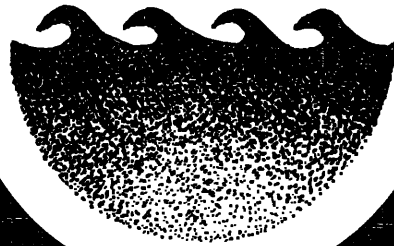
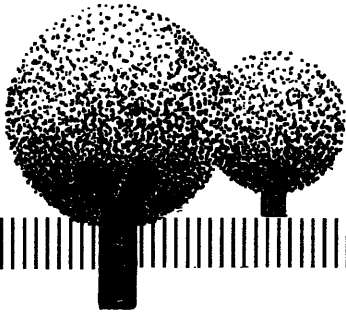
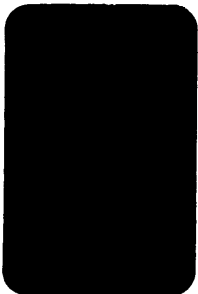


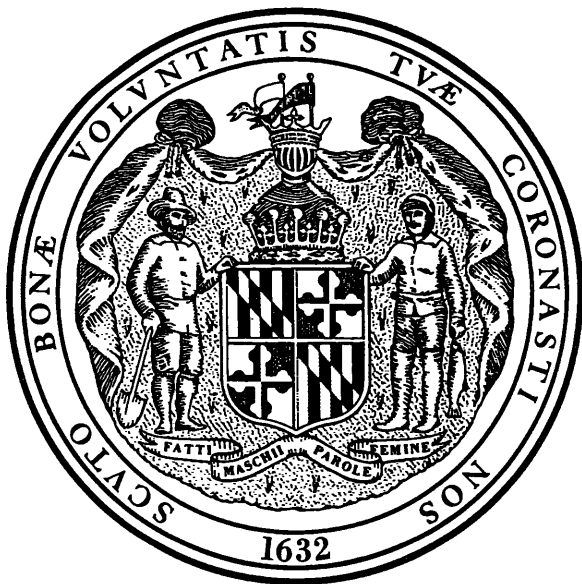
DEPARTMENT OF NATURAL RESOURCES  
INFORMATION RESOURCE CENTER  
NON-CIRCULATING



MARYLAND  
DEPARTMENT OF  
NATURAL  
RESOURCES

1985 ANNUAL ACTIVITIES REPORT





STATE OF MARYLAND

HARRY HUGHES

GOVERNOR

LOUIS L. GOLDSTEIN

COMPTROLLER OF THE TREASURY

WILLIAM S. JAMES

TREASURER

DEPARTMENT OF NATURAL RESOURCES

TORREY C. BROWN, M.D.

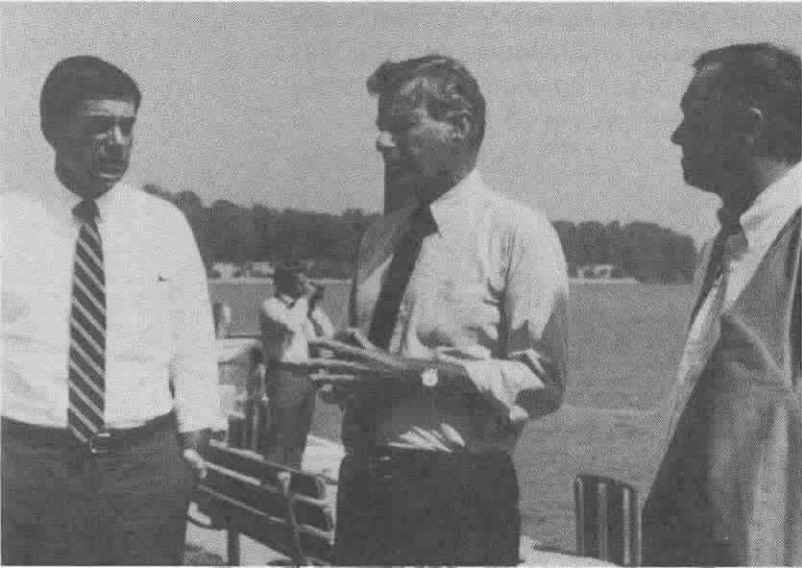
SECRETARY

## MARYLAND DEPARTMENT OF NATURAL RESOURCES ANNUAL ACTIVITIES REPORT 1985



Helene Tenner

Virginia Governor Charles Robb, Maryland Governor Harry Hughes and Dr. Torrey C. Brown, Secretary, Maryland Department of Natural Resources, discuss status of various Chesapeake Bay improvement initiatives of meeting held at Elk Neck State Park on September 20, 1985.



“Laws and institutions must go hand in hand with the progress of the human mind; as that becomes more developed, more enlightened, as new discoveries are made, new truths discovered and manners and opinions change, with the change of circumstances, institutions must advance also to keep pace with the times.”

Thomas Jefferson



TORREY C. BROWN, M.D.  
SECRETARY

STATE OF MARYLAND  
**DEPARTMENT OF NATURAL RESOURCES**  
TAWES STATE OFFICE BUILDING  
ANNAPOLIS 21401

JOHN R. GRIFFIN  
DEPUTY SECRETARY

## INTRODUCTION

This report describes significant activities of the Maryland Department of Natural Resources during Fiscal Year 1985. It is an accounting of the Department's stewardship of our vast yet vulnerable land, water and living resources. In fulfillment of its legislative mandate the Department of Natural Resources deals with the sometimes conflicting demands of the general public, special economic interests, local government and activists of all persuasion. Our effort, always, is to conduct the Department's business in such a manner that Maryland's natural resources will be protected and enhanced by wise use for the benefit of all our citizens.

A handwritten signature in black ink, reading "Torrey C. Brown M.D.", with a long horizontal stroke extending to the left.

Torrey C. Brown, M.D.

**In a Natural Resources Emergency or for  
assistance telephone**

**(301) 267-7740 twenty-four hours a day or  
(301) 269-3181 during working hours.**

**The facilities and services of the Department of Natural Resources are available  
to all without regard to race, color, sex, age, national origin, physical or mental  
disability.**

## TABLE OF CONTENTS

<b>OFFICE OF THE SECRETARY.....</b>	<b>7</b>
<b>CAPITAL PROGRAMS ADMINISTRATION.....</b>	<b>11</b>
<b>CHESAPEAKE BAY CRITICAL AREA COMMISSION .....</b>	<b>15</b>
<b>HAZARDOUS WASTE FACILITIES SITING BOARD .....</b>	<b>16</b>
<b>ENERGY ADMINISTRATION .....</b>	<b>17</b>
<b>MARYLAND ENVIRONMENTAL TRUST.....</b>	<b>19</b>
<b>MARYLAND FOREST, PARK, AND WILDLIFE SERVICE .....</b>	<b>23</b>
<b>NATURAL RESOURCES POLICE.....</b>	<b>24</b>
<b>MARYLAND GEOLOGICAL SURVEY.....</b>	<b>27</b>
<b>MARYLAND ENVIRONMENTAL SERVICE.....</b>	<b>31</b>
<b>WATER RESOURCES ADMINISTRATION.....</b>	<b>33</b>
<b>TIDEWATER ADMINISTRATION.....</b>	<b>37</b>
<b>STATE BUDGET.....</b>	<b>45</b>
<b>DEPARTMENT OF NATURAL RESOURCES BUDGET.....</b>	<b>45</b>
<b>CHART OF ORGANIZATION.....</b>	<b>46</b>



## EXECUTIVE DIRECTION

The Secretary, The Deputy Secretary and Assistant Secretaries of the Department of Natural Resources provide the establishment, coordination, administration and direction of overall departmental policy. The Office of the Secretary has final responsibility for management policy; it maintains liaison with various legislative bodies as well as communication with the public. The Office of the Secretary furnishes support services to all elements of the Department of Natural Resources.

## LEGAL SECTION

The Legal Section is supported by ten Assistant Attorneys General. One serves as Counsel to the Secretary of Natural Resources and is responsible to the Attorney General for the direction and supervision of the section. The legal staff represents agencies of the Department involved in litigation, and supplies legal advice inherent in the normal functioning of the Department. This includes the approval of contracts and regulations, and representing the agency at administrative hearings.

During Fiscal 1985, the legal staff continued its active role in the formulation and enforcement of laws protecting and preserving the State's natural resources. It handled cases in the federal courts, initiated legal action at the State Circuit Court level and prosecuted violations in the State District Courts. In addition, assistance and legal advice was rendered in administrative proceedings at federal and state levels.

## FISCAL AND SUPPORTIVE SERVICES

The Fiscal and Supportive Services Program in the Office of the Secretary provides to the Department assistance and direction in the areas of financial management, personnel services and data processing services. The program is responsible for administering the Department's \$100 million plus budget, providing fiscal information to agency administrators, maintaining fiscal controls over income and expenditures. It also develops accounting procedures, fiscal controls and systems. During FY '85, personnel service contracts for seasonal and temporary employees were automated resulting in decreased paperwork and quicker payroll action. Also an automated timecard distribution system was established providing for quicker and more accurate reimbursement of personnel costs by the Federal Government.

During FY '86, the timecard distribution system will be expanded, and development of automated Federal grant management and procurement systems will continue. In addition, an automated working fund system will be started.

Specific activities include:

### General Accounting

This project is responsible for producing and maintaining financial reports and records, for the receipt and deposit of revenues, for the disbursement of State funds, for maintaining and collecting accounts receivable and for maintaining time and leave records for all personnel.

### Procurement

This project is responsible for the processing of service contracts, requisitions and purchase orders in accordance with Title 21, State Procurement Regulations. It is also responsible for reviewing personal service and timber sale contracts and for revising and updating DNR Supervisor's Manual. During FY '85 1,390 commodity order with an approximate value of \$4,900,000; 507

service contracts with an approximate value of \$10,120,000 and 1,500 personal service contracts for seasonal and temporary employees were processed.

### Mail Distribution

During FY 1985 the department's mailroom handled more than 4,750,000 pieces of mail and 23,000 parcels.

### Special, Federal and Capital Fund Management

The fiscal and statistical records for five general categories of Federal and State projects are maintained and coordinated by this section. Other responsibilities include collecting Federal revenue, providing cash requirement forecasts for loan funds, income and expenditure projections for Special and Federal funds and managing the Time Distribution System.

During FY '85 financial records were maintained on 49 Shore Erosion projects totalling \$1,429,737; 57 Waterway Improvement projects for \$2,910,059; 207 Outdoor Recreation Land Loan projects for \$8,001,840; 58 General Construction Loan projects for \$16,256,575 and 97 Federal Grant projects for \$10,933,388.

### Supportive Services

This project is responsible for controlling Real and Personal property purchased or otherwise received by the Department. As of June 30, 1985, the value of Land and Buildings to which the department holds title exceeds \$243,000,000. During FY '85 inventory records for 17,800 items valued at approximately \$22,000,000 were maintained, 1,500 vehicles and 800 watercraft were registered and titled. These services are also responsible for maintaining monthly motor vehicle report forms.

### Data Processing

The Data Processing Section in the Office of the Secretary maintains a central review authority over all Data Processing Activities of the Department. In addition, the Section is directly responsible for all administrative/financial computer applications located in the Office of the Secretary's Fiscal and Supportive Services and Licensing and Consumer Services.

Data Processing activities are dispersed throughout the Department. The Maryland Environmental Service (MES) operates an IBM System 36 minicomputer. In the Tawes Building, all units share a Four Phase/Motorola minicomputer system. Cathode Ray Tubes (CRT's) on the system have the capability of doing local intelligent data entry and word processing, with data communications to the Annapolis Data Center's (ADC) IBM 3081 mainframe computer. The Department has approximately 80 computer applications of various sizes and complexities in operation at the ADC. The data for these applications are keyed locally on the Four Phase/Motorola minicomputer and transmitted via leased phone lines to the ADC. Printed reports are produced on the Four Phase/Motorola line printer. Word processing printers, located in various units, are also connected to the minicomputer system.

Significant data and word processing achievements during Fiscal Year 1985 included the development of a last name, on-line inquiry capability into the Licensing Boat Master File; implementation of a new system to process Waterman's Compensation records; setting up a System to process Wildlife time records for management review and Federal aid billing; implementation of a Wildlife vehicle reporting system; design and implementation of a special Canvasback Hunting Permit application system; installation of Radio Shack TRS-80 Model 4 microcomputers at Sandy Point State

Park warehouse for concession inventory control and maintenance; programming of a new system reporting on finfish and crab-dealers; procurement and installation of an IBM System 36 mini-computer for the Maryland Environmental Service; procurement of NBI word processors for the Legal Section and the Critical Areas Commission; significant expansion of the DNR Information Processing Plan by the addition of DNR Unit data processing goals and objectives and identification of almost 100 data processing projects throughout the Department; the development and implementation of a flood property identification system; installation of a permit-number on-line inquiry capability and random access update to the Water Appropriation Network System; procurement of an IBM PC/XT Flood Warning System; completion of the WRA Surface Mining system and procurement of an IBM PC for the Office of the Secretary to inquire into the Legislative Bill Status System. Also word processing for several executives in the Office of the Secretary.

During the coming fiscal year, and beyond, the Data Processing Section will strengthen its support capabilities throughout the Department. The efficient, prudent use of these modern tools is essential to responsible management.

## LICENSING AND CONSUMER SERVICES

Licensing and Consumer Services administers the State Boat Act and the licensing provisions under the Natural Resources Article for the Tidewater Administration and the Forest, Park & Wildlife Service. The section titles and registers all boats; records security interest in boats; issues commercial and sport licenses and permits; collects shellfish taxes and licenses boat and shellfish dealers. The five Natural Resources Service Centers are under the supervision of this section. This unit is also responsible for the Boat Act Fund, the Boat Dealer Assurance Fund, the Publication Sales Fund and the sale of the *Guide For Cruising Maryland Waters* and certain other Department publications. Licensing and Consumer Services completed implementation of the Tidal Fish License in Fiscal Year (FY) 1985, created a statewide sales network for implementation of the Chesapeake Bay Sport Fishing License program and designed, sold and accounted for the licenses and receipts. Licensing and Consumer Services initiated a contract for the creation of a First of State Saltwater Fish stamp. Prints are to be produced, distributed and sold nationally under the contract with Mid-West Marketing.

The Adopt-A-Rockfish program was implemented in FY 1985, and Licensing and Consumer Services issued 5,411 certificates and collected \$31,256 in revenue.

The six Licensing and Consumer Services Offices collected gross revenues of \$18,658,727 representing 1,034,131 transactions. Included were 30,640 applications for Maryland boat titles resulting in \$9,524,401 in boat title taxes collected; 125,798 applications for boat registrations resulting in revenues of \$1,340,036; 6,064 applications for documented yacht stickers totaling \$30,314; also 796,423 applications for various recreational fishing and hunting licenses and stamps resulting in revenues of \$5,890,000. Of the 796,423 recreational fishing and hunting licenses and stamps, 136,158 were the newly created Chesapeake Bay Sport Fishing Licenses. Licensing and Consumer Services processed 18,654 applications for commercial fishing licenses with revenues totaling \$777,055. A total of \$98,832 was collected for the recordation of security interest with \$39,540 deposited to the account of the Comptroller of the Treasury, \$32,950 available to be distributed to the counties and \$26,342 for offsetting costs of the collection and recordation. Gross revenues from publications were \$85,282 of which \$81,684 was generated from the sale of the *Guide For Cruising Maryland Waters*.

Licensing and Consumer Services Staff processed 125,798 boat registrations of which 13,921 were issued for three years free-of-charge. Also processed were 3,465 oyster and clam dealer reports which accounted for over 1,860,258 taxed bushels of shellfish (1,216,527 harvested bushels) and \$637,695 in severance, import and export taxes. The Licensing and Consumer Services staff provides daily direction and interaction between the Department and the 728 licensed boat dealers, 233 fish dealers, 24 Clerks of Court, 7 hunting and fishing license distributors, 214 hunting and fishing license consignment agents and 532 hunting and fishing license cash agents, as well as the general public.

Licensing and Consumer Services staff at the five Regional Service Centers, in addition to the issuance of titles, registrations and licenses, provide comprehensive administrative support to the Regional Managers and field personnel of all units of the Department located at the centers. The Regional Service Center in Southern Maryland collected \$12,592 on behalf of the Potomac River Fisheries Commission through sales of Potomac River Fisheries Commission Licenses and deposited the money direct to the Potomac River Fisheries Commissions account.

In addition, Licensing and Consumer Services collected and deposited to the State's accounts \$231,265 in miscellaneous permits and sales.

Of the recreational fishing and hunting licenses recorded as sold, 35,072 were returned by retail agents resulting in \$209,014 in refunds. The net revenue from recreational fishing and hunting licenses is \$5,698,460.

Of revenues collected during FY '85, \$17,213,076 was used to support the activities of the Tidewater Administration, the Forest, Park and Wildlife Service, the Natural Resources Police and the Office of the Secretary.

Licensing and Consumer Services' total costs for FY 1985 to accomplish these services was \$1,890,910.

During the FY 1986, Licensing and Consumer Services plans to increase the availability of licenses to the public by coordination with the Clerks of Court and by incentive programs to agents. The fishing license for 1986 has been revised. The revised format is expected to reduce processing time for Licensing and Consumer Services personnel, as well as, increasing revenue by making it available to a larger portion of the public and by offering a mail-in service. The new format will be easier to handle and will increase the number of agents selling the licenses for the State.

Over the next five years, Licensing and Consumer Services plans to reduce or eliminate the time lag in license issue by improving the electronic receipt system, upgrading data entry capabilities, and revising forms and procedures to reduce the current labor intensive process. Licensing and Consumer Services plans an aggressive education program familiarizing all agents, dealers, users and employees of the licensing and tax process. It will improve its capability to provide information statistics for use by the Marine Police and Department of Natural Resource managers.

Through the use of news media and by enhancing education programs, Licensing and Consumer Service plans to increase public awareness of license requirements. Further plans include efforts to simplify licensing procedures to reach our goal of providing maximum service to the public by the most effective and efficient means possible.

## NATURAL RESOURCES ASSISTANCE AND INFORMATION

The Office of Assistance and Information provides direct public access to the services of the Department of Natural Resources. It serves as a focal point and public interest center where information about activities of the Department may readily be obtained. The staff uses all modern communications tools: news releases, public service messages (television and radio) pamphlets and brochures, direct mail, telephone responses. Also motion pictures, books, exhibits, slides and public presentations to civic groups, etc.

The Office provides support for the line agencies of the Department in their specific public communication efforts. This includes coordination of exhibits at fairs, festivals and observances; support services at public hearings; assistance in preparation and distribution of mandated media advertisements and general mailings.

During Fiscal Year 1985, the Office of Assistance and Information consisted of these units: Administration Library, Graphic Services and Field Operations.

### Administration

Overall management is the responsibility of the Administration unit. In Fiscal Year 1985 it maintained contacts with media and officials of other State, Federal, county and public agencies. It served as a center for public information on all issues involving the Department. This includes inquiries from and responses to queries from news media, special interest groups, other agencies and the general public.

The unit also conducts the annual Migratory Waterfowl and Trout Stamp Design Contests, prints and revises the Departmental telephone directory; compiles the DNR News, the DNR Calendar

of Events, maintains a current register of public participation groups associated with the Department; provides staff support for the Advisory Board of the Secretary of Natural Resources and publishes the Department's Annual Activities Report.

### Library

The DNR Library is located on the first floor of the Tawes State Office Building. Its services are available to DNR employees and the general public. Activities include the Department's circulating film library; an expanding book collection; a repository for Departmental publications and reports; participation in the interlibrary loan program; and offering technical reference and research assistance.

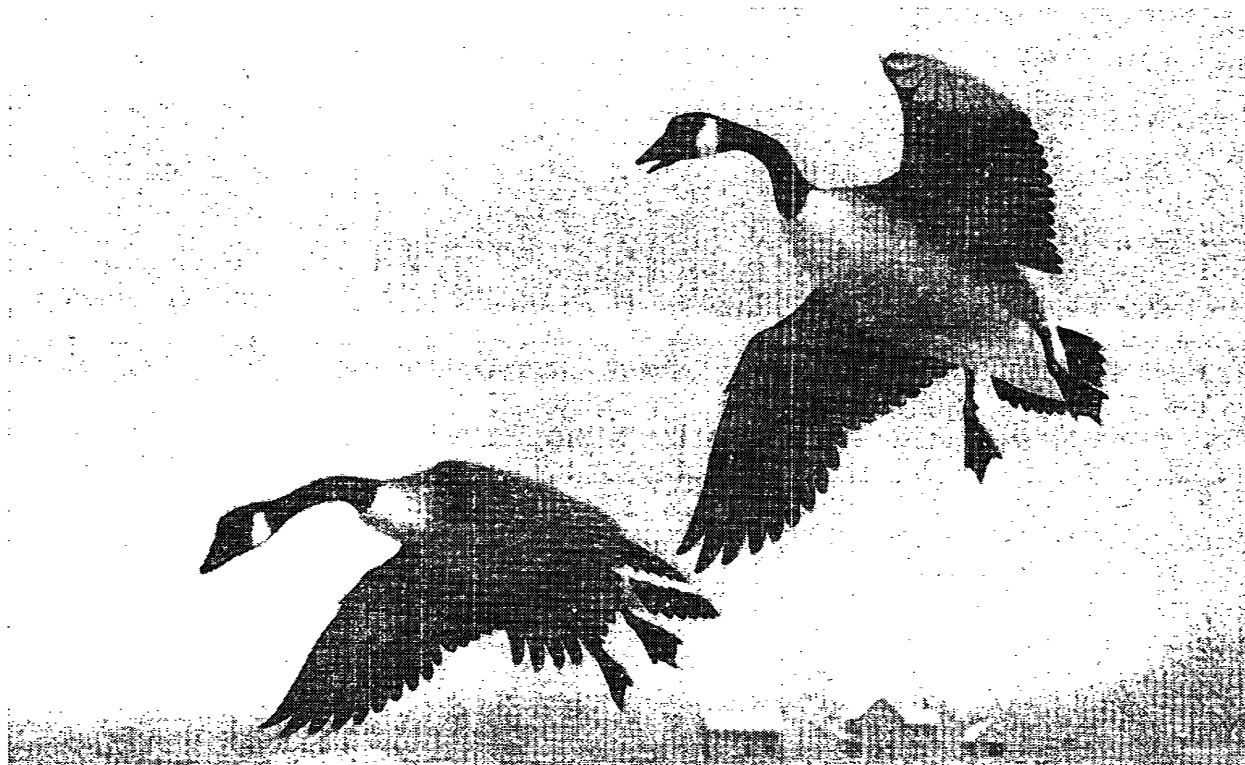
### Graphic Services

Two illustrators provide graphic arts services for the agencies of the Department, producing publications, exhibits, maps, posters and similar elements of communication.

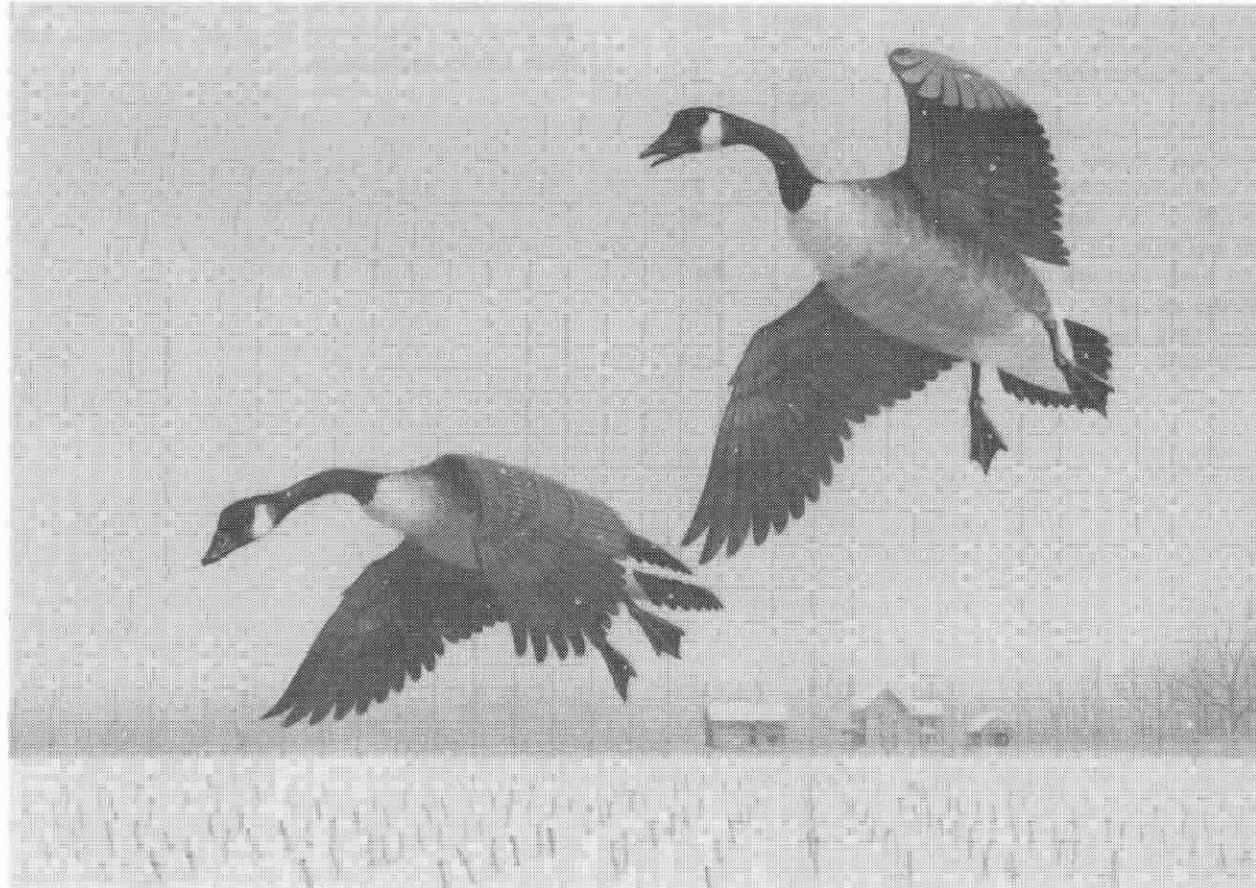
### Field Operations

Three field representatives brought the natural resources story of Maryland to the public. They conducted teacher training seminars in many counties and the City of Baltimore. The Field Operations staff also made presentations before school groups, service clubs, community and sportsmen's associations. The unit coordinates DNR exhibits at fairs, special expositions and events. In addition, it conducts orientation programs for employees of the Department.

