

JOINT LEGISLATIVE
AUDIT & REVIEW
COMMISSION

THE
VIRGINIA
GENERAL
ASSEMBLY

PROGRAM EVALUATION
MARINE RESOURCE
MANAGEMENT
PROGRAMS IN VIRGINIA

June 28, 1977

MEMBERS OF THE
JOINT LEGISLATIVE AUDIT & REVIEW COMMISSION

Chairman
Delegate Edward E. Lane

Vice Chairman
Senator Edward E. Willey

Senator Hunter B. Andrews
Senator Herbert H. Bateman
Delegate Vincent F. Callahan, Jr.
Senator Omer L. Hirst
Delegate L. Cleaves Manning
Delegate Theodore V. Morrison, Jr.
Delegate Lacey E. Putney
Delegate Ford C. Quillen
Delegate James M. Thomson
Charles K. Tribble, Auditor of Public Accounts

Director
Ray D. Pethtel

*STAFF OF THE JLARC
FOR THIS REPORT*

Philip A. Leone, Project Director
Mark S. Fleming
Timothy M. Garner
Richard E. Hickman, Jr.
Peggy S. Mobley

SUMMARY
MARINE RESOURCE MANAGEMENT

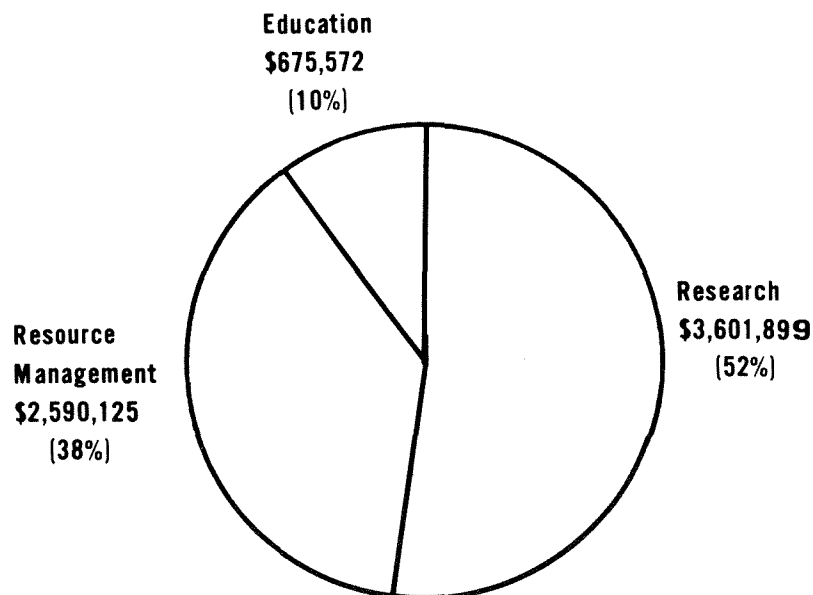
Virginia has historically ranked among the leading states in commercial fishing. In 1975, over 520 million pounds of seafood worth \$43 million were landed to place Virginia among the top ten states in volume of landings and in catch value. Commercial and recreational fishing, seafood processing, and related activities employ some 100,000 persons and contribute over \$250 million to the State economy each year. In addition to their economic significance, Virginia's marine resources--shorelines, coastal waters, wetlands, and fisheries--are a priceless heritage to be protected for the use and enjoyment of future generations.

In recent years, however, natural disasters, overfishing, and effects of urban growth have threatened Virginia's marine resources. The oyster fishery has been devastated by the disease MSX (*Minchinia Nelsoni*), Tropical Storm Agnes, and Kepone pollution. Economically valuable fish such as the menhaden and surf clam are threatened with depletion because of overfishing. About 60 percent of the State's population and half of its industry are presently located in the Tidewater region. Anticipated urban growth patterns suggest that the increasing need for new residential and industrial sites and waste disposal facilities in this region may pose a serious threat to marine resources. As this development continues, the Commonwealth will inevitably face difficult choices regarding the use of coastal waters and shore lands.

Since 1890, the General Assembly has established a variety of programs to preserve and protect marine resources. Over \$6.7 million was appropriated for resource management, research, and education for fiscal year 1976 (Figure S-1).

Figure S-1

ESTIMATED DISTRIBUTION OF FUNDS FOR MARINE RESOURCE
MANAGEMENT PROGRAMS
(Fiscal Year 1975-76)



The legislation for existing programs has been developed in response to specific problems and issues and is very detailed. The statutory framework required for a coordinated approach to the planning and management of marine resources is lacking. As a result, programs are fragmented, narrow in scope, and lack flexibility to respond to changing conditions. To achieve a balance between resource protection and economic growth, a comprehensive plan for marine resource management is needed. Such a plan must identify priorities in the use and preservation of marine fisheries, coastal waters, and shorelines in relation to regional and State economic development needs. At the same time, agencies should be provided sufficient flexibility to address marine problems as they emerge.

MANAGING MARINE RESOURCES

The purpose of marine resource management as outlined in the *Code of Virginia* is to promote the general welfare of the seafood industry and to protect and conserve marine resources. Marine resource programs have traditionally focused on regulating the fisheries, but their effectiveness has been limited, as shown by declining production and employment trends in the oyster industry and the possible depletion of other fish stocks. More recently, marine resource efforts have been expanded to include other concerns such as wetlands, shorelines, and coastal waters.

The Oyster Fishery (pp. 10-21)

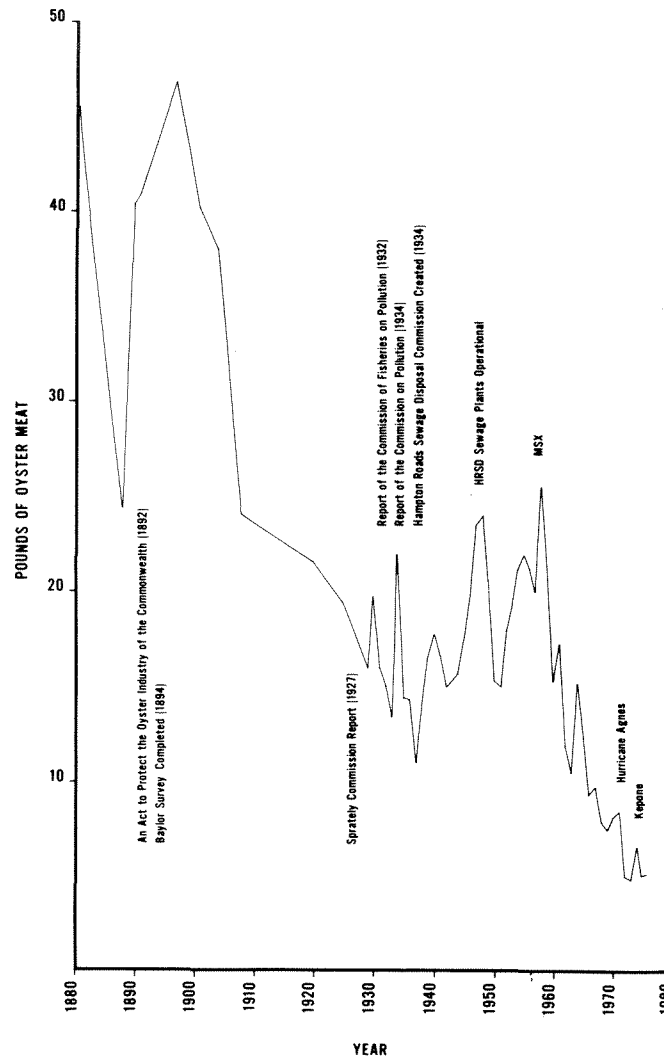
A major emphasis of marine resource programs has been to preserve and protect the oyster fishery by preventing depletion of public oyster growing areas. Nevertheless, Virginia's oyster catch has declined from 46 million pounds in 1897 to six million pounds in 1976 (Figure S-2). The decline has resulted, in large part, from natural disasters, from the urban growth in the Tidewater region, as well as from physical depletion. However, another contributing factor is an outdated and inefficient framework of regulation. Unless positive actions are taken to revitalize oyster production, it is likely that the cost of State involvement in oyster fishery management will continue to increase, particularly in the area of sanitary regulation, while oyster production remains stable or declines.

Public and Private Grounds. Oyster producing areas are divided into public and private grounds. After Lieutenant James Baylor identified the natural oyster producing areas in 1892, the General Assembly designated them as public grounds. While open to all Virginians, the 240,000 acres of public grounds are tightly regulated to prevent overfishing. Restrictions include limits on the size of catch, permissible equipment, and the season for taking oysters. The private grounds, or those growing areas not included in the Baylor Survey, may be leased by individuals or companies for producing oysters. There are approximately 100,000 acres of commercially leased grounds. Considerable investment is required to make these grounds productive and there are few State imposed restrictions governing the use of private grounds.

Although the private grounds are half as large as the public grounds, commercial oyster production has traditionally exceeded public ground production,

Figure S-2

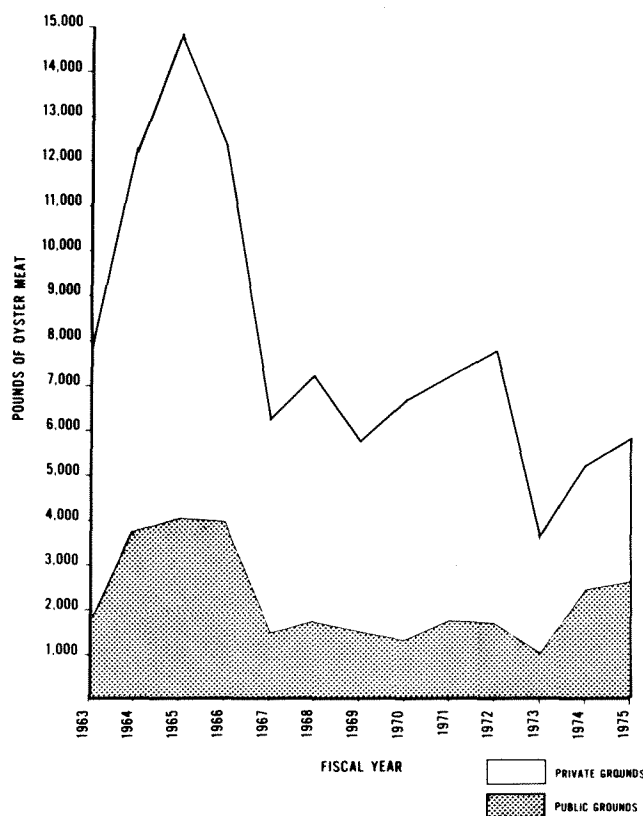
VIRGINIA OYSTER CATCH 1880-1976
(Millions of Pounds)



in some years by as much as 300 or 400 percent (Figure S-3). However, recent natural and man-made disasters have ravaged the industry. The disease MSX caused private oyster production to fall sharply after 1965 and Tropical Storm Agnes devastated production in 1972 by raising salinity levels in growing areas. Most recently, the James River oyster fishery (one of the most productive) was closed due to Kepone contamination. Because of these unforeseeable risks, private investors have become reluctant to invest in oyster growing. As a result, commercial oyster production is now about equal to that from the public grounds.

Figure S-3

COMPARISON OF OYSTER PRODUCTION FROM PUBLIC AND
PRIVATE GROUNDS IN VIRGINIA, FISCAL YEARS 1963-1975
(Thousands of Pounds)



Limits to Production. In addition to natural disasters and pollution, regulation of the oyster fishery limits productivity in two respects. First, there is no incentive for private leaseholders to invest in oyster production because of low annual rental fees (\$1.50 per acre) and 20-year leases with guaranteed renewal. Proof is not required that leased acreage is used to produce oysters and estimates by VIMS indicate as little as 10 percent of the privately leased grounds are actually used to produce oysters. Second, MRC cannot efficiently manage all public grounds. Funds for repletion activities are limited and are used for replenishing only a small proportion (about two percent) of the public grounds, leaving the remainder marginally productive or barren. In addition, the productivity of public grounds replenished by MRC varies considerably, but the commission lacks sufficient information to determine with any accuracy a cause and effect relationship between replenishment and total catch.

The regulatory framework for the oyster fishery not only reserves to the public more grounds than the State can effectively manage but also allows much of the remaining grounds to be held by persons unwilling to use them for oyster production. At the same time, however, considerable market demand exists

DEMAND FOR OYSTERS, UNITED STATES TO THE YEAR 2000

<u>Year</u>	<u>U. S. Consumption (Millions of Pounds)</u>	<u>U. S. Production (Millions of Pounds)</u>
1970	71.6	53.6
1975	88.0	53.2
1980	94.3	--
1985	101.3	--
1990	108.5	--
2000	123.4	--

for oysters. Total U. S. consumption of oysters was 88 million pounds in 1975--35 million pounds more than total national production. Thus, the Virginia oyster industry may be losing potential income and employment because State regulation limits the productivity of oyster grounds.

Shellfish Sanitation. Proposed federal shellfish sanitation regulations may result in the State having to spend more money for oyster fishery management. Virginia participates in the National Shellfish Sanitation Program through the Bureau of Shellfish Sanitation of the State Department of Health. This program is designed to ensure the sanitary quality of shellfish (including oysters) by monitoring the quality of their growing environment and processing plants. A recent evaluation of the Virginia program by the U. S. Food and Drug Administration (FDA) revealed inconsistencies in classification of growing areas. FDA was particularly concerned about the lack of standard criteria for classification. In addition, new regulations now being considered by FDA may require a substantial increase in appropriations for shellfish sanitation. Estimates of the Bureau of Shellfish Sanitation range from \$500,000 to as much as \$2 million per year. The Commonwealth needs to consider the extent of its commitment to the oyster industry, as increased program expenditures may be necessary to guarantee access of Virginia oysters to national markets.

Options to Increase Oyster Production. In light of expanding market opportunities and increasing program costs, critical choices must now be made with regard to the State's future role in revitalizing the oyster industry. A variety of options are available to the Commonwealth to increase oyster production. A first step could be to stimulate private ground production by discouraging the nonproductive holding of private oyster ground leases. Alternatives within this option include higher rent per acre, shorter lease duration, repeal of guaranteed renewal, and requiring proof of production as a prerequisite for renewal.

A second option is to maximize oyster production on the public grounds through more effective replenishment programs and expanded leasing of unproductive bottomlands. Since the Commonwealth is responsible for management of two-thirds of oyster growing ground, MRC replenishment activities could be more effectively targeted to promote greater production. VIMS is presently conducting an evaluation of public oyster ground productivity for MRC which should provide useful information to enable more effective replenishment. In addition, MRC should work with VIMS to develop procedures to evaluate the impact of the replenishment program. Regulation of the public oyster fishery could also be modified to make additional ground available to private growers by leasing

barren portions of the public grounds. Because these grounds are capable of natural production, this alternative could serve as an added inducement to commercial growers.

As already recommended by the Governor's Management Study, consideration should also be given to delegating MRC greater authority for the management of the oyster fishery. MRC has little management flexibility in this area, and many regulations and procedures are mandated by law. Simplification of existing laws would allow MRC to be more responsive to the changing conditions and needs of the oyster fishery.

Wetlands and Bottomlands (pp. 24-26)

Tidal marshes and bottomlands are important because they provide the natural habitat and breeding ground for marine organisms. The framework for their protection is established by State ownership of bottomlands and regulation of wetlands through local wetlands boards. State ownership of bottomlands provides MRC with the opportunity to review and evaluate proposed uses of these areas while the wetlands process vests the review responsibility in the localities (or in MRC if the locality does not elect to establish a wetlands board). The wetlands process appears to have significantly reduced the rate of tidal marsh destruction since 1972, although the lack of a systematic procedure to follow up on all permits hinders efforts to ensure compliance. Effective regulation of bottomlands has been limited by lack of specific guidelines for evaluating the overall impact of proposed bottomland projects on the marine environment. Although MRC is preparing such guidelines as part of the coastal resources planning program, none have been adopted. Greater protection of wetlands and bottomlands would be afforded by a more comprehensive evaluation of proposed uses, including consideration of all potential spillover effects, as well as more adequate monitoring of permit compliance.

Shorelines and Coastal Waters (pp. 26-29)

The Commonwealth has had only limited success in resolving conflicts over the use of marine resources. While shorelines and coastal waters may be used for a variety of purposes such as commercial fishing, recreation, industrial development, or aesthetic enjoyment, conflicts frequently arise over the preferred use of a particular resource. For example, watermen are extremely concerned over the pollution of shellfish producing areas caused by inadequately treated wastes. Effective management requires that decisions to use marine resources for a given purpose be guided by explicit policies and plans. However, such decision-making tools are lacking and no legislation assigns these responsibilities to any one State agency.

A coastal resources plan is being prepared by the Office of the Secretary of Commerce and Resources with the assistance of MRC and VIMS. As a continuation of the federally sponsored coastal zone management program initiated in 1972, the plan will identify key issues, as well as goals, objectives, and policies for marine resource management under the direction of the Secretary of Commerce and Resources. MRC is supplying information regarding permissible uses and priorities for water, while the Office of Commerce and Resources is preparing similar materials for land uses and priorities. In addition, VIMS is

examining geographical areas of particular concern and the impact of outer continental shelf development.

The coastal resources planning program represents an important first step for the Commonwealth in that it attempts to deal with marine resources in a comprehensive fashion. The General Assembly may wish to consider creation of a State-local partnership for marine resource management modeled on the Wetlands Act of 1972. Under this arrangement, MRC would be responsible for planning and oversight while localities would evaluate and judge proposed uses of marine resources.

ADMINISTRATION OF MARINE RESOURCE AGENCIES

Efficient administration of agency programs is a prerequisite to effective marine resource management. However, MRC and VIMS continue to rely on administrative practices which are outdated and inefficient. Problems in program planning, law enforcement operations, and oyster ground administration require the immediate attention of MRC. The quality of VIMS research is high, but there is a lack of program and financial control over research activities.

MRC Administration and Planning (pp. 31-41)

MRC program management is based largely on administrative practices which are mandated by law. Numerous sections of the *Code* specify, in detail, MRC operating requirements for carrying out fisheries programs. Legislated procedures for processing oyster ground applications, for collecting tax revenues and ground rents, and for selling licenses have been cumbersome and inefficient. For example, State law requires that district inspectors serve as a conduit for processing oyster ground invoices and rental payments. The inspectors are responsible for maintaining records of these transactions and accounting for the money. This manual procedure is inefficient because professionals perform clerical functions and are diverted from essential law enforcement duties. MRC has obtained legislative approval to modernize some of its revenue collection functions, but more needs to be done. Automation of ground rent invoices, combined with direct collection of rental payments by the central office, would improve agency operations as well as relieve district inspectors of unnecessary administrative tasks.

Although legislation places certain constraints on agency operations, MRC must also share some of the responsibility for shortcomings in agency administration. In particular, the commission lacks a program planning process which identifies program needs, objectives, and priorities and the personnel classification system is obsolete and confusing. Implementation of an internal program planning process to identify and address marine resource needs and revision of the job classification structure for law enforcement personnel would considerably strengthen agency management.

Research Management at VIMS (pp. 41-49)

VIMS produces research which is of significant value to marine resource programs. However, administrative improvements in research planning, project

management, and financial control have lagged behind the institute's growing research program.

Research Performance. VIMS has a broad legislative mandate to conduct research in support of State marine resource management programs and the seafood industry. In order to assess VIMS compliance with this mandate, JLARC staff performed an extensive review of all active and recently completed research projects and conducted interviews with State and federal agency officials who rely on VIMS for research assistance. By all indications, VIMS has carried out a comprehensive and diverse program of marine research and has gained a nationwide reputation for its scientific achievements.

Research Mission and Planning. VIMS is a State agency with a primary mission to serve the marine research needs of the Commonwealth and seafood industry. However, VIMS wants to be considered more like an educational institution and has asked the Governor to grant greater academic freedom to some employees and exempt them from the Personnel Act. The VIMS Board of Administration believes that scientific staff share some of the same interests and qualifications of their counterparts in higher education. The education implications of the board's request should be studied very carefully in light of existing legislation and VIMS traditional role of producing applied marine research for State agencies and the seafood industry.

Although general funds are used to partially support the institute's research program, research activities are carried out independent of the Commonwealth's marine resource research needs. A formal priority-setting process involving State marine-related agencies and the seafood industry is needed. Projects are solicited by VIMS staff members, often on the basis of available federal grants, without the review of other marine agencies. The Board of Administration must participate in a research planning process to ensure that limited State funds are directed towards those areas of greatest relevance to the Commonwealth. The Secretary of Commerce and Resources should develop and periodically update broad priorities for research in cooperation with the seafood industry, BSS, SWCB, and VIMS. These priorities could serve as a guide for a research plan developed by the VIMS Board of Administration.

Financial Management. The Auditor of Public Accounts has reported that VIMS ended fiscal year 1976 with a substantial fund deficit. The deficit is due, in part, to project cost overruns and to a lack of effective procedures for collecting special fund revenues.

VIMS fund deficit problem is aggravated by a shortage of special funds to cover the full cost of converting a 144' U. S. Navy minesweeper to a deep-water research vessel (named the *Virginian Sea*). In July, 1975, the State accepted the Navy minesweeper under the condition that no general fund monies would be obligated for operating and equipping the vessel. At that time, the Director of VIMS stated that the vessel could be used almost immediately and the conversion costs would be modest. VIMS anticipated using the vessel at least 50 days each year and recovering the total costs of conversion from special revenues over a five-year period. As of June, 1977, the vessel had been used 28 days, and \$489,000 had been spent for conversion. About \$25,000 of this amount has been recovered and an additional \$25,000 may be recovered from special fund sources during the next year. There are no research contracts beyond July, 1978 that call for the use of the *Virginian Sea*. Clearly, the condition that no general funds be obligated for the vessel has been seriously abused.

The process of collecting special fund revenues must be substantially strengthened if VIMS is to avoid fund deficits. Project billings have not been issued in a timely manner. In fact, as of May, 1977, over \$2 million in project expenses had not been billed. Despite the assistance of the Department of Management Analysis and Systems Development, an automated billing procedure scheduled for implementation in July, 1976, was not operational. The board must place a higher priority on upgrading its accounting, billing, and bookkeeping procedures.

Project cost overruns and delayed billings have resulted in serious cash flow problems. The institute has relied on temporary loans to cover cash deficits at the end of a fiscal year. Many of these loans have not been repaid on schedule. For example, VIMS defaulted on the \$1.6 million loan due May 1, 1977. However, a new loan for \$2.2 million was requested and approved by the Department of Planning and Budget. As of June, 1977, therefore, the institute had an outstanding loan obligation of \$4.0 million. Apparently, VIMS is borrowing from the general fund to replace cash used to retire past due loans which were to have been repaid from special revenues. This practice is not consistent with Section 190 of the 1976-78 Appropriations Act.

The VIMS administrative group needs to be better organized to provide appropriate financial management support. The Finance Office must be staffed with qualified and experienced personnel for effective control of VIMS \$5 million research program and outstanding loan balance. Internal budgets should be developed and used to better manage the allocation and expenditure of funds by project. Increased commitment to sound financial management is required, especially since the VIMS research program is financed in part by loans from the general fund.

Vessel Operations (pp. 49-57)

State agencies maintain over 100 motor vessels for marine law enforcement, research, and education. A JLARC review of vessel operations indicates that there is considerable variation among the agencies in operation, maintenance, and utilization of motor vessels. MRC vessel maintenance and operating procedures were found to be satisfactory, but only about half of the 19 large cabin cruisers owned by the agency are efficiently utilized. Low utilization is particularly evident in the northern regions of the Chesapeake Bay and the Potomac River. MRC must clearly define its marine patrol needs and the most effective deployment of patrol cruisers. Furthermore, MRC should consider eliminating some patrol cruisers where greater economy of operation could be achieved through the use of smaller boats.

Vessel management at VIMS has generally been poor. Vessels and maintenance personnel are scattered throughout the agency, and data on utilization and cost were not available from officials responsible for vessel management. Some improvements have recently been initiated (for example, purchasing and supply functions have been consolidated in the vessel operation group), yet management control responsibility remains dispersed. To improve vessel management, responsibility for maintenance and scheduling of all vessels should be assigned to the central operations group.

EDUCATION AND ADVISORY SERVICES

Virginia supports two similar graduate programs in oceanography and marine science. The Institute of Oceanography at Old Dominion University (ODU) offers masters and doctoral programs while the College of William and Mary confers similar degrees for students at VIMS. Although these programs are numerically productive, weaknesses in academic planning, coordination, and evaluation suggest that current organization is inefficient. In addition, VIMS and Virginia Polytechnic Institute and State University (VPI&SU) provide advisory services to Virginia's marine industries. A major portion of these services is provided through the federal Sea Grant program. However, competition between VIMS and VPI&SU may have hindered coordination of Sea Grant activities in Virginia and may hinder the designation of a Virginia Sea Grant College.

The Affiliative Relationship (pp. 59-64)

Although VIMS is authorized by law to provide educational programs "in affiliation with" institutions of higher education, the nature of this relationship is not defined. As a result, neither the William and Mary Board of Visitors or the VIMS Board of Administration is responsible for program oversight, particularly the evaluation of personnel performance and program quality. Although oceanographic experts have, in the past, urged strengthening the relationship between VIMS and William and Mary, faculty relationships between VIMS and the college are virtually nonexistent, and the status of VIMS graduate students on the parent campus is vague. The affiliative relationship should be clarified because VIMS appears to be operating as an independent institution of higher education regardless of the fact that this has not been authorized by the General Assembly.

Program Similarities and Differences (pp. 64-69)

There appears to be little substantive difference between the graduate programs in oceanography (ODU) and marine science (VIMS). The State Council for Higher Education has directed ODU to focus on the physical aspects of marine studies while VIMS is to emphasize application of the biological sciences to marine problems. In practical terms, there is a very little distinction between the two programs. Entrance and degree requirements are the same at both institutions, course offerings at each are reasonably balanced between the physical and biological sciences, and a JLARC faculty survey indicates over 75 percent of the courses offered at VIMS are also available at ODU.

Academic Planning. There are specific weaknesses in the planning of academic programs and space needs. One shortcoming is the absence of reliable information about marine manpower and education needs in the Commonwealth. Because education programs are primarily aimed at fulfilling manpower needs in Virginia (and, to a lesser extent, the nation), the colleges in Virginia could well benefit from a comprehensive study of employment opportunities in various marine occupations.

Academic program planning at VIMS is haphazard, leading to student uncertainty about course content, availability, and relevance. In addition,

VIMS education facilities are planned without full staff involvement and often on the basis of very low and erroneous cost estimates. On the other hand, ODU has established a planning process to schedule curricula three years in advance, and coordinate oceanography courses with those of other departments at the university. Marine science educational facilities now used by the Institute of Oceanography are inventoried and planned by ODU's central administration. In light of the administrative problems at VIMS and similarities in educational programs between VIMS and ODU, Virginia's approach to marine science education may require modification.

Program Options. There are two possible options for improving the administration and planning of marine science education programs in Virginia. First, the affiliative relationship between VIMS and William and Mary could be clarified through legislation. Specifically, academic planning and financial management responsibilities could be centralized at William and Mary. A definite advantage of this alternative is that it continues a long-standing relationship between VIMS and William and Mary, both institutions of national reputation.

Another alternative is the development of a single marine science program encompassing both VIMS and ODU. This option would eliminate course duplication and improve many of the educational problems noted at VIMS, particularly the lack of academic oversight. A single program could provide a strong core curriculum in oceanography at ODU, while providing opportunities for advanced seminars and research at VIMS. Such an arrangement would encourage more effective program planning and evaluation, and would not disrupt ongoing research projects at VIMS. Over the long term, a single program could provide a higher quality education at lower cost to the Commonwealth. (pp. 74-75)

Advisory Services (pp. 69-73)

VIMS and VPI&SU both provide advisory services to the seafood industry and other marine interests. In 1971, VPI&SU and VIMS established a committee to coordinate the programs, but the committee has not met since 1972. There is evidence that VPI&SU and VIMS are still trying to serve the seafood industry, but without coordination there is every possibility of costly duplication and overlap. The award of federal Sea Grant funds to VPI&SU for a wetlands evaluation project indicates both VIMS and VPI&SU are competing for limited funds. MRC was not consulted either in the planning or the submission of the project, though MRC oversees wetlands program.

Poor coordination, unnecessary competition, and program overlap seriously weaken the effectiveness and responsiveness of Virginia's advisory service programs. Because federal and State funding is likely to remain limited unless the State develops an integrated Sea Grant program, Virginia must develop a mechanism for coordinating advisory services. One model worth considering is the "sea grant consortium" system set up by South Carolina and other states to improve their advisory services.

CONCLUSION

Marine resources are an extremely valuable asset of the Commonwealth which have been threatened in recent years by natural and man-made disasters, overfishing, and urbanization. State programs for managing marine resources are fragmented, uncoordinated, and inefficient. Research and education activities are not sufficiently integrated into the marine resource program, and there is no definition of Commonwealth needs and priorities for the use and development of marine resources. The preparation of a coastal resources plan is a positive step toward establishing a unified marine resource program in Virginia. It is expected that draft legislation will be presented at the next session of the General Assembly to implement various recommendations of the plan. In light of the difficult choices facing the legislature regarding State and local involvement in coastal zone management programs, the Coastal Studies Commission, or appropriate standing committees of the General Assembly, may wish to hold hearings or conferences on this important public issue.

COMMISSION ACTIONS

Each of the agencies reviewed in the report, Marine Resource Management Programs in Virginia, were invited to attend a special meeting of the Joint Legislative Audit and Review Commission on June 28, 1977, to discuss selected findings in greater detail. At the conclusion of the meeting, the commission approved the report for release and adopted resolutions in each of the following areas:

I. MARINE RESOURCE MANAGEMENT

Resolved:

The Joint Legislative Audit and Review Commission believes that the marine resources of the Commonwealth are valuable economic and ecological assets that should be protected for the use and enjoyment of citizens now and in the future. The coastal resources planning process can provide the State with an opportunity to deal with the many important issues involving coastal development and/or protection.

The Office of the Secretary of Commerce and Resources, the Marine Resources Commission, and the Virginia Institute of Marine Science are to be commended for their efforts in preparing a coastal resource management plan. The plan represents an important first step in the development of a comprehensive and coordinated approach to managing the Commonwealth's marine resources.

The commission directs the staff to cooperate fully with the Coastal Study Commission and to make available any information which may assist in its work.

II. OYSTER FISHERY MANAGEMENT

Resolved:

The report of the Joint Legislative Audit and Review Commission be transmitted to appropriate legislative committees and that the Chesapeake Bay and its Tributaries Committee of the House and the Agriculture, Conservation, and Natural Resources Committee of the Senate be urged to review the effectiveness and efficiency of present oyster fishery management and administrative practices, with special attention given to:

- Raising the annual lease fee to discourage nonproductive holding of the privately leased grounds;
- Requiring proof of oyster production to stimulate harvesting on private grounds;
- Finding ways to increase productivity of oyster grounds consistent with sound conservation practices;
- Centralizing and automating all revenue collection procedures in the main office of the Marine Resources Commission; and
- Delegating the Marine Resources Commission broader management and planning flexibility to strengthen and develop Virginia's economically valuable shellfishing industry.

III. VIMS ADMINISTRATION AND FINANCIAL MANAGEMENT

Resolved:

It is the conclusion of the Joint Legislative Audit and Review Commission that immediate steps should be taken to improve financial administration and management at the Virginia Institute of Marine Science. Specifically:

(1) In accordance with the provision of Section 2.1-196.1, *Code of Virginia*, the comptroller should

- direct the development of a modern, effective, and uniform system of bookkeeping and accounting which will provide:
 - accurate and timely accounting for the total costs incurred and revenues received for each research project,
 - timely billing,
 - a means for comparing actual expenses and revenues by project against budgeted expenses and revenues by project.

- (2) The Department of Planning and Budget should develop in cooperation with the comptroller appropriate temporary loan management procedures consistent with the provisions of Section 190, 1976-78 Appropriations Act. The procedures should take into account the need to:
 - identify the specific grants and contracts which serve as collateral for each loan;
 - ensure that temporary loans are repaid from the special revenue as it is collected; and
 - establish a separate, temporary loan account to cover costs related to conversion, maintenance, and operation of the Virginian Sea.
- (3) A property inventory and equipment management system needs to be developed and implemented by VIMS as soon as possible.

The commission requests the Board of Administration to report on the extent to which each of these matters has been accomplished, no later than November 1, 1977.

IV. VIMS MISSION

Resolved:

That the Joint Legislative Audit and Review Commission finds the essential and primary function of the Virginia Institute of Marine Science is to conduct marine research in support of State agencies and the Virginia seafood industry. Because there are references in legislation which have been used to obscure this primary function, the commission believes that the General Assembly needs to consider legislation which clarifies the relationship between research, education, and other advisory services carried out by VIMS.

V. MARINE SCIENCE EDUCATION

Resolved:

The Joint Legislative Audit and Review Commission requests the State Council of Higher Education to:

- (1) Examine the extent of duplication and overlap that may exist in graduate programs of marine science, oceanography, and ocean engineering at William and Mary (VIMS), Old Dominion, VPI&SU and other public colleges and universities in the Commonwealth;
- (2) Review the appropriateness and advisability of VIMS existing affiliative relationship with William and Mary, and possible future relationships between VIMS and other State supported colleges and universities with particular attention to:

- college mission statements found in the *Virginia Plan*;
- the need for graduate marine science education to be supported by and related to graduate programs in other academic fields ;
- program overlap and duplication;
- the need for and ways to achieve effective and efficient oversight of educational administration; and
- (in cooperation with the House Appropriations and Senate Finance Committees) ways to achieve effective budgetary oversight of the VIMS educational program.

The commission requests that the State Council of Higher Education make a report of its progress and appropriate recommendations to the Governor, General Assembly, and the institutions prior to the 1978 session of the General Assembly. A final report and recommendations should be made by November 1, 1978.