In FY 1985, its staff gave over 200 presentations before some 13,500 participants, which included community leaders, educators, students and Department employees.



**Wintering Canadas** — David T. Turnbaugh's oil painting of two Canada Geese lighting in a cornfield, was the winner in the Department of Natural Resources' 1985-86 Maryland Migratory Waterfowl Stamp Design Contest.



**Wintering Canadas** — David T. Turnbaugh's oil painting of two Canada Geese lighting in a cornfield, was the winner in the Department of Natural Resources' 1985-86 Maryland Migratory Waterfowl Stamp Design Contest.

## PERSONNEL ADMINISTRATION

The Personnel Section is responsible for all personnel services for the Department.

PERSONNEL ADMINISTRATION ACTIVITIES	F.Y. 84	F.Y. 85
PERSONNEL TRANSACTIONS PROCESSED — (Appointments, Reclasses, etc.)	3643	4549
RECLASSIFICATION STUDIES	245	452
Desk Audits	50	36
CONTRACTS —		
Personal Services Salary Certification *14 month total	72*	76
SPECIFICATIONS REVISED	1	10
SUGGESTIONS PROCESSED	6	5
BLOOD PROGRAM —		
Drives	3	3
Donors	235	233
Units Produced	224	221
Disbursement	40	106
INTERVIEW & MOVING EXPENSE REQUEST —		14
APPLICANT ACTIVITY —		
Correspondence	2100	1856
Walk-ins	843	710
Interviews	201	189
Telephone Inquiries	3352	3065
Employee Reviews	121	103
EXAMINATIONS REQUESTED	10	30
EMPLOYEE GRIEVANCES (4th and 5th Step Hearing)	26	24
NEW EMPLOYEE ORIENTATIONS	8	6
STATE ACCIDENT FUND ACTIVITY		
First Report of Injuries Processed	180	153
Workmen's Compensation Hearings Coordinated/Attended	10	2
Bills Processed	372	313
MISCELLANEOUS CAMPAIGNS (Flu inoculations, various employee benefit programs)	3	3
UNEMPLOYMENT INSURANCE HEARINGS	4	4
F.Y. 86 ASR PROPOSALS		
New classes/salary increases recommended		101
Classes/salaries adjusted		39
Percentage of DNR employees benefiting from F.Y. 86 ASR		45%

## Highlights

- Developed, administered and implemented alternate section processes to improve capability to hire minorities.
- Participated in management planning to engage a consultant to give human relation training to law enforcement and management personnel.
- Coordinated a very successful Annual Salary Review which adjusted salaries for almost half of DNR employees.

## One Year Goals

Increase professional and clerical staff due to increased workload; secure larger office space and capacity for greater confidentiality; improve timeliness of reclassification studies; improve data processing capability.

## Five Year Goals

Improve communications with and services for field employees; increase understanding of personnel function among top management; administer all examinations for DNR classifications; increase delegation of authority by the Department of Personnel in certain administrative areas.

## OFFICE OF EEO AND MANPOWER

This office advises and serves the Department and its agencies on affirmative action and equal employment opportunity. It is responsible for the day-to-day operation of the Equal Employment Opportunity and Affirmative Action Program. The staff coordinates all reports, studies and other administrative duties dealing with equal employment opportunity and provides to units of the Department, periodic reports. It works with the Personnel Office to develop training materials, guides and seminars to inform the Department's employees of their responsibilities in the Equal Employment Opportunity Program. Also works with Federal and State EEO Commissions.

# CAPITAL PROGRAMS ADMINISTRATION

The Capital Programs Administration consists of five programs in addition to General Direction; Land Planning Services, Program Open Space, Shore Erosion Control, Land Management and Recreational Services and Capital Development.

The administration provides planning services for state parks, natural resources management areas and recreational facilities. It administers Program Open Space funds under the provisions of the Outdoor Recreation Land Loan of 1969 and Federal Funds provided by the US Department of Interior's Land and Water Conservation Fund, and provides shore erosion control services to public and private landowners.

## PROGRAM OPEN SPACE

The mission of Program Open Space is to provide public recreation and open space areas within Maryland. It coordinates the purchase of land for all units within the Department of Natural Resources. This program also obtains federal grants for land acquisition and development, administers state and federal grants to Maryland's subdivision for local recreation areas and open space, and coordinates development and maintenance of the Helen Avalynne Tawes Garden.

The fiscal year 1985 Program Open Space allocation by the Maryland General Assembly totaled \$24,000,000. By law, one half of these funds (Outdoor Recreation Land Loan) are designated for state land acquisition, Agricultural Land Preservation Easements, and a Direct Grant to Baltimore City for park acquisition, development, or maintenance. The remaining \$12,000,000 is distributed to the local subdivisions for local park acquisition and development.

## State Share Activity

During fiscal year 1985 Program Open Space continued to make progress in meeting the Department acreage goal of 396,766 acres. An additional 5,040 acres was acquired during fiscal year 1985 leaving 78,407 acres to be acquired.

Below is a summary of the acreage owned by the Department of Natural Resources:

### Fee Simple Ownership

State Parks	81,796 acres
State Forests	131,822 acres
Wildlife Management Areas	83,023 acres
Fish Management Areas	1,034 acres
Natural Environmental Areas	7,024 acres
Natural Resources Mgmt. Areas	12,838 acres
Capital Programs	68 acres
Energy and Coastal Zone	1,065 acres
Fire Towers	48 acres
Natural Resources Police	6 acres
Ocean City Beach Control	5 acres
Tidewater/Waterway	3 acres
Miscellaneous	90 acres
<b>TOTAL</b>	<b>318,822 acres</b>

## Local Share Activity

In fiscal year 1985 there were 44 acquisition grants approved for the county and municipal governments, with a total Program Open Space assistance of \$9,304,525. The completion of these projects will result in an additional 1,970 acres of local park land.

There were also 97 development projects or amendments approved by the Board of Public Works with a total assistance of \$6,456,076.

Since 1970 Program Open Space has provided \$167,800,000 to the local governments for park grants. At the end of fiscal year 1985 the unencumbered balance was \$12,815,865, an obligation percentage of 92 percent.

## Land and Water Conservation Fund

Program Open Space also administers the annual allocation of federal Land and Water Conservation Funds. Each year since 1966, with the exception of 1982, the U.S. Department of the Interior has apportioned a sum of money to the State of Maryland to be used for the acquisition and development of park and natural resource areas throughout the State. To receive federal funding, the State must submit a detailed project application that conforms with the State's Comprehensive Outdoor Recreation Plan. Upon completion of an approved project, the State receives fifty percent reimbursement of the costs incurred to acquire or develop a specific park site.

In 1973, according to the Annotated Code of Maryland, Sections 5-901 and 5-903, a local governing body of Maryland and the Maryland National Capital Park and Planning Commission are entitled to receive an amount equal to one half of the federal funds allocated to the State of Maryland through the Land and Water Conservation Fund. To comply with this law, the annual allocation is split fifty/fifty between the State and the local governments. Each county receives an apportionment according to a formula created by a committee appointed by Governor Tawes in 1965.

To alleviate the submission of numerous small local projects to the Federal Government, the State submits several major projects to recover the entire annual allocation. The local governments receive their share by submitting to the department of Natural Resources a project application which complies with Program Open Space guidelines and State and local comprehensive plans.

Through fiscal year 1985, the State of Maryland has received apportionments totaling \$60,737,639. Of that amount \$56,342,263 has been obligated on 296 park acquisition and development projects throughout the State; an obligation rate of 92 percent.

In fiscal year 1985, \$4,837,480 was reimbursed to the State from the federal Land and Water Conservation Fund. The local governments expended \$1,615,033 on local park acquisition and development and the State invested \$4,515,972.

## HELEN AVALYNNE TAWES GARDEN

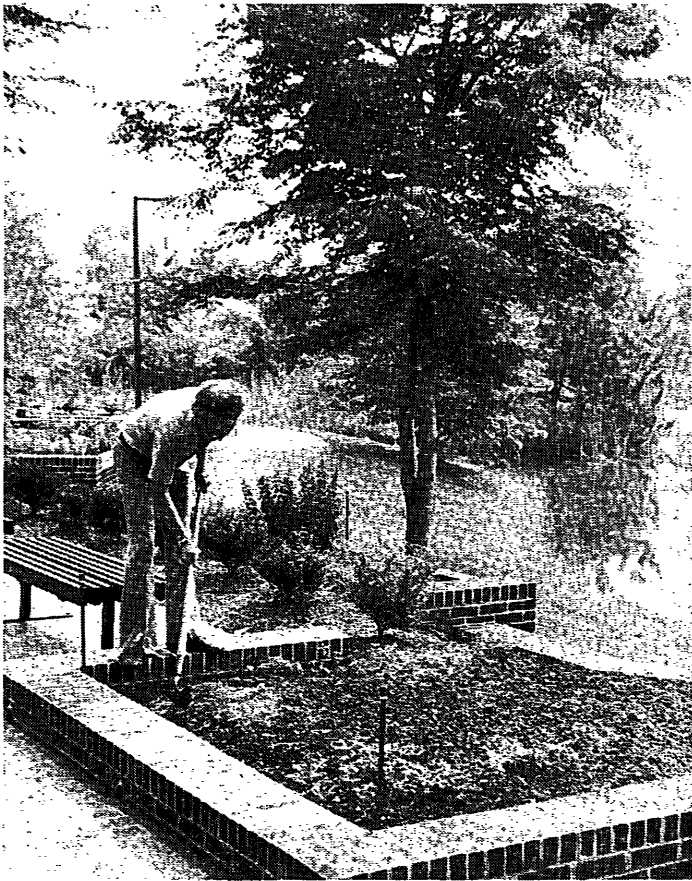
In 1985, Program Open Space became responsible for managing the Tawes Garden and the newly constructed Visitors Center in the lobby of the Tawes State Office Building. A long-awaited Visitors Center with conference room, exhibits, and new Natural Resources Library now serve the Department and the Helen Avalynne Tawes Garden. A naturalist was hired in May to plan, coordinate, and conduct programs.

The Garden pathways were resurfaced and a new pathway added which will connect with a proposed boardwalk to make a continuous loop. Plans and specifications are being completed for the proposed boardwalk and sand dunes which will be the Garden's Eastern Shore peninsula. Construction should take place in FY 1986.

The Garden's Advisory Board was reorganized. It is now composed exclusively of members of the public.

Articles featuring the Garden appeared in *Southern Living* and *Maryland Magazine*. Over \$2,500 in contributions was deposited in the Garden's Stevie Lyttle Fund (an account of District II of





Helen Avalynne Tawes Garden

the Federated Garden Clubs of Maryland). Sixty guided tours involved approximately 550 people.

### **Program Open Space Goals**

The following are Program Open Space goals for the next five years:

- With the assistance and cooperation of the Department of General Services, Program Open Space will expedite the annual rate of land acquisition to meet the overall State goals for open space and public recreation, park, and conservation lands.
- Study, recommend, and implement programs to assist in the purchase of easements for buffer strips around the Chesapeake Bay and its tributaries.
- Improve production of status reports, correspondence, and Board of Public Works Agenda administration through the use of computers, word processors, and other labor-savings devices.
- Streamline processing of Program Open Space and local grants and federal Land and Water Conservation Fund grants to accelerate processing time and to eliminate storage of bulky files and applications.
- Intensify education effort in environmental quality and public open space, conservation lands, and public recreational lands.

## **LAND MANAGEMENT AND RECREATION SERVICES**

The Land Management and Recreation Services Program was established within the Capital Programs Administration during November of 1983 and has four primary projects: Land Management, Real Property Review and Evaluation, Recreation and Leisure Services, and Enterprise Development.

### **Land Management**

The Land Management Project operates properties that have been identified for enterprise development, major capital improvement or innovative natural resources management. These include, the Merkle Wildlife Sanctuary, Somers Cove Marina, and the Fair Hill and Patuxent River Natural Resources Management Areas.

At Fair Hill, a Concept Plan has been produced recommending development of the property as an equestrian center offering a diverse array of public activities. In addition, construction has begun on a privately funded thoroughbred training facility.

Construction also began on a \$400,000 visitors center at the Merkle Wildlife Sanctuary. The center, scheduled to begin operation in the spring of 1986, will provide information to the public about the sanctuary's history, the characteristics of the thousands of Canada Geese that winter at the property and the principles of wildlife management.

The Land Management Project assumed control of the Somers Cove Marina in February of 1983. This 272 slip marina is located in Crisfeld and was expanded by the Waterway Improvement Division of the Tidewater Administration.

The project is responsible for the management of more than 2,000 acres of land along the Patuxent River and will implement a Natural Resources Management Plan, under preparation, for the entire Patuxent River Watershed. This management plan includes recommendations for recreation opportunities, soil conservation, wildlife improvement and forestry management.

### **Real Property Review and Evaluation**

This project is responsible for the execution of all leases, rights of ways, easements and use agreements initiated by the Department for the use of its real property. The section also maintains a Real Property Inventory for the Department, and processes all requests for disposal, razing or change in use of properties.

### **Recreation and Leisure Services**

Recreation and Leisure Services offers technical assistance in planning and conducting recreation activities and programs to agencies of State, Local and Municipal governments, as well as, private corporations, organizations, and members of the general public. This section routinely responds to requests regarding grant sources, program development, lectures and workshops.

Two publications are published to serve recreation and park professionals, academic institutions and the public. "Recreation Reflections", a bi-monthly newsletter, reports events and new developments in recreation and leisure services. A "Directory of County and Municipal Recreation and Park Boards and Commissions" is compiled annually. It identifies administrators and directors of all recreation departments at State, Local and Municipal levels of government; and includes a roster of all Recreation and Parks Advisory Boards and Commissions.

Also under way is a program that will assist governments and private agencies in providing recreation opportunities and services to Maryland's special populations.

Recreation and Leisure Services maintains a resource library, sponsors a recreation training program for student volunteers, and prepares promotional displays for conferences and festivals.

### **Enterprise Development**

This is a new project for development of state lands by private interests to generate benefits and revenues for both the public and private sectors. These enterprises will be established to preserve the integrity of our natural resources, while enhancing their recreational potential and fiscal productivity.



Helen Avalynne Tawes Garden



Some projects under consideration are; privately-financed construction of a resort/conference center in Western Maryland, development of an equine training center at Fair Hill, and restoring and converting the Mt. Airy Mansion at Rosaryville State Park into an historic country inn.

## SHORE EROSION CONTROL

The Shore Erosion Control Program provides assistance to reduce shoreline erosion on the Chesapeake Bay, its tributaries and the Atlantic coastal region. The Program provides both technical and financial assistance to public and private waterfront property owners.

Technical assistance, provided free of charge, takes the form of on-site visits to assess erosion problems, recommending actions the property owner can take to reduce erosion, providing permit information, designing protective structures, and managing construction contracts for state-funded projects.

Financial aid in the form of interest-free loans for qualified property owners is provided by this Program. Under the Program's Revolving Loan Fund, the qualified property owner receives a 25-year loan covering one hundred percent of the first \$50,000 of construction costs; fifty percent of the next \$20,000; twenty five percent of the next \$20,000 and ten percent of that portion of the construction costs over \$90,000.

In conjunction with design and construction tasks, Program personnel obtain hydrographic and topographic data at proposed sites for use during the project design phase. During the construction phase an inspector visits the project site frequently to ensure compliance with the plans and specifications. In addition, Program personnel have overall responsibility for the operation of the Shore Erosion Control Revolving Loan Fund.

## Goals

### One Year

- Fully utilize all appropriated and loan payback funds
- Reduce elapsed time between start of project design and project completion
- Reduce elapsed time between request for, and provision of, technical assistance actions
- Increase minority business enterprise participation
- Fully implement the inspection program for completed projects

### Five Year

- Improve information activities to ensure all appropriate Maryland citizens and groups are aware of services provided
- Pursue additional funding that will allow construction of up to 4 miles of protective structures per year

## SHORE EROSION CONTROL FY 85 ACCOMPLISHMENTS

Technical Assistance Actions	181
SEC Loan Applications Received	80
Engineering Contracts Awarded	34
Construction Projects Bid	47
Construction Contracts Awarded	26
SEC Loans Processed	41
Length of Shoreline Protected by:	
Timber Bulkheads	1,288.0 LF
Timber Bulkhead Repairs	614.6 LF
Steel Bulkheads	133.5 LF
Stone Revetments	5,533.1 LF
Stone Revetment Rehabilitation	214.0 LF
Concrete Wall Repairs	248.0 LF
Total	8,031.0 LF
	1.52 Miles

Number of Projects Completed	22
Number of SEC Loans Involved	35
Amount of SEC Funds Loaned	\$1,155,945.80
Total Cost of Construction Completed	\$1,801,476.95

## Land Planning Services

Land Planning Services provides the Department of Natural Resources with planning, mapping, graphic, environmental review, and capital budget services for the acquisition, development, and resource management of public lands and scenic rivers administered and/or managed by the Department.

The activities of Land Planning Services are accomplished through five projects: Resource Planning, Wild and Scenic Rivers, Acquisition Graphics and Research, Natural Heritage and Environmental Review, and Capital Budget Planning.

## Resource Planning

Resource Planning staff develops master plans for new State parks and recreational use, development and activity modification plans for existing State parks; conducts detailed property reviews for proposed new DNR areas; conducts environmental reviews for DNR projects and land areas; and prepares master facilities plans for new sites.

Throughout the planning process, DNR agencies, interested citizens, citizen advisory committees, elected officials, and federal, state and local government representatives participate in generating, refining, and evaluating master plans. Public information meetings and formal hearings are held before master plans are adopted by the Department.

During Fiscal Year 1985, Resource Planning was actively involved in developing plans for the following state parks, natural resource management areas, wildlife management areas, and special projects:

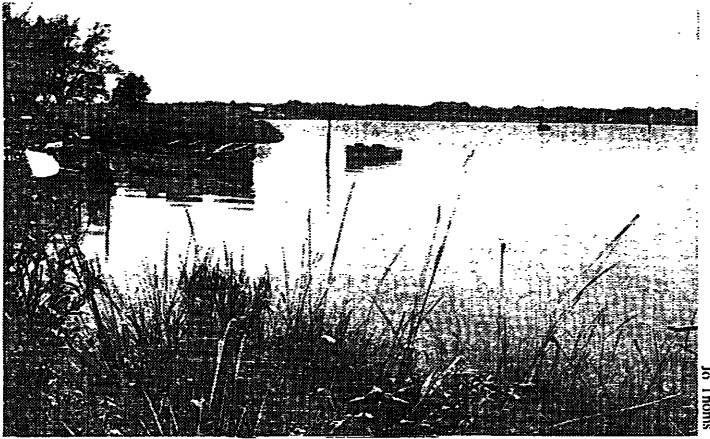
Chapel Point State Park  
 Choptank River Bridge Project  
 Cunningham Falls State Park — Catoctin Furnace Complex  
 Fair Hill Natural Resources Management Area  
 Fountain Rock Spring  
 Gunpowder Falls State Park — Days Cove Section  
 Hart-Miller Island  
 Patapsco Valley State Park  
 Patuxent River Natural Resources Management Areas  
 Sandy Point State Park  
 Smallwood State Park  
 Soldiers Delight Natural Environment Area  
 Susquehanna State Park — Steppingstone Museum  
 St. Mary's River State Park

## Wild and Scenic Rivers

The Wild and Scenic Rivers staff prepares resource management plans for the nine rivers that comprise the Wild and Scenic Rivers system of Maryland; promotes the wise use of the rivers' land and water resources; improves resource conservation measures; and administers the Youghiogheny Wild River Regulations. This project works with local citizen advisory boards and local governing bodies to develop recommendations for use by the appropriate governing body.

Completed planning projects for Fiscal Year 1985 included:  
 The Maryland River' Study.

Continuing planning projects for Fiscal Year 1985 include:  
 Monocacy River  
 Youghiogheny River.



View of West River, included in current Bay tributaries study of 17 rivers by Wild and Scenic Rivers program and National Park Service.

In cooperation with the National Park Service the unit is preparing an inventory and study for 17 additional rivers in the state to determine which possess outstanding scenic, fish, wildlife, and other values of present or potential benefit to the citizens of Maryland.

### Acquisition Graphics and Research

Acquisition, Graphics and Research staff researches property records (deed, surveys, and land patents) and prepares project boundary maps illustrating privately owned properties legislatively authorized for acquisition to complete public ownership of DNR managed lands. These activities are coordinated with numerous DNR agencies as well as other state and federal programs. This project also provides mapping, graphics, and property research for the oil and gas leasing program and other DNR and State agency projects, and prepares the Department's bi-annual Acreage Report.

Project boundary maps and special project maps completed in Fiscal Year 1985 were:

- Chesapeake Bay Critical Area Maps
- Patuxent River Watershed
- Georges Creek Watershed
- Savage River State Forest Basemapping — Competitive Bid
- Green Ridge State Forest
- South Mountain/Appalachian Trail
- Youghiogheny River Scenic Corridor

Acquisition Graphics staff spend 40% of their time providing technical research support to the DNR Legal Office to resolve the growing number of property disputes which occur between DNR and private owners bordering DNR areas. This support takes the form of an overall analysis of the problem including property research, field visits, and meetings with landowners, culminating in a final report recommending methods of resolution.

### Natural Heritage and Environmental Review

Natural Heritage staff systematically collects, records, and analyzes information about the State's biotic diversity and as a result maintains the State's most extensive computerized data base of species and habitat information. Heritage Program responsibilities include: the identification of representative elements of Maryland's Natural Heritage, including habitats for rare and endangered species and natural communities; monitoring these species and habitats to assess problems or threats to their continued existence, and, protecting these significant resources through information exchange and environmental reviews, coordination with land management agencies, and the development of acquisition and easement priorities.

The Natural Heritage Program identifies important natural areas for acquisition or protection. In Fiscal Year 1985, the legislature appropriated \$300,000 for the purchase of "Heritage Areas." In addition, the Heritage Program is cooperating with many private conservation groups, such as The Nature Conservancy, to facilitate their identification and protection of significant habitats.

The Natural Heritage Program conducts environmental reviews as requested for DNR projects and lands. These reviews include detailed inventories of natural and man-made resources, rare and endangered species, natural conditions and processes, attributes and limitations for use of the area.

During Fiscal Year 1985, the Heritage staff demonstrated the program to citizens' groups, governmental agencies, and private organizations. Over 2,000 data requests were filled. Approximately 40% of these were from divisions of state government. Other requests included federal government agencies, non-profit groups, county governments, consulting firms and academia.

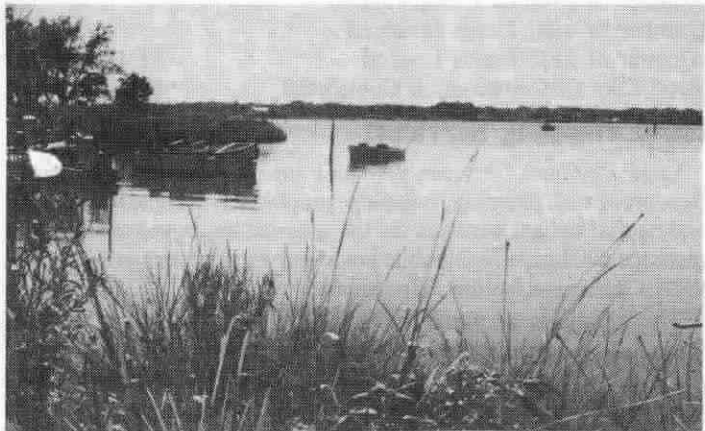
Natural Heritage has published a 476 page book, *Threatened and Endangered Plants and Animals of Maryland*, which contains 30 papers dealing with the State's rare plants, animals, and habitats.

### Capital Budget Planning

The project is responsible for preparing the Department's annual Capital Budget Request and Five Year Capital Improvement Program. The Department is required to submit its annual capital budget and five year program to the Department of State Planning for consideration for inclusion in the capital budget.

### Capital Development Program

The Capital Development Program offers design, construction, engineering, and historic preservation services for agencies of the Department. In fiscal year 1985 the Program completed 16 design projects and 20 construction projects, totaling over \$3 million. Engineering services were provided for three reports and four planning projects. Also, three curatorships for historic structures were approved.



Jo Thoms

View of West River, included in current Bay tributaries study of 17 rivers by Wild and Scenic Rivers program and National Park Service.