TABLE OF CONTENTS

SUMMARY	S-1
FOREWORD.	ii
I. MARINE RESOURCE PROGRAM	1
II. MARINE RESOURCE MANAGEMENT	
The Oyster Industry	10
Management of Other Fisheries	21
Coastal Shorelines and Waters	24
Conclusion.	29
III. ADMINISTRATION OF MARINE RESOURCE AGENCIES	
Administration and Planning at the Marine Resources Commission. . . .	31
Research Management at the Virginia Institute of Marine Science . . .	41
Agency Vessel Operations.	49
Conclusion.	57
IV. EDUCATION AND ADVISORY SERVICES	
Education	59
Advisory Services	69
Improving Program Coordination.	74
END NOTES	76
APPENDICES.	80

FOREWORD

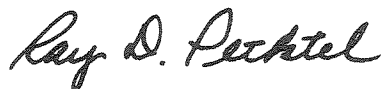
The General Assembly has authorized the Joint Legislative Audit and Review Commission to conduct operational and performance reviews of State agencies and programs. Each study is designed to assess the extent to which legislative intent is being met as well as the efficiency and effectiveness of program activities. This study deals with marine resources and represents the commission's second comprehensive report on water management programs in Virginia.

The economic vitality of the seafood and recreation industries is closely linked to the State's rich supply of marine resources. For this reason, laws have been enacted and programs established to manage the fisheries and coastal waters and shorelines of the Commonwealth. The report looks at various programs for managing the natural resources of the marine environment and at the administrative efficiency of State agencies in implementing these programs. Special attention is also given to marine research and educational programs offered by the Virginia Institute of Marine Science and Old Dominion University.

A number of significant marine resource issues face the Commonwealth including a sharp decline in oyster production and a reliance on traditional fisheries management practices. Achieving an equitable balance between marine resource protection and economic growth is an emerging public concern in Tidewater Virginia. This issue is currently being addressed as part of a coastal resources plan now being developed by several State agencies. It is likely that the 1978 General Assembly will be asked to endorse the concept and recommendations of the plan.

On June 28, 1977, the Joint Legislative Audit and Review Commission held a special meeting to obtain agency comments on the major findings and recommendations of the study. At that meeting, the commission adopted several resolutions which specifically address some of the key resource management, agency administration, and education problems identified in the report. The text of these resolutions can be found at the conclusion of the legislative summary.

On behalf of the commission staff, I wish to acknowledge the cooperation and assistance provided by every agency contacted during this study effort. Special appreciation is extended to the staff of the Marine Resources Commission and Virginia Institute of Marine Science for assistance during the review and for commenting on the findings of the report.



Ray D. Pethtel
Director

June 28, 1977

MARINE RESOURCE PROGRAM

Virginia is a coastal state with an abundant supply of marine resources, including finfish and shellfish, tidal waters, shorelines, wetlands, and bottomlands. These resources are important State assets which contribute over \$250 million to the economy each year. Because of their economic and ecological significance, it is essential that the State enact laws and develop programs which protect and conserve these valuable natural resources.

Although the Marine Resources Commission (MRC) is authorized to manage marine fisheries and to administer wetlands and bottomlands programs, no legislation exists setting forth an explicit policy toward the comprehensive management of marine resources. Attempts have been made to expand the State's interest in marine affairs, but no single agency is authorized by the Legislature to plan and manage the use of marine resources.

About \$6.7 million was appropriated for fiscal year 1976 to support marine resource related programs. Over half of these funds are used to finance the marine research efforts of the Virginia Institute of Marine Science (VIMS), while support for the resource management activities of MRC comprises 38 percent. Educational programs carried out by VIMS, Old Dominion University, and two community colleges receive approximately ten percent of the total annual appropriation.

This chapter examines several important aspects of marine resource management including the economic value of the commercial fishing and recreation industry, legislative intent, program organization, and program cost.

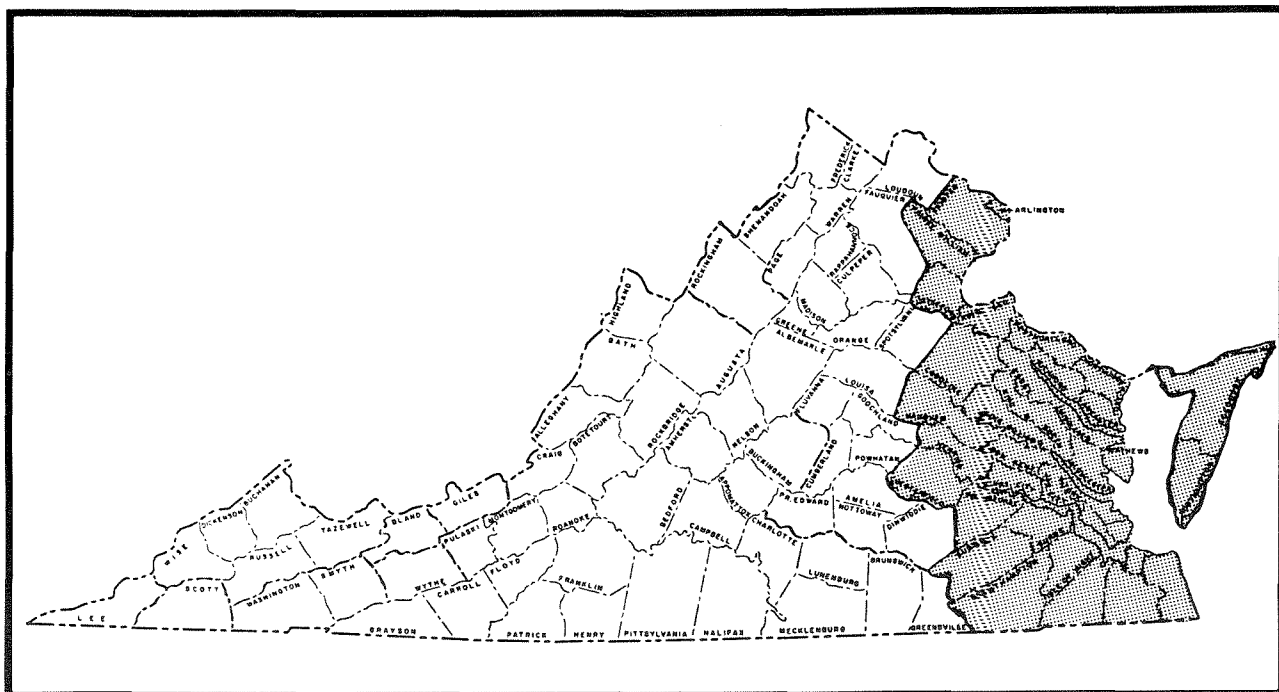
I. MARINE RESOURCE PROGRAM

Virginia's coastal lands and waters contain a rich supply of marine resources including shorelines, wetlands, bottomlands, tidal waters, and finfish and shellfish. These natural resources are valuable economic and ecological assets. Commercial fishing and recreation industries contribute over \$250 million to the economy each year and provide over 100,000 jobs. Additionally, hundreds of thousands of people are attracted to the shorelines for recreational reasons.

The need for marine resource management programs is clear. The continued economic well-being of the commercial fishing and recreation industries is dependent on the availability of marine resources at adequate levels of quality and supply. However, the marine resources of Tidewater Virginia (Figure 1) have been endangered by a growing population and increasing industrial development. Sixty-two percent of the population and half of the manufacturing activity are concentrated in this section of the State. The rapidly changing development patterns of Tidewater have created multiple demands for marine waters and shorelines. This trend toward increasing and competing use of marine resources is likely to continue and intensify. Recent events, such as pollution of valuable shellfish producing areas and conflicts over the use of shore lands and waters for siting of large industrial complexes, have demonstrated the need for effective public policies and programs to manage marine resources. This chapter examines the economic value of marine resources and the role of the State in protecting the marine environment. Several different aspects of marine resource management programs are explored including legislative intent, costs, and organization.

Figure 1

TIDEWATER VIRGINIA



Source: Joint Legislative Audit and Review Commission.

Value of the Commercial Fishing and Recreation Industry

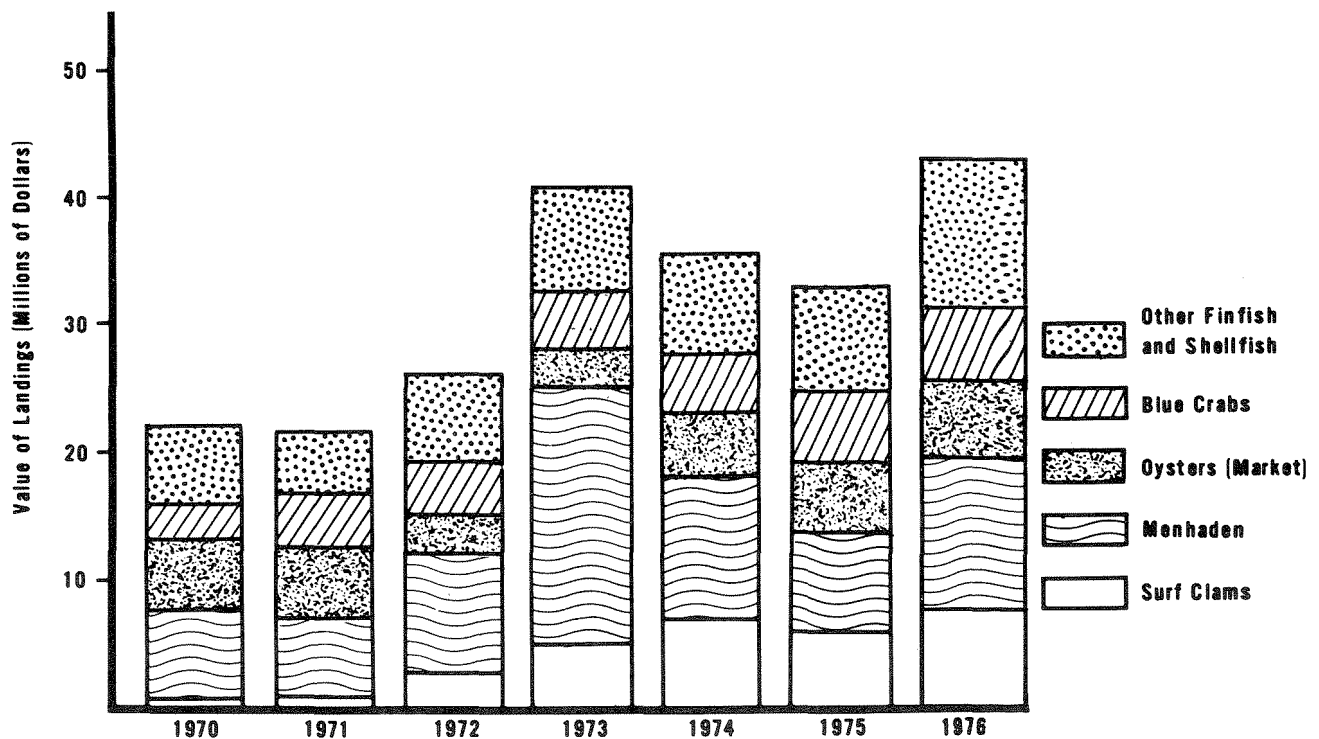
Commercial fishing activities have always been recognized as a significant use of marine waters. But, a more affluent and growing population has placed greater demands on marine resources for recreational and aesthetic enjoyment.

Commercial Fishing. Virginia has historically been a leader among states in volume of shellfish and finfish landed, usually ranking third in the nation in volume of total landings, and in the top ten in value of fish caught. Landings of finfish and shellfish in 1976 were 520 million pounds, valued at \$43 million.

Numerous species of finfish and shellfish are harvested off Virginia's coast, but several species stand out as being economically important. The dockside value of these species is presented in Figure 2. A substantial portion of the annual total landing is attributable to the menhaden fishery, a nonedible finfish used for its oil and fishmeal. In 1969, 178.2 million pounds of menhaden were landed at a value of \$7.5 million. In 1976, landings totaled 437 million pounds worth \$12.2 million. This catch represents 84 percent of all fish landed and 28 percent of the catch value.

Figure 2

VALUE OF VIRGINIA LANDINGS OF FISH AND SHELLFISH (1970-1976)



Source: National Marine Fisheries Service, *Virginia Landings Annual Summary*, and Marine Resources Commission.

The oyster represents a small fraction (about one percent) of the total landings of fish; but from an economic standpoint, oysters make up between 15 to 20 percent of the total catch value each year.

Within the past six years, the surf clam has become an integral part of the fishing economy. (Surf clams are used for making canned chowder, party dip, and fried clam strips.) Landings increased from less than one million pounds in 1970 to 58.2 million pounds worth \$6.8 million in 1974. However, due to overfishing, landings decreased to 39 million pounds valued at \$5.7 million in 1975, and further declined to 14 million pounds worth \$7.5 million in 1976.

Another important dimension to the commercial fishing industry is the number of employees involved in fishing and seafood processing operations. It has been estimated that the industry employs about 10,000 persons earning wages in excess of \$35 million dollars annually.¹

Sports Fishing and Recreation. Hundreds of thousands of Virginia residents and tourists participate in saltwater sport fishing and recreation activities. Based on a 1974 National Marine Fisheries Service study, it was estimated that over one million persons take part in sports fishing.² During 1976, expenditures on recreational sports fishing activities totaled \$154 million.³

Because of its many miles of pleasure beaches, Tidewater is also a popular recreation and resort area. Numerous hotels, motels, residential developments, and restaurants located along the shorelines serve thousands of tourists. According to 1975 employment and wage statistics, over 100,000 persons were employed by Tidewater recreation industries generating about \$100 million in wages.⁴

Legislative Intent

The General Assembly has recognized the economic and ecological value of marine resources by enacting laws to protect various elements of the marine environment. However, the State has not articulated a comprehensive policy toward marine resources, and no agency is directed by statute to plan and manage the use of marine resources. The basic legislative framework for marine resource management programs is found in Title 28.1, "Fish, Oysters, and Shellfish". Generally, the State's role is to:

- promote the general welfare of the seafood industry;
- conserve and promote the seafood and marine resources of the State;
- protect the public health by regulating the quality of seafood available for marketing; and
- conduct marine science research and education programs.

The Legislature has also passed laws to protect wetlands and bottomlands. Unlike Section 62.1-44.36, which requires the State Water Control Board to

formulate a water resource policy,* Title 28.1 does not set forth an explicit policy toward the management of marine resources or marine fisheries. Instead, this title focuses mainly on the regulation of commercial fisheries which has been the State's primary marine resource program interest.

Attempts have been made to expand State involvement in marine resource affairs. In 1967, the Marine Resources Study Commission recommended that "the mission of the Commission of Fisheries be broadened so that it will be prepared in the years ahead to more completely manage Virginia's marine resources".⁵ To achieve this purpose, the study commission recommended changing the name of the Commission of Fisheries to the present Marine Resources Commission (MRC). The 1968 session of the General Assembly approved this change, but there was no further statutory confirmation of the commission's expanded role in the marine resource management area.⁶ However, in 1972, MRC was assigned additional program responsibilities under the Wetlands Act. Although support programs have been established to provide marine science education and research services, these programs are not formally integrated into an overall scheme for managing marine resources. The education and research functions are largely independent of the resource management activities of MRC. As a result, the Commonwealth's approach to marine resource management is composed of many separate elements, each of which is oriented to a specific program concern.

Marine Resource Programs and Costs

Marine resource programs authorized under State law may be grouped into three general categories: marine resource management, research, and education. During fiscal year 1975-76, about \$6.7 million was appropriated to support these program areas. Figure 3 indicates over half of the available funds are used to support research activities, while public expenditures for resource management comprise 38 percent and education 10 percent. These figures include State (58 percent) and federal (42 percent) funds.

Marine Resource Management. Programs to protect and conserve certain aspects of the marine environment are included in this general category. The Marine Resources Commission serves as the lead agency for marine resource programs. Primary areas of activity are as follows:

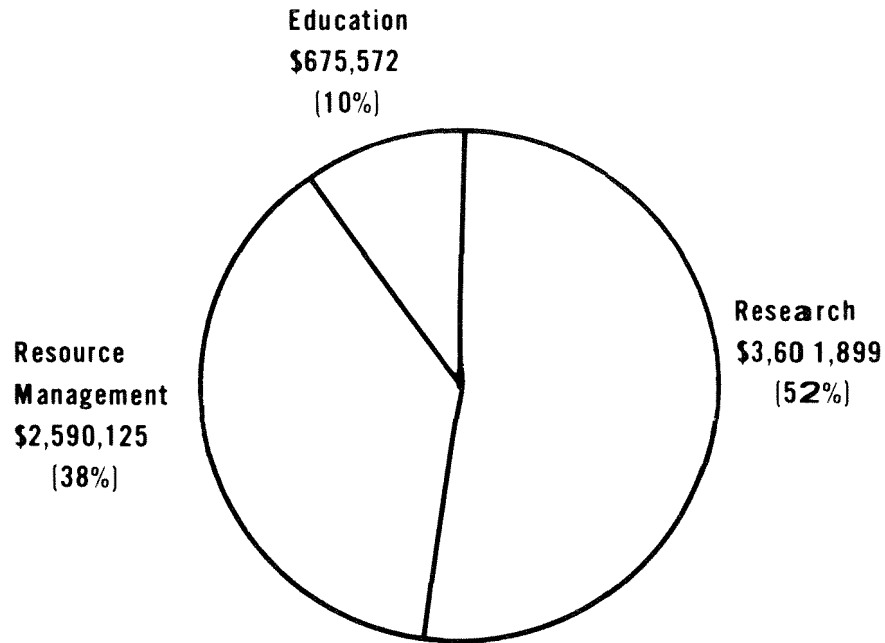
Fisheries Management. This is a broad category of programs which govern the availability, size, and exploitation of shellfish and finfish stocks in Virginia and its contiguous waters. Constituent elements are promulgation of rules and regulations, enforcement of fisheries laws and regulations, replenishment of public oyster grounds, placement of artificial reefs, and collection of fisheries data.