# Chesapeake Bay Critical Area Commission

## Background

The Chesapeake Bay Critical Area Commission was created by the Chesapeake Bay Critical Area Act in 1984. The purpose of the Act and of the Commission is to provide Maryland with a strategy for protecting the water quality and natural habitat of the Bay with respect to future land use in a specifically designated Critical Area. The Act recognizes that the land immediately adjacent to the Bay has the greatest potential for affecting water quality and fish, plant, and wildlife habitat in the Bay, and has defined the Critical Area as a strip of land along the tidal shoreline up to 1,000 feet from the water's edge to the heads of tide or from the landward boundary of any adjacent wetlands. The Critical Area Commission is the designated body to draft this strategy through criteria to guide development in the Critical Area. These criteria are to be used by the 16 coastal counties and the 44 affected municipalities in the development of their respective critical area programs. The Commission, which consists of 25 members, appointed by the Governor, had until December 1, 1985, to promulgate the criteria. The General Assembly must then approve the criteria in the 1986 session in order for them to become effective June 1, 1986, and to be used by the local jurisdictions in the development of their programs.

## Accomplishments

Since October 1984, the Commission met sixteen times to be briefed on Bay issues and to discuss the criteria. It held seven hearings, in December 1984, and January 1985, to obtain public comment on the design of the criteria and its contents. From January 1985, until May 1985, the Commission subdivided into three Subcommittees dealing with specific land uses around the Bay and through its 48 meetings, developed the criteria for publication in the June 7th issue of the *Maryland Register*. Between mid-June, 1985, and July 1985, the Commission held nine additional hearings to obtain public comment on the draft criteria. Changes to reflect the comments appeared in the re-proposed draft criteria printed in the September 27th issue of the *Maryland Register*.

## Future Efforts

Work will focus upon the passage of the criteria and upon coordination and assistance to the local jurisdictions in the beginning efforts of the development of their critical area programs.



# Hazardous Waste Facilities Siting Board

The Hazardous Waste Facilities Siting Board is an independent eight-member commission created in 1980 to ensure that the State had a means of locating new hazardous waste management facilities. The Board's mission is to protect health and environment in providing for new treatment, disposal and recycling facilities. In performing this function, the Board must also consider the economy, employment, social values, and the beneficial use of land and natural resources. The permitting and enforcement functions of the Department of Health and Mental Hygiene are unchanged by Board action.

The Board is appointed by the Governor to staggered four-year terms. One member is nominated by the Maryland Association of Counties, one by the Maryland Municipal League, and one by the Maryland Chamber of Commerce. Two must be members of the scientific community, and three are drawn from the general public. Membership is also distributed geographically. The Board employs a full-time Secretary to the Board and expert consultants on particular subjects.

## **The Process: Application to the Board is an Option**

The Board is one of three components in new-facility development: the Health Department and U.S. EPA have permitting and regulatory authority which is not changed by actions of the Board. Either private firms or the Maryland Environmental Service may propose locations and develop facilities. A decision to approve or deny a facility location may be made by the Board. The Board does not seek out sites; it acts on applications submitted to it.

A new facility does not automatically require Board approval. A developer may negotiate directly with county or municipal government. As an alternative to local approval, the Board provides a balance of authority and resembles a special-purpose zoning appeals board. The Board's authority makes it difficult for a local government to reject a developer who has a solid design and who is sensitive to environmental and community impact. For the developer who does apply, the Board's requirements are rigorous. Recourse to the Board is not an easy way to evade local authority. The Board may approve a facility only after presentation of the developer's proposal to the public, careful study, opportunity to comment and contest the proposal, and public hearing.

## **Program Includes Planning, Communication and Participation**

The Board must consider site suitability and statewide needs in any siting decision, and it must consult with affected governments and operate in an open manner. The current program reflects these requirements and the experience of the Board. One of the important points of the State's experience over the last five years is that facility development has not taken place as expected.

## **Needs Of The State**

The needs of the State for treatment and disposal facilities have been studied twice, in 1981 and 1983, reported, and formalized in regulations. Both studies stated the Board's expectation that waste generation would hold steady or decline. Assessment of industry's options, in both the previous studies, considered facilities in Maryland and neighboring states, shifts to preferred methods, and recycling. The Board's needs assessment, besides tracking generation and disposition reported to the Health Department, have involved waste-reduction experiments, direct contact with generators, and publicity on recycling measures. Board members and staff have visited facilities in Maryland and other states, and have invited presentations on developing and alternative technology.

## **Program Plan**

The Board's program plan, which was adopted in its present form in March 1985, includes the following objectives:

- Maintain the Board as the State's statutory authority to locate needed hazardous waste and low-level radioactive waste facilities. The Board provides both site-approval power if and when needed, and the incentive for political subdivisions to consider a facility-development proposal seriously.
- Accept and process any application according to law and regulation.
- Carry out studies and exercises that contribute to the Board's expertise and readiness to evaluate an application.
- Establish and maintain a level of awareness by citizens, government and commerce that will permit informed response to an application, to determinations of treatment and disposal needs, or to other Board actions.
- Conduct periodic reviews of the State's hazardous waste treatment and disposal needs, considering generation, availability of management services inside and outside Maryland, and trends in generation and services.
- Conduct analogous activities for low-level radioactive waste, which the Act says shall be treated separately, at a lower level.

The Energy Administration's mission is to evaluate and facilitate the production and conservation of energy while minimizing adverse environmental effects. This is accomplished by determining the environmental impact of existing and proposed power plants, promoting public and private participation in energy conservation, maintaining balanced fuel allocation within the State during times of shortage in accordance with the needs of the consumer, regulating the environmental impacts of active coal mining, and reclaiming abandoned coal mines. These tasks are the responsibility of three operating programs within the Administration which are the Power Plant Siting Program, the Bureau of Mines, and the Maryland Energy Office.

## POWER PLANT SITING

The Power Plant Siting Program conducts environmental research and provides technical information and recommendations to regulatory agencies concerning actions necessary to minimize the environmental impact of the siting and operation of power plants and associated facilities, without imposing unreasonable costs on the production of electricity. Ongoing activities include the following:

- Prediction of the impact of future power plants at proposed sites.
- Environmental review of all proposed high voltage transmission lines.
- Assessment of the environmental impact of operating power plants.
- Identification, evaluation and acquisition of suitable power plant sites for holding in the Site Bank.
- Preparation of long-range forecasts of future electric power demands.
- Evaluate generic issues related to the environmental impact of power plant siting and operation.

## Major FY 85 Activities

- Review of applications for the Chalk Point and Wagner Power Plants to determine the need for modifying cooling systems.
- Sampling of environmental media from the Susquehanna River and Chesapeake Bay to determine the radiological impact of the Peach Bottom Atomic Power Station and the Calvert Cliffs Nuclear Power Plant.
- Participation in Federal Energy Regulatory Commission (FERC) relicensing of the Conowingo Dam to resolve contentions concerning flow regimes, water quality, anadromous fish restoration, and fish passage facilities.
- Completion of studies to identify a potential power plant site in Western Maryland.
- Reconnaissance of existing and in-construction transmission line corridors to determine the effectiveness of recommended construction and maintenance practices.
- Continuation of long-term monitoring programs to evaluate the effects of the operation of the Calvert Cliffs, Morgantown, Chalk Point, R.P. Smith, and Dickerson power plants on nearby biological communities.
- Continuation of studies to evaluate the suitability of the Baltimore Gas & Electric Company's proposed Perryman site.
- Evaluation of several small scale hydroelectric projects, and presentation of recommendations to FERC.
- Completion of project to evaluate the effects of high voltage electric shocks, such as can be inducted near high voltage transmission lines, on people.

- Investigation of the sources of acidity and any potential adverse effects on Deep Creek Lake.
- Continuation of a program to evaluate storm water and stream chemistry changes associated with acid deposition.
- Evaluation of the issues requiring resolution if acid precipitation control legislation were passed, and preliminary estimation of the economic costs to Maryland ratepayers of such legislation.
- Initiation of a program to evaluate survival of larval blueback herring in streams potentially susceptible to acid deposition effects.

## BUREAU OF MINES

The Bureau of Mines (BOM) is concerned with environmental control of active mines, and reclamation of abandoned mines.

### Comparative Activity

	FY 84	FY 85
Number of Active Mines	117	108
Tons of Coal Mined	3,700,000	2,865,000
*Acres Permitted	125	661
*Acres Reclaimed	917	915
Inspections	1,797	1,729
Notices of Violations	156	121
Cessation Orders	54	49
Forfeited Mines Reclaimed	1	1
Abandoned Mine Projects	6	12

\*Based on 83 & 84 calendar years

### Active Mines

The Bureau evaluates mining plans for proposed deep and surface coal mines. Environmental controls are established and permits are issued before mining operations can begin. Active mines are monitored for compliance with the law, regulations, and the approved mining permit.

Since repermitting under Maryland's Federally Approved Surface Coal Mine Control Program was completed on June 29, 1984, permits for seven new mining operations and acreage amendments to 13 existing operations have been approved. Although mining operations are severely curtailed due to market conditions, the Bureau is currently processing six permit applications which involve either new operations or acreage additions to existing operations.

The State Land Reclamation Committee and members of the Bureau of Mines staff visited mine sites in Pennsylvania to review revegetation practices and procedures. The committee was interested in comparing the revegetation result between Pennsylvania and Maryland.

### Abandoned Mines

The Bureau administers two programs to reclaim abandoned coal mines in Maryland. The programs are similar in scope and goals, but utilize separate funding sources, expending both State and Federal Funds. In the State funded program, legislation provides for monies collected from a surcharge on coal mined in Maryland to be used for reclamation of those abandoned mines which cause severe environmental problems.

During FY 85, State funds were utilized for five abandoned mine projects, totaling \$122,500. Construction was completed on four of the projects and partially completed on the remaining project.

In the Federally funded program, federal legislation (PL 95-87) places a fee on coal mined to be used for reclamation of the adverse impacts of past coal mining practices. During FY 85, the Bureau

requested and received Federal funding, totaling \$1,738,871, for eight abandoned mine reclamation projects. Construction was completed on three of the projects in early 1985.

## **Goals**

Within the next year, the BOM expects to revise regulatory program regulations to comply with changes mandated by required federal regulation amendments.

In the next 5 years, the Regulatory Program Regulations will be evaluated and modified to enhance environmental protection while reducing some of the provisions which are burdensome both to the State and the mine operators.

## **MARYLAND ENERGY OFFICE**

The Maryland Energy Office conducts energy conservation programs to benefit all sectors of Maryland's population. The office works with citizen's groups, other State agencies, local governments, and private contractors to develop and implement its programs. Included among these organizations are the Department of Economic and Community Development, the Department of Transportation, the University of Maryland Cooperative Extension Service, and the Department of General Services, as well as county and municipal governments across the State.

The MEO is responsible for administering a number of federally funded programs: the State Energy Conservation Plan, the Energy Extension Service, the Residential Conservation Service, and the Institutional Conservation Program. The office also coordinates the bulk purchase and storage of heating oil for use by state agencies, and is responsible for emergency energy planning within the State.

### **State Energy Conservation Plan**

The State Energy Conservation Plan encompasses a wide variety of energy conservation efforts. Under this Plan, MEO sponsors workshops for industrial and commercial energy consumers. MEO also holds workshops on Super Insulation and Passive Solar Home design for building contractors and homeowners. Local government officials across the State attend the Annual Energy Conference in Salisbury. In addition, MEO has implemented programs for energy conservation in Transportation, Waste Management, Building Standards, Procurement, and other areas.

### **Energy Extension Service**

The Energy Extension Service continues its efforts to conserve energy through outreach and education. These include a successful pilot program to assist small municipalities on the Eastern Shore reduce energy costs for streetlighting and government buildings. In Southern Maryland, several homes were analyzed by thermography, which images the heat loss in the dwelling. Residents were then invited to seminars discussing the reduction of heat loss in their homes. A program in Western Maryland provided energy audits for small businesses.

## **Residential Conservation Service**

The Residential Conservation Service, provides energy audits to homeowners throughout the State. The audits are conducted by the local utilities, which are required by law to provide this service. Since the program's inception in 1981, over fifty thousand homes have been audited. Twelve thousand of these audits were completed in the past year.

## **Institutional Conservation Program**

The Institutional Conservation Program provides federal matching grants to schools and hospitals in the State. These funds are used to conduct an engineering analysis of the institution's facilities and provide money for energy conservation retrofits recommended in the engineer's report. In the past year, grants were awarded to six schools and two hospitals to conduct engineering analyses in twenty-seven buildings. In addition, twelve schools and eight hospitals received grants to complete eighty-one energy conservation projects in forty-nine buildings. These grant awards committed a total of \$1,018,075 in federal money to Maryland schools and hospitals.

## **Heating Oil Storage**

Prior to the 1984/85 heating season, MEO assisted the Department of General Services in purchasing and storing seven million gallons of heating oil for use by state agencies. By purchasing in bulk, the office was able to negotiate a lower price that saved \$600,000 for state agencies last year. MEO is already making arrangements to continue this purchasing program in the next heating season.

## **Emergency Energy Planning**

In addition to the energy conservation programs conducted by MEO, the office is prepared to act in the event of an energy crisis. This office has developed a contingency plan to be used in the event of an oil shortage, and office personnel are prepared to implement it. Events affecting the supply of oil are closely monitored to insure an early warning of potential problems.

## **Future Plans**

In the coming year, the Maryland Energy Office plans to continue its present conservation efforts and to expand those efforts to include new efforts. In particular, the office plans to implement an entirely new program, Energy Financing, which will provide a clearinghouse for information on how Marylanders can obtain the financing to invest in energy conservation projects. The MEO also plans to implement several energy auditing programs, including a program to provide audits to small businesses and non-profit institutions, also a statewide expansion of the Small Town Energy Education Program that includes energy audits for buildings operated by local governments is planned. These audits will be conducted by trained MEO staff and will focus on low cost methods for reducing energy use.

The Maryland Forest, Park and Wildlife Service serves the forest management and recreational needs of the people of Maryland. It is responsible for the maintenance, management and protection of birds, land-based reptiles and amphibians, and mammals. This includes game and non-game species and threatened and endangered wildlife. The Service manages Maryland's natural, cultural, historical and recreational resources. Its operational elements are: General Direction, Cooperative Forestry, Forest and Park Management and Wildlife Management.

## GENERAL DIRECTION

This group provides direction, administrative support and services. This includes: Budget, personnel, purchasing, training, motor vehicle fleet management, radio communications, safety, equal opportunity, public information and planning and program development functions to serve the unit's program areas.

Several radio and television public service spots were produced by the unit's forestry information and education program. Public service announcements proved particularly important during the spring of 1985 when Maryland suffered its worst fire season in 20 years.

Artist Steven Weitzman completed work on a sculpture carved from a limb from Maryland's state tree, the historic Wye Oak. It depicts larger than life-size children standing beneath a white oak tree. The sculpture was dedicated during Martinak Days at Martinak State Park.

On Arbor Day all third grade students in Maryland's public schools received a pine seedling as part of an ongoing program to increase public awareness of the importance of our valuable forestry resources and teachers were given educational resource materials.

The Wildlife Conservation Stamp and Print Program was initiated with a first year goal of \$30,000. Funds are being raised by selling voluntary wildlife conservation stamps and a limited-edition signed and numbered print by artist John Taylor. The prints and stamps feature a pair of Northern (Baltimore) orioles. All proceeds are being used for nongame and endangered species management in Maryland.

A quarterly newsletter entitled "Tracks 'n Trails" was established. The eight page publication is directed toward organized sportsmen's clubs and hunters.

A major revision of Maryland's Guide to Public Hunting Lands was begun. The new publication will contain maps of all wildlife management areas and state forests and state parks where hunting is permitted. The maps are being produced by the University of Maryland Cartographic Division. The books should be available by early 1986.

"White-tailed Deer and the Maryland Hunter" was the title of a slide show produced and distributed to all regional and district wildlife offices. The show lists future management options for white-tailed deer and was viewed by over 2,000 sportsmen within four months of its release.

"Poaching: It's Illegal And You Can Help!" is the slogan for the new Catch-A-Poacher Program, a cooperative program of the Maryland Forest, Park and Wildlife Service, the Natural Resources Police, and citizens of Maryland. Cash rewards are made to individuals who supply the Natural Resources Police with information leading to the arrest and conviction of game violators. Rewards have been issued in at least five cases, and plans have been made to include Tidewater and Fisheries in the Catch-A-Poacher Program.

Other public information activities included production of the "Guide To Hunting and Trapping In Maryland", "Maryland's Migratory Game Birds" booklet, hunting and waterfowl season posters; management of the antlerless deer permit and canvasback permit program; and planning for the 1986 annual meeting of the Southeastern Association of Fish and Wildlife Agencies which will be held in Baltimore.

## PLANNING AND PROGRAM DEVELOPMENT

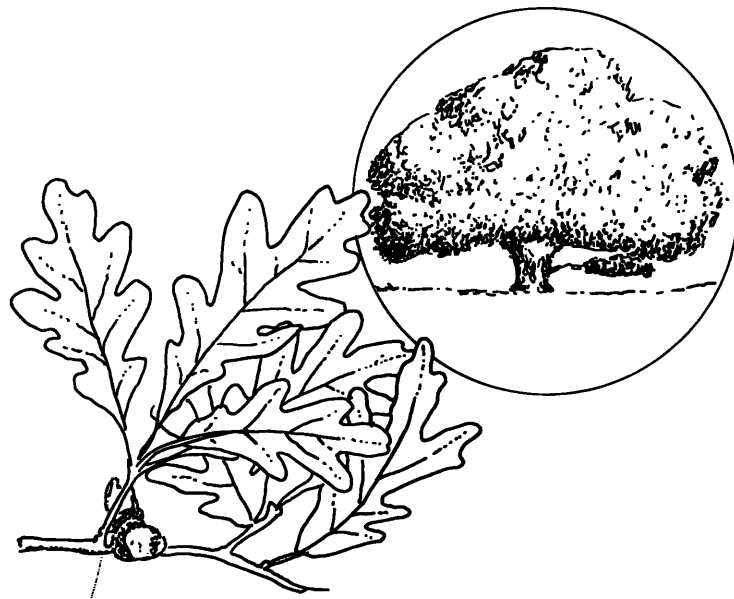
This area consists of five major functions:

- Forest Resources Planning
- Wildlife Comprehensive Planning
- Environmental Review and Assessment
- Program Development
- Technical assistance provided to counties concerning ordinances and regulations that deal with forest land and its protection

Resource planning in both forest and wildlife resources continued to provide overall long term direction and guidance for these major program functions. The thrust of the forest resource planning activities was directed at working with the Chesapeake Bay Critical Area Commission to ensure that forests and wildlife habitat were fairly and properly addressed.

Wildlife Comprehensive Planning embarked on a new system for FY 85 under which specific federal requirements were met which allowed for a 16% increase in federally reimbursed Pittman-Robertson monies. Also, a publication entitled "Maryland Wildlife Management — A Comprehensive Plan for the 80's" was issued and was given wide distribution to provide the public with an understanding of how Maryland's wildlife resources are managed.

Environmental review and assessment of public and private projects as they might affect forest and wildlife resources continued at a rapid pace. Several areas of concentration have been better review and coordination of wetland projects, roads, bridges and PL566 drainage projects, all with an eye towards improving forest and wildlife habitats. Three major projects completed during the year totaled 133 acres of new habitat gained through required mitigation. An internal environmental review process has been completed and is expected to be implemented during 1986. It will ensure that any projects on Forest, Park and Wildlife lands will be environmentally sound before construction begins.





## FOREST AND PARK MANAGEMENT PROGRAM

The Forest and Park Management Program administers and manages Maryland's State forests, parks, scenic preservations, historic monuments, natural environment areas and the Deep Creek Lake, Monocacy and Wye Island Natural Resource Management Areas.

The program provides recreational opportunities, preserves the natural resources and ensures multiple use and sustained yield of forest resources.

Caring for these lands and resources requires expertise in forestry, horticulture, maintenance, construction, history and administration.

Each year approximately six million people use these areas. Popular activities include camping, picnicking, swimming, hiking, boating, hunting, equestrian events, skiing and use of ORV trails.

Knowledge in law enforcement, first aid and nature interpretation are essential. The rangers are fully certified, armed law enforcement officers empowered to enforce all State laws on DNR lands. Law enforcement activities include traffic violations, family disputes, disorderly conduct, illegal hunting, larceny and distribution or use of drugs, a growing concern.

Historically, the Maryland Forest, Park and Wildlife Service has taken an active stance on law enforcement by informing and educating the general public as to the laws, rules and regulations. This approach has worked well with the majority of forest and park users. Nevertheless in 1984 there was an overall increase in crime of .4% while the arrest rate for those crimes increased 40%.

Another important aspect of the Service is assisting visitors encountering problems. Approximately 850 first aid cases annually are handled, as well as help rendered for disabled boats and cars, locating lost people and providing help during natural disasters.

The Service's maintenance program looks after more than 1,150 buildings and over 400 miles of roads and parking lots. In addition, there are many miles of sewer, water and electric lines, swimming pools, beaches, historic monuments, boat ramps and water chlorination systems which require maintenance.

Throughout the year interpretive programs, designed to increase awareness of the natural and cultural resources, were conducted in State parks, State forests, schools and communities throughout the State. Special events in the State parks included cross-county skiing tours and races, Easter sunrise services and Easter egg hunts, guided trail hikes and canoe trips, Civil War Days, military reenactments, firelock matches, the Civilian Conservation Corps reunion, craft days and festivals.

Two programs for youth were initiated during the summer: a residential camp for Baltimore City children which was conducted at four locations in State Parks. Also two crews of Maryland youth, with their DNR leaders attended the Hurricane Island Outward Bound School in Maine. The two groups subsequently conducted service projects in Maryland.

The Service administers a number of historic structures and has been successful in enlisting private investment to rehabilitate and preserve several of them. Three new resident-curatorships were established whereby private parties donate restoration and maintenance of particular historic sites in return for occupancy right. Other structures received historic rehabilitation with public funds.

New products, creative merchandizing, volume purchasing and renovation of existing concessions have improved and streamlined the concession program.

Centralized purchasing and distribution of resale items resulted in savings of 20% on wholesale purchases. Additionally, the product line was upgraded based on sales trends in the gift and souvenir industry. Contracts with the private sector and other state parks personnel at nationwide shows have proven invaluable in predicting trends for sales and merchandizing Maryland's products and services.

The concession program has grown into a significant source of revenue providing first class services and merchandise to the public. Profits from the program are returned to the parks and forests to supplement funds for operations and maintenance.

## FOREST AND PARK USE ATTENDANCE

Green Ridge State Forest	261,038
Pocomoke/Wicomico State Forests	52,614
Potomac/Garrett State Forests	177,875
Savage River State Forest	197,805
Assateague State Park	216,697
Big Run State Park	14,145
Calvert Cliffs State Park	59,386
Cedarville State Forest	56,858
Cunningham Falls State Park	287,860
Dans Mountain State Park	60,393
Deep Creek Lake State Park	117,554
Elk Neck State Park	310,510
Fort Frederick State Park	60,572
Gambrill State Park	213,606
Gathland State Park	50,777
Greenbrier State Park	173,951
Gunpowder Falls State Park	491,242
Herrington Manor State Park	89,190
Janes Island State Park	142,428
Jonas Green State Park	19,248
Martinak State Park	58,248
Matapeake State Park	44,003
New Germany State Park	32,286
Patapsco Valley State Park	552,506
Patuxent River State Park	16,514
Pocomoke River State Park	304,851
Point Lookout State Park	246,600
Rocks State Park	128,115
Rocky Gap State Park	378,344
St. Mary's River State Park	17,394
Sandy Point State Park	535,330
Seneca Creek State Park	107,709
Severn Run NEA	13,353
Smallwood State Park	85,719
Soldiers Delight State Park	14,096
South Mountain NEA	65,579
Susquehanna State Park	142,586
Swallow Falls State Park	142,429
Tuckahoe State Park	63,492
Washington Monument State Park	108,660
Wye Oak State Park	31,023
<b>TOTAL</b>	<b>6,142,586</b>

## COOPERATIVE FORESTRY PROGRAM

The Cooperative Forestry Program has the responsibility of providing assistance to private forest landowners, municipalities and other governmental units in the management of their forests and individual trees. The program has five major functions: Forest Resource Management, Forest Protection, Chesapeake Bay Initiative, Urban-Community Forestry and Wood Utilization.

**Resource Management** makes assistance available to the 95,800 forest landowners throughout the State. Management assistance to these landowners begins with a plan prepared by a project forester, which directs overall operation of the forest and continues with technical advice in carrying out the operation. In 1985 project foresters prepared 631 management plans on 33,571 acres. Timber stand improvement practices improved the growth rate and quality of the remaining trees on 1,399 acres. Site preparation on an additional 2,352 acres readied these sites for forestation.

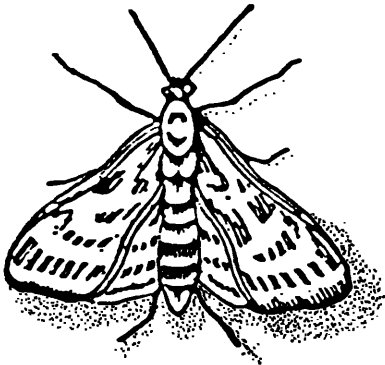
The Buckingham Forest Tree Nursery at Harmans produced more than 3 million tree seedlings in fiscal 1984. These young trees were sold to private landowners for planting 3,327 acres of open land and cutover forest lands. In addition, 1,200 sapling size trees were produced and sold to municipalities for roadside tree plantings.

Tree improvement, a part of Maryland's forestry program for many years, has changed dramatically in the past year. A forest geneticist was hired to evaluate past accomplishments and implement a tree improvement plan. Treatment work in the loblolly pine seed orchards fully utilized improved seed production. Controlled breeding was started and seed from these crosses will provide a new generation of superior trees for future plantings.