Protection of Public Health. The Bureau of Shellfish Sanitation of the State Department of Health is responsible for evaluating the sanitary quality of shellfish growing areas and processing plants. Also, the MRC posts notices of condemnation, and prevents harvesting of shellfish in

*Refer to the JLARC report on water resource management in Virginia for a discussion of water resource policy and planning (pp. 5-8).

Figure 3

ESTIMATED DISTRIBUTION OF FUNDS FOR MARINE RESOURCE
MANAGEMENT PROGRAMS
(Fiscal Year 1975-76)



Source: Joint Legislative Audit and Review Commission, October, 1976.

areas found to be polluted for growing shellfish for human consumption.

Regulation of State-Owned Bottomlands. Anyone desiring to use the beds of the bays and ocean, rivers, streams, or creeks owned by the Commonwealth must apply for a permit from the MRC.

Protection of Wetlands. Coastal wetlands are protected under the Wetlands Act. The MRC and local wetlands boards are jointly responsible for regulating the use of wetlands through a zoning ordinance and permit system.

Protection of Marine Water Quality. The State Water Control Board is responsible for protecting marine water quality. (The water quality management activities of SWCB were reviewed in the JLARC evaluation of water resource management programs in Virginia.)

Research Services. The Virginia Institute of Marine Science (VIMS) is authorized to conduct basic and applied research in the marine sciences. To a lesser degree, Virginia Polytechnic Institute and State University (VPISU) and the Old Dominion University (ODU) Institute of Oceanography, are engaged in marine research activities.

Education and Advisory Services. Marine science education and advisory service programs are offered by several organizations. ODU, Tidewater's regional university, and VIMS have developed large and growing programs to produce trained researchers and college-level teachers. Thomas Nelson and Rappahannock community colleges train individuals as para-professionals or technicians for employment in the maritime industry. In addition, VPISU and VIMS have organized technical advisory programs to serve such groups as the seafood industry and local wetlands boards.

Organization

The Marine Resource Commission has the primary statutory authority for carrying out marine resource management programs. In addition to this agency, several other organizations play a prominent role: (1) Bureau of Shellfish Sanitation of the State Department of Health, (2) Virginia Institute of Marine Science, and (3) Potomac River Fisheries Commission. A brief description of the organizational makeup of these agencies follows:

Marine Resources Commission. The commission is comprised of seven members who are representative of all segments of the users of the marine resources of the State. The members are appointed by the Governor subject to confirmation by the General Assembly. The jurisdiction of the commission is confined to all tidal rivers and streams located in Tidewater Virginia.

The Commissioner of Marine Resources is the chairman of the commission and the chief administrator of the agency. The commissioner is personally responsible for administration of the MRC staff, enforcement of fish and shellfish laws, and the development of programs to enhance and improve commercial and sport fisheries in Virginia's tidal waters.

Bureau of Shellfish Sanitation. The State Health Commissioner, Department of Health, is authorized to analyze the sanitary quality of fish and shellfish, whether in growing areas or processing plants. Furthermore, the commissioner has the power to condemn polluted shellfish growing areas. The Bureau of Shellfish Sanitation has been designated by the health commissioner to implement these legislative provisions. The bureau is headed by a director who supervises the administrative activities of the central office in Richmond and three regional laboratories located in Accomac, Norfolk, and Whitestone.

Virginia Institute of Marine Science. The institute is governed by a nine member Board of Administration consisting of the Commissioner of Marine Resources, ex-officio, and eight citizens appointed by the Governor familiar with various aspects of the seafood industry and other maritime segments. The board appoints a director who is responsible for overall agency management.

Potomac River Fisheries Commission. The Potomac River Fisheries Commission was created under the Potomac River Compact of 1958 to conserve and improve the fishery resources of the tidal portion of the Potomac River. The commission is comprised of six members, three from Maryland and three from Virginia, representing the Marine Resources Commission. The chairmanship alternates from year-to-year between Maryland and Virginia.

Scope of Review

State participation in marine resource management involves a wide array of programs ranging from oyster fishery regulation to marine science education. The purpose of the JLARC study is to evaluate the efficiency and effectiveness of these programs. The study presents a broad overview of the marine resource effort in Virginia, focusing on the management of resource programs and agency activities. State programs directed at protecting and conserving certain aspects of the marine environment--fisheries, wetlands, bottomlands, and coastal shorelines--are described and evaluated in Chapter II. The administration of resource management programs at MRC and research activities at VIMS are the subject of Chapter III. Chapter IV examines marine science education and advisory programs offered by Virginia's educational institutions.

MARINE RESOURCE MANAGEMENT

The purpose of marine resource management programs is to promote the general welfare of the seafood industry and to conserve and protect marine resources. The State has been actively engaged in managing marine fisheries, but growing public concern has resulted in the creation of programs to regulate other aspects of the marine environment including wetlands and water quality. Nevertheless, significant management gaps remain, namely, the need for a more efficient and effective oyster fishery management program and a coordinated government response to managing the Commonwealth's marine resources.

Urbanization of the Tidewater region has resulted in increased competition for the use and development of valuable marine resources. Because marine resources are demanded for many different purposes, conflicts frequently arise over their preferred use. Developments such as oil refineries, dredging projects, and waste disposal facilities can have substantial adverse impact on the marine environment. For example, industrial and municipal sewage has resulted in the closing of thousands of acres of productive shellfish growing areas. As the Tidewater region becomes more populated and developed, these concerns can be expected to intensify unless appropriate actions are taken to achieve a balance between marine resource protection and economic growth.

It is essential that decisions to use marine resources be guided by explicit policies and plans. However, such decision-making tools are unavailable and no legislation assigns these responsibilities to any one State agency. A plan for managing coastal resources is being prepared by the Office of the Secretary of Commerce and Resources, with the assistance of the Marine Resources Commission (MRC) and the Virginia Institute of Marine Science (VIMS). This plan is scheduled for completion in late 1977. As a logical extension of its marine resource management responsibilities, MRC could be solely authorized to perform this planning function.

The oyster industry has suffered a sharp decline in production and employment since 1900. Despite declining production, consumer demand has remained relatively stable and MRC officials believe further economic growth of the oyster industry is possible. A variety of management options are available to improve the productivity of the public and private oyster grounds. Non-productive holding of privately leased grounds, for example, could be discouraged by increasing the annual lease fee and by imposing a requirement that leaseholders provide proof of oyster production. Oyster production might also be enhanced by allowing private growers to lease barren public oyster grounds, by offering economic inducements to private growers, and by accelerating replenishment of public grounds.

MRC's ability to respond quickly to the changing conditions of the commercial fisheries is constrained by legislated regulations. In light of the many problems facing the commercial fisheries, MRC should be provided greater flexibility to adopt, modify, and repeal regulations. This could be accomplished by revising and simplifying Title 28.1 of the Code.

This chapter will examine the following key issues related to marine resource management: (1) the regulation of the oyster fishery; (2) the need for intergovernmental agreements to manage off-shore fisheries; (3) the regulation of wetlands and bottomlands; and (4) the conflicts in the use of shorelines and coastal waters.

II. MANAGEMENT OF MARINE RESOURCES

The goal of marine resource management programs is to promote the general welfare of the seafood industry and to conserve and protect marine resources. Over the years a number of separate programs have been established to protect different aspects of the marine environment, particularly fisheries, wetlands, and bottomlands. However, program accomplishments have been mixed, and several critical resource management problems exist. The alarming decline in oyster production and the lack of a comprehensive planning framework to evaluate proposed uses of marine resources should be of immediate concern to the State.

This chapter first examines the problems and opportunities confronting the oyster fishery. Then it reviews several programs for managing other economically important fisheries which require intergovernmental cooperation. Finally, measures for protecting coastal shorelines and waters are discussed.

THE OYSTER FISHERY

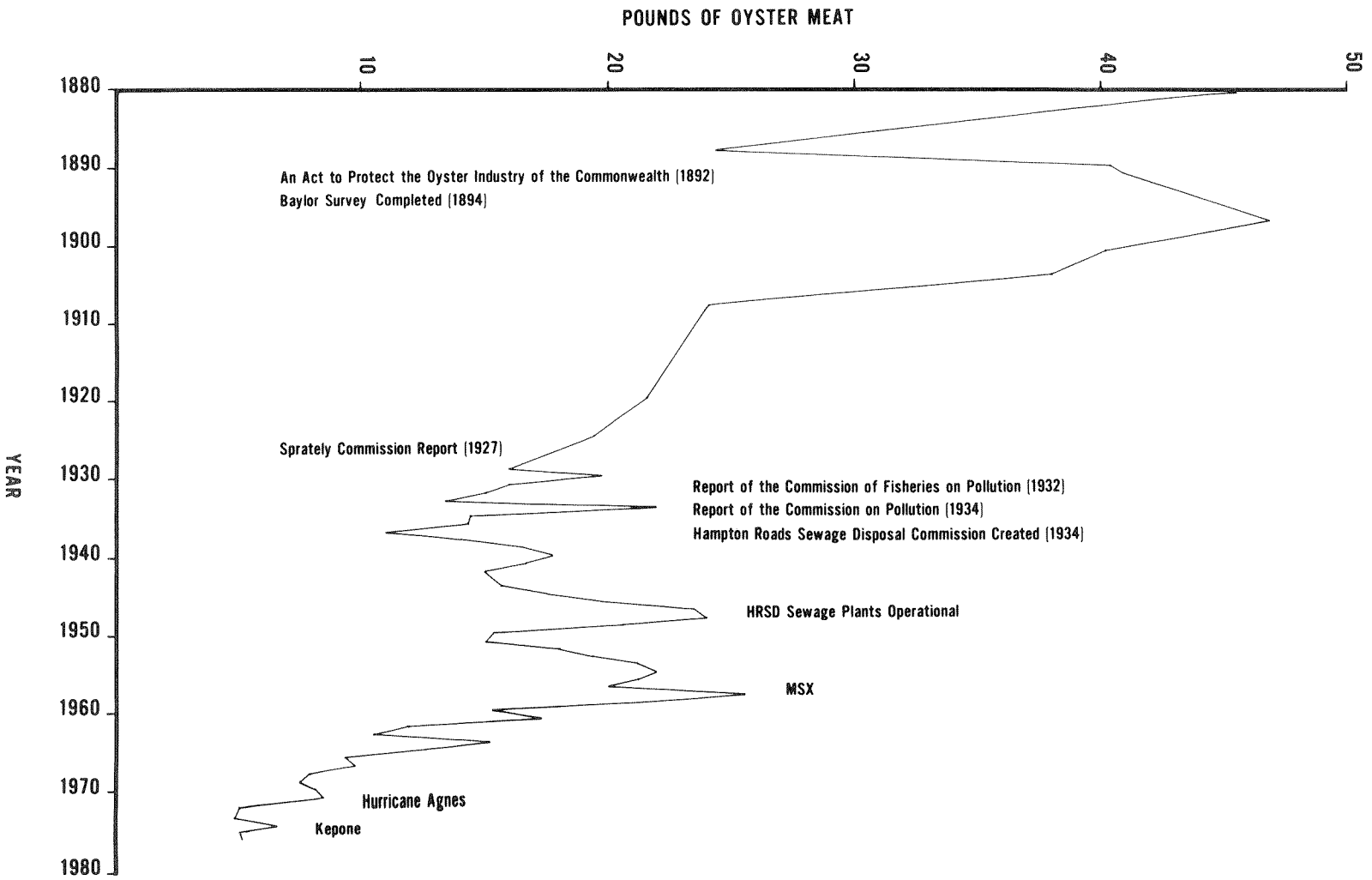
Because of its economic significance, interest in the protection and conservation of the oyster industry has long standing in Virginia. Numerous study commissions have been created to assess oyster fishery problems, and oyster legislation has been considered by nearly every session of the General Assembly since 1880. Nevertheless, commercial landings have declined sharply. This decline has been attributed to several factors including natural disasters, man-induced environmental changes, declining oyster fishery profits, and inefficient management practices. However, in the face of these problems, the national demand for oysters has been gradually rising. Additional market opportunities exist for the oyster industry, but future growth may well depend on the development of improved oyster fishery management practices and on the State's commitment to protect shellfish growing areas from environmental degradation.

Economic Status of the Oyster Fishery

An important indicator of the effectiveness of oyster fishery management programs is the economic behavior of the industry. Such behavior can be measured in terms of production, employment, and demand trends.

Production. A review of production trends reveals that Virginia's oyster industry has declined steadily since the late 1880's, when legislation was first enacted to protect the oyster fishery. Between 1880 and 1976, the pounds of oyster meat landed dropped from 45 to 6.1 million pounds--a decrease of 86 percent. As illustrated by Figure 4, this decline has occurred in a series of abrupt stages, beginning in 1880 when depletion of the public oyster fishery caused production to fall to 24 million pounds. Alarmed by this decrease, the General Assembly, in 1892, passed the Act to Protect the Oyster Industry of the Commonwealth. While the intent of the legislation was to protect the dwindling oyster fishery, from 1897 to 1925, oyster production dropped from 47 to 20 million pounds. This rapid decline was due, in large part, to sewage pollution

Figure 4
VIRGINIA OYSTER CATCH 1880-1976
 (Millions of Pounds)



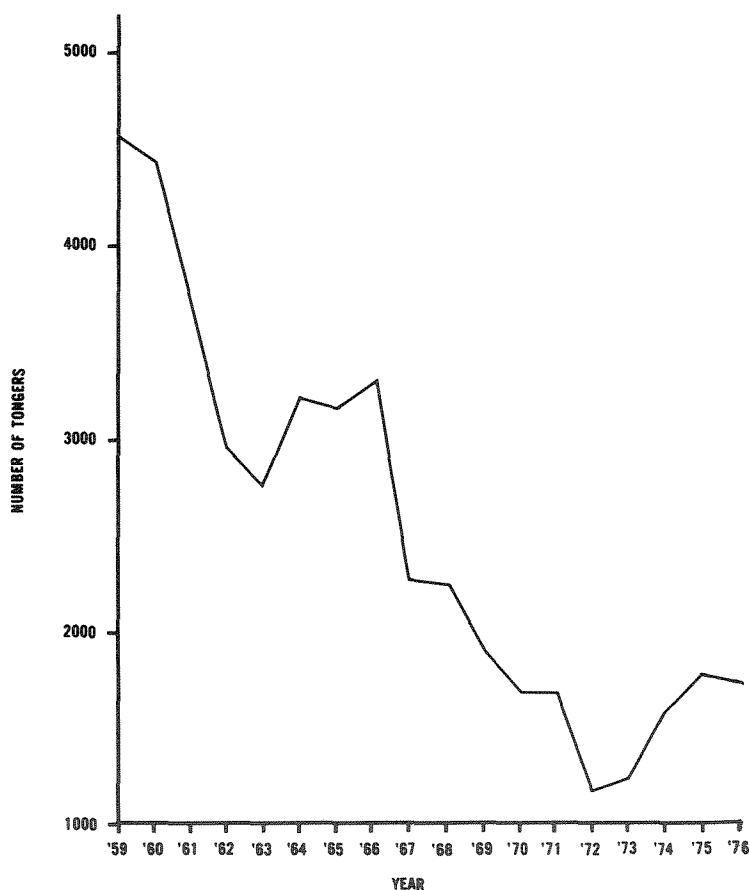
from cities and to continued physical depletion of the oyster growing areas. During the 1930's and 1940's, various legislative study commissions were concerned with finding ways to curb the effects of industrial and municipal sewage on shellfish producing areas. Creation of the Hampton Roads Sewage Disposal Commission was a major accomplishment of these study efforts.

Most recently, oyster fishery production has been severely hampered by a series of natural disasters caused by diseases and hurricanes. In 1959, an outbreak of the disease *Minchinia Nelsoni* (MSX) resulted in a high mortality rate among market, seed, and young oysters; between 1959 and 1969, production dropped from 21 to 7 million pounds. Just as the oyster industry appeared to be recovering from MSX, Tropical Storm Agnes (1972) sent a rush of fresh water through the oyster grounds, destroying a substantial number of oysters. As a result, oyster production plummeted to less than 5 million pounds in 1972.

The decline in oyster production is dramatic, and should be of tremendous concern to the Commonwealth. Based on past production trends, it is conceivable that the occurrence of another major disaster--either natural or manmade--could deal a disastrous blow to the oyster industry.

Figure 5

NUMBER OF OYSTER TONGERS IN VIRGINIA
(1959-76)



Source: Marine Resources Commission.