More emphasis is being placed on the value of forests in controlling erosion and sedimentation. With this emphasis has come the requirement to control damage to the soil from forest harvest operations. The Maryland Forest, Park and Wildlife Service has taken the initiative to train loggers in the proper methods of logging and subsequent site stabilization. Four hundred fifty (450) loggers and foresters attended training in 1985 with programs scheduled to reach the remaining loggers in 1986.

The **Resource Protection** goal is to reduce forest land loss from fire, insects and disease. In 1985, the Maryland Forest, Park and Wildlife Service responded to 1,156 wildfires which burned 17,663 acres. This resulted in a 370% increase in the number of forest and a 268% increase in acres burned from the previous year. FY 1985 was the worst fire year in 20 years as a result of severe drought, low relative humidity and windy conditions which dried natural fuels, made them ignite quicker, burn hotter and spread rapidly. The primary causes continue to be debris burning and incendiary. They accounted for a total of 661 fires or 57% of the total. Twice, at the request of the U.S. Forest Service, fire fighters were sent to Idaho to assist in major fires there.

Control techniques for protection from insects and disease is provided to homeowners and forest landowners. Assistance in both surveying and controlling major insect infestations is provided to the U.S. Department of Agriculture. The two primary insects infesting the State's forest are pine sawfly and gypsy moth which account for 86,944 and 83,488 acres of defoliation respectively. In 1985, approximately 125,000 acres were aerially sprayed to prevent heavy defoliation by the gypsy moth.



As part of the **Bay Initiative** during fiscal year 1985, four Bay watershed foresters were hired. Their primary functions involve mapping forested critical land areas adjacent to the Bay and its tributaries, provide technical assistance to landowners including the preparation of forest management plans and work with state, county and local jurisdictions in developing policy and criteria for forestry operations within the critical area. Forest management plans covering 1,039 acres and sediment control plans for 1,534 acres were prepared or review during the year.

**Urban and Community Forestry** experienced increased awareness in 1985. More cities have been requesting assistance to manage their urban forests through street tree inventories, management plans, and tree planting plans. The desire of cities and counties to achieve the Tree City USA designation through the National Arbor Day Foundation was evident as requests increased.

With rapid development in Maryland, work with developers, builders architects and city planners during developmental planning and large scale forestry projects was emphasized. Information and education is being expanded to include an urban forestry poster and several brochures explaining the urban forestry program in Maryland.

Supervision of utility crews to ensure the proper care of roadside trees continued in fiscal year 1985. Construction of new lines and routine trimming kept tree inspectors busy. Roadside tree training programs were given emphasizing the need for consistency the trimming and removal of trees.

Over 400 tree experts are now licensed in the State of Maryland.

**Forest Resource Utilization** emphasizes increasing the availability of wood products through reducing loss in harvesting and processing, and in developing new markets for under-utilized raw materials. The utilization section has played a major role in the increased use of wood as an energy source in Maryland. In 1985, the section began a program to educate the forest industry on the opportunities to increase the use of forest products from Maryland. Another area of emphasis was to increase the use of hardwoods, especially yellow poplar, in housing construction.

## **WILDLIFE MANAGEMENT PROGRAM**

The major goals of the wildlife program are to conserve and enhance the natural environment upon which all wild creatures depend for food, shelter and reproduction. Biological programs, a wildlife field service section and a waterfowl restoration project work to meet that goal.

### **Forest Wildlife Program**

This program is responsible for management of wild turkeys, whitetail deer, sika deer, ruffed grouse, gray squirrel, eastern fox squirrel and red (Piney) squirrel. These species provide more than 1,000,000 hunter-days of recreation.

Investigations are conducted to determine mortality rates of the whitetail deer and gray squirrel. Population trends of deer, grouse, squirrels and turkeys were studied.

Recent successes with the Eastern wild turkey translocation project are contributing to the restoration of this species throughout the State.

### **Furbearer Program**

This program is responsible for the management of 18 species of furbearers in Maryland. Furbearer pelt sales generate an income of approximately \$3,000,000 annually for Maryland's fur harvesters.

Additional surveys and inventories will be undertaken to determine population trends of important fur species, such as raccoon, fox, otter and muskrat. Surveys are also planned to determine the population status of the bobcat, a species which appears to be recovering in Maryland.

### **Waterfowl Program**

The wetland wildlife species considered in the Migratory Waterfowl Program include eight species of dabbling ducks, eleven species of diving ducks, five species of seaducks, three species of geese, two species of swans and the American coot, all combined in a category termed waterfowl; plus the common gallinule, six species of rails and jacksnipe.

During 1985, 7,100 waterfowl (which included 3,800 geese) were banded to monitor population trends and movements.

Surveys of the changes and conditions in waterfowl habitat indicated a continued decrease in bay grasses from the previous year. Evaluation of penreared mallard releases was continued.

A study initiated in 1983 will help determine survival, mortality and local and regional movements of Canada geese wintering in the Atlantic Flyway. The Waterfowl Program's contribution, marking Canada geese with highly visible neck collars, will aid in collected data required for management of this species.

The objective of the "Maryland Waterfowl Restoration Project" is to provide technical assistance to private landowners for developing and managing waterfowl habitats for breeding and wintering ducks. The goal of the project is to improve wetlands habitat for dabbling ducks by providing permanent open water, properly interspersed with food and cover, throughout the year.

The Waterfowl Restoration Project does not retire cropland from production or open land to the public. This is the prerogative of the landowner or tenant.

Waterfowl habitat improvement on private lands in the State, funded by duck stamp money, is improving and growing. Since 1981 the program has added 287 projects throughout the State totaling 54,000 acres. Waterfowl habitat improvement on private land is an effort to develop and recapture some of the waterfowl breeding and wintering habitat lost to development, erosion, etc.

The second phase of the project, restoration of waterfowl habitat on public lands, has included flooding of impoundments at Fairmount and the repair and improvement of water control structures at Deale Island Wildlife Management Area. Additionally, over 700 acres of waterfowl ponds on other state and municipal areas were planned.

The third phase of the project is the mallard duckling release. During the year 28,000 mallard ducklings were purchased then released in every county of the State.

### **Nongame and Endangered Species Program**

This program includes species of wildlife not legally classified as game birds or mammals and those species classified as threatened or endangered. These include thirty-seven species of amphibians, forty-six species of reptiles, two hundred and eighty species of birds and fifty-one species of mammals.

The coordination of research responsibilities includes planning and project execution for nongame and endangered species. Additional responsibilities include issuing endangered species and scientific collecting permits.

Maryland continues to provide significant year-round habitat for bald eagles. The nesting population and productivity continues to increase and Maryland now has 60 to 65 nesting pairs of bald eagles. The winter population also continues to increase.

In 1985 four pairs of peregrine falcons nested in the wild in Maryland. Until recently, this bird was extirpated from the entire eastern United States, but conservation efforts in Maryland and elsewhere are beginning to succeed in restoring this species.

### **Upland Wildlife Program**

The Upland Wildlife Program is responsible for the management of rabbits, quail, pheasants, doves, woodcock and crows.

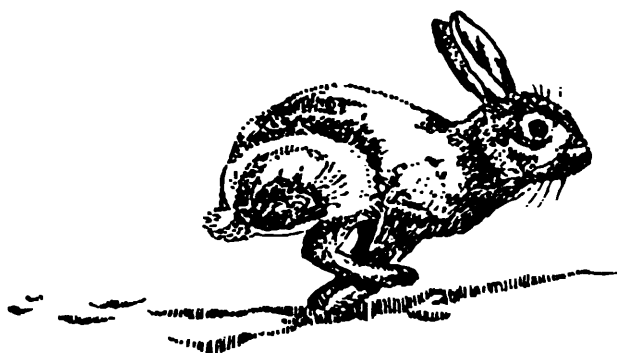
Research studies were conducted on hunting mortality rates on quail and rabbits on the Millington Wildlife Management Research Area. Trend surveys were continued on all upland species.

A hunter-use survey of licensed hunters in Maryland is conducted to obtain estimates of number of hunters, efforts expended and harvest for selected game species.

The "Acres for Wildlife" project continues to protect, improve or create upland wildlife habitats on private lands and rights-of-way and create an awareness of what upland wildlife habitat actually is and the need to manage it.

The Wildlife Field Services section performs field operations for the Service. Divided into four regional management units it carries out wildlife management practices on public-owned properties as well as cooperative lands. It also serves a support function by providing the hands-on-work required for five biological staff programs (data collection for the various wildlife surveys and inventories, etc.). The program serves the public by dissemination of information regarding policy and regulations, technical assistance in planning wildlife management practices and handling animal problems as well as providing areas where the public can find hunting and other forms of recreation. The total acreage of State Wildlife Management Areas is 102,300 acres plus 56,200 acres of leased land under the Cooperative Hunt Program.

Regional Wildlife personnel have helped to train animal control units throughout the State in handling rabid animal complaints. This section continues to cooperate with the Department of Health and Mental Hygiene and various county animal units in the control of rabies problems.



The Maryland Environmental Trust was established by the General Assembly in 1967 to conserve, improve and perpetuate the State's natural, scenic and cultural qualities. Activities of the "Keep Maryland Beautiful" program were also transferred to the Trust in 1967. Programs and policies of the Trust are defined and supervised by a volunteer board of trustees consisting of 12 citizens and three ex-officio members (Governor, President of the Senate, Speaker of the House).

For twelve years, the Trust's major program has been acquisition of easement donations on properties of recognized public conservation value. Private properties protected by conservation easements include farmland, woodland, waterfront, marshes, streams and ponds, scenic views, wildlife and plant habitats, historic properties, archeological sites, and properties of educational or recreational value. The Trust has accepted conservation easements on 98 properties statewide encompassing approximately 20,000 acres. Easements presented to the Trust are reviewed and approved by the Board of Public Works prior to acceptance.

During FY 85 the Governor's MET Chesapeake Bay easement initiative prompted the hiring of two full time easement planners. They will focus on the acquisition of easements along the Bay and its tributaries. A substantial amount of their staff time will be directed toward an educational/marketing component involving the cooperative assistance of the Chesapeake Bay Foundation. Through this initiative the Trust expects to place conservation easements on 1,000 additional acres annually--increasing the average area protected yearly on or near the Bay to 2,000 acres. FY 86 will be the first year in which the easement initiative is in full operation.

The Trust received 51 easement inquiries in FY 85. A total of eleven easements were documented, accepted and recorded in FY 85, covering 2,130 acres. Four of the properties are adjacent to prior easement sites, five have frontage on Bay tributaries, two have historic homes, four are in rural historic districts, and eight have productive agricultural land. Five additional easements, 76 acres, were completed but not recorded in FY 85.

FY 85 easement highlights included an easement donation by the Town of Charlestown in Cecil County which establishes permanent public recreation areas on the shore of the Northeast River. Also noteworthy was an easement donated by three landowners on a 300 acre property on Kent Island in Queen Anne's County. A particularly unique aspect of this gift is that the property has a 91 lot recorded subdivision which now can never be developed. Finally the Trust continued its successful relationship with the Maryland Historical Trust (MHT) with the acceptance of an easement on a 145 acre Charles County property. This brought the total number of easements on which MET and MHT are listed as co-grantees to seven.

FY 85 was a year of uncertainty with respect to the IRS's interpretation of federal tax laws designed to encourage charitable giving for conservation purposes. Proposed IRS tax regulations were carefully analyzed by the Trust in consultation with numerous public and private land trusts throughout the country. Specifically, the Trust sponsored a conference on the protection of rural and coastal lands through conservation easements. A substantial part of the conference was devoted to the tax consequences of easement donations, with representatives of the IRS and the fields of appraisal and tax law participating.

Trust staff conducted home meetings, participated in a radio broadcast, school classes, and met with other groups to review the easement program, tax regulations and other related conservation matters. A reference room is maintained with environmental

documents and films for public use. The "Keep Maryland Beautiful" committee continued to work on the reduction of visual pollution in the State including billboard removal. FY 85 also saw the re-establishment of a Trust newsletter: LAND MARKS. It is published quarterly to further land conservation and appreciation of Maryland's natural and historic resources.

The Trust is supported by eleven local volunteer committees and affiliates in Allegany, Baltimore, Charles, Dorchester, Howard, Kent, Montgomery, Prince George's, St. Mary's, Somerset, and Worcester counties.

## One Year Goals

- Develop, standardize and index for word processor special easement provisions re: flood prevention, forestry management, buffer strips, agricultural practices, wildlife habitat, etc.
- Track IRS conservation tax regulations and proposed federal conservation legislation
- Accelerate a focused easement solicitation drive in cooperation with the Chesapeake Bay Foundation (e.g., waterfront property owners, adjoining to existing easements)
- Select remaining area representatives
- Improve easement monitoring, including where possible, the assistance of trustees, area representatives, local affiliates and volunteer conservation groups
- Continue to publish and distribute LAND MARKS, directed toward land conservation issues
- Co-sponsor a land use conference with the Department of State Planning

## Five Year Goals

- Revise MET policy document
- Revise brochure and conservation easement booklet
- Establish a revolving conservation fund for bargain sale purchases, supported by gifts, bequests, etc.
- Consider MET non-voting membership categories and a membership drive
- Sponsor one or more land conservation conferences for the public, including a technical program for attorneys, appraisers, government officials and conservationists
- Establish a modest grant program for school science and ecology clubs or other similar private non-profit organizations.



Conservation easement property in Charles County.



Conservation easement property in Charles County.

# Natural Resources Police

The Natural Resources Police enforce Maryland's natural resources laws and regulations mainly through the Field Operations Division's five Regional Offices. There are approximately 160 on-line enforcement officers plus supervisors. The Support Service Section, provides maintenance, supply, training, special investigations, communications and aviation support.

The Natural Resources Police explain and administer DNR policies to and for the general public. Success depends on the relationship between the Natural Resources Police Force and the general public.

In the past year the police acquired sixteen new 31' patrol vessels, to help rebuild a once seriously depleted patrol fleet. Revenues from the increase in annual boat registrations helped defray the cost.

The rockfish moratorium and the new Chesapeake Bay Sport-fishing License had noticeable impacts on police activity during the last half of the fiscal year. Following a brief introductory period, it is believed that both situations are being adequately monitored and enforced. In both cases widespread public support has made the job easier.

## FIELD OPERATIONS

### Information, Assistance and Emergency Responses

The Natural Resources police handle over 107,000 calls per year for service or information. Officers received 14,600 calls at their home and the five Regional Offices received more than 52,800. The Annapolis Headquarters Communications Center received over 40,000 calls. Additionally, the public visited officers' homes on business 850 times and the Regional offices over 4,100 times.

In FY 1985, the Natural Resources Police responded to 1,686 emergency response calls.

Some of the responses include:

Disabled boats	175
Disabled autos	187
Emergency transportation	32
Boats towed to port	677
Boats freed from grounding	321
Pumped sinking boats	34
Rescued persons in boats	16
Rescued persons in water	20
Rescued persons stranded	3
Search for overdue boats	40
Search for missing persons	17
Search for drowning/accident victims	41

Sixty-six persons were given emergency medical assistance. The emergency rescue responses assisted 3,792 persons for 2,487 man hours. Non-emergency assistances occurred 447 times, helping an additional 998 persons, requiring 1,428 man hours. Patrol units assisted at 197 public events involving direct or indirect contact with 81,442 persons requiring 1,622 man hours.

Additional assignments included public information, education, speaking engagements and demonstrations of equipment and procedures occurred on 254 occasions and expended 3,657 man hours.

### Enforcement and Protection

Natural Resources Police personnel worked 281,515 man hours including 19,637 man hours of overtime; drove 1,365,615 miles on patrol, spent 63,716 man hours patrolling by boat, patrolled on foot for more than 28,500 hours and flew more than 500 patrol hours.

Natural Resources Police personnel issued 9,618 citations and 8,034 warnings in FY 1985. The total of 17,652 violations noted shows a net increase of 22% over last year.



Ground breaking for new DNR Police Building, Queen Anne's County. (Left to right: Jack Taylor, Superintendent, Natural Resources Police; Verna Harrison, Assistant Secretary DNR; Dr. Torrey C. Brown, Secretary, DNR; Brig. General James F. Fretterd, Assistant Adjutant General for Army for the State of Maryland and State Senator Walter M. Baker.





Strong enforcement of the conservation and boating safety laws continues with emphasis on resource protection. Support by the District Court System is very good in most jurisdictions with stiffer penalties being handed down. Some examples are:

Three illegal deer hunting cases involving 4 defendants in Western Maryland were concluded with fines totaling \$3,150, 30 day jail terms, weapon confiscations, supervised probations from 1 to 2 years, and loss of hunting privileges for up to five years.

In Central Maryland a commercial waterman was convicted on 24 counts of possession of undersized rockfish and was fined \$155 per count. Another commercial fisherman was fined \$500 for fishing in a rockfish spawning area. In the same area Natural Resources Police officers were the initial investigators and chief prosecution witnesses in a paint spill case in the Susquehanna River which resulted in 6 convictions and \$18,000 in fines.

On the upper Eastern Shore a convicted jacklighter (hunting deer with a light) was fined \$3,170, sentenced to 18 months in jail, placed on 7 years supervised probation and had hunting privileges suspended for 3 years. Three other convicted jacklighters, apprehended with assistance from Natural Resources Police aircraft, were each fined \$500, sentenced to 30 days in jail, loss of weapons and had hunting privileges revoked for 5 years.

On the lower Eastern Shore a man convicted of trapping waterfowl and other related charges was fined \$1,780, received two (2) 90 day jail sentences and two years of supervised probation. The defendant indicated that this activity is a way of life for him and he would probably do it again. Other waterfowl hunters paid out over \$9,600 in fines. In the same area, 12 persons convicted of rockfish violations were fined from \$200 to \$1,000 each, and several were sent to jail in a cooperative covert operation effort with the U.S. Fish and Wildlife Service.

Natural Resources Police noted 2,122 hunting violations including 392 jacklighting violations; 3,850 fishing violations, of which 1,886 were for fishing without a license, and 725 violations of illegal possession of fish in all categories. There were 7,422 boating violations with the most common ones (speeding, registration not on board, and PFD's not on board) accounting for 4,335 or 58%.

There were 856 oyster violations with 567 for possession of uncultured or undersized oysters, and 1,002 crabbing violations with 774 cases of undersized crabs. There were also 1,221 violations involving the Criminal Code, the Motor Vehicle Code or other articles of the Annotated Code.

A close working relationship is maintained with the Maryland State Police, the various Sheriff's departments and county police as well as the U.S. Coast Guard, the U.S. Fish and Wildlife Service, the Drug Enforcement Administration and U.S. Customs Service.

The Natural Resources Police routinely investigate and assist other agencies in the investigation of criminal activity. Involvement in these activities continues to grow and is a significant part of Maryland's over-all law enforcement effort. The most common cases are theft, breaking and entering and vandalism but Natural Resources Police officers also have been involved in the investigation of murders, suicides, and drug incidents, and have searched for fugitives and missing persons.

The Natural Resources Police have been testing a Hovercraft to determine its suitability to marine law enforcement, search and rescue, and emergency response situations. After more than a year of testing, it was concluded that the Hovercraft compares very favorably with the conventional police patrol vessel. An additional advantage is the capability of operation when other surface craft

and aircraft cannot. As an icebreaker the Hoovercraft can easily break 5 inches of ice.

Based on the Natural Resources Police test and operational figures Hovercraft can be purchased and operated at a cost comparable to conventional patrol vessels. A small number of Hovercraft would certainly supplement the patrol fleet and enhance the capabilities of the agency in the performance of its mission.

## **Alcohol Enforcement Program**

The effects of this program, now in its second year, are being noted in greater public awareness and support. The actual results of the program are almost identical with previous years in terms of number of arrests, where they occurred, as well as convictions.

## **SUPPORT SERVICES**

### **Maintenance and Supply**

This program provides the necessary maintenance of the patrol vessels and their equipment including the 16 new patrol vessels equipped with radar and Loran C equipment. Eight new Boston Whalers were added to the police fleet. The 18' boats will be the standard replacement for the older 16 footers. Two 22' whalers tested proved too large for most applications.

The spring auction of confiscated firearms, obsolete boats, and used equipment brought in \$107,874. An additional public sale of a confiscated 32' Nivens sloop brought \$10,500.

### **Criminal Investigation Section**

This section is responsible for a wide variety of investigations, from criminal to internal, applicant background investigations. It is the clearinghouse for nationwide inquiries; supervises covert operations and provides administrative and inter-agency liaison support for field units involved in criminal investigations. Some cases handled include the prosecution of a boat dealer for fraud, forgery and perjury; the discovery and dismantling of a ring of juvenile thieves; and a case of suspicious death. Covert operations were successful this year with a number of apprehensions. A five month covert investigation in Western Maryland relating to illegal deer hunting and marketing resulted in 70 arrests.

#### **WRA Detachment**

The Water Resources Administration detachment of 2 Natural Resources Police officers continues to provide police support to the WRA enforcement section. The detachment has two officers who made 65 cases, won 46 convictions and had 6 cases pending at the end of the year.

### **Boat Accident Investigations**

The accident investigator reported the following:

Boating Accidents	212
Boating Fatalities	24
Boating Injuries	74
Property Damages	\$889,512

(Because of special requirements by the U.S. Coast Guard for reporting boating accidents the above statistics cover calendar year 1984.)

The typical fatal boating accident involves an outboard motor boat less than 16' long which capsizes while underway, probably while overloaded and has a single fatality, although there might be several persons on board. Boat accidents were up 10% over the previous year, fatalities down 8% and injuries up 8%.



## Police Academy

The 35th Basic Recruit Class culminated on December 14, 1984, with the graduation of 15 certified Natural Resources Police Officers after 22 weeks of training.

Two events occurred during the 35th Basic Recruit Class which were especially noteworthy. First, the Natural Resources Police Academy was approved by Chesapeake College, Wye Mills, Maryland, as one of their satellite training sites. This enables each graduate to earn 26 college credits toward a Certificate in law enforcement.

Second, the Maryland Apprenticeship and Training Council and the Federal Committee on Apprenticeship approved the position of Natural Resources Police Officer as a certified program of apprenticeship. This program entitles a military service veteran employee to financial benefits from the Veterans Administration up to 24 months.

As a public service the Natural Resource Police Training Academy was responsible for the instruction and coordination of 14 Cardio-Pulmonary Resuscitation Courses in Fiscal Year 1985. Some of the groups receiving this training included:

Civilian Employees of the Department of Natural Resources  
U.S. C.G. Auxiliary Flotilla 19-3  
U.S. C.G. Auxiliary at Group Baltimore  
U.S. C.G. at Station Annapolis  
Governor Harry Hughes Civilian Staff  
Maryland Court of Appeals Personnel

The Maryland Police and Correctional Training Commissions requires all certified police and corrections instructors to attend a 35 hours Instructor Training Course. During Fiscal 1985, the NRP Training Academy Staff assisted in the instruction at 6 of these courses at various locations of the State.

Summary of man-hours of training by the Natural Resources Police Training Academy.

Topic	Number of Personnel	Total Man Hours
Recruit Training	15	15,502
In-Service Training	186	3,964
CPR Training	227	681
Instructor Training	108	756

## Hunter Education

This year marked the 19th year of Hunter Education Training, with the last eight compulsory for first-time license purchases. The program's goal of reducing hunting accidents and instilling a code of ethical behavior in Maryland hunters seems to be working. It may in fact be more successful than statistics indicate in view of the continued urbanization of the population with its corresponding decrease in traditional rural values and experiences. The program was given the highest rating of AAA by the International Associations of Fish and Wildlife Agencies.

Twenty-five hunting accidents were reported in the state during FY 1985 including 7 self-inflicted wounds and 1 fatality. Although the total of accidents is up 31.5%, there was no change in self-inflicted wounds and a 50% reduction in fatalities.

## Boating Safety Education

The Boating Safety Office conducts a boating safety education program to reduce boating accidents, deaths and injuries.

In addition to the traditional adult home study method, the "Maryland Basic Boating Course" is being presented in a formalized classroom instructional program using volunteer instructors who are specifically trained. Three hundred people have taken the courses presented by the first group of instructors.

Public schools also have enlarged the scope of their boat safety programs giving instruction to nearly 2,200 school children with natural resources police officers providing some of the instructions.

Summary of Basic Boating Safety Courses:

	Distributed	Passed
Home Study	3,537	1,186
Schools & Colleges	2,162	1,027
Adult Education Instructors	300	151
	<u>5,999</u>	<u>2,364</u>

The program also continued to conduct special training sessions for agencies which respond to water related emergencies, including the firefighter who operates a boat from his station.

## GENERAL DIRECTION

The Maryland Geological Survey conducts topographic, geologic, hydrologic, and geophysical surveys, and prepares topographic, geologic and other types of maps to meet specific needs. The Survey prepares reports on the extent and character of the geology, mineral, and water resources of the State, and supervises provisions relating to archeology. It also is concerned with archeological resources, and disseminates information about this research.

Through scientific investigation and analysis, the Survey seeks to obtain a better understanding of the geology, archeology, water resources, and mineral resources of the State; and to apply this knowledge to practical problems related to the earth sciences.

Survey publications are the primary means of providing information to the public. They also use geological and archeological exhibits at fairs and outdoor events to inform the public of Survey activities.

Through its Director, the Survey is represented in intrastate and state-federal advisory activities. These functions include representing the State at the Mid-Atlantic Governor's Coastal Resources Council; Association of American State Geologists; Interstate Mining Compact Commission; Interstate Oil Compact Commission; Board on Earth Sciences of the National Academy of Science; Maryland Mining Council; State Topographic Mapping Committee; Land Reclamation Committee; and Outer Continental Shelf Policy Committee.