Declining Employment. Corresponding to the decline in oyster production has been a decrease in the number of licensed tongers and large oyster planters. The decline in the number of tongers has been most marked--from 14,000 in 1903 to 1,743 in 1976. Employment statistics supplied by the Marine Resources Commission indicate that a substantial drop occurred after the 1959 outbreak of MSX (Figure 5). MRC officials claim that the slight rise in the number of tongers between 1972-75 was attributable to the depressed state of the economy. High unemployment rates in the construction trades forced individuals to return to oyster fishing.

The number of large private oyster growers has also decreased, especially since 1959. Of the four largest growers at the time MSX struck, only one is still solely dependent on oyster fishing; two terminated their fishing operations; and one grower diversified into other types of fishing activities.

Demand Factors. While production and employment have declined, the national demand for oysters has increased steadily. The U. S. Department of Commerce, National Marine Fisheries Service, estimates consumer demand for oysters at 94 million pounds by 1980 (Table 1). Domestic production has averaged around 53 million pounds for the last six years, and foreign imports contribute about 16 million pounds annually. If domestic production and imports remain relatively stable, this will provide a market opportunity of about 25 million pounds of oyster meats by 1980. At current wholesale prices (\$1.26/per pound), this could generate over \$32 million in added sales nationally. Assuming these figures are reliable estimates of future demand, further economic expansion of the Virginia oyster industry is possible.

Table 1
DEMAND PROJECTIONS FOR OYSTERS, UNITED STATES,
TO THE YEAR 2000

<u>Year</u>	<u>U. S. Population (Millions)</u>	<u>Total U. S. Consumption (Millions of Pounds)</u>	<u>Total U. S. Production (Millions of Pounds)</u>
1970	206.0	71.6	53.6
1975	219.4	88.0	53.2
1980	235.2	94.3	--
1985	252.9	101.3	--
1990	270.8	108.5	--
2000	307.8	123.4	--

Source: Adapted from Bell, Frederick W., D. A. Nash, E. W. Carlson, F. V. Waugh, R. K. Kinoshita, and R. Fullenbaum, *The Future of the World's Fishery Resources: Forecasts of Demand, Supply, and Prices to the Year 2000 With a Discussion of Implications for Public Policy*, Economic Research Laboratory, National Marine Fisheries Service, File Manuscript, December, 1970, p. 419.

Regulating the Oyster Fishery

Virginia will be hard-pressed to take advantage of expanded market opportunities unless certain barriers to managing the oyster fishery are overcome. In general, these barriers are related to the two fundamentally different approaches taken by the State to regulating the oyster fishery.

Public Versus Private. The oyster fishery is divided into two areas--public grounds and privately leased bottoms. Because the oysters of the public grounds are considered a natural resource available to all Virginia residents, fishing practices are closely regulated by the State. On the other hand, oyster fishing on the leased grounds is conducted like a private business, and is largely independent of government regulation. Although considered the least desirable oyster growing areas, privately leased bottoms have been substantially more productive than the public grounds.

When oyster production began to decline in the late 1800's, the General Assembly designated a public oyster fishery and applied direct controls of fishery exploitation. In 1892, the State commissioned Lieutenant James B. Baylor of the United States Coast and Geodetic Survey to survey areas where oysters grow naturally. The survey was completed in 1894, designating approximately 210,000 acres of natural growing areas. (Since then, the General Assembly has added another 30,000 acres to the original Baylor Survey making 240,000 acres available for public oyster fishing.) These areas are commonly referred to as the Baylor or public grounds. Generally, all other oyster beds not classified as public grounds, or assigned to riparian property owners, are available to residents of Virginia for private leasing and production. In 1975, there were 100,000 acres of leased ground.

Because the oysters of the Baylor grounds (as well as other fishery resources) are considered a public resource, there is no attempt to limit the number of fishermen allowed to engage in the fishery. For example, when commercial oyster fishing becomes profitable, the fishery attracts additional fishermen. Unless efficient conservation practices are implemented, the unlimited entry of fishermen into the public oyster fishery can result in unproductive use of economic resources, and depletion of available fish stocks.*

Instead of controlling the number of fishermen in the public oyster fishery, Virginia has legislated inefficient harvesting practices to conserve the availability of oysters. (All oyster producing states regulate their oyster fisheries in a similar manner.) Generally, these practices involve restricting the use of efficient harvesting methods through gear restrictions, size limits, and limited seasons. These restrictions reduce the overall efficiency of the oysterman. For example, hand tongs severely limit the amount of catch; size limitations require additional expenditure of effort separating marketable from small oysters; and season limitations require that fishing equipment lay unused for part of a year. Oystermen argue that these controls are necessary to protect the public oyster grounds from further physical depletion. Others, however, contend that the objective of State regulation is

*If the available supply of oysters remains stable or declines, and the number of fishermen and boats increase, there is an accompanying increase in fishing costs and a reduction in profits. This phenomena is commonly referred to as overcapitalization.

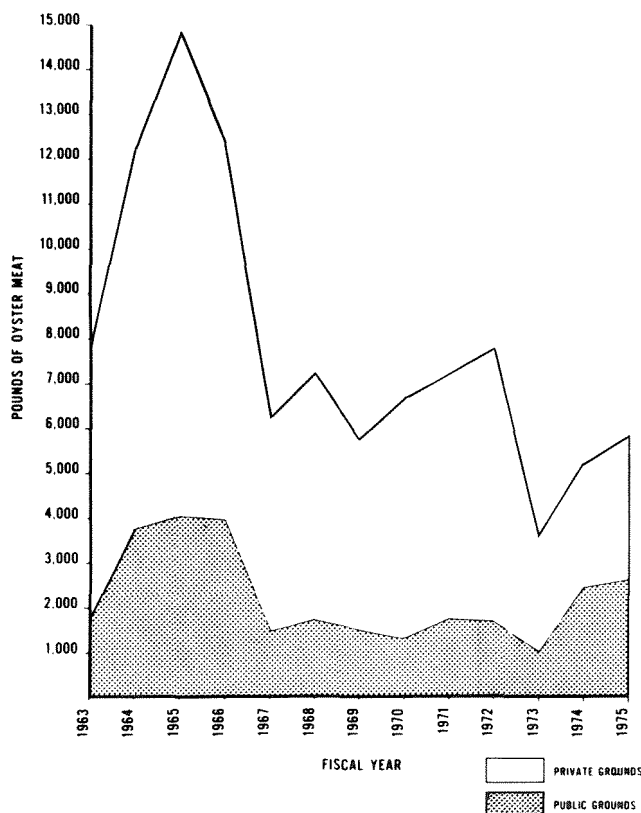
"enforced inefficiency" to maximize employment and to preserve the traditional public oyster fishery at a considerable expense. Moreover, these same people point out that the privately leased grounds, which are not as closely regulated by the State and burdened by outdated fishing gear restrictions, are more productive than the public grounds.

Although the private grounds represent the less desirable portions of the oyster growing areas, they have traditionally out produced the public grounds (Figure 6). Until 1972, about three-fourths of the marketable oysters were produced in privately managed areas. In fact, since private grounds are more productive, recommendations have been made to expand the leasing program into barren areas (areas that are not naturally productive) of the public oyster grounds. But, the original Baylor Survey has remained essentially intact.

Problems With Private Leasing. As indicated by Figure 6, although the private grounds consistently produce more marketable oysters than the public grounds, private production has fallen steadily during recent years.

Figure 6

COMPARISON OF OYSTER PRODUCTION FROM PUBLIC AND PRIVATE
 GROUNDS IN VIRGINIA, FISCAL YEARS 1963-1975
 (Thousands of Pounds)



Source: Marine Resources Commission.

This decline can be largely attributed to unstable economic conditions caused by environmental disruptions. To a lesser extent, outdated management practices have also hampered private production.

A key concern of private oyster growers is the unstable economic situation of the oyster industry, which is highly susceptible to natural and man-induced environmental changes. As noted earlier, several large oyster growers lost their entire financial investment after the MSX outbreak. Soon after MSX, Tropical Storm Agnes imposed further damage on the oyster grounds. Recurring water pollution problems have also aggravated the profitability of oyster growing. At one time, oystermen were able to obtain a profit from marginally profitable beds which yielded one bushel of mature oysters from each bushel of seed oysters planted. Growers often harvested oysters from beds located in polluted waters, relayed them to cleaner waters for cleansing, and reharvested them for profit. But increased labor and capital costs are now making this practice less common, and growers must now depend on the more productive lands which yield about two bushels of oysters for each bushel of seed planted. Clearly, there is a high degree of financial risk associated with the private oyster growing business caused by constantly changing environmental and economic conditions. Unless ways are found to make oyster growing more economically profitable and to reduce the risk of financial loss, growers will be hesitant to invest in the commercial oyster producing business.

Environmental and economic factors have played a dominant role in the decline of private oyster production, but State management of leased grounds has also affected production. A criticism of the leasing system has been that existing regulations and fees do not encourage efficient use of private oyster grounds: only a small percentage of the privately held grounds is actually used for oyster production. In an unpublished draft report on the oyster industry, VIMS estimates that between 1931 to 1960, less than 30 percent of the leased grounds were used for oyster production.¹ Today, a VIMS oyster fishery expert estimates that 10 percent (10,000 acres) are used for oyster growing purposes.² The minimal use of privately held grounds for oyster production purposes is attributable to several problems in the leasing program, namely, low rental fees, indefinite renewal of leases, and no requirement for proof of production.

JLARC staff discussions with fishery officials indicate that the low annual rental fee (\$1.50 per acre) encourages persons to maintain leases and not to produce oysters. For example, individuals may hold an oyster lease because it has been in their family for years. While leaseholders do not intend to use the grounds for oyster production, the rental fee encourages continued ownership. In fact, the \$1.50 lease fee has been described as a bargain in light of the productive capability of portions of the private grounds. When compared to other Atlantic and Gulf Coast states, Virginia's oyster rental fee is about average: Georgia (25¢), Maryland (\$1.00), Florida (\$5.00), and North Carolina (\$5.00). The last time Virginia increased its rental fee was over 15 years ago (1960), from \$1.00 to \$1.50 per acre. Since then, the average price for a bushel of market oysters has doubled from \$4 to \$8. It seems that this price increase and the rising cost of administering oyster ground leases justify an increase in the annual rental fee.

The duration of leases also discourages productive use of oyster grounds. For example, the period of an oyster lease in Virginia is 20 years,

with guaranteed renewal at the end of this period. Other states such as North Carolina (10 years) and Connecticut (3 to 10 years) are more restrictive. Furthermore, North Carolina and Florida have laws stipulating that a lease must be used to produce oysters. For example, in North Carolina, leaseholders must prove that they have produced a minimum of 25 bushels of oysters per acre; and in Florida, 800 bushels per acre (produced over a certain period of time) is the requirement. Failure to comply results in forfeiture of the lease or a fine.

Repletion of Public Oyster Grounds

An oyster replenishment program has been carried out on the public grounds since 1962, but MRC does not have sufficient information to measure the impact of its replenishment efforts on stimulating oyster production. Unlike the leased grounds, where growers are solely responsible for cultivating oysters, the State is responsible for carrying out repletion activities in the areas reserved for public use. The purpose of repletion is to sustain the yield or increase the productivity of the public grounds. Primary methods of replenishment include the planting of oyster shells to provide beds for developing oysters and the transplanting of seed oysters from areas where seed production is too heavy. A replenishment tax (varying from 5 to 30 cents per bushel depending on the selling price of market and seed oysters) levied on oysters taken from the public grounds is a major source of revenue used to finance the repletion program. Since 1962, MRC has spent over \$6 million for repletion purposes.

Effectiveness of Repletion Program. JLARC staff conducted an extensive review of MRC repletion and production data for the public grounds from fiscal year 1963 to 1976. It was impossible to determine, with any accuracy, a direct cause and effect relationship between replenishment efforts and total catch. For the period studied, MRC had not collected oyster catch information from the specific areas planted. While it is difficult to measure the impact of the replenishment program, available data tend to suggest that MRC has had a positive effect on rehabilitating certain oyster growing areas. For example, oyster and seed production on the Great Wicomico was virtually nonexistent until MRC initiated an intensive replenishment effort. Today, the Great Wicomico is producing market and seed oysters.

While replenishment efforts do seem to stimulate production of oysters, additional information is required to accurately assess the effects of State replenishment activities on specific oyster growing areas. Recently, MRC authorized VIMS to conduct a four-year study of the public grounds to determine those areas that would cost too much to bring back to productivity; which MRC through replenishment, could restore to productivity; which are already productive with cultch on them; and subject to the disease MSX. As an extension of this study, MRC and VIMS should develop a procedure for measuring the affect of publicly sponsored replenishment efforts on revitalizing oyster growing areas. Such procedures would provide MRC with valuable information on which to plan future replenishment activities. At present, MRC has sufficient funds to plant shells and seed oysters on only a very small percentage (about two percent) of the public grounds. Due to the low level of public oyster production, MRC should make every effort to obtain the greatest yield from its limited replenishment funds.

Sanitary Regulation and Enforcement

Since 1971, Virginia has encountered major difficulties in meeting federal shellfish sanitation regulations. As a result, the General Assembly has had to appropriate over \$1 million to finance program improvements in the areas of regulation and enforcement. Despite these improvements, disagreement still exists between federal and State agencies over acceptable bacteriological levels in growing areas and the need for increased regulation. Furthermore, recently proposed federal shellfish sanitation regulations may impose an even greater financial burden on State agencies, oyster growers, and oyster processors.

The quality of oysters is directly related to the waters in which they grow and feed. Because oysters feed by pumping water through their bodies, they accumulate microorganisms, chemicals, and toxic substances from marine waters. Since consumers frequently eat partially cooked or raw oysters, a health hazard may exist if the shellfish are harvested from contaminated waters. The National Shellfish Sanitation Program (NSSP) is the principal means for regulating the safety of shellfish, including oysters. The NSSP is a voluntary, cooperative enforcement agreement between federal, State, and industry representatives directed at making sure shellfish are safe to eat. Under the agreement, Virginia is encouraged to adopt laws and regulations to ensure control of shellfish sanitation, survey shellfish growing areas for pollution sources, post growing areas that are unsafe and patrol such areas to prevent illegal harvesting, and inspect shellfish plants. The Bureau of Shellfish Sanitation of the Department of Health and the Marine Resources Commission are jointly responsible for enforcing the regulations. The Federal Food and Drug Administration (FDA) conducts an annual review of each state's control program including a review of growing area files and the inspection of a representative sample of processing plants. Based on this review, FDA certifies or withholds certification of a state's program. During the entire history of NSSP, the FDA has never withheld certification of a state shellfish program.

Compliance With NSSP. Virginia's program failed to pass FDA's 1971 evaluation. The primary criticisms were that BSS was permitting the removal of oysters from water with high bacteriological counts and that MRC was not adequately enforcing the closures of shellfish growing areas. In response to this criticism, the State developed an action plan to correct the problems cited by FDA and the General Assembly appropriated \$1.3 million to implement various elements of the plan, including the addition of 18 marine police and an inspector supervisor at MRC.

FDA did not perform another evaluation until 1975, allowing sufficient time to determine the effectiveness of the 1972 action plan. In its 1975 review, FDA found that Virginia had made considerable progress, but several problems were identified with BSS growing area classifications:

- Classification was inconsistent--some areas are closed solely on the basis of the bacteriological results, while others with high bacteriological counts remain open.
- Questions raised by sampling data in some growing areas require further analysis or special investigations, but none has been done.

- Some BSS evaluations fail to identify stations which do not meet the established criteria.
- Areas which show excessively high bacteriological counts with no apparent sources of pollution were not considered health hazards.

In response to FDA's criticism, BSS is developing guidelines to specify when a growing area should be open or closed. However, BSS and FDA still disagree over what constitutes an acceptable bacteriological level. FDA specifies 14 fecal/100 ml. (a level of bacteria which indicates the possible presence of harmful organisms) as the minimum water quality standard for all types of wastes--of human and animal origin. BSS applies this standard to wastes originating from human sources (septic tanks and waste disposal plants) but not to wastes from nonhuman sources. If the pollution source is determined to be nonhuman (animal wastes and feed-lots), BSS tolerates a higher bacteriological level--23 fecal/100 ml. Virginia is able to exercise this option because the NSSP guidelines specifically state that areas with high fecal count must be closed unless it can be shown by a scientific study that the fecal count does not indicate a public health hazard. A study conducted for BSS found no evidence that disease could be passed from animal feces through shellfish to humans. BSS officials contend that the FDA fecal coliform standard can be exceeded if certain criteria are applied and "professional judgment" is exercised. The area guidelines now being developed will require consideration of the following before a growing area is closed: location and discharge of sewage treatment plants, salinity content, population density, drainage characteristics, and dispersion of shoreline deficiencies such as septic tanks. While FDA does not entirely agree with Virginia's "professional judgment" policy, it considers the development of guidelines a step toward uniformity in classifying growing areas.

The 1975 evaluation was favorable toward plant inspections and enforcement. Processing plants were found to be in reasonably good condition, and MRC had greatly improved its enforcement function.