The Maryland Geological Survey Commission advises the Director on any matters within the Survey's jurisdiction.

During FY 1985 the Survey and the U.S. Geological Survey were co-hosts of a "Cluster Meeting" of all State Geological Surveys in the eastern U.S.

## HYDROGEOLOGY AND HYDROLOGY

Projects of the Hydrogeology and Hydrology Program are carried out under the auspices of the U.S. Geological Survey-Maryland Geological Survey Cooperative Agreement. Through this agreement funds budgeted by the State and participating intrastate agencies, are generally matched by the Federal government on a 50/50 basis.

The Hydrogeology and Hydrology Program is responsible for the maintenance of a Statewide water data network and the investigation of the hydrologic and geologic characteristics of Maryland water resources. The water data network provides information on minimum, maximum, and average stream flows for the planning of water supply and sewage facilities, water power projects, dams, bridges, and other public and private works; and ground-water levels, in selected wells throughout the State. This network allows monitoring of the hydrologic effect of long-term changes in pumpage, land-use patterns, and precipitation.

In addition to the Statewide network activities, site-specific projects are undertaken to determine ground-water and streamflow characteristics and rates of replenishment. Applied research projects of this type are often supported by special matching funds from County or State cooperators. During FY 85, investigations were underway in areas of Anne Arundel, Cecil, Charles, Frederick, Garrett, Queen Anne's, Somerset, Washington, and Worcester Counties.

## Stream-Flow Gaging Network

During the year operation and maintenance of 88 continuous-record stream-gaging stations were continued. In addition, 11

crest-stage gages, 44 low-flow stations, and 6 sediment sites were operated. Data from these stations for the 1984 water year were compiled and published in "Water Resources Data for Maryland and Delaware", U.S. Geological Survey Water-Data Report MD-DE-84-1.

## Ground-Water Data Network

This project maintains a continuous inventory of ground-water levels in aquifers and selected springs of the State and relates changes in ground-water levels to withdrawals and precipitation. The regional distribution of observation wells is:

	Wells
Appalachian Region	16
Piedmont Province	18
Coastal Plain Province	
Western Shore	54
Baltimore Industrial Area	14
Eastern Shore	<u>53</u>
TOTAL	155

Several hundred wells are periodically measured as part of other Program projects that supplement wells comprising the regular network. The following projects were active during the fiscal year:

### Anne Arundel County

In FY 85 ten observation wells were drilled in the Sawmill Creek and Marley Creek basins near Glen Burnie. Pumping tests were conducted to determine geohydrologic parameters and to obtain water samples for analysis. These data will be used to prepare a multi-aquifer, digital model simulating ground water conditions in the Glen Burnie area. The model will be used to define more precisely, the recharge areas of the aquifers and to quantify the effects that additional pumpage will have on water-levels, streamflow, and brackish-water encroachment.

### Baltimore Harbor Area

A report summarizing the results of this three year ground water project was completed in FY 85. It will be distributed as Maryland Geological Survey Report of Investigations No. 43 — "Hydrogeology, Digital Solute-Transport Simulation, and Geochemistry of the Lower Cretaceous Aquifer System, near Baltimore, Maryland". Commenting on the chloride plume contaminating the Patuxent aquifer in parts of the Harbor area, the report concludes "it is unlikely that the plume will spread to pumping centers in Sparrows Point or Glen Burnie in the foreseeable future", but, "it is possible that significant pumping stress in the Marley Neck area...could cause the plume to migrate toward that pumping center".

### Cecil County

At year's end the new County water resources report was 65 percent complete. This report, which will be issued as a Bulletin of the Maryland Geological Survey, will: access the quality of water in streams and aquifers; identify variations from expected background water quality; define by subbasin the total water yield by source; describe the ground-water flow system and map the potentiometric surface; indicate potential well yields of the various water-bearing units based on range and distribution of the yields of wells tapping the unit; estimate potential sustained yields of the aquifers based on water-budget analysis; estimate flow duration, low-flow frequency, and average flows by subbasins; estimate impacts of drought.

A separate report compiling the basic hydrologic data collected during the project has been completed and is undergoing editorial review. It contains records of stream-discharge measurements; chemical analyses of surface water and streambed materials; wells and test borings; chemical analyses of ground water; and water levels.

### **Charles County (Waldorf Area)**

During the year a 615-ft. core hole was drilled to obtain hydrogeologic information at the State Police barracks north of Waldorf. Additionally, a drilling program was initiated to construct 4 upper Patapsco aquifer observation wells. The objectives of this study are to define the areal distribution and thickness of the Patapsco aquifers, determine their hydrologic properties, estimate available quantities of water from them, and define their chemical quality. In addition an attempt will be made to quantify the amount of interaquifer leakage occurring between the Magothy and Patapsco aquifers.

A preliminary open-file report discussing the geohydrology of the Patapsco aquifers tested in a 1,650-ft. well, located 2.5 miles south of Waldorf, was completed and is being prepared for distribution.

### **Frederick County**

At year's end the new County water resources report was 75 percent complete. Major report topics will: assess current ground and surface-water quality and identify changes since the previous County report was published; identify by subbasin the total water yield by source; describe the ground-water flow system and map the potentiometric surface; indicate potential well yields of the various water-bearing units; estimate potential sustained yields of the aquifers based on water-budget analysis; and estimate average flows of streams by subbasin.

The Basic Data Report was approved for publication. The report contains surface-water data, including streamflow measurements and chemical analysis of water collected at 25 sites; ground-water data, including locations and descriptions of 1,898 wells and 130 springs; chemical analysis from 45 wells and 2 springs; and water-levels measured in 58 observation wells.

### **Garrett County (Mettiki Mine Area)**

In FY 85 the Maryland Geological Survey published Report of Investigation No. 41 — "First Report on the Hydrological Effects of Underground Coal Mining in Garrett County". This report describes the hydrologic effects that old, abandoned coal mines have had on the Sand Run and Laurel Run basins in southwestern Garrett County and relates them to the current underground mining activities at the Mettiki Complex (begun in 1977).

Current plans are for monitoring to continue through the mining and post-mining periods to assess and document the impact of mine dewatering in streamflow, ground-water levels, and surface and ground-water quality.

### **Queen Anne's County (Kent Island Area)**

During this year a 15-well test drilling program was completed on northern Kent Island. The wells were drilled to obtain hydrogeologic, water level, and water quality data needed to define the areal and vertical extent of Bay-water encroachment into the Aquia aquifer, which presently is the main source of water on Kent Island. These data will be used in a ground water model to simulate the effects of increasing pumpage on the movement and concentration of the Bay-water plume.

### **Worcester County (Ocean City Area)**

Increased summer pumpage, coupled with a trend toward year-round usage of the resort, has increased stress on the fresh-water aquifer system supplying Ocean City. Data are needed to determine how deep as well as extensive water-level declines are during the peak July-August period, and to what extent levels recover during the winter. To obtain this information eight observation wells were reequipped in FY 85 with continuous water-level recorders. These data will be compared to the chloride content of the water to determine if a cause and effect relationship exists between pumpage and salt-water encroachment.

### **Other Project Activities**

During FY 85 two new county water resources projects were initiated in Somerset and Washington Counties. Efforts during the first year of these projects emphasized basic data collection of stream flow, ground-water, and water-quality information.

A Chesapeake Bay research initiative, to assess the impact of storm-water infiltration on ground-water quality, involves two likely Coastal Plain monitoring sites in Anne Arundel County and two Piedmont sites in Carroll County.

During the year the effect of ground-water pumpage on water levels in the vicinity of three Southern Maryland power plants was monitored. Project activities at the Calvert Cliffs, Chalk Point, and Morgantown facilities are carried out in cooperation with the Power Plant Siting Program.

### **Environmental Geology and Mineral Resources**

This program has the responsibility for geologic and environmental mapping and research, topographic map revision, mineral and energy resources investigations, and dissemination of geologic information. Studies provide the basic framework for delineating and managing the State's mineral and land resources. A relatively new approach in environmental mapping is the Mineral Resource and Mined-Land Inventory Maps and maps of the Geologic Factors Affecting Land Modifications.

The following investigations were in progress or completed in FY 85.

### **Geologic and Environmental Mapping**

Geologic field mapping continued in the Lonaconing-Westernport, Manchester and Westminster 7.5 minute quadrangles. Field work was initiated in the Frostburg/Avilton, and Barton quads; in the Lineboro and Finksburg Quadrangles and in Caroline County. Quadrangle manuscript maps were prepared for Herford, Littlestown, Cumberland/Cresaptown, Woodsboro, Union Bridge, Finksburg, and Calvert County. The Port Tobacco, Bristol and Lower Marlboro Geologic Quad maps were published, as was the Somerset County Geologic Map. Maps are under review for publication in Dorchester County and Cecil County.

### **Topographic Mapping**

The Caroline County Topographic Map as well as the revised Garrett County Map were published. The Baltimore, Somerset and Worcester County maps are being printed. Field work was initiated in Allegany, Dorchester, Prince Georges and Queen Anne Counties, with publication expected in FY 85 or FY 86.

### **Mineral Resources and Other Studies**

A revised and simplified Directory of Mineral Producers has been compiled and is being reviewed for publication in FY 86. Work continued on a consolidated stratigraphic chart of Maryland and on a physiographic mapping and terrain analysis project in the

Blue Ridge province of Frederick County. An information circular describing map products of the Survey is near completion. An update of the List of Publications was published. A joint cooperative program was initiated with the U.S. Geological Survey preparing geological constraint maps and mineral resources maps in southern Maryland's Charles and St. Mary's Counties. A study was completed on the sand and gravel resources in the Patuxent River drainage area for the Capital Programs Administration. A pamphlet was updated for publication on the Building Stones of Maryland. The Survey's collection of Maryland rock and mineral specimens and description handouts for school children were updated and expanded. A study of coal bed stratigraphy, distribution, and economic importance was initiated as was a study of upper Mississippian-aged strata in Western Maryland. A continuing intensive study is underway on the geologic history and structure of the Piedmont in Carroll County of central Maryland.

The proceedings from the 20th Forum on the Geology of Industrial Minerals, held in Baltimore in May 1984 and hosted by the MGS, were being prepared for the publisher at year's end. The special publication "Frederick-Montgomery-Howard County Resurvey of 1980" was nearing completion.

### **National Cartographic Information Center (NCIC)**

The Survey continues to serve the needs of Maryland Cartographic users as the State's NCIC affiliate office. As part of that service the affiliate office began distribution of a semi-annual cartographic information newsletter.

### **Offshore Atlantic Coast**

One well was drilled on the federal Mid-Atlantic Outer Continental Shelf (OCS) in FY 85 by Shell Oil Company in 5,017 feet of water. It encountered no commercially productive hydrocarbon zones, and was abandoned in November, 1984. An offshore sale is scheduled for October, 1985, but exploratory interest among oil companies may have been dampened by lack of drilling success in recent years.

### **Western Maryland Gas**

Gas continued to be produced from eight wells in two gas fields in Garrett County. An exploratory well was abandoned as a dry hole near Avilton, also in Garrett County.

A number of oil companies as well as the federal government, who jointly own mineral interests in state lands, have requested leasing of state lands for oil and gas exploration in several areas around the State. Various agencies of DNR are involved, with the MGS acting as geologic advisor.

### **Coastal and Estuarine Geology**

The Coastal and Estuarine Geology Program has the responsibility for basic and applied geological investigations in the coastal zone of Maryland. The overall objectives are to determine the processes altering the shorelines of Maryland and to characterize the physical and chemical aspects of the recent sediments of the Chesapeake Bay.

### **Sedimentology of Tangier Sound**

This study is a continuation of the Chesapeake Bay Earth Science Study to map the sediment distribution within the Chesapeake Bay system. Grain size analysis of sediment samples collected in Tangier Sound have been completed this fiscal year. Carbon and sulfur analysis will be completed in the fall of 1985. Results of this study will be published.

## **Geochemical Environments of the Chesapeake Bay**

Efforts continue to analyze the dominant biogeochemical processes operating in the Bay, and their spatial extent in the main stem of the Bay. New research has been directed at examining sulfur speciation in the bulk sediments. Variations in sulfur speciation will yield unique information on the geochemical state of the sedimentary environments of the Bay, and may provide historic information on water column anoxia.

### **Hart-Miller Island Environmental Assessment**

The monitoring program to assess the sedimentological and geochemical environment around the Hart-Miller Island Diked Disposal Area is in its fourth year. The results from the first two years monitoring were presented in a paper given at the Coastal Zone '85 Symposium held in Baltimore, July 24 through August 2, 1985.

### **Geochemical Reactions Within a Small Watershed**

Analysis of precipitation and stream water samples from a two year collection period have been completed. Preliminary results from the study were presented in an abstract and talk at the annual meeting of the Geological Society of America, Northeastern Section, in March, 1985.

### **Geologic Framework of the Inner Continental Shelf**

A continuation of the study was approved by the Mineral Management Service. High-resolution seismic profiles and surficial sediment samples were obtained during the initial field effort. Additionally, a joint effort with the Marine Geology Division of the U.S. Geological Survey provided for collection of over 170 kilometers of high-resolution seismic profiles.



## **Dredge Material Monitoring**

The third year of investigations on the distribution and fate of dredged material in the Northern Bay has been completed. Data for the fourth year of this continuing effort have been collected utilizing an acoustic profiling system. Initial data reduction indicates that this system will dramatically increase the ability to track the distribution of dredged material. An additional study was initiated to assess the suitability of a specific site at the Patapsco River mouth for continued overboard placement of dredged sediment.

## **Geologic History of Chesapeake Bay**

The first year of a five year cooperative study with the Virginia Institute of Marine Science and the U.S. Geological Survey saw completion of a cruise in the region of the Bay mouth. Work in the Maryland portion of the Bay will begin in the fall of 1985.

## **Field Operations**

The R/V Discovery logged approximately 1,360 hours of operation in support in scientific field operations for various agencies in the Chesapeake Bay and the Atlantic Ocean.

## **Division of Archeology**

The archeology program is responsible for research in Maryland archeology, for coordinating professional and amateur archeological activities in the state, and for administering the permit system for archeological investigations on State lands, as provided in the Maryland Archeological Resources Act of 1968. The Division maintains a reference library containing records of all known archeological sites and investigations in the State, and curates an extensive collection of historic and prehistoric artifacts from all sections of the State. Its resources are available to the public, governmental agencies, and professional archeologists.

## **Eastern Shore Contact Period Sites**

A project initiated in FY 83 has the objective of locating and investigating archeological remains of 16th through 18th century Indian settlements in the Choptank and Nanticoke river drainages, primarily Dorchester County. Although such settlements are mentioned in historic records, none had been located and archeologically investigated. Extensive testing of a site on Locust Neck was accomplished last year, and a report on that work will be published. Initial testing at several other locations in the same vicinity has revealed an eighteenth century site that warrants further investigation.

## **Popes Creek**

A large oyster shell midden near the mouth of Popes Creek, Charles County, was the scene of the 1985 Annual Field Session in Maryland Archeology sponsored by the Archeological Society of Maryland and directed by the Geological Survey. Much of the site has been removed by nineteenth century quarrying, but investigation of the remaining area revealed midden up to 1.3 meters thick containing shell-filled pits, Late Archaic stemmed points, and Early Woodland pottery suggesting that the midden accumulated between 2,000 B.C. and A.D. 100. About 75 avocational and vocational archeologists participated in the 10-day project.

## **Underwater Archeology**

An underwater survey of the Potomac River near Fort Lincoln in Pt. Lookout State Park, carried out in cooperation with the Underwater Archeological Society of Maryland, revealed pilings,

scattered artifacts, and structural detail of the submerged wall of Fort Lincoln. The Division also assisted the Underwater Society in recording the remains of timber crib railroad bridge piers built ca. 1836 in the Little Patuxent River at Savage, Howard County.

## **Highway Studies**

Archeological investigations of proposed highway projects have continued since 1975 with funding provided by the State Highway Administration. During FY 85, field reconnaissance studies were completed for fourteen highway projects in ten Maryland counties. Archeological assessments, review, information, and coordination were provided for about fifty other highway projects in Maryland.

Work continued at the Oxon Hill Manor site which is to be partially destroyed by redesign of the Capital Beltway/Indian Head Highway interchange in Prince Georges County. Oxon Hill has exceptional archeological significance because of its early construction date (ca. 1720), intensity of occupation, and abandonment since ca. 1890. The Geological Survey completed intensive test excavations in December and monitored major salvage excavations by a consultant during the second half of the fiscal year. Among several hundred features excavated were two deep cellars, a meat house, a formal garden, and an early 18th century well. In other highway-related projects, the Division of Archeology completed extensive testing of the 19th century Trueman's Appeal residence site in Calvert County, and began excavation of an occupation area associated with the early to mid-nineteenth century Harford Iron Furnace site in Harford County. Three formal reports on highway archeological projects were completed and distributed in FY 85.

## **Other Activities**

The number of archeological sites recorded in the Maryland Archeological Site Survey increased from 5,216 to 5,409 during FY 85. Six permits were issued for archeological investigations on State lands. The Division received seven artifact collections during the year and continued to catalog and organize older collections.

Four Towson State University students served as interns during the year. A controlled surface collection of a Late Archaic site to be destroyed by the Reservoir Ridge development, Baltimore County, was conducted with the assistance of volunteers and in cooperation with the developers.

The Division continues to maintain close and active relationships with organizations of vocational and avocational archeologists working in Maryland.

The Division supplied artifacts and information for a new teaching exhibit on archeology by the Maryland Historical Society, and prepared two temporary exhibits for local fairs.

A travelling exhibit on Maryland Archeology, developed with the aid of funds from the Maryland Humanities Council has been in continuous demand and will be circulated as long as interest continues.

The Division also distributes information leaflets on Maryland archeology, including a guide to characteristic artifacts and a new directory of volunteer opportunities in Maryland archeology.

The Advisory Committee on Archeology, composed of the five citizen archeologists, counsels the Maryland Geological Survey on archeological matters. It met in August and October, 1984, and in January, 1985, to review and make recommendations on the work of the Division of Archeology.

The Maryland Environmental Service is unique in its status as both a State agency of the Department of Natural Resources and as a non-profit public utility corporation.

Since its creation in 1970, it has been providing services in the areas of water supply, wastewater treatment, energy and resource recovery from wastes, sewage sludge management, compost marketing, and hazardous waste management. These services have been available to the State government, local municipalities, county governments, and the private sector.

MES was created in response to a need for the State of Maryland to offer planning, operating, management, and engineering services to the State's smaller communities and industries which were having difficulties developing and operating water supply and wastewater treatment facilities.

In fiscal year 1985, MES was a \$18,000,000 enterprise. The Service is essentially self-supporting, with approximately 83 percent of its income currently derived from fees paid by corporate clients.

State funds pay the cost of operating State-owned water supply and wastewater treatment facilities for parks, hospitals, and correctional institutions and provide limited planning and technical services for local governments and State agencies.

Corporate revenues are derived from fees for services charged non-State clients, and represent the major share of the total operating revenues.

MES has been granted substantial autonomy from its parent agency, the Department of Natural Resources, in its internal management and external operations. The Service is able to sell revenue bonds for MES-related projects, enter into contracts and leases, and is able to charge fees for its varied services.

The corporate affairs of MES are managed by a three-member Board of Directors, one being the Director of the Service and the other two being appointed citizens of Maryland.

## ADMINISTRATION

This division is responsible for project development, administration, and for setting overall MES policies and goals. Legal services, legislative liaison, contract administration, State and Corporation personnel and benefits administration, and safety and health are functions of Administration. The MES Corporation's Board of Directors is included in this division.

## FINANCE

The Finance division is responsible for financial accounting and control, procurement, and electronic data processing for all operations.

During fiscal year 1985, the Service acquired an IBM System 36 computer and related financial software, and the Finance division implemented, and continued to implement, basic financial systems, such as accounting, purchasing, and accounts payable and receivable.

The data processing function provides additional non-financial support to the agency, including centralized word processing, automated scheduling, effluent discharge statistical monitoring and permit compliance, as well as supporting various engineering activities.

## ENGINEERING

The Engineering division provides engineering capability within MES for planning, design, and construction. In addition, the division operates and maintains special projects, such as dredged materials containment, hazardous waste disposal, sewage sludge composting, and land restoration projects.

In fiscal year 1985, the Engineering division continued its responsibility for operations and maintenance of the Hart-Miller Island Dredged Material Containment Facility. Through FY 1985 this site had received over 8 million cubic yards of spoil from channels and docking facilities in the Baltimore harbor.

Hart-Miller is the designated disposal site for the 50 million cubic yards of spoil expected from dredging the Baltimore harbor shipping channels from 42 feet to 50 feet.

To operate the Hart-Miller facility, the service provides full-time inspection of the dredged materials, the unloading and handling operations, laboratory services and staff for on-site water quality monitoring, security, and the equipment and personnel for interior dike maintenance.

The Engineering division also has begun studies of facilities for small-scale composting of sewage sludge. Its staff assisted in a successful composting demonstration project in Queen Anne's County. Engineering personnel designed and began tests to develop small in-vessel composting units, which have potential for many small-to-medium wastewater treatment plants across the State of Maryland.

MES continued to operate the Hawkins Point hazardous waste landfill for disposal of 50,000 cubic yards of chrome ore tailings from the Allied Corporation.

MES continued its contractual oversight responsibilities for the operation of the Baltimore County Resource Recovery Facility (BCRRF). During fiscal 1985, the BCRRF processed an average of 650 tons of municipal solid waste per day, of which 425 tons/day of refuse derived fuel (RDF), 35 tons/day of ground glass (used to manufacture fiberglass), and 25 tons/day of ferrous metals were recovered for sale.

Baltimore Gas and Electric Company's C.P. Crane Power Generating Station in Essex burned 27,550 tons of RDF in fiscal year 1985, and would have burned far more had the plant been in operation for the entire period.

MES also initiated a test burn of refuse derived fuel at the Potomac Electric Power Company's Dickerson Power Plant which, if successful, could lead to a full scale project capable of handling the majority of the solid waste generated in Montgomery County. Also in Dickerson, MES continued to operate the county's leaf composting facility, the product of which was sold by the MES marketing staff.

Under contract with the Washington Suburban Sanitary Commission and the District of Columbia, MES monitored permits which govern landspreading sewage sludge on agricultural properties in 14 counties in Virginia and Maryland.

## OPERATIONS AND MAINTENANCE

MES's Operations and Maintenance division provides trained and licensed personnel to operate and maintain approximately 90 water supply and wastewater treatment facilities.

These facilities are divided into three categories according to their ownership: State owned; local government-owned; and privately owned facilities.

During fiscal year 1985, design was completed for the sophisticated Dorsey Run nitrification/denitrification wastewater treatment facility to serve the House of Correction in Jessup. When completed in fiscal year 1987, this plant will replace an at-capacity, temporary plant.

Other State-owned wastewater treatment plants are in varying stages of improvement or replacement, such as Cheltenham Boys' Village, Bowie State College, Southern and Poplar Hill Correctional Pre-Release Units, Montrose School, and the Crownsville State Hospital.

The Operations and Maintenance division provides weekly tests at all water supply and wastewater treatment plants operated by MES, and also monitors other waste-management sites.

Other significant developments within the Operations and Maintenance division during fiscal 1985 were: creation of a full-time sludge-management coordinator position; a sewage-sludge composting demonstration project on Kent Island in partnership with Queen Anne's County; a comprehensive sludge-management plan for all MES-operated wastewater treatment plants; and negotiation of a cooperative working agreement with the Maryland Center for Environmental Training in Charles County.

## **TECHNICAL SERVICE**

The Technical Services division conducts planning and feasibility studies for waste management projects, provides assistance for solid waste recycling programs and technical assistance consultation with local governments on waste management problems, and carries out projects and studies assigned to the Maryland Environmental Service by the Department of Natural Resources, State law, and the Maryland General Assembly.

During FY-85, an information package to help small quantity generators of hazardous waste understand new regulations and find assistance was prepared in cooperation with the Department of Health and Mental Hygiene, the University of Maryland, and the

Maryland Chamber of Commerce. A federal grant from EPA was received to support this work and the technical assistance program.

The Maryland Recycling Directory was updated and reissued and the division continued responsibility for the Maryland Used Oil Recycling program and toll-free recycling information service.

Assistance was given to Queen Anne's, Caroline, and Talbot Counties on solid waste management options.

A study requested by the legislature, researching the possibility of an "amnesty days" program for the collection of household hazardous waste began in FY 1985. The study will be completed by January 1986, and submitted to the legislature for review.

## **MARKETING**

Fiscal year 1985 saw the creation of a new division to promote MES technologies and services available to State and local governments and to private industry.

One continuing successful marketing and sales project is the 4-year-old ComPRO<sub>R</sub> program. ComPRO<sub>R</sub> is composted sewage sludge produced by the Washington Suburban Sanitary Commission (WSSC) at a site in Montgomery County. ComPRO<sub>R</sub> is a soil conditioner and fertilizer, and is purchased by landscapers, construction contractors, institutions, golf courses, plant nurseries, and State agencies. ComPRO<sub>R</sub> is available in bulk, and is also packaged for retail sales at garden centers and hardware stores.

The Maryland Environmental Service provides the marketing service for WSSC and has demonstrated that large volumes of composted sewage sludge can be sold directly from a composting facility.

A leaf compost product was added to the MES recycled product line in 1985. Leaf compost is being produced by the Service at the Dickerson Leaf Compost Facility, and is marketed for Montgomery County. This product has a similar market as ComPRO<sub>R</sub> and is being well received.



The Water Resources Administration is responsible for the protection, management and development of Maryland's water resources and accomplishes its mission through four programs: General Direction, Watershed Protection, Water Management and Resource Protection. Its staff totals 151 with a budget of \$6,220,338.

The Water Resources Administration, in order to meet the increased responsibilities under the Chesapeake Bay Legislation, adopted the following organization as of July 1, 1984:

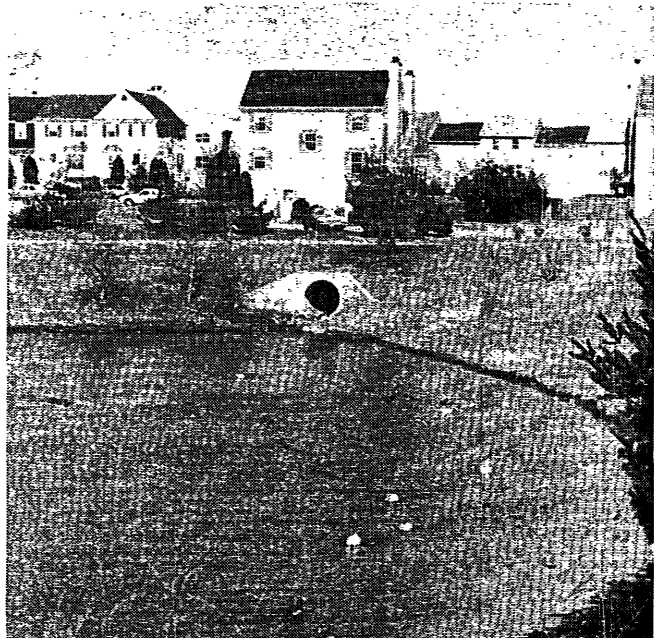
- General Direction
- Watershed Protection Program including Waterway Permits Division, Sediment and Stormwater Division and Enforcement Division.
- Water Management Program including Dam Safety Division, Water Supply Division and Flood Management Division.
- Resource Protection Program including Surface Mining Division, Wetlands Division, Oil Control Division and Technical Services Division.
- Citizen complaints, monitoring and inspection for Erosion and Sediment Control and Waterway Permits may be referred to the Enforcement Division, by calling 1-800-DNR-SOIL in Baltimore and Annapolis 269-2641. Citizen complaints, monitoring and inspection activities for Wetlands and Surface Mining may be referred directly to the appropriate Division.

The Water Resources Administration responds 24 hours a day to **OIL SPILL** problems in Maryland — (269-3551 during business hours, Monday through Friday or 269-3181 evenings, weekends or holidays).

## GENERAL DIRECTION

This section is responsible for the overall supervision and coordination of the policies and operations of the Administration. This includes coordination of public notices and hearings, and public information.

During FY 1985 the Water Resources Advisory Commission met four times to discuss activities and policies that included sediment stabilization regulations, the stormwater management programs, water supply planning and underground oil spills.



Stormwater management retention ponds can be an attractive community asset while providing water quality benefits.

## WATERSHED PROTECTION PROGRAM

This program area includes: Waterway Permits Division, Sediment and Stormwater Division and Enforcement Division.

### Program Administration

The Chesapeake Bay Initiatives provided a \$1.7 million grant fund for distribution to local jurisdictions for the support of local personnel responsible for Stormwater Management Plan review inspection, and enforcement services as required by the Stormwater Management Law.

To assist in local stormwater management program implementation, the Administration provided grant-in-aid funds to the following:

Anne Arundel County	Prince George's County
Allegany County	Queen Anne's County
Baltimore County	Somerset County
Calvert County	St. Mary's County
Carroll County	Talbot County
Charles County	Wicomico County
Dorchester County	City of Annapolis
Frederick County	Baltimore City
Garrett County	Bowie
Harford County	Cambridge
Howard County	Ocean City
Kent County	Rockville
Montgomery County	

The FY 1986 budget includes an appropriation of \$1,631,000 for the continuation of the Stormwater Management Grant Program.

### Waterway Permits Division

The Waterway Permits Division reviews permit applications for projects that affect non-tidal streams and floodplains, and conducts site inspections and technical evaluations of proposed projects for permit decisions. Advisory services are provided to prospective applicants on measures and alternatives to minimize adverse effects on the environment.

Major activities during FY 1985:

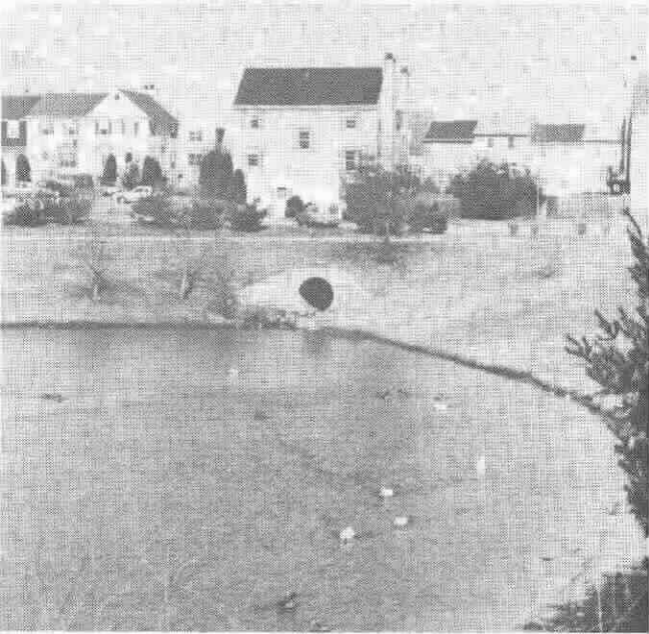
The Division is participating on the Steering Committee for developing a computer based system for statewide hydrologic analysis. The State Highway Administration, with federal funding, is researching the development of a real-time hydrologic model for use in their highway design program. A limited data base (Phase I evaluation) has been developed and is under review for feasibility and use on a statewide basis.

As part of the Interstate Division for Baltimore City's plans to renovate the Jones Falls Expressway a detailed watershed study of the Jones Falls has been prepared. This study, including hydrology and hydraulics, encompasses and updates studies performed over the past decade and will provide a baseline floodplain on which future project reviews will be based.

- The Division acted as lead for DNR for comment on the final link of U.S. 48 between Cumberland and Green Ridge. Comments on several alternatives have been submitted to the State Highway Administration for inclusion in the Environmental Impact Statement to be published in the fall of 1985.

- Detailed construction plates were developed by the Division to provide interim criteria for minimum sediment control measures that must be included for projects requiring waterway permits or approvals.





As a result of the emphasis on the Chesapeake Bay Initiatives, the Division is increasing its quality control review of erosion and sediment control details associated with floodplain and channel construction. The Division will be responsible for review and approval of plans for State and federal projects that require a Waterway Construction Permit, as well as those projects that are exempt from local SCD approval under COMAR 08.05.01.04.

The Division has received a total of 872 permit applications for FY 1985. This is an increase of 29% and reflects the increase in construction activities.

The Division's activities included:

Type of Project	Number
Maintenance and Repairs	102
Temporary Construction	208
Waterway Construction	228
Waterway Obstruction/Dams	10
Small Ponds	5
Preliminary Project Plan Review	123
Applications Received and Withdrawn	196

## Sediment and Stormwater Division

### SEDIMENT CONTROL SECTION

The Sediment Control Section directs the State Erosion and Sediment Control Program by reviewing local programs; developing Statewide guidelines and conducting the "Responsible Personnel Training Program", and erosion and sediment control educational effort.

The "Responsible Personnel" training program promotes an understanding of the benefits of clean water and offers training to construction industry field personnel and local government agencies. A supervisor, certified under the State program, is required on all construction sites.

Under the Chesapeake Bay Initiatives, WRA has increased responsibility for enforcement and monitoring sediment control plans statewide. As a provision of this legislation and Administration could recommend that a particular local jurisdiction be delegated enforcement authority. A major activity in conjunction with the Enforcement Division was conducting extensive reviews of each local program requesting these authorities. Nine counties and five municipalities were granted delegation. The Water Resources Administration is responsible for inspection and enforcement in all jurisdictions that were denied delegation.

The sediment control section has also contracted a study to investigate the trapping efficiency of sediment control structures, geotextiles and innovative practices for sediment control.

### STORMWATER MANAGEMENT SECTION

The Stormwater Management Section directs a statewide program to reduce stream channel erosion, pollution, siltation and sedimentation by maintaining the pre-development run-off characteristics of a watershed after development has been completed. All local jurisdictions have been required to adopt a stormwater management ordinance and establish a stormwater management program.

The staff developed a model ordinance and has assisted local jurisdictions in meeting the requirements of the Stormwater Management Law. It has also provided technical review and recommendations for the approval of grand applications received from local jurisdictions.

A study to investigate stormwater infiltration practices and develop a training manual was undertaken this fiscal year.

A series of nine boat oriented workshops was sponsored to provide county and city government personnel, council members and commissioners an opportunity to see first hand the biological and physical stresses on the Bay. The purpose was to emphasize the need for better sediment and stormwater management.

### PLAN REVIEW SECTION

The Plan Review Section evaluates sediment and stormwater plans for all State projects.

Projects reviewed for FY 1985:

DOT, SHA	422
DGS	295

## Enforcement Division

Responding to the new responsibilities statewide for enforcing compliance with sediment control plans, the Enforcement Division has increased its staff to 30 inspectors. Hired in January 1985, the inspectors spent two months in classroom and in-field training. The State currently monitors and enforces compliance with sediment control plans in the following fourteen counties: Worcester, Wicomico, Somerset, Talbot, Caroline, Queen Anne's, Cecil, Calvert, St. Mary's, Charles, Montgomery, Carroll, Washington and Garrett Counties.

The Enforcement Division is also responsible for insuring compliance with other WRA permits and approvals including sediment control, stormwater management plans, waterway construction and small pond permits.

The Enforcement Division has conducted 11,847 inspections on job sites in FY 1985 and investigated 889 citizen complaints.

The Division has issued the following number of notices for violations:

Floodplains	59
Waterway	102
Sediment Control	399
Stormwater	150

## WATER MANAGEMENT PROGRAM

### Flood Management Division

The Flood Management Division administers the State's Flood Hazard Management Act of 1976 which mandates comprehensive planning and design of flood management projects and provides for a grant program to aid local subdivisions with projects to reduce flood hazards. Technical assistance is provided on watershed modeling, methods of mitigating flood hazards and damage, and local flood management ordinances. The Division coordinates and promotes the National Flood Insurance Program in Maryland.

Technical watershed studies undertaken in FY 1985 include: Gunpowder River, Baltimore County; Big and Little Elk Creeks, Cecil County; Church Creek, Anne Arundel County; Winters, Wildcat, Bynum, Grays, James, Swan, Harford County; Fairgo, Triple Lakes, Warrior, Upper Georges, Braddock, Wills Creek, Allegany County; Anacostia River, Prince George's County; Delaware, Rockburn, Sucker, Tiber, Dorsey, Cat Rock, Howard County; Crisfield Area, Somerset County; Little Run, Havre de Grace; Fishing Creek, Frederick County; Zekiah Swamp, Charles County; Savage River (Broadwater Chapel Area), Garrett County; and, Albert Power Fish Hatchery, Washington County.

Thirteen capital project applications were received from 10 jurisdictions. Funding was requested for acquisition for flood-prone homes, construction of a flood free community access, stream enclosure, a levee, detention structures, a diversion channel, and an automated flood warning system.

The Division worked cooperatively with the National Weather Service and Baltimore City to implement an automated flood warning system along the Jones Falls. A joint effort with MEMCDA, the National Hurricane Center and the U.S. Army Corps of Engineers to develop comprehensive warning and evacuation plans for hurricane flooding was initiated.

As part of the 1984 agreement between the State of Maryland and Washington, D.C. a watershed study is underway for the Anacostia River watershed. The first task is to develop an inventory and assessment of sediment sources.

The Division, under the Federal Emergency Management Agency State Assistance Program, is identifying and notifying flood-prone property owners throughout the State.

### **Dam Safety Division**

The State dams program is administered by this division. FY 1985 investigations include:

- Inspected construction at Little Seneca, Crabbs Branch, Fishing Creek, Emmitsburg, Oaks of Harford, Centennial and Frostburg.
- Conducted danger reach surveys and analyses for Lake Linganore, Blairs Valley, Broad Creek and Piney Run.
- Conducted dam safety inspections at Frazer Lake, Cecil County; Lake Waterford, Anne Arundel County; Hunting Creek in Cunningham Falls State Park, and three Harford County flood control dams on Little Deer Creek.
- Continued to inventory small dams and ponds in Maryland.

The Division also developed a system to assign inspection frequency to the State's 206 regulated dams. Dams have been assigned an annual to once every five years inspection frequency based on condition, storage-height product, hazard class, dam type, age and spillway type.

### **Water Supply Division**

The goal of the Water Supply Division is to direct the development, management and conservation of the State's water supply resource to protect the resource while encouraging the greatest feasible use. The Division includes three sections: the Water Appropriation and Use Permits Section, the Water Supply Planning and Engineering Section, and the Water Conservation Section.

#### **WATER APPROPRIATION AND USE PERMIT SECTION**

The Water Appropriation and Use Permits Section regulates the withdrawal and use of water in the State to protect the quantity and quality of the resource and to provide reasonable protection to other users of the resource. The Section evaluates permit applications to ensure that adequate quantities of water are available for proposed uses, to protect groundwater supplies and instream values during low river flow and to lessen potential conflicts among water users. There are currently in excess of 8,000 active water appropriation permits on file. An additional 1,200 surface and groundwater appropriation permits are being processed annually by the Section.

Major FY 1985 cases handled by the Water Appropriation and Use Section include permits associated with: Town of Port Deposit; Charles County; Furnace Branch, Frederick County; Harpers Ferry, WV; Clifton, Charles County; Saunders Almond, Harford County; Oyster Cove Development, Queen Anne's County; U.S. Naval Academy; Chesapeake Ranch Water Company, Calvert County; and, Frederick County Department of Public Works.

#### **WATER SUPPLY PLANNING AND ENGINEERING SECTION**

The Water Supply Planning and Engineering Section analyzes area-wide effects of collective water appropriation in view of a region's future water supply and demand. The Planning and Engineering Section identifies regional water supply resources problems and formulates management alternatives. The engineers and planners have developed and utilized computer groundwater and management models in forming plans for development and conservation of regional water supply resources. Implementation of those plans occur through the water appropriation permit process. An important component of the Section's work has been establishing and maintaining a water use data system. The system is based on water use reports submitted to the Department bi-annually by all permittees appropriating more than 10,000 gallons a day. Other responsibilities of the Planning and Engineering Section include: water supply reservoir planning and development, mitigation of consumptive water losses through non-structural and structural techniques and coordination of water supply planning activities with the neighboring states, the U.S. Army Corps of Engineers, the Interstate Commission on the Potomac River Basin and Susquehanna River Basin Commission.

Major FY 1985 activities of the Water Supply Planning and Engineering Section include: Charles County Water Supply Plan, Kent Island Saltwater Intrusion-Interim Management Strategy, Fish Hatchery Water Use Analysis, George's Creek Basin, Pumpage Reports Manual, Potomac River Consumptive Use Augmentation Regulation and Duck Hatchery Investigation.

#### **WATER CONSERVATION SECTION**

Formed as part of the Chesapeake Bay program, the Water Conservation Section is responsible for implementing strategies to reduce the effects of declining fresh-water inflow to the Bay. Concepts related to modification of consumptive water losses, conservation hardware retrofitting, water conservation pricing, leak detection and system design and management are important components of the program. The Water Conservation Section was organized at the end of FY 1985.

The section recently published "Before The Well Runs Dry — A Handbook for Designing a Local Water Conservation Plan".

### **RESOURCE PROTECTION PROGRAM**

The divisions in this program include Wetlands, Surface Mining, Oil Control and Technical Services.

#### **Wetlands Division**

This division issues wetland permits and approvals for the regulation of dredging, filling and related activities in private wetlands; makes written recommendations to the Board of Public Works on the issuance of wetlands licenses for work in State wetlands, including storm drain systems outletting into tidal waters; enforces the wetlands law and regulations, licenses and permits and identifies, evaluates, and pursues resolution of wetlands violations and other Water Resources Administration administered statutes and regulations; administers the monitoring of overboard dredge material disposal projects; and, provides comment on matters affecting tidal and non-tidal wetlands throughout the State. The permit and licensing procedures for these activities involve site inspections, technical evaluations, interagency coordination and public hearings. The Division provides advisory services to prospective applicants on modifications or alternatives to proposed works that would minimize adverse effects on the environment.

The Wetlands Division continues to oversee preparation and conduct of integrated studies assessing the environmental impacts of the Hart-Miller Islands Containment Facility.

In cooperation with the Coastal Resources Division of the Tidewater Administration, the Wetlands Division works to promote local protection of non-tidal wetlands.

The Division acted on 740 projects affecting 626 acres of predominantly open water wetlands. Four and one third acres of vegetated wetlands were established for shore erosion control and as mitigation for otherwise environmentally acceptable works.

### Surface Mining Division

The Surface Mining Division seeks to ensure environmental safeguards in the operation and reclamation of non-fuel surface mines and prevent hazards to public safety from such activities. The Division issues licenses and permits. It establishes permit conditions, reviews and evaluates mining and reclamation plans, and makes an annual review of each permit. Funds received from license fees, permit fees and other sources are held in the Surface Mine Land Reclamation Fund to be used for reclamation of abandoned non-fuel surface mines. At the end of FY 1985 there were nearly 8,120 acres of land being used for surface mining by approximately 250 licensed operators.

The Phelps property in the Patuxent River watershed is the first abandoned mine to be reclaimed. Two other properties are scheduled for restoration in FY 1986-1987.

The Division worked with enforcement personnel of the Resource Protection Program to ensure surface mine operator compliance with permit conditions.

### Oil Control Division

The Oil Control Division issues Oil Operations Permits, Oil Vehicle Operator's Certificates and Oil Terminal Facility Licenses and carries out follow-up field enforcement work related to these activities. The Division is supported by the Maryland Oil Disaster, Containment, Clean-up and Contingency Fund. This special fund is maintained by license fees charged for oil storage facilities over 3,000 barrels.

The Division developed and obtained equipment to respond to, contain and clean up oil spills on inland waters and open waters of the Chesapeake Bay and its tributaries.

A 24 hour duty roster is maintained to respond to oil spill emergencies.

The Water Resources Administration responded to 1,065 spills, including 153 underground spills, in FY 1985.

The Water Resources Administration stores spill equipment and absorbent materials statewide for use by local fire departments and other State, county and local agencies to combat minor oil spills.

Training and instruction was provided statewide to help industry and others prevent and control oil spills. Thirty-four presentations on the program were made to volunteer and paid firemen, high school students, State highway personnel and petroleum industry personnel.

The Ad Hoc Committee on Oil Spills in Open Water met six times to discuss and advise the Administration on oil control policies and new equipment. The committee spent considerable time working with the Water Resources Administration on proposed regulations to control and prevent leaks from underground tanks.

Revised regulations were promulgated in January 1985. The Division has provided workshops to assist the industry to meet the new requirements.

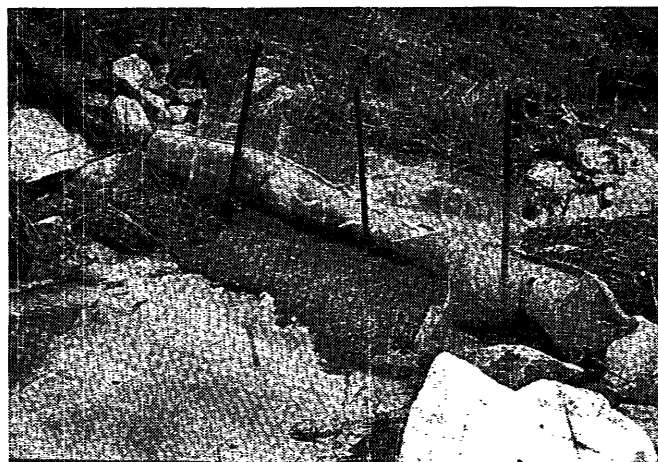
Total Number of Site Complaints and Notices of Violations	258
Total Number of Cases Tried for Oil Violations	32
Total Fines Assessed	\$4,695

### Technical Services Division

The Technical Services Division provides various services and support to WRA and other DNR agencies. The Division is organized into three sections based on the type of service provided. The laboratory services section maintains capability for a wide range of laboratory work including chemical, physical and bacteriological analyses of water, wastewater, oil, sediments and aquatic life. During 1985 this section moved from the Tawes Natural Resources Complex to the EPA regional laboratory in Annapolis.

Another section of the Technical Services Division is the surveying and drafting team. Surveys are conducted for clarification boundaries for enforcement of various WRA permits and licenses; development of site plans for construction of parks and buildings or for as-built drawings of existing structures; plans for reclamation of surface mining sites; and collection of data for computer models used in flood studies. This group also works closely with the well drilling crew in locating and mapping elevations and distances of monitoring wells.

The well drilling section of the Division is assigned responsibility for drilling of test borings and constructing monitoring, observation and recovery wells. These services are requested by other WRA divisions in connection with monitoring seepage at dams, determining the extent of groundwater contamination, collecting data on soil suitability for building construction, obtaining soil samples and conducting percolation tests. The section's expertise has also been devoted to the investigation of underground leaks from petroleum storage tanks.



Filter fences are one of the most effective ways to control a spill in a small stream. The fence posts, wire mesh, bag sorbent boom used in the construction of this fence are included as standard material in the Administration's spill control trailers.



The Tidewater Administration encompasses the Waterway Improvement Division, the Coastal Resources Division and the Fisheries Division. These three working programs deal with the resources of the Bay and its tributaries, boating, aquatic life and land-water interface.

During FY 85 the fresh water fishery was transferred to the Tidewater Administration, bringing together all fisheries related activities within one agency. It is the responsibility of the Tidewater Administration to manage resource restoration and enhancement projects to restore traditional fishery species of Maryland waters to their previous abundant levels.

## GENERAL DIRECTION PROGRAM

This program is responsible for the overall direction, supervision and coordination within the Administration.

### Administration and Support

Provides administration in all phases of the operation, including budgets, contracts, personnel and purchasing.

### Boards and Commissions Coordinations

Serves as liaison between multi-state efforts to productively manage bays, rivers and other estuaries. All of the boards and commissions affect the Chesapeake Bay or its tributaries and include representatives from states in the drainage basin whose waters flow into Maryland. There are also Boards and Commissions concerned with ocean fishery in Maryland which has a growing economic impact on the State.

### Tidewater Vessels and Facilities

The State vessels under this group, during FY 85 were the AURORA and the FIFTY-FIFTY. They were used for promotion of the Chesapeake Bay and other Maryland waters. Numerous cruises were conducted throughout the year for the benefit of Maryland and its citizens.

The facilities under control of the group include 69 Prince George Street, Cambridge Boat Yard, Matapeake Water Port and the State Pier in Annapolis.

## WATERWAY IMPROVEMENT DIVISION

### Hydrographic Operations

Hydrographic Operations is responsible for hydrographic engineering services in establishing, maintaining, and charting regulatory buoys and aids to navigation, surveying and charting pound nets, oyster seed planting areas and private oyster leases, and breaking ice during the winter for shellfish operations.

Hydrographic Operations responds to requests for the placement of regulatory, navigational, and special buoys in the Chesapeake Bay and its tributaries. The Fisheries Division requested the installation of additional clam, oyster, crab line, dredge line and territorial limit buoys/markers. This office also receives requests from other Waterway Improvement Projects, the DNR Police, the State Health Department, State Parks and counties/municipalities as to the placement of channel markers, shoal/hazard, speed limit, swimming and restricted areas as well as buoys for special projects/events such as Chesapeake Appreciation Days.

A summary of the placement of buoys/markers in FY 1985 follows:

Regulatory	1,292
Aids to Navigation	258
Special	132

Hydrographic Operations performed the following work in regard to surveys, pound net locations and construction of new triangulation stations;

Survey Corners of Private Oysters Leases	1,050
Survey Shell and Seed Plantings	8
Pound Net Location Surveys	30
Construct New Triangulation Stations	18

Twenty-nine private oyster lease charts were updated.

In FY 1985, 26 days were spent in ice-breaking operations to maintain free channel to Smith Island and in other selected harbors throughout Maryland so commercial watermen could continue their winter fishing operations.

### Dredging

The Dredging Program is responsible for State waterway projects involving dredging and protection of harbors and channels that are not maintained by the U.S. Army Corps of Engineers. Activities include development of hydrographic and topographic surveys at proposed channel areas, determining the need for protective structures at project sites, commenting on the design of all State funded dredging/breakwater projects and conducting surveys of previously completed channel dredging sites.

A report was prepared for the Legislative Budget Committees covering the funding of the proposed regional boating centers at West Ocean City, Smallwood State Park and Fort Washington Marina.

During fiscal years 1963 through 1984, 136 projects were completed at a cost of \$8.2 million. In fiscal year 1985, 7 projects were completed, at a total cost of \$358,000.00.

The Dredging Program currently has 33 active projects in various stages of development with an estimated construction value of \$4 million.

### Waterway Grants & Projects Planning

During FY 1985, the Waterway Improvement Division continued planning efforts for two new regional boating facilities West Ocean City and Fort Washington Marina, and commenced planning the expansion of existing boating facilities at Elk Neck and Smallwood State Parks. Construction began for two Calvert County boat ramps, at Solomons and Hallowing Point, along with additional construction projects at Rocky Gap, Deep Creek Lake, and Seneca Creek. Construction projects were completed at the Calvert County Marine Museum, Baltimore City's Hanover Street Bridge Marina, Assateague State Park, and the Seneca Creek State Park boating facilities.