Proposed Federal Regulations. The effectiveness of NSSP regulations in protecting the consumer was seriously questioned by the General Accounting Office in a 1973 evaluation and by FDA internal appraisals. In June, 1975, FDA proposed tougher regulations under the Food, Drug, and Cosmetic Act of 1938 which would have required states to: (1) develop a Comprehensive State Shellfish Control Plan; (2) strictly enforce microbiological, pollution, and other quality standards of the waters; (3) establish a tagging and record-keeping system for shellfish to determine growing area origin and processors; and (4) establish specific control practices and sanitary requirements for both processors of shellfish and handlers of shell stock.

The proposed guidelines were received with considerable opposition in Virginia, as well as in other shellfish producing states. Most of this opposition revolved around the anticipated cost of implementing the new program. BSS estimated that the new law would increase the cost of the shellfish sanitation program anywhere from one-half to \$2 million. Because of strong opposition, FDA withdrew its proposed regulations in December, 1975. FDA plans to review the comments of states and resubmit revised regulations sometime during 1977. States will again have an opportunity to comment on the regulations.

The State has already spent over \$1 million to comply with federally imposed regulations to strengthen the National Shellfish Sanitation Program. Assuming that the revised regulations result in increased program costs, the State will be faced with a difficult decision: How much more should be spent to protect a declining oyster industry? It may be necessary to seek more efficient ways of producing shellfish, especially oysters, in order to justify future increases in the cost of operating shellfish sanitation programs.

Improving Oyster Production

The concerns of the oyster industry are numerous and complex. Natural and man-made disasters, inefficient management practices, decreasing oyster profits, and increased program costs have all contributed to the sharp decline in oyster production. Critical choices must now be made with regard to the State's future role in reversing this decline. According to MRC officials, Virginia has an excellent opportunity to capture a part of the growing national demand for oysters "by implementing a program designed to maximize the use of all public and private oyster planting grounds".³ Furthermore, MRC believes that it is quite feasible to restore oyster production to pre-1959 levels, about 15 to 20 million pounds per year. In a 1975 grant application to the Federal Economic Development Administration, requesting \$2 million in replenishment assistance, MRC stated:

If this grant is awarded, it is estimated that by 1980 Virginia production will reach 17.5 million pounds or 18.6% of national consumption. In addition, it is estimated that approximately two thousand new jobs will have been created for harvesters and that an increase in employment will also occur in the processing plants.⁴

Although the grant was not awarded, MRC officials still maintain that oyster production can be substantially increased through the application of improved management practices and techniques.

In light of the potential for expanding market opportunities, a number of different management actions could be pursued to increase the productivity of the public and private oyster grounds:

- First, the \$1.50 rental fee could be increased to discourage the holding of private oyster grounds for reasons other than the production of oysters. This fee could be assessed on the value of the volume of oysters produced. Additionally, leaseholders would be required to provide annual evidence of oyster ground use.
- Efforts could then be made to stimulate private and public production. This could be accomplished by: (1) expanding the private use of oyster fisheries by leasing the barren bottom of public growing areas; (2) lessening the financial risks associated with oyster growing through some form of economic inducements; and (3) increasing replenishment of the public oyster grounds.

Under existing oyster laws, the General Assembly is primarily responsible for finding ways to stimulate oyster production. The MRC has limited decision-making authority to manage the public oyster fishery since regulations are established by legislation. An annual report of the MRC states:

The Commission has always felt, and the Governor's Management Survey concurs, that basic responsibilities and authorities should be granted the Commission, leaving the details to be promulgated via the Commission's regulatory power. Conditions in the industry change too rapidly for statutory laws to be effective. To produce oysters you must plant and harvest according to the dictates of the environment and not laws. We hope that this option is widespread enough, and that the Commission has engendered the confidence of industry, in order to allow some substantive changes to be made.⁵

A recent study of the Council of State Governments found that "State marine fisheries agencies should have the authority to adopt, modify, and repeal regulations pertaining to the management of marine fisheries resources".⁶ Detailed provisions of the *Code* could be greatly simplified by delegating the MRC broad authority to manage the oyster fishery and to develop an oyster fishery management plan. The commission, with the assistance of VIMS, could then formulate an appropriate action plan for reviving the troubled oyster industry, which could include the options outlined above.

MANAGEMENT OF OTHER FISHERIES

Since the oyster growing areas are located within the waters controlled by the State, a great deal of management attention has been directed at this fishery. However, the Marine Resources Commission is also involved in regulating other types of fisheries and faces some of the same management problems associated with oysters--principally, the common property nature of fisheries.

An emerging concern in Virginia's off-shore and coastal waters has been overfishing of the surf clam and menhaden. As pointed out in Chapter 1, these species make an important contribution to the fishing economy and, therefore, it is essential that effective management programs be developed to protect them from possible depletion. However, since menhaden migrate across state boundaries and surf clams live in waters beyond State control, Virginia must rely on voluntary intergovernmental agreements to manage these fisheries. Thus far, little progress has been made in achieving coordinated management of these fisheries. The recent enactment of the federal Fisheries Management and Conservation Act, extending U. S. fishery jurisdiction to 200 miles effective March, 1977, may make management of these fisheries more effective.

Surf Clam

Between 1974 and 1976, surf clam landings in Virginia declined by 44 million pounds. Most of the harvest occurs outside the three mile limit. The surf clam fishery extends along the Atlantic Seaboard from North Carolina to

Maine and is most abundant from New York to the mouth of the Chesapeake Bay. But, as the surf clam became depleted off the shores of New Jersey and Maryland, fishermen moved their operations off the shores of Virginia. While there are strong indications that surf clam stocks are being overfished, conclusive data are lacking and the industry remains unregulated.

Prior to 1971, most of the surf clams were harvested within the three mile territorial zone of New Jersey. In order to prevent depletion, industry spokesmen in September, 1971, recommended strict conservation measures within State waters. Later that year, New Jersey recommended that the surf clam be considered for inclusion under the State-Federal Fisheries Management program. The purpose of this program is to regulate fisheries by developing and implementing management plans to ensure effective conservation and optimum economic, recreation, and social benefits. The states, federal government, and private sector cooperate in the development of management plans. Plans are prepared by technical committees composed of state and federal administrators, industry representatives, and scientists.

A State-federal management committee on surf clams was formed in June, 1973. An MRC official said that the committee's efforts have been totally unsuccessful. The states involved (New York, New Jersey, Delaware, Maryland, and Virginia) have not agreed to uniform regulations which could lead to effective control. The Legislature enacted general legislation which would allow MRC regulation of the surf clam industry, but Maryland has not. However, if MRC implemented regulations to control the size of the catch, fishermen would likely land their catch in Maryland. In 1974, the states agreed to a mandatory system for collecting statistical data on fishing effort and fish mortality; however, the system has not been developed, and there is no agreement among states on management measures limiting surf clam efforts or landings.

Finfish Management

Finfish are difficult to manage because they are more mobile than shellfish. For this reason, the role of the individual states is somewhat constrained; effective management requires concerted action at the regional, national, and international levels. In the past, strict finfish management was not necessary because of the abundance of supplies. This situation has changed, however, with the increase in domestic and foreign fishing efforts off Virginia's coast. Domestic fishermen have heavily fished menhaden within State controlled waters and foreign vessels have operated outside the three mile limit without much federal regulation of foreign catch. The fishery most affected by the large foreign involvement has been the river herring. Foreign fishermen intercept these fish on their spawning runs into the Chesapeake Bay system. An MRC official stated that the increase in foreign catch had been accompanied on a pound-for-pound basis by a decrease in Virginia catch. River herring landings were 9.3 million pounds in 1973 worth \$.3 million and 13.3 million pounds worth \$.4 million in 1974. The losses attributed to foreign fishing is evident when these production figures are compared to the 20-year average of 21.3 million pounds.

The menhaden fishery is the largest in Virginia in terms of volume landed. Nearly all of the catch is obtained from the Chesapeake Bay, which is defined as an "interior waterway" and regulated by the State. Virginia landings

of menhaden have increased from 178 million pounds in 1969 to 437 million in 1976. Some fisheries experts are concerned that the menhaden fishery is being threatened with depletion, but there are others who do not perceive the need for extensive planning and regulatory action at this time. Under the State-Federal Fisheries Management Program, a subcommittee composed of government and industry officials is reviewing available menhaden fishery data. If it is decided that a plan is required, there are a number of management options available including modification of fishing season dates, limitation of entry, and restriction of catch.

Fisheries Management and Conservation Act

A framework for improved State-federal collaboration in off-shore fisheries management has been established under the Fisheries Conservation and Management Act of 1976. The purpose of the act is to extend U. S. jurisdiction of fisheries from 3 to 200 miles. This action was brought about because of the steadily increasing number and size of foreign fishing fleets which have significantly overfished many species and caused economic losses to U. S. fishermen. The act requires foreign fishermen who wish to fish within the 200-mile limit to obtain a permit. The permit will specify a quota which can be taken. This quota will be based on the concept of optimum sustainable yield; that is, the number of fish which can be taken while still maintaining the necessary number to allow propagation. The act became effective in March, 1977, and will be enforced by the United States Coast Guard.

The primary means of management will be through regional councils composed of the National Marine Fisheries Service regional director, the fisheries administrator for each state in the region, another representative from each state, and other representatives from within or outside the region. The Governor of Virginia has appointed three representatives including the Commissioner of MRC, the Director of VIMS, and an industry representative.

The council is presently discussing preliminary draft management plans for these species for which foreign fishing interests are competing with American fishermen. Surf clams, lobsters, and the river herring appear to be top priorities. (MRC officials also speculate that menhaden could be included under the jurisdiction of the act.) Once plans have been approved by the council, they will be forwarded to the National Marine Fisheries Service and the Secretary of Commerce for final approval. Under proposed management plans, foreign and domestic fishermen would be allowed within the 200-mile limit under federal regulation of catch limits, size limits, or other controls. A key feature of the legislation allows the Secretary of Commerce the power to impose management measures in fisheries under domestic jurisdiction when such measures are not implemented by the states. However, it is anticipated that use of this authority will be limited.

Achieving Effective Management of Other Fisheries

The effective management of other fisheries will depend, in large part, on the actions of MRC and on cooperation between states and the federal government. An appropriate role for MRC could be to develop shellfish and finfish management plans for the area extending to the three-mile limit, representing Virginia's coastal waters. In addition, the Commonwealth should seek

opportunities for collaboration in off-shore fish management with other states through intergovernmental arrangements.

As noted earlier, the opportunities for effective management as well as the economic potential of the fisheries resource vary by species. For example, crabs and resident estuarine finfish (those fish which live in Virginia waters, such as white perch, yellow perch, and catfish) are under the legal jurisdiction of the Commonwealth during their entire life cycle and could be managed. On the other hand, the menhaden and surf clam fisheries are of substantial economic importance, but the species are located in waters less easily managed by the State acting alone and may be threatened with depletion. The Marine Resources Commission should consider developing criteria for selecting threatened species and appropriate plans for managing these species. Plans could include the identification of threatened species, their economic importance, and available fisheries conservation measures. The plans should clearly specify the type of actions required to manage inshore and offshore fisheries under the State-Federal Fisheries Management program and Fisheries Management and Conservation Act. If necessary, the plans could include recommended changes to State laws regulating marine fisheries.

COASTAL SHORELINES AND WATERS

Although the welfare of the commercial fisheries industry remains a top priority, marine resources have been endangered by man's use of coastal shorelines and waters. Decisions to allow urban development, waste disposal facilities, and marinas have frequently conflicted with existing marine resource uses, resulting in the loss of prime fishing areas, tidal marshes, and bottomlands. Proposed uses of marine resources should be evaluated within the context of a systematic planning process. But, such a process does not now exist in Virginia.

Despite the lack of an overall planning framework, steps have been taken to protect certain elements of the marine environment, namely, wetlands and bottomlands.

Wetlands and Bottomlands

Tidal marshes and bottomlands serve as the natural habitat for marine organisms and plant life. As such, wetlands and bottomlands are recognized as important marine resources and are protected by State law. These statutes provide an opportunity for State and local officials to review and evaluate proposed uses of wetlands and bottomlands. However, available evidence suggests that the effectiveness of these processes is reduced by a lack of follow-up on wetlands permits, a reluctance on the part of the legal system to prosecute violators, and an absence of specific guidelines for evaluating the impact of proposed encroachments on bottomlands. (For a discussion of permit coordination problems among State agencies, refer to the JLARC report on water resource management programs in Virginia, pp. 143-144.)

Wetlands. The Wetlands Act of 1972 was passed in recognition of the unique character and role of tidal marshes in the marine environment. The act

establishes a State policy of wetland preservation and accommodation of necessary economic development in a manner consistent with their preservation. Primary decision-making responsibility is vested in wetlands boards established in each Tidewater locality. Where local boards have not been established, permit applications are reviewed by the Marine Resources Commission, which also hears appeals from local boards. The law also directs MRC to establish regulatory guidelines. The Virginia Institute of Marine Science is directed to assist in the formulation of guidelines, maintain an inventory of wetlands, and to evaluate development proposals and make recommendations to local boards.

Twenty-five of 50 Tidewater localities have established wetlands boards, and MRC has developed and issued guidelines. VIMS has inventoried approximately three-fourths of Virginia's tidal wetlands and anticipates completing this task by late 1977. VIMS has also evaluated permit applications for local boards and provided advice on how to accommodate proposed uses with a minimum adverse impact. The Wetlands Act appears to have had a positive impact. Initial data suggest the program may have decreased the rate of wetlands alteration from an estimated 450 acres per year prior to 1972 to less than a total of 100 acres between 1972 to 1976.⁷

Despite the apparent success of the legislation, nearly all officials interviewed by JLARC cited the need for more systematic follow-up to ensure permit compliance. Although the extent of noncompliance is unknown, it does occur. For example:

- A landowner was denied a permit to build a retaining wall at the mean low water mark. Instead, he was granted a permit to construct the wall five feet from the mean high water mark toward the marsh. A subsequent visit by the chairman of the local wetlands board found that the wall had been constructed well beyond this point, destroying much of the marsh. The landowner was given a \$100 suspended fine but was allowed to leave the wall in place since its removal would have created even more damage.

Few, if any, local boards have enough personnel for permit surveillance, and MRC marine patrols provide only intermittent coverage. Moreover, local officials are reluctant to prosecute violators of the law. MRC, VIMS, and the local boards should review the wetlands process to determine the extent of noncompliance and develop more adequate follow-up procedures.

Bottomlands. The bottoms beneath bays, rivers, and creeks below the mean low water mark are reserved for the public benefit in Virginia. All persons who wish to use these bottoms must obtain a permit from the MRC which has exclusive authority for bottomland regulation. Several broad categories of users are exempted from this process. Such exemptions include dam construction, U. S. Coast Guard and Corps of Engineers projects, port facilities owned or leased by the Commonwealth or its political subdivisions, and riparian property owners. Since fiscal year 1972, over half of the bottomland users were exempted from a permit; and of the 775 remaining requests, only 10 were not approved (Table 2).

Section 62.1-3 of the *Code* establishes general criteria for evaluating bottomland permit applications. In evaluating a proposed use, MRC is directed

Table 2

BOTTOMLAND PERMITS

<u>Fiscal Year</u>	<u>Total</u>	<u>Approved</u>	<u>Exempt</u>	<u>Withdrawn and Inactive</u>	<u>Pending</u>	<u>Denied</u>
1971-72	182	85	83	12	0	2
1972-73	358	173	126	22	30	7
1973-74	613	200	365	33	14	1
1974-75	<u>539</u>	<u>134</u>	<u>343</u>	<u>17</u>	<u>45</u>	<u>0</u>
Total	1,692	592	917	84	89	10

Source: Marine Resources Commission.

to consider, among other things: other reasonable and permissible uses of waters and bottomland; impact on marine fisheries and resources; impact on wetlands; effect on adjacent or nearby properties; impact on water quality. Although the Code establishes these general criteria for reviewing permit applications, MRC has not yet completed and implemented specific guidelines (similar to those now used to review wetlands applications) for evaluating the overall impact of proposed projects on the environment.

Other Coastal and Water Resources

Decisions which affect or modify the use of coastal shorelines and waters can also have a significant impact on the supply of marine resources. Numerous fisheries--oyster, crab, certain species of finfish--are dependent on coastal areas and waters for survival. Urban growth, economic development, and water pollution can easily destroy or alter these fisheries and adversely affect fish growth and reproduction rates, especially in estuaries. Furthermore, uncontrolled releases of harmful waste materials can result in substantial economic losses to the commercial fishing and seafood processing industry.

Conflicts in Land Use. Proposed developments on coastal shorelines can have a detrimental effect on various marine resources, especially in heavily populated areas. By the year 2000, it is anticipated that almost two-thirds of the State's population will live in the Tidewater region. The current population of the region is expected to increase from 2.8 to 4.1 million persons--a gain of 1.3 million in 25 years. Obviously, the pressures of population growth will likely cause environmental disruptions and lead to conflicts over the most desirable use of coastal shorelines. For example:

- A proposed \$450 million oil refinery in Portsmouth, Virginia is located near valuable oyster seed beds of the James River. Many contend that the refinery will kill seed oysters in the area as occurred with refineries in Maryland and New Jersey. Proponents of the refinery have stated that public and private benefits far exceed public costs. The refinery is expected to employ 2,200 persons.