A total of 123 local grants projects with a construction value of \$4 million and 30 State projects with a construction value of \$6.2 million were partially funded or completed during FY 1985. This program also funded 107 debris and derelict boat removal projects during fiscal years 1976-1985 totaling \$3.8 million. Since the inception of this program in 1966, 21.1 million dollars has been spent on projects.

### Marine Services

Marine Services provides general waterway maintenance of channels, harbors, and areas of the Chesapeake Bay not maintained by the U.S. Army Corps of Engineers. Activities include; removal of debris and derelict vessels from the Chesapeake Bay and its tributaries; installation of public-owned facilities such as piers, bulkheads, boat launching ramps and small dredging operations associated with the above projects. Winter activities also include ice-breaking operations.

During FY 1985, nine State vessels were hauled at the Cambridge Terminal railway for general maintenance and repairs.

The marine construction crew completed or began the following dredging projects in FY 85:

#### COMPLETED PROJECTS

Ganays Wharf, Caroline County	1,280 cubic yards
Mollies Leg, Solomons, St. Mary's County	3,230 cubic yards
Somers Cove, Somerset County	1,233 cubic yards
Cambridge Creek, Dorchester County	1,705 cubic yards

#### PROJECTS UNDER CONSTRUCTION

Bivalve Harbor, Dorchester County	23,425 cubic yards
-----------------------------------	--------------------

The construction crew completed the stone rip rap at Ganays, Caroline county; repaired the concrete block jetty at Kent Island; completed the marsh creation project at Somers Cover, Somerset County, constructed a timber bulkhead at Bivalve, Dorchester County; drove test piling at Janes Island State Part, Somerset County, Trenton Street Marina, Dorchester County, and Bivalve Marina, Wicomico County.

### COASTAL RESOURCES DIVISION

The Coastal Resources Division coordinates Maryland's Coastal Zone Management Program (CZMP). The Division uses federal funds to provide financial assistance to local governments and State agencies for coastal management and to improve the data base for better decision making. It ensures that State and local projects take into consideration preservation and protection of coastal resources.

The CZMP is dependent upon existing State laws and regulations of the State's sixteen coastal counties and the City of Baltimore. These laws provide the legal and administrative bases for activities in the coastal zone. Through signed agreements the jurisdictions and the six departments concerned with coastal zone management--Agriculture, Economic and Community Development, Health and Mental Hygiene, Natural Resources, State Planning and Transportation, have agreed to carry out the goals of Maryland's Coastal Zone Management Program.

#### Direction and Coordination

This group coordinates coastal resources management efforts and negotiates Memoranda of Understanding, which provide the framework for coordination.

Fiscal management and budget activities, as well as, the public participation section are in this unit. The latter is responsible for informing the public by special publications, display on coastal matters, and support for the 100 plus members of the Coastal Resources Advisory Committee. Three Coast and Bay Bylines were printed as well as a new booklet "The Coastal Resources Division and Maryland's Coastal Zone Management Program--How the Pieces Fit".

#### Resource Enhancement

This program is concerned with the management of freshwater wetlands; submerged aquatic vegetation; estuarine research and education sites; and shoreline erosion sites which may be stabilized through non-structural methods. The staff is also responsible for undertaking technical research analysis and pilot projects to determine their potential use in managing coastal resources.

The following specific sub-programs, three of which are Chesapeake Bay Initiatives, are part of the Resource Enhancement Program: Non-tidal Wetlands Protection. (Bay Initiative); Submerged Aquatic Vegetation. (Bay Initiative); Non-Structural Shore Erosion Control. (Bay Initiative); Estuarine Sanctuaries Program; Special Investigations.

Non-tidal wetlands protection activities focused upon the creation of a statewide mapping and data base development for non-tidal wetlands. Over 90 National Wetland Inventory maps (all Western Shore Counties) were digitized. Several training and education sessions were held for the benefit of local governments and consultants to assist them with field identification and delineation of non-tidal wetlands. A major conference entitled "Wetlands of the Chesapeake" was co-organized and conducted by Program staff. Conference proceedings will be published and distributed as a major reference for future management of Chesapeake wetlands.

Submerged aquatic vegetation (SAV) management activities focused upon SAV transplanting and propagation experiments. In the Susquehanna Flats area, 50,000 tubers of *Vallisneria americana* (wild celery) were planted in 12 areas and approximately 10,000 sprigs of wild celery were transplanted from a dredge site at Log ponds to Garrett Island. At the University of Maryland's Horn Point facility four 1/8 acre pond sites were renovated and planted with a variety of SAV species to provide nursery stock for future transplanting work. Five SAV test plots were established along the Choptank River to help determine water quality and sediment characteristics needed for SAV seed production and below-substrate overwintering modules. Also, salinity, light, nutrient, and competition experiments were conducted to determine how *Hydrilla verticillata* will compete with other more desirable native SAV species.

Non-structural shore erosion control activities included completion of a major marsh grass installation project at Wye Island to control shore erosion in a low wave energy environment. More than 300 feet of shoreline was protected through the installation of spartina plant (emergent marsh) species within the inter-tidal shore zone at a cost of approximately \$54/foot. Program standards and procedures were also developed to implement a new 50/50 matching grant program for property owners to install marsh grass at appropriate locations.

Estuarine Sanctuaries Program activities centered upon the establishment of federally designated estuarine sanctuary sites for long-term research and education. One site (Monie Bay in Somerset County) has been designated. Other potential sanctuary sites are currently under consideration for federal designation. A management plan has been developed for Monie Bay and a Memorandum of Understanding between the State and the property managers was developed and signed this year.

A Special Investigations project was conducted to determine how Landsat satellite imagery might be used to classify and monitor non-tidal wetlands.

#### Project Evaluation and Environmental Review

The responsibilities of the Project Evaluation and Environmental Review Program fall into three general categories: Project Review, including Federal Consistency determination pursuant to Section 307 of the Federal Coastal Zone Management Act (CZMA); Provision of local technical assistance; and overall coordination activities as dictated through the Coastal Zone Management Program (CZMP) Memoranda of Understanding.

Due to the broad nature of the CZMP, the types of projects reviewed include, erosion control projects; dredge and fill operations, municipal and industrial waste disposal; filling within the 100-year floodplain, shoreline residential development; and transportation projects.

In carrying out these activities, close coordination is maintained with other units of Department of Natural Resources (DNR).



A special aspect of project review activities are those involving a Federal action. The CZMA requires that Federal activities in the coastal zone be consistent, to the extent practicable, with a State's CZMP. Based on the State's review, the appropriate Federal agency must be notified as to project's consistency with the Maryland CZMP.

During the past year the Program reviewed approximately 650 projects, the majority consisting of U.S. Army of Engineers permits and Clearinghouse projects.

Two forms of assistance is provided local governments: (1) financial assistance through annual contractual agreements, and, (2) technical assistance in the review of local plans and projects.

The local contractual agreements ensure active involvement in the CZMP. Financial assistance is provided to enable Counties to undertake activities which incorporate the goals and objectives of the CZMP. In general, the following types of activities have been undertaken: (1) Improvement of procedures in the day to day review of projects from an environmental standpoint; (2) The incorporation of Program objectives into comprehensive plans, zoning, and subdivision ordinances; and (3) Undertaking special projects.

Primary efforts in the next few years will be implementation of the Chesapeake Bay Critical Area Act.

## **Land and Water Activities**

Activities of this project include:

1. Shoreline Improvement Grant Program
2. Outer Continental Shelf
3. Public Access and Planning
4. Recreational Boating

The program also reviews dredging projects and undertakes dredging studies relating to spoil site selection. The program coordinates on project review for all sediment and erosion control studies, and studies and projects involving stormwater management with the water Resources Administration. A variety of special project designs and review that fit into no distinct category such as engineering, marsh creation designs, bridge design, groin and shore erosion design, construction, etc., have been undertaken this year.

The Shoreline Improvement Grant Program, created by the General Assembly in 1984 as part of the Chesapeake Bay Initiatives, obligated \$2,000,000 in 1985 for projects which will improve the shoreline of the Chesapeake Bay. The funds are used for grants of up to 75% of the cost of projects undertaken by local governments which border the Bay and its tributaries. Funded projects must accomplish one or more of the following objectives: (1) restoration or improvement of existing public waterfront property, (2) abatement or eroding shoreline, (3) establishment or creation of environments or habitats for wildlife or aquatic resources, (4) development of facilities for public access to the shoreline for recreational and educational purposes, (5) restoration of waterways and streams, and (6) debris removal. Fifteen diverse projects were selected from around the Bay totaling the authorized amount of \$2,000,000.

The Recreational Boating Program coordinates boating activities for the Department of Natural Resources and is responsible, along with other agencies in the Department, for the development of policies for the boating industry. This Program also staffs the Boat Act Advisory Committee which provides review and comment to the Secretary of Natural Resources on safety standards for boaters and speed limits. This Program has worked on a number of studies in 1985, including the Sassafras River Project, the production of an environmental guide to acceptable marina siting, data compila-

tion for the Patuxent River watershed, and the formation of a project to digitize the Patuxent River watershed quad-maps. This group also coordinates, compiles, and is the editorial staff for the State's Guide to Cruising Maryland Waters to be published in Spring, 1986.

The Public Access and Planning Program coordinates activities relating to the shorefront access and access planning for the Department. Policies for access are being developed in response to passage of the Chesapeake Bay Critical Area Protection Act. In addition, the Bay Access Park Study is being updated.

The Outer Continental Shelf (OCS)/Coastal Energy Impact Program (CEIP) section administers Federal Coastal energy impact funds which assist State and local governments in dealing with fiscal, economic, environmental and recreational impacts of a coastal energy facility. In 1985, DNR's position was prepared on EPA's proposed regulations for ocean incineration of toxic wastes.

During FY 1985, CEIP funds were used to develop the Baltimore Harbor Enhancement Plan, Flag Ponds Master Plan, and public access piers for fishing and boat dockage at Hull and Boston Streets in Baltimore Harbor.

## **Monitoring and Data Management**

This Program is responsible for implementing two of the Chesapeake Bay Initiatives--the Regional Data Center and Living Resources Monitoring.

The Chesapeake Bay Program Computer Center is located at the EPA Annapolis Liaison Office. It is funded by Maryland, Virginia, Pennsylvania and the U.S. Environmental Protection Agency. In addition to funding, Maryland provides data as well as analysis of historic Chesapeake Bay data.

The Living Resources Monitoring Program objectives are: (1) To collect information concerning the abundance and habitat quality of economically important living resources; (2) To provide information necessary to determine the effectiveness of pollution control activities based upon the living resources of Chesapeake Bay; (3) To determine habitat quality factors affecting the reproductive success of economically important living resources; (4) To store all data on the State/Federal regional data base (VAX 11/780) and make data available to other users.

To meet these objectives, data bases for fisheries have been coordinated so that field monitoring data can be entered into the computer. Information has been gathered on striped bass adult populations, striped bass early life history, and Young of the Year Index. Habitat data has been gathered for important anadromous fish spawning areas in Upper Chesapeake Bay and the Choptank River and information on water quality, larval conditions and climatic conditions has been accumulated.

## **Fisheries Division**

The Chesapeake Bay is one of the most productive estuaries in the world. Maryland's portion of the bay has historically been a major producer of oysters, blue crabs and soft shell clams. It is also the spawning ground for the majority of the east coast's stock of striped bass.

The Tidal Fisheries Division with six administrative programs has a broad range of responsibilities. It monitors species abundance and the environmental conditions affecting their populations. It also regulates harvesting activities and administers programs to increase production of oysters and fish. To achieve these goals it conducts research and education programs to ensure that available funds are spent in the most effective manner.

The goal is to maintain optimum condition of fisheries stocks for purposes of harvest and ecological balance, and to encourage the greatest return for the citizens of Maryland.



## Special Projects

This group includes programs and projects that interact with other Fisheries Division Programs and agencies.

Projects include sportfish enhancement and habitat development and a stream classification system that is directed to improving fisheries potential. The Maryland Youth Conservation Corps provides opportunities for youth in natural resources conservation projects. Commercial and sportfishing catch statistics and economics, and habitat investigations are underway.

## Fisheries Statistics

At 91,018,855 pounds, total commercial finfish and shellfish landings for calendar year 1984 were nearly identical to those for 1983 (92,038,803). Total dockside value (dollars paid to fishermen) rose from \$52,179,670 to \$54,526,804

Analysis of the 1983 Maryland Saltwater Sportfishing Survey was completed. A total of 15.7 million pounds of fish was harvested by recreational saltwater sportfishermen in 1983 compared to 9.8 million pounds in 1980 (the last previous year in which the survey was conducted). Bluefish comprised the largest share of the marine recreational fishery in 1983 at 8.9 million pounds. This compares to 6.4 million pounds in 1980. The full report will be published during the early part of FY 86.

## Stream Classification

Through Maryland's water use classification system all waterways are assigned to one of four classes. Each class is intended to protect a general use, such as shellfish harvesting or self-sustaining trout populations. The classification of a waterway dictates, in part, the conditions of discharge permits, waterway construction permits, and other regulated activities.

The concept of water use classification is being reexamined with the goal of incorporating the concepts embodied in the 1984 Chesapeake Bay Initiatives. Specifically, the project is examining ways to enhance the ability of the regulatory system to protect existing areas supporting important living resources as well as those waters which will improve in the future as a result of the Chesapeake Bay Initiatives.

Projects are developed to mitigate adverse impacts and enhance productivity of waterways for fisheries potentials. Anadromous fish streams and certain sportfish species have benefited through technical assistance provided by project staff.

## Anadromous Fish Stream Studies

Cooperative studies have been undertaken with other agencies to assess the effect of acid precipitation on streams. Stream pH and other water quality changes are being assessed in anadromous fish spawning streams.

The effect of precipitation and acid deposition on early life stages is being assessed and remedial stream management techniques investigated to enhance anadromous fish spawning.

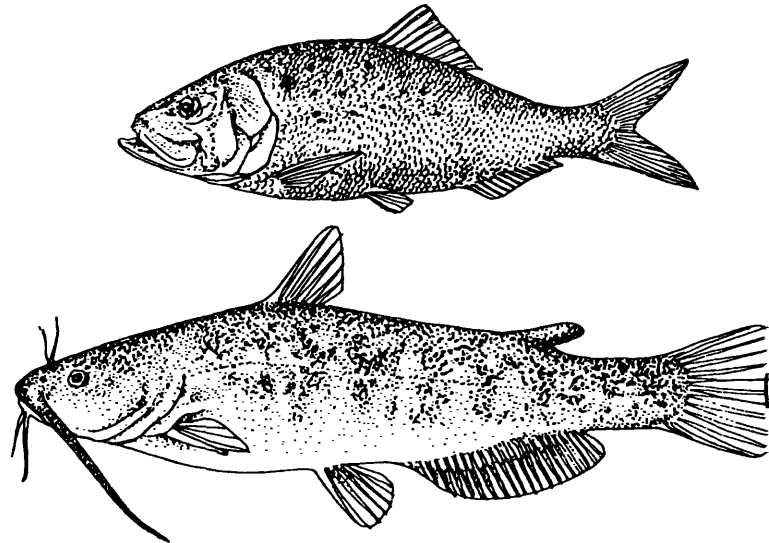
Stream barriers are being inventoried and assessed for anadromous fish passage, stream classification, and possible mitigation.

## Save Our Streams

Since its inception in 1970 this program has attempted to directly involve the public in resource preservation and enhancement activities. The primary focus has been to minimize the effects of water quality factors upon living resources. People are taught how to identify situations where aquatic habitat is damaged. Activities are designed to show how to improve and protect the aquatic habitats supporting important living resources by working through

various local, state, and federal agencies. While most activities were carried out through Save Our Streams, a total of 94 organizations have received assistance. Over the past 15 years more than 10,000 people have participated in the program.

Hundreds of citizens have used the knowledge provided through this project to reduce mud pollution from thousands of construction sites. The project conducted 60 intensive studies of aquatic habitat quality throughout the state in FY 1985.



## Habitat Investigation

Investigations into the long term problems of diminished reproductivity and viability on fisheries due to habitat degradation have been the main focus of the project. These investigations dealt not only with the preeminent species of the Bay such as striped bass, oysters, and clams, but also with fish species of lesser notoriety but equal importance in the Bay's ecosystem such as menhaden and bullheads.

The most intensive survey undertaken this year was the collection, examination, and evaluation of striped bass eggs and larvae from the Choptank River. Developmental, environmental, nutritive, pathological, and virological aspects were documented. Environmental parameters were monitored for comparison with the larval collections and evaluations.

A similar survey last year revealed IPN virus, known to cause springtime mortalities of Atlantic menhaden, is present in sperm samples from some adult striped bass and in a percentage of larval striped bass collected from the Choptank River. This virus was specifically monitored due to considerable circumstantial evidence indicating it might play a role in the survival of larval striped bass in the laboratory due to the difficulty of keeping striped bass larvae alive for a series of infectivity experiments. A cause and effect relationship between the virus and larval survival was not able to be demonstrated. Larval fish were examined histologically for developmental changes which would compromise the organism's ability to survive. Significant changes in both liver and muscle tissue were discovered that impair survival. Possible contamination of fish tissue has been monitored by cooperative programs with the Department of Health and Mental Hygiene — Office of Environmental Programs. Speculation by other states that bluefish may be contaminated by PCB's is currently being evaluated by obtaining and processing this species to yield biological data and to produce standard edible portions which are analyzed for contaminants. Pre-determined numbers of selected size groups are processed and analyzed to determine if a problem exists within a specific age class.

Investigations into suspected contamination of some species of fish in urbanized areas were begun last year and continued this fiscal year again as a cooperative investigation with the DHMH-OEP.

The sampling of young of the year menhaden documented the occurrence of an unusual fungus disease affecting the young menhaden. This fungus has been documented in North Carolina and Virginia, occasionally in very high quantities. The lower Eastern Shore tributaries, the Potomac River, and upper Bay tributaries are sampled throughout the summer while the young menhaden inhabit these nursery areas.

The shellfish project laboratory capability monitors the presence and intensity of both infectious and non-infectious diseases in oysters, hard-shell clams, and soft-shell clams. Four hundred major oyster bars and clamming areas are sampled twice each year.

## **Recreational and Commercial Fisheries Enhancement**

The Department of Natural Resources Recreational Fisheries Program was organized early FY 1985 to implement projects supported by the Chesapeake Bay Sport Fishing License. The primary goal of the program is to improve the quality of sport fishing on the Chesapeake Bay and its tributaries. This goal will be achieved through replenishment and conservation of sport fish stocks, enhancement of recreational fishing and needed research on tidal fishery resources.

In addition, a tidewater sport fishing survey, conducted in cooperation with the National Marine Fisheries Service, was begun in early 1985 to continue through December. The survey assesses the impact upon bay sport fishing, by the new Chesapeake Bay Sport Fishing License, the recently imposed striped bass moratorium and the new promotional Catch a Fortune Fishing Contest.

Personnel of the Sport Fishing Information-Tournament Office prepared displays and staffed exhibits for five major outdoor-oriented shows that attracted 563,000 patrons. In addition, seminars, small shows and outdoor writers association programs were assisted and administrative help given the Maryland State Bass Federation Tournament and other similar events.

The Sport Fishing Information-Tournament Office prepared a comprehensive advertising campaign for radio, television and newspapers in the mid-Atlantic States. Posters and flyers were designed for the promotion of the contest. The office's staff conducted press conferences to inform the public of the new contest.

The Maryland Sport Fishing Information-Tournament Office distributes brochures, pamphlets, information sheets and booklets containing commercial laws and regulations for finfish, oysters and crabs.

Participation in the Maryland Sport Fishing Tournament by residents and tourists has been excellent even though the striped bass moratorium has been in effect. For the 20th year over 4,000 fresh water and salt water citations, patches and date bars have been issued.

The Fisheries Technology and Advisory Services publishes the Tidewater Fisheries News on a monthly basis and writes and distributes materials on particular issues when necessary. The Advisory Service also conducts conferences, workshops and seminars for the seafood and marina industry. Many special projects in support of other Department of Natural Resources' activities were carried out by this unit.

## **Maryland Conservation Corps**

In its second summer of operation, the Maryland Conservation Corps employed six hundred and forty-five disadvantaged youths, and ninety-six advantaged youths through the Award of Excellence program which required that the candidates for the program have above average grades, a real interest in the natural resources field as a career and be willing to work at minimum wage. In addition, eighty-five adults were hired as crew chiefs, field coordinators and naturalists.

The participants worked at fifty-five Bay related work sites throughout the state on projects that included soil erosion repair, stream clearing, debris removal, and other conservation projects.

A new job readiness component was instituted into the program providing the participants with information on how to get and keep a job.

Seven naturalists were hired this year to provide environmental education programs on site to all participants. In conjunction with that program all the participants in the program spent a day on the Chesapeake Bay on Charter boats learning more about the Bay, fishing and learning to appreciate it. For many this was the first experience they had had on a boat or the Bay.

## **Watermen's Compensation**

The Watermen's Compensation Program (WCP) was developed to assist watermen and charter boat captains who were dependent on striped bass for all or part of their income. The program provided employment opportunities designed to allow captains to offset the loss of income due to the striped bass harvest moratorium.

The program started in January 1985 and has provided some work for over 130 charter boat and commercial captains. Work has included striped bass stock assessment; hatchery refurbishment; striped bass brood stock collection; weakfish stock assessment; white perch studies; a "Day on the Bay" program for disadvantaged youth; and the "Catch-A-Fortune" sportfishing contest tagging effort.

The program is scheduled to run at least until 30 June 1986 with a budget of \$1.5 million for the 18 month period.

## **SHELLFISH**

### **Soft Clams**

In 1984 Maryland's soft-shell clam landings declined to just under 80,000 bushels due to generally low population levels, an August Health Department closure due to high bacterial counts, and a severe summer die-off of market sized clams in most major producing areas. These problems resulted in part from abnormally low summer salinity (3-5 ppt below average). Harvesting centered in the Upper Bay.

During the year soft-shell clammers began to harvest an abundant population of razor clams for crab pot bait and as a market substitute for the extremely scarce soft clams. This fishery seems to have ample promise to continue.

In 1984 scientists at the Oxford Laboratory (National Marine Fisheries Service) identified a virus disease (Neoplasia) in soft clams. An historic review of preserved clam samples indicated that this disease was not present in the Chesapeake Bay before 1978, and since then only appearing in pockets of low prevalence until 1984. In 1984 levels of about 50% disease prevalence were found at Swan Point and Poplar Island. Major clam producing areas will be monitored in 1985 for disease presence.

In a further effort to better utilize shellfish growing areas, 2,300 acres of unproductive but chartered natural oyster bars in St. Mary's and Queen Anne's Counties was redesignated by the Department as barren bottom and opened to soft-shell clamming.

## Hard Clams

During 1984 Maryland's hard clam landings totaled 39,250 pounds of meats, a substantial decline from the 80,000 pounds landed in 1981. This decreased harvest resulted from a decline in harvest pressure and reduced market demand for large chowder clams.

## Oyster Project

The oyster harvest for the 1984/85 season was 1.02 million bushels. This figure represents a slight decline from the harvest of the previous year. The continued low harvest is attributed primarily to poor reproduction during the last three oyster setting seasons and to the impact of the oyster disease MSX throughout the bay three years ago.

The disease MSX, while it does not appear to be causing extensive mortalities at this time, is still present in the higher salinity Maryland waters and with a continued long term high salinity condition it is anticipated that MSX will cause some additional oyster mortalities this year.

A poor spat set, with only two areas in the Chesapeake Bay system having sufficient counts of oyster seed to make it economically worthwhile to more occurred this year. These two areas were the Little Choptank River and the seed areas at the mouth of the Potomac River. The only significant spat set that took place in the Chesapeake Bay occurred in lower Tangier Sound and Pocomoke Sound. It is anticipated that the 1985/86 harvest will be below average.

During the spring of 1985 the annual shellfish propagation program seed and shell planting operations were completed. A total of 137,000 bushels of seed, including seed and polluted oysters was transplanted. More fresh shell was moved this year than during previous years, with a final figure of 178,705 bushels of shell being moved.

The fresh shell operation was conducted differently than in past years, with a cost saving of over \$27,000, by use of State personnel and equipment.

The dredge shell program was larger this year than last year with slightly over 5 million bushels of dredged shells being planted. Chesapeake Bay Initiatives monies provided essential funding to help cover the costs of these resource restoration programs.

The oyster hatchery program at the Department's Deal Island facility was enchanted when the old building was torn down and a new block structure erected.

The publication of the Oyster White Paper titled "Current Status of Maryland Oyster Resources" was a major accomplishment. The paper is being used as a catalyst with which to stimulate discussions and develop initiatives that will help revitalize the declining oyster industry in Maryland.

The 1985 shell dredging season was the final year of the current five year contract to dredge, transport and plant dredged shells for oyster propagation purposes. This contract was advertised and rebid.

## FISHERIES ENVIRONMENTAL REVIEW

The Environmental Review Program reviews projects forwarded by Federal, State and other agencies for determination of their potential effects on aquatic habitat. Comments and recommendations are made to the project proposers and permit-issuing agencies.

Projects review include applications for wetland and watershed permits, environmental impact statements, proposed regulations, surface mining permits and water quality certificates. Additionally, project staff reviews proposals for study and monitoring dealing with subjects such as acid rain and stream channelization.

Project staff take part in inter-agency mosquito control work, inter-agency insecticide committee work, and other coordinative functions.

The Critical Area Law of 1984 has generated additional workload totaling 1,019 individual cases in FY 1985.