- A planned dredging project in Westmoreland County to expand a boat marina threatened the closing of two major oyster beds. The loss of these two areas would affect the oystermen in the area.
- Public oyster grounds have been replaced by engineering projects. A shipbuilding industry has expanded further into the public oyster grounds by having the State declare waters to be nonproductive.
- A company recently purchased 980 acres of land in Northampton County to be used for manufacturing off-shore oil drilling equipment. The industry will provide up to 2,000 jobs in an economically depressed county. Opponents of the project claim that it will disrupt the rural coastal environment of the lower Delmarva Peninsula.

In the future, it is expected that the effects of urban land development on marine resources will intensify. Moreover, it is likely that conflicts over the most appropriate use of shore lands will increase as well. An official of the State Water Control Board recently stated that "The problem is, do we go for the shellfishing industry and halt shoreline development, or do we allow development at the expense, or even the loss, of the shellfish industry to the State?"

Conflicts in Water Use. Water pollution has had a devastating effect on the commercial fisheries of Virginia. As of January, 1977, the Bureau of Shellfish Sanitation had closed over 169,000 acres of classified shellfish growing areas, of which about half are capable of shellfish production. Additionally, a partial ban on fishing exists on the lower James River because of Kepone contamination. Pollution problems resulting from waste disposal have always been a major concern of watermen in southeastern Virginia. Several legislative study commissions have dealt with the problem and made numerous recommendations to reduce the impact of discharged wastes on the commercial fisheries. However, as the population grows, more waste is produced and additional sewage treatment facilities are required. Even though water pollution abatement programs have substantially reduced the amount and type of pollutants discharged into State waters, serious water pollution problems still remain in fisheries areas. For example:

- Discharges of chlorine has been blamed for killing oyster larvae. Following the 1973 fish kill on the James River which was attributed to chlorine, a special task force was assembled to determine whether cutbacks in chlorine could be permitted during spawning season without jeopardizing public health. VIMS has found that the level of chlorine found in treated sewage is three times greater than the amount needed to kill fish and oyster larvae.
- The State Department of Health condemns waters adjacent to a sewage treatment plant outfall for the taking of shellfish.
- The most severe impact on the State's marine resources has been the discharge of Kepone into the James River. In December, 1975, the Governor imposed a ban on the taking of finfish and

shellfish from the James River. The Health Department has estimated that Kepone pollution has resulted in an economic loss of \$29 million to the commercial fishing, sports fishing, and recreation industries. Approximately 2,600 full-time or part-time jobs have been eliminated.

Suggestions have been made that improvements in the methods of controlling sewage from wastewater treatment plants and vessels are urgently needed. Furthermore, recent conflicts over the use of shorelines and tidal waters have demonstrated the need for effective planning and management of the State's marine resources.

Planning for the Use of Marine Resources

The State must provide leadership in developing a coordinated government response which identifies the most desirable uses of marine resources and achieves a balance between environmental protection and economic growth. A process should be established whereby federal, State, and local decision making concerning the protection and use of marine resources is brought into sharper focus.

The General Assembly has established the basic goals for the Commonwealth's marine resource management program: To protect and promote the State's seafood industry, marine fisheries, and marine resources. However, beyond these goals there is little explicit legislation dealing with comprehensive planning and coordination of marine resource programs. Moreover, no State agency is authorized by statute to establish a process for translating these goals into a coordinated program to manage the use and development of the State's marine fisheries and resources.

Management of marine resources in Virginia lacks sufficient direction. Coordination that does exist requires extensive contact among agencies and special task forces, and is concerned with specific problems rather than the broader scope of overall marine resource management. Effective management of marine resources will require a comprehensive planning and management process which encompasses all marine resource issues. Although lacking specific legislative endorsement, such a process was initiated in 1974 as part of the Commonwealth's Coastal Resources Management Program. A coastal resources plan is currently being developed by the Office of the Secretary of Commerce and Resources, with the assistance of MRC and VIMS, as a means for managing activities in the coastal zone. The plan is being financed under the 1972 federally enacted Coastal Zone Management Act (CZMA). By December, 1977, \$1.5 million in federal funds and \$500,000 in State matching services will have been spent to support this planning effort. The State's final plan must:

- identify coastal zone boundaries;
- determine permissible land and water uses;
- designate areas of particular concern;
- provide that local land- and water-use regulations do not unreasonably restrict uses of regional benefit;

- consider the national interest when siting facilities designed to meet requirements which are not local in nature;
- provide for public participation;
- demonstrate that the State has the authority and organizational structure to control coastal resource uses and to implement the program; and
- coordinate program development activities with interested federal agencies, State agencies, local governments, regional organizations, port authorities, and other interested parties.

Once the coastal resources plan is completed (in late 1977), it is likely that the General Assembly will be presented with various alternative recommendations to implement sections of the plan. The Legislature may wish to consider providing authorization and direction for this effort through appropriate legislation. Specifically, consistent with existing marine resource legislation, MRC could be assigned the responsibility for coastal resources planning, under the policy direction of the Secretary of Commerce and Resources. If implementation of the plan is desirable, the General Assembly may also want to consider creating a State-local partnership for marine resource management, modeled after the Wetlands Act of 1972. Under such an intergovernmental arrangement, MRC would be responsible for planning and oversight while localities would evaluate and decide on proposed uses of the marine environment.

CONCLUSION

A variety of issues are involved in managing marine resources. Important questions arise about the effectiveness of State oyster ground regulation and the need for a comprehensive approach to managing marine resources. In view of the difficult choices facing the General Assembly regarding coastal zone management, it is essential that the Legislature have a clear understanding of marine resource problems. One way of obtaining this understanding would be through public meetings or conferences which involve appropriate committees or commissions of the General Assembly to focus attention on critical marine resource issues. The Coastal Studies Commission is already charged with following the progress of the coastal resources planning program and reviewing the management proposals prepared by the Office of the Secretary of Commerce and Resources. Standing committees of the General Assembly, the House Committees on the Chesapeake and Its Tributaries and on Conservation and Natural Resources, and the Senate Committee on Agriculture, Conservation and National Resources could be involved in reviewing other aspects of marine resource management, including fisheries regulation. Because proposals may be presented at the next session of the General Assembly for implementing a coastal zone plan, public hearings would be useful in assessing citizen attitudes toward marine resource problems and in determining the need for changes in existing marine resource laws and programs.

ADMINISTRATION OF MARINE RESOURCE AGENCIES

Efficient internal administration of marine resource agencies is required to ensure effective program performance. However, marine resource agencies continue to rely on outdated administrative practices in implementing program responsibilities.

Legislation imposes many restrictive operating requirements on the Marine Resources Commission (MRC) for administering fisheries programs. For example, procedures for processing private oyster ground leases and for collecting revenues are defined in statute and are difficult to change. Eventually, fisheries laws will have to be revised if MRC is to attain a high level of program efficiency and responsiveness. In the meantime, however, the commission could initiate several actions which would greatly strengthen management of the agency. A particular weakness is the absence of a planning process for identifying program needs, objectives, and priorities. The lack of a program plan has resulted in several administrative problems involving job descriptions for law enforcement personnel, agency-wide allocation of manpower, and use and deployment of large patrol cruisers. Establishment of an internal program planning process and modernization of the job classification system would be significant steps toward improving agency management.

The Virginia Institute of Marine Science has performed well in providing a broad range of marine science research. However, administrative organization, grants and contract management, and financial controls must be strengthened to adequately manage its multimillion dollar research program. An audit conducted by the Auditor of Public Accounts for a period ending June 30, 1976, found that VIMS net deficit was \$735,741, of which about \$413,053 may be recoverable over the long term. A shortage of revenues to cover the full cost of converting a 144' U. S. Navy minesweeper to a vessel for deep-water research has contributed to this deficit. VIMS mismanagement of funds and its continuing inability to repay loans on time clearly indicate that a higher priority must be given to financial administration. Furthermore, to ensure that the research program of the institute is relevant to the Commonwealth, VIMS must develop a systematic research planning process guided by a realistic assessment of the most pressing marine research needs of the State.

JLARC staff conducted a special review of vessel operations, and found utilization of MRC cabin cruisers to be low. Vessel management at VIMS has been virtually nonexistent. Vessels and maintenance personnel are dispersed throughout the agency, and there are no data on utilization and costs. MRC and BSS vessel management procedures are recommended as a model for VIMS.

III. ADMINISTRATION OF MARINE RESOURCE AGENCIES

Administration of marine resource agencies is vitally important. Program performance is enhanced by efficient use of funds and personnel, by constant attention to improving operating procedures, and by development of responsive organizational structures. A prerequisite to efficient agency administration is the development of a program planning process to ensure that available resources are directed towards established goals and objectives.

Many of the administrative practices of Virginia's marine resource agencies are outdated and in need of change. Significant administrative deficiencies were observed at the Virginia Institute of Marine Science and the Marine Resources Commission, including problems in administrative organization and the absence of agency-wide program planning. Moreover, project management procedures and financial controls at VIMS are not sufficient to effectively manage a \$5 million research budget. The first section of this chapter focuses on law enforcement operations at MRC, while the second section addresses grants and contract management, financial controls, and organization at VIMS. A third section examines vessel operations at marine resource agencies.

ADMINISTRATION AND PLANNING AT THE MARINE RESOURCES COMMISSION

The operational efficiency of the Marine Resources Commission influences the ability of the State to effectively manage its marine resource programs and activities. However, the commission does not have sufficient flexibility to respond to changing marine resource conditions and needs; and program management is based largely on traditional administrative practices. Problems are caused by detailed fisheries laws and regulations and by weaknesses in agency organization and program administration. Of special concern are revenue collection procedures, job classification structures, and agency-wide program planning. These concerns must be addressed so that MRC can improve the efficiency and effectiveness of agency operations.

Law Enforcement Operations

Law enforcement is the largest single activity undertaken by the Marine Resources Commission. Over 70 percent of all MRC personnel are involved with such activities as shellfish and finfish regulation, marine boat safety, environmental protection, and oyster inspection. MRC has taken several steps to improve enforcement operations in the last few years. However, the personnel classification system and patrol activities of the Law Enforcement Department appear outmoded, and may hinder the responsiveness of MRC to marine enforcement needs.

Personnel. Responsibilities of law enforcement personnel are vague. The present system of employee classification was established in 1959 and consists of only two basic positions: district inspector and marine patrolman (captains and mates). Position specifications for district inspector do not include a number of law enforcement responsibilities now frequently assumed by these employees as shown in Table 3. In addition, there is substantial variation

Table 3

COMPARISON OF WORK ACTIVITY AMONG MRC LAW ENFORCEMENT
PERSONNEL, SELECTED MONTHS, 1975

<u>Activity</u>	<u>District Inspectors (Percent)</u>	<u>Other Enforcement Personnel (Percent)</u>
Clams, Crab, Fish, Oysters	38%	39%
Small Boat Act	2	3
Replenishment	4	3
Wetlands	3	2
Shellfish Sanitation	25	28
Equipment Maintenance	7	14
Paperwork	16	5
Other	5	6

Source: Marine Resources Commission.

in the actual duties performed by district inspectors. JLARC staff has classified district inspectors into four categories based on assigned work activities:

1. District inspectors who serve as *the primary agents for a district*. These district inspectors are the sole agents for sale of fixed fishing devices and administration of oyster ground leases. They also sell licenses for other fishing devices and conduct law enforcement patrol.
2. District inspectors who act in a *subordinate capacity* in a district and are authorized to sell licenses for moveable fishing devices and patrol for enforcement of fisheries law and regulations.
3. District inspectors who serve on *shore patrol* units and have no administrative duties.
4. District inspectors who perform *administrative functions* such as man tax stations, and handle communications and central supply.

All district inspectors are eligible for the same pay scale (\$8,400-\$10,992), and failure to recognize different levels of responsibility and duty hazards results in inequitable compensation.

The persistence of an outmoded personnel classification system is a clear indication of MRC reliance on traditional administrative practices. MRC needs to modernize its classification system to ensure that job descriptions accurately reflect employee responsibilities. The Commissioner of MRC has recognized this need and noted in discussions with JLARC staff that he had sought to change to law enforcement personnel system to a single progression of responsibility (e.g., Inspectors I through IV) which would allow greater flexibility in the deployment of personnel. MRC reported the Department of Personnel and

Training was reluctant to approve such a change. The department, on the other hand, informed JLARC staff members that such a change is wholly within the scope of MRC authority. Apparently, there is a need for improved communication between MRC and the Department of Personnel and Training. Both organizations should cooperate to develop an appropriate personnel classification system for employees of the enforcement department. Adoption of the four-step progression system proposed by MRC is recommended.

Patrol Activities. The boundaries of law enforcement districts, the deployment of personnel to these districts, and patrol levels are also based on traditional patterns of activity. For example, marine units (captains and mates) patrol the open water in large motor launches, but also work close to the shore in smaller boats with outboard engines. Shore patrol units rove by automobile in two-man teams, but also patrol shallower waters by small boat when necessary. District inspectors who are primary licensing agents also patrol when their other duties permit. However, the patrolling activities of inspectors are largely continued to specific geographic districts, originally established by the old Commission of Fisheries (See Figure 7). Furthermore, until 1970, marine units, shore units, and district inspectors made their own decisions on when and where to patrol with little agency supervision. Because this practice produced haphazard and uncoordinated enforcement coverage, the Governor's Management Study Committee recommended in 1970 that MRC consolidate the 24 districts into three regions, and appoint supervisors for each region.

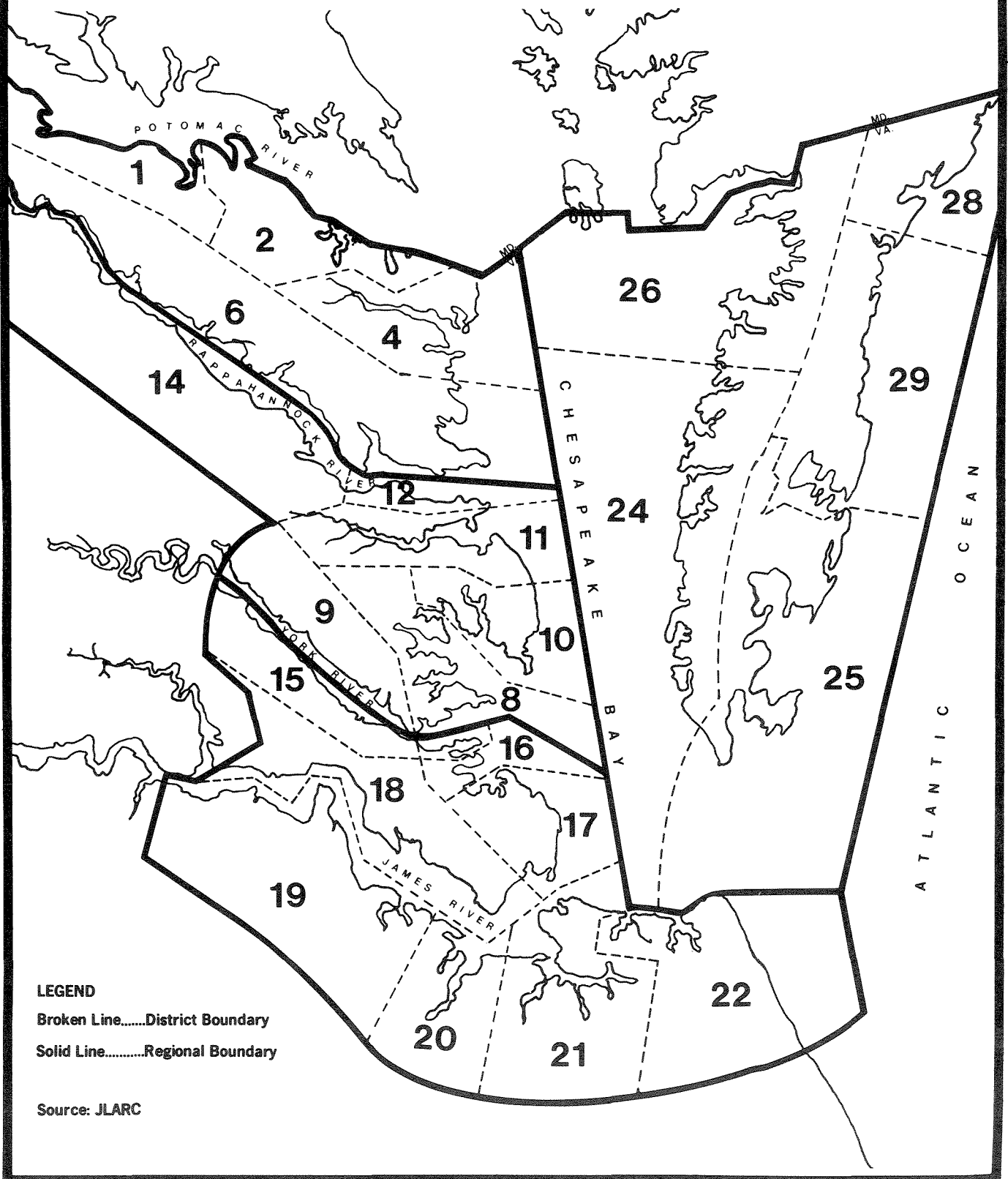
Since 1970, several steps have been taken to improve the efficiency of the Law Enforcement Department. Four regional supervisors were added in 1972 to provide daily coordination and direction of enforcement personnel. The number of district inspectors serving as primary agents has been reduced from 24 to 17 by assigning some inspectors responsibility for several districts and establishing area offices for license sales. These initiatives have enhanced MRC flexibility in responding to unexpected problems and have relieved at least some enforcement personnel of administrative duties.

While the day-to-day management of agency law enforcement operations seems to have improved, MRC still lacks a systematic procedure for regularly assessing overall law enforcement needs. As a result, the continued deployment of personnel and equipment on the basis of traditionally established geographic districts and patrol areas may no longer be appropriate or efficient. MRC administrators regard current personnel and equipment levels as an absolute minimum and existing patrol patterns as the most appropriate. Yet, in the absence of an internal program planning process for law enforcement operations, MRC lacks the capability to evaluate either the efficiency or effectiveness of its largest single agency activity.

To ensure continued program effectiveness and to promote efficient use of personnel and equipment, MRC must begin to systematically assess its law enforcement responsibilities and needs. Such an assessment must articulate the goals for law enforcement and the objectives to be achieved. The goals and objectives can serve as basis for translating MRC statutory responsibilities into specific tasks which, in turn, will establish the need for personnel and equipment in the field. For example, by clearly defining enforcement goals and objectives, criteria can be established for determining personnel and equipment needed to support field operations. Such criteria could include:

Figure 7

MRC Regional and District Boundaries



- *purpose* for patrol (e.g., fisheries, shellfish sanitation, wetlands, bottomland, boating law);
- *geographic areas or districts* to be patrolled and the relative importance of each (e.g., economic and environmental value, pollution problems, high incidence of violations);
- *time and frequency* for patrol (e.g., day, night, or weekend); and
- *type* of patrol (e.g., onshore, shallow water, open water, or aerial).

MRC has taken a limited approach to this type of planning with the establishment of a patrol policy for shellfish sanitation. The policy classifies shellfish growing areas according to the need for patrol and specifies a minimum number and type of patrols for each area. However, the policy is deficient in two ways: (1) only one facet of MRC enforcement responsibilities is addressed; and (2) because it specifies *minimum*, rather than actual patrol levels, the policy specifications cannot be directly translated into personnel and equipment needs. Most important, the policy fails to address the overall purpose of the MRC law enforcement function.

Development of a program plan, through which law enforcement needs can be systematically addressed on a regular basis, would enable MRC to determine more accurately the efficient deployment of personnel and equipment. This plan would complement administrative improvements already initiated and represents the logical next step in the transition of MRC to a more professional law enforcement organization.

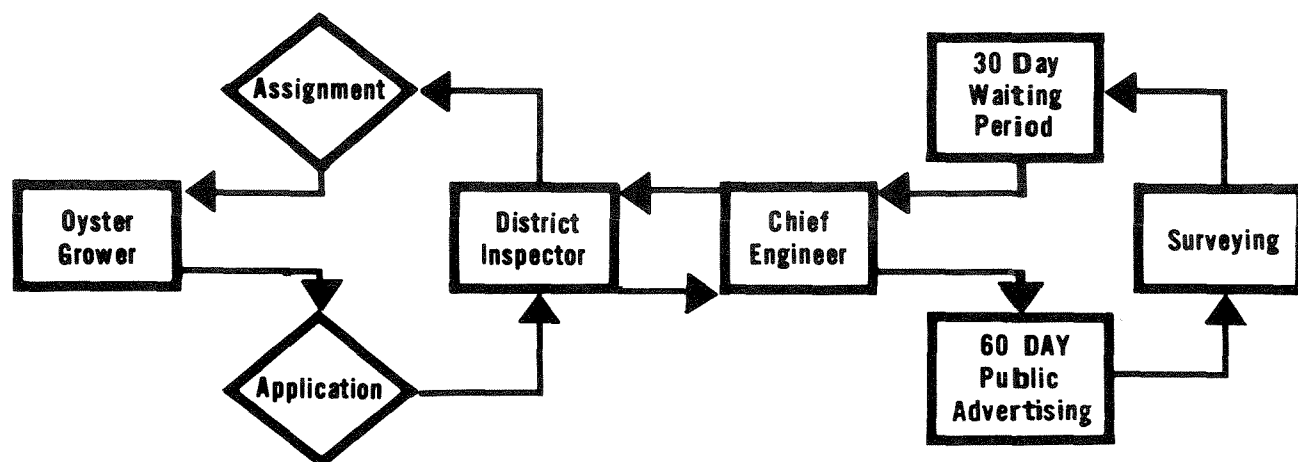
Oyster Ground Leasing

As of July, 1976, there were 474 applications for oyster leases awaiting processing, many of which had been pending for several years. The large backlog is a clear example of MRC's constrained ability to respond to changing program needs. According to commission officials, the primary cause for the backlog is the unreliability of base maps for leased areas and the lack of personnel to update these maps.

The process for obtaining an oyster ground lease is set by law¹ and is shown in Figure 8. Ideally, the MRC Engineering Department can process lease applications in slightly more than the 90-day waiting periods established by the *Code*, but because accurate maps of leased areas are lacking, surveyors cannot readily lay out the boundaries of either existing leases or areas sought by growers. The unreliability of present base maps is largely the product of past surveying practices. Prior to 1975, MRC surveyed each plot separately on the basis of unique reference points (e.g., a chimney or a house). In many instances, reference points have disappeared or have been otherwise altered and cannot be used to replicate the bounds of an oyster ground. Since 1975, MRC policy has been to survey each new application on the basis of a uniform grid system which often requires reestablishing boundaries for adjacent grounds as well. The Engineering Department estimates that from 90 to 95 percent of its

Figure 8

OYSTER GROUND LEASING PROCESS



Source: Joint Legislative Audit and Review Commission.

base maps need to be resurveyed to ensure reliability. Estimates of time required to complete resurveying range from five to ten years given present personnel levels and no new applications.

In 1975, MRC had four alternatives for reducing the backlog: (1) continue present personnel levels and slowly reduce the backlog over a five to ten year period; (2) reallocate funds or personnel from other agency program areas (particularly law enforcement); (3) require applicants to contract for their own surveys as is done in North Carolina; or (4) request additional personnel. Despite the budgetary constraints facing the Commonwealth and the savings possible through the other options, MRC elected to request additional personnel for 1976-78 biennium. Only a draftsman position was funded.

If the backlog is as serious as it appears, MRC must now consider the other alternatives. A review of agency priorities is overdue and should be undertaken to determine whether funds or personnel could be diverted to lease application processing. The commission may also wish to consider requiring applicants to provide their own surveys drawn to MRC specifications. However, in order to institute this change, Section 28.1-109 of the *Code* would have to be amended. Requiring applicants to prepare their own surveys, as is the practice in North Carolina, would allow surveyors to eliminate the current backlog of applications and prevent future backlogs. Furthermore, a private survey requirement would provide an added inducement that applicants seek leased ground only when intended for actual production.

Financial Management

MRC collects over one-half million dollars in fees, rents, and taxes each year. Although criticized by the 1970 Governor's Management Study for using district inspectors to collect revenues, over 70 percent of MRC funds are still collected by field personnel with receipts remitted to the central office monthly (Table 4). MRC has recently initiated some changes in collection procedures, but the commission continues to use law enforcement personnel for revenue collecting and incurs a substantial cost in terms of personnel time (6.5 man years in 1975). Revisions in the actual workload of the district inspectors could be reduced through streamlining and automation of the collection process.

Table 4

MRC REVENUE RECEIPTS
(Fiscal Year 1976)

	<u>Amount</u>	<u>Percent</u>	<u>Collected By District Inspectors</u>
Oyster Ground Rents and Related Fees	\$159,262	22%	Yes
Licenses	116,705	16	Yes
Oyster Taxes	230,132	32	Yes
Dredging/Easement/Permit Fees	<u>219,719</u>	<u>30</u>	No
Total	\$725,818	100%	

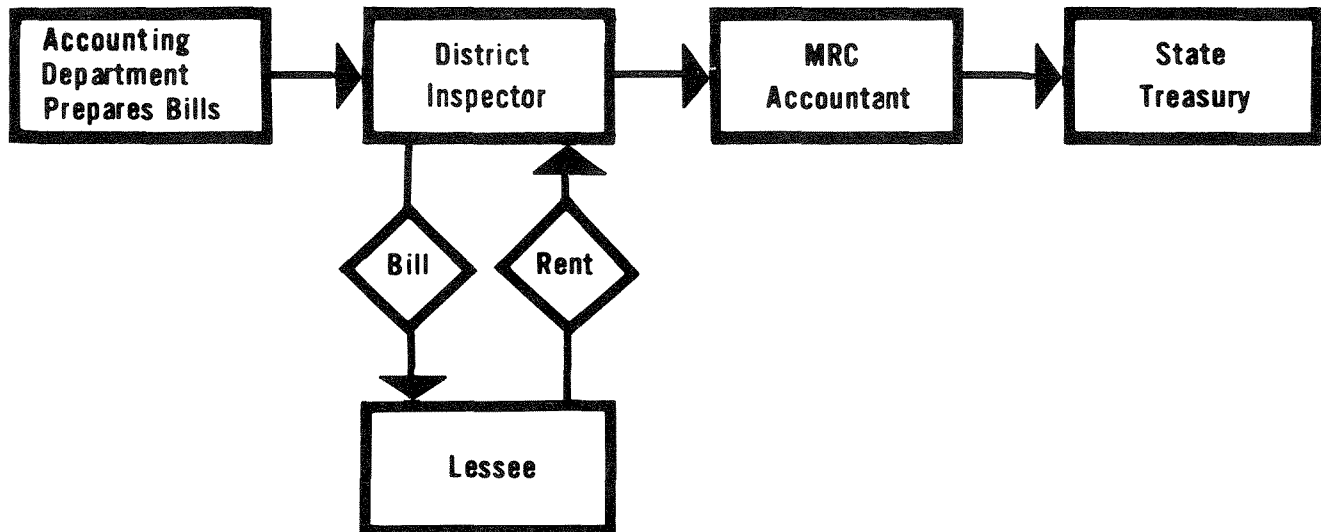
Source: Marine Resources Commission.

Oyster Ground Rents. The billing and collection of the annual rent for private oyster grounds is the most obvious process in need of improvement (Figure 9). State law requires that annual rent for leased grounds be paid to a district inspector.² However, invoices for rent due are prepared and mailed by the central office. The district inspector serves merely as a conduit for invoices and rent payments and must maintain records of these transactions as well as account for funds collected. There appears to be no reason why invoices prepared by the Accounting Department could not be mailed directly to the leaseholder who would remit payments directly to the central office. MRC could request an amendment of Section 28.1-109(11) of the *Code* to permit direct billing and collection of rents.

Additional savings could also be obtained by automating the production of annual rent statements which are now prepared manually and require approximately 40 man days to complete each year. MRC is developing an automated process for rent collection which would produce rent statements in less than one day. Development of an automated system for producing rent statements, combined with direct collection, should improve MRC efficiency by reducing costs as well as relieving district inspectors of an unnecessary paperwork burden.

Figure 9

COLLECTION PROCESS FOR OYSTER GROUND RENT



Source: Joint Legislative Audit and Review Commission.

Other Collections. District inspectors are also responsible for selling licenses and collecting oyster taxes (Figure 10). However, MRC appears to be moving towards relieving district inspectors of some of their revenue collection responsibilities. For example:

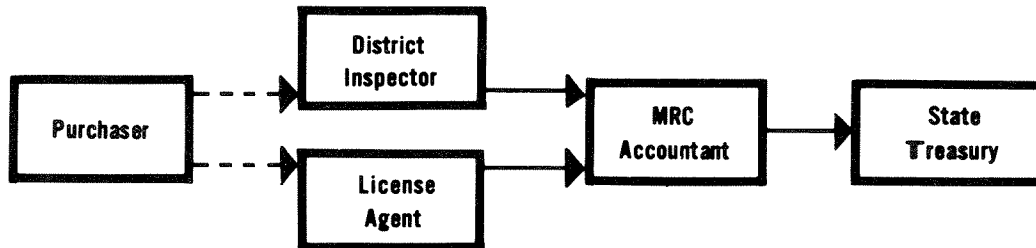
- Sections 28.1-93 and 28.1-86 of the *Code* have been amended to eliminate the requirement that district inspectors collect the Public Oyster Rock Replenishment Tax and Inspection Tax. Most of these taxes are collected either by shucking houses or at MRC Tax Stations.
- Sales of licenses for seven of the 23 inspection districts have been centralized in four suboffices manned by a district inspector. MRC officials describe this as a step toward establishing regular places and hours for license sales. This procedure concentrates financial and administrative responsibility in a few district inspectors thus freeing others for law enforcement duties.

Despite these positive changes, district inspectors retain significant responsibility for collection of and accounting for revenue. Specifically, district inspectors continue to collect taxes from shucking houses and forward them to the MRC central office. Similarly, district inspectors remain the primary source for sale of licenses and permits although eleven agents (e.g., sporting goods stores which receive \$.25 per sale as compensation) also sell some licenses.

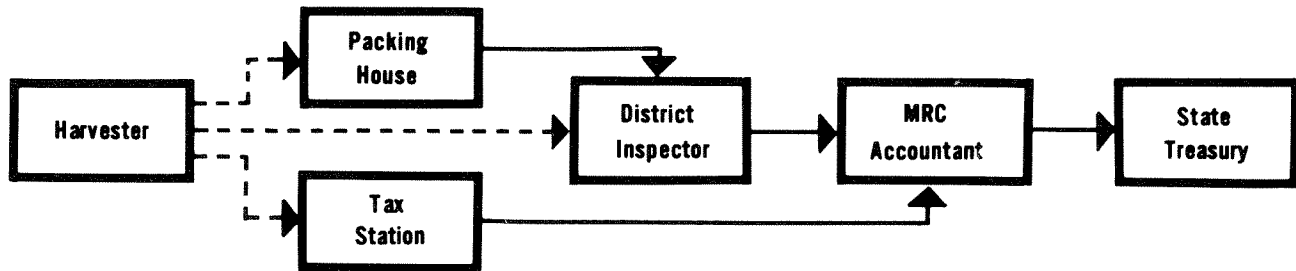
Figure 10

MRC TAX COLLECTION AND LICENSE SALES PROCESSES

LICENSES



OYSTER TAXES



LEGEND

- Single Route
- - - - - Alternate Routes

Source: Joint Legislative Audit and Review Commission.

MRC appears to be seeking more efficient methods for collecting taxes and selling licenses, but so far these efforts continue the existing use of district inspectors and have resulted in little manpower savings. More efficient procedures which would produce such savings include:

- Direct remission of oyster taxes collected by processors. No additional costs would be incurred for processing funds, but an individual trained in auditing procedures would be required at approximately \$12,000 per year.
- Use of agents to sell licenses for all but fixed fishing devices. Costs for this procedure at present reimbursement rates (\$.25 per license) would equal \$2,600 for the 10,400 licenses for moveable devices and harvester permits issued during fiscal year 1975.

- Sales of licenses for fixed fishing devices (crab trap, pound net, stake gill net, Fyke net, and fish pot) by the central office with location data provided to enforcement personnel for use is verifying location and fishing use. It is estimated one clerical position (at \$7,000) would be needed to handle these duties.

Total costs for implementing these proposals would be approximately \$21,600 per year, with estimated savings of \$40,000 over present collection procedures. MRC should expedite the development of improved collection procedures in order to reduce the administrative tasks of district inspectors.

Improving Program Management

Existing legislation imposes certain administrative constraints on MRC. Nevertheless, MRC could substantially improve management of its program activities by developing, then continually evaluating an internal program plan. In general, a program plan identifies agency priorities and goals, and sets forth activities and levels of performance necessary to achieve agency goals. Currently, MRC programs are not based on clearly defined priorities which reflect current needs. MRC departments do not identify levels of performance such as how many patrols are needed or how many leases should be processed. Funds and manpower are not distributed according to current resource management needs, but according to traditional practice.

To alleviate these problems, MRC should immediately undertake the development of an internal program planning process to guide its marine resource management programs. This process should:

- clearly establish agency goals, objectives, and priorities;
- divide agency responsibilities into identifiable programs and projects;
- define work tasks, management responsibilities, and performance level requirements for each project;
- define expected outputs or impacts, and agency resource requirements for each project; and
- identify relationships among agency programs and programs in other State, federal, and local agencies where appropriate.

Both the State Water Control Board and the Bureau of Sanitary Engineering of the State Department of Health have initiated program planning processes which could serve as models for MRC.

The program budgeting system being established by the Department of Planning and Budget should provide additional stimulus to MRC. This budgeting system will require program statements, but also will require the development of program objectives, strategies for achieving these objectives, and performance standards. This requirement will, in one sense, force MRC to plan and budget on the basis of broad priorities and objectives.

To meet the changing marine resource