## ESTUARINE FISHERIES

Basic data on the status of finfish populations and fluctuations in their abundance are collected and analyzed by this program. Decisions on fisheries regulation, habitat protection, and long range management policy are based on these data. The goal is to perpetuate the finfish resources in fishable abundance throughout their geographic range and generate the greatest economic and social benefits from their harvest and utilization.

The annual estuarine recruitment survey has monitored reproductive success of tidewater fishes for 28 consecutive years. Continued declines in reproductive success of the anadromous species, white perch, striped bass, herrings and shad, were documented in previous years. Although striped bass reproduction has slightly improved, it is still below the long term average and documentation of this was a factor in the decision to ban the catching of striped bass in Maryland, beginning in 1985.

A five year investigation of striped bass and white perch reproduction in the Choptank River has shown highly variable annual survival. In some years mortality of early life stages is associated with high rainfall and river flow.

Striped bass culture activities at the Joseph H. Manning Fish Hatchery have been successful in providing eggs and fry for research and fingerlings for stocking. During the spring of 1985, approximately 10 million fry were distributed to state and federal hatcheries. Fingerlings were to be marked and released into the Chesapeake Bay system and their ultimate survival will be assessed.

The Interstate Striped Bass Management Plan was amended to recommend a 55% reduction in harvest in all coastal states. Compliance with this recommendation became mandatory upon passage of P.L. 98-613, the Atlantic Striped Bass Conservation Act, which required that states implemented the plan or face a federal closure of their fishery. Data from the juvenile surveys, adult stock assessment, landings, and mathematical modeling of the population indicated that striped bass stocks were depressed and that recovery of the stocks would be more rapid if fishing mortality were drastically reduced. Maryland took the step of imposing a total fishing closure.

Monitoring of the winter resident stocks of striped bass showed a continued reduction in the number of year classes in the population as a result of high fishing pressure on week year classes.

The spring spawning stock monitoring in the C and D Canal, Upper Bay, and Choptank River found a lack of females in the spawning stock. This was a continuation of the trend of the past three years. Monitoring of the adult striped bass population will continue to assess the effects of the moratorium.

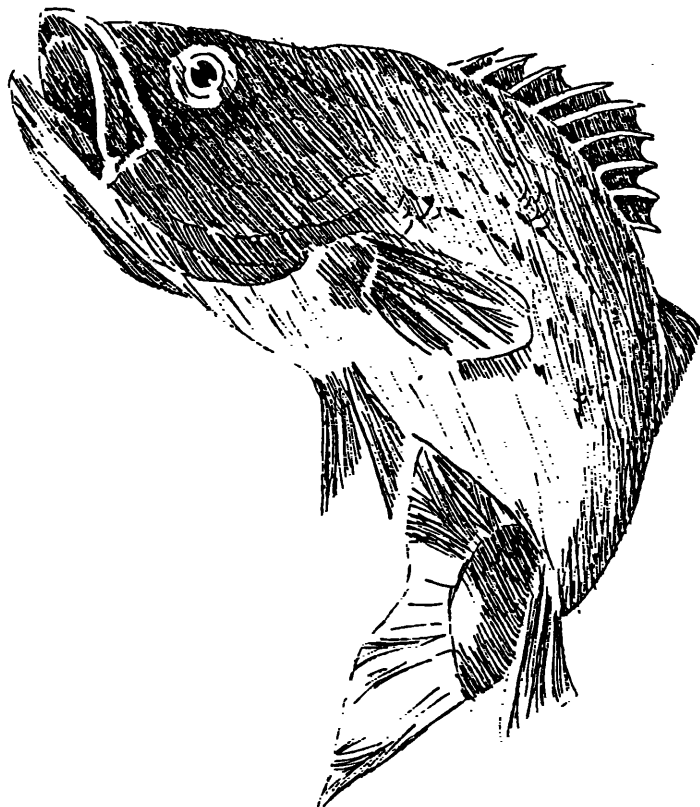
Two studies of striped bass by-catch in a directed white perch fishing effort showed that the gill net fishery cannot distinguish between these two species. The two species cohabit areas at the same time and are almost equally susceptible to capture by gill net.

The blue crab stock monitoring project was reduced during 1984 due to manpower needs on other projects. The project is to be

expanded in the following years as part of a joint National Marine Fisheries Service — Maryland — Virginia stock assessment effort.

In the coastal bays the trawl and seine surveys documented a continuing decline in bluefish young-of-year but increases in summer flounder and weakfish.

The fisheries management plans project was created by the Fisheries Resources Bay Initiative E-4, one of the 34 Chesapeake Bay restoration initiatives. The project's objective is to develop comprehensive species-specific plans for rational management of Maryland tidewater fish resources. The project first establishes planning criteria relevant to the Chesapeake Bay System, Maryland constituency, and the state's regulatory authorities and processes. To date, five species plans are being worked on.



Streams in the lower Choptank River were surveyed in the summer and fall to document potential barriers to upstream movement of spring-spawning fish. In the spring fish surveys were made of 13 streams and the mainstem. White and yellow perch were found in seven, herring were found in two and striped bass were found in the mainstem.

The American shad project again documented very low levels of adult shad in the Susquehanna River. The 1984 population was estimated at 3,814 fish which is a 47% decrease from the 1983 estimate. In the spawning stock, most males are three and four years old and females are five and six. The 1984 estimated by-catch of American and hickory shad by Susquehanna sport fisherman increased from last year. No juvenile American or hickory shad were captured in the trawl and seine surveys of the nursery area. No down-migrating juveniles, from stockings above Conowingo Dam, were captured in November.

## FRESHWATER FISHERIES

### Coldwater Fisheries

The Coldwater Fisheries Project is responsible for the proper management of the coldwater fisheries resources of the State, including brook, brown, and rainbow trout. Project personnel attempt to provide the public with a maximum number of trout fishing opportunities. The Coldwater staff continues to investigate new ways to provide additional trout fishing opportunities as existing economic and environmental limitations allow. At the same time, the project personnel strive to preserve and enhance the naturally reproducing trout population of the State.

### Field Activities

The field staff of the Coldwater Project is responsible for studies of stream water quality, habitat and population dynamics as they relate to trout species. During FY '85 the field staff conducted stream studies, performed environmental responsibilities, investigated fish kills, and participated in the spring trout stocking program.

The majority of field studies were conducted under Federal Aid Project F-36-R, "Survey, Inventory and Management of Maryland's Coldwater Resources". Work under this project consisted of biological studies of selected watersheds, angler surveys, and continual monitoring of existing natural trout populations.

Stream work conducted during the final segment of the project included intensive studies of Beaver Creek, Gunpowder River, Savage River, Patuxent River, Piney Run, Owens Creek, Hunting Creek, Paint Branch and four brook trout streams in Baltimore County. Naturally reproducing trout populations were documented in 130 streams.

### Warmwater Fisheries

The Warmwater Fisheries Section manages 10 gamefish, 15 panfish, and 65 rough and forage fish species. Gamefish species include:

- largemouth bass
- smallmouth bass
- walleye
- northern pike
- chain pickerel
- striped bass
- striped bass hybrids
- yellow perch
- tiger muskie
- channel catfish

The walleye stocking program in Deep Creek Lake has resulted in a abundant walleye population which is now reproducing naturally. This has accounted for the high walleye population now present. Because of the success of natural reproduction, it is no longer necessary to stock walleye in Deep Creek Lake.

Walleye stocked for the past several years in the Potomac River between Williamsport and Harpers Ferry are producing a modest fishery as far downstream as Washington, D.C.

Fishing for smallmouth bass and largemouth bass continue to be good in the spring of 1985. A strong year class that entered the fishery in 1983 continues to furnish good fishing.

It was noted in the FY 1984 Annual Report the increasing popularity of black bass tournaments with numerous tournaments being held at Deep Creek Lake, the Potomac River, and the Upper Chesapeake Bay Area. This trend continued in FY 1985.

The Hatchery Program is in the process of meeting all of the Freshwater Fisheries management requirements for fish. Striped bass and striped bass hybrids, produced in the Joseph Manning Hatchery, were stocked in five impoundments. Growth and relative condition of the Piney Run striped bass is good during their first three years of life, but growth slows, and conditions worsen as they become older. Growth and condition of Liberty Reservoir strippers has been excellent for all age classes.

Walleye were stocked in the Potomac River, Rocky Gorge Reservoir, Prettyboy Reservoir, Loch Raven Reservoir, and Savage River Reservoir.

Smallmouth bass were stocked in two river systems. Largemouth bass were stocked in eight rivers, 20 impoundments, and 148 farm ponds. Channel catfish were stocked in 15 rodeo ponds.

The following numbers of warmwater fish species produced in the Manning Hatchery, Lewistown, and Unicorn facilities were stocked into selected waters of Maryland during FY 1985.

SPECIES	SIZE	NUMBERS/POUNDS
Largemouth bass	Fry	230,504 Fish
Largemouth bass	Fingerlings	3,646 Fish
Smallmouth bass	Fingerlings	14,152 Fish
Bluegill	Fingerlings	159,750 Fish
Walleye	Fry	3,739,000 Fish
Walleye	Fingerlings	28,335 Fish
Striped bass	Fingerlings	127,018 Fish
Striped bass hybrids	Fingerlings	90,420 Fish
Fathead minnow	Fingerlings	130,000 Fish
Redear sunfish	Fingerlings	41,600 Fish
Golden shiner	Fingerlings	11,000 Fish
Channel catfish	Adult	6,600 lbs.

An intensive effort started in FY 1981 to monitor and evaluate the results of stocking largemouth bass in Upper Chesapeake Bay was continued. Data collected in FY 1985 indicate that the numbers of young-of-the-year bass were significantly greater in areas stocked than in areas not stocked.

Studies to measure and evaluate basic physical and chemical characteristics of Maryland lakes and ponds for species suitability and their capability to sustain fish populations; and to determine species composition, relative abundance, food habits and age and growth; to produce information necessary in preparing management plans for each water surveyed were continued. Surveys were conducted on the following impoundments:

- Bloomington Lake
- Rocky Gorge Reservoir
- Liberty Reservoir
- Deep Creek Lake

To date 24 lake survey and fishery management plans have been completed.

A statewide survey initiated during 1980 to provide information on physical-chemical characteristics, species composition, distribution, relative abundance of benthic macroinvertebrates and fish in various river basins was continued in FY 1985. Streams surveyed were Town Creek, Patapsco River, Monocacy River, Nanticoke River, and Wicomico River. To date, final reports and management plans have been completed for seven rivers and streams.

Warmwater Fisheries personnel assisted the Estuarine Fisheries Program in conducting stripe bass and shad surveys and the hatchery Program in stocking trout and rearing and stocking of warmwater species.

## FINFISH HATCHERIES

### Coldwater Hatchery Project

During Fiscal Year 1985 hatchery personnel produced and stocked record numbers and weight of trout. Public trout fishing was enhanced by the release of 228,871 catchable size (9-15 plus inches) trout weighing a total 121,241 pounds (60.6 tons) into 42 streams and 28 impoundments. The combined production of the Albert H. Powell Hatchery and Cushwa Rearing Station was 151,475 trout (84,511 pounds). The Bear Creek Rearing Station produced 77,396 trout (36,730 pounds).

### Warmwater Hatchery Project

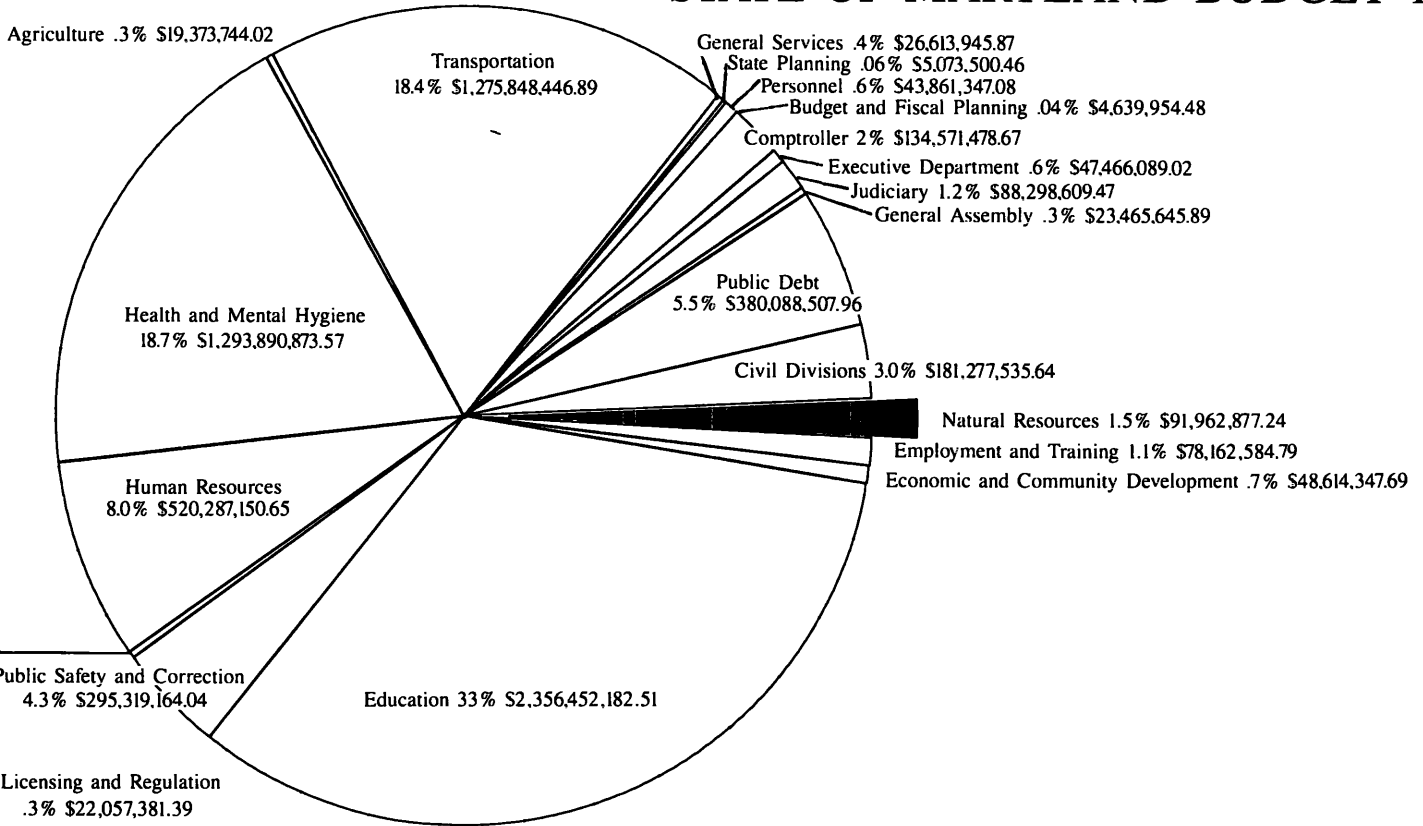
A significant and productive agreement with the U.S. Fish and Wildlife Service was signed. Under this agreement Chesapeake striped bass fry produced in Maryland will be reared to stocking size in several U.S. Fish and Wildlife Service hatcheries located throughout the southeast. When these fish reach desirable stocking size they will be returned to Maryland to be stocked in the Chesapeake to revitalize the parent stocks necessary for the fishery to recover. This year approximately eleven million striped bass fry were distributed to these federal hatcheries for grow out and return.

The Patuxent River received one hundred thousand striped bass fingerlings. This stocking is the fourth year of production of a five-year Patuxent River Fisheries revitalization program.

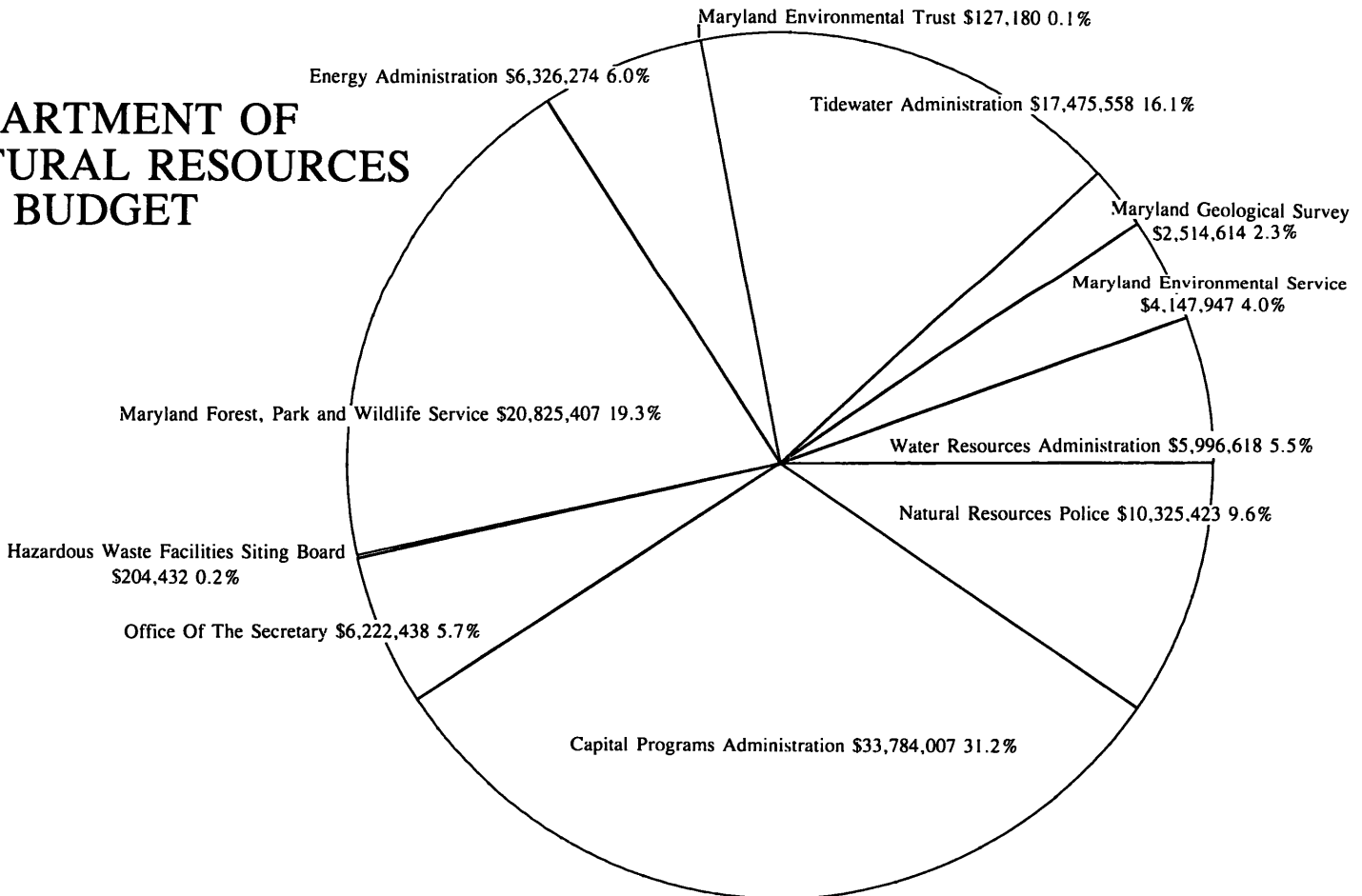
The hatchery program supported the inland management program by producing in the Joseph Manning Hatchery, Unicorn and Lewistown culture areas the following species for stocking:

Largemouth bass	252,543
Bluegill	173,053
Redear Sunfish	44,447
Walleye	3,789,000
Smallmouth bass	5,500
forage species (goldfish, golden shiner, fathead minnow)	500,000

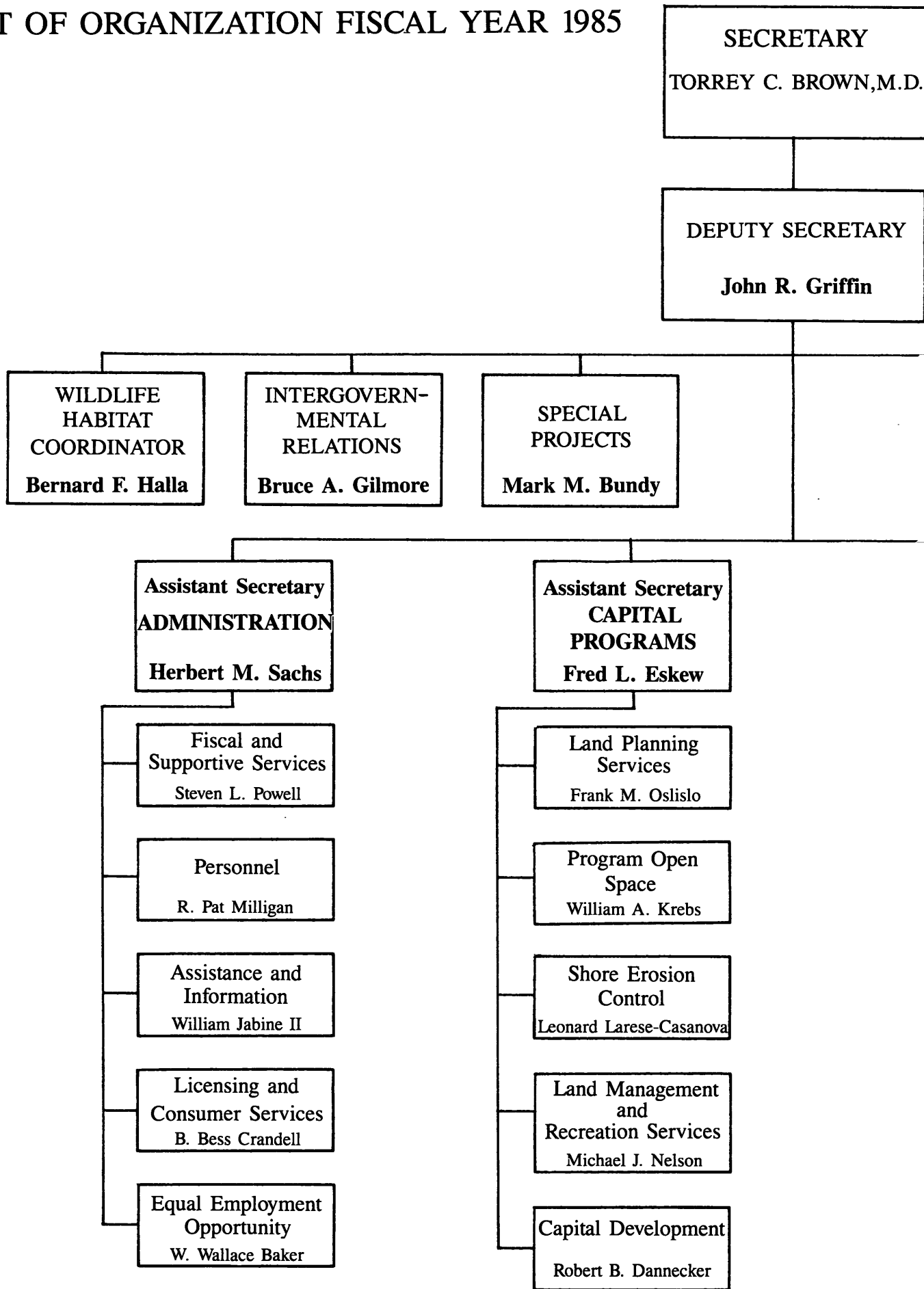
# STATE OF MARYLAND BUDGET 1985

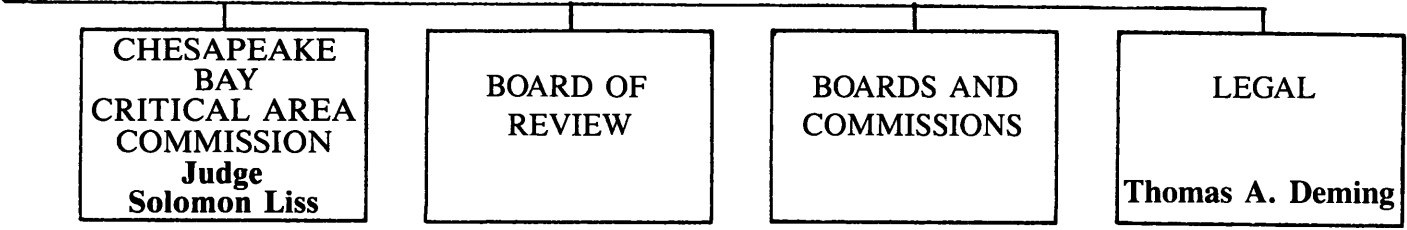


## DEPARTMENT OF NATURAL RESOURCES 1985 BUDGET



# CHART OF ORGANIZATION FISCAL YEAR 1985





Assistant Secretary  
NATURAL RESOURCES  
Thomas C. Andrews

Water Resources Administration  
James W. Peck

Maryland Geological Survey  
Dr. Kenneth N. Weaver

Hazardous Waste Facilities Siting Board

Energy Administration  
Paul O. Massicot

Maryland Environmental Service  
John D. Seyffert

Assistant Secretary  
NATURAL RESOURCES  
Verna E. Harrison

Tidewater Administration  
Lee E. Zeni

Forest, Park, and Wildlife Service  
Donald E. MacLauchlan

Natural Resources Police  
Roy W. Rafter

Maryland Environmental Trust  
Robert L. Beckett





“Our lands were originally very good, but use and abuse have made them quite otherwise.....”

George Washington

HC  
107  
.M3  
M263A  
MDNR

Maryland. Dept of Natural Resources.  
Annual activities report.



Maryland Department of Natural Resources  
Tawes State Office Building  
Annapolis, Maryland 21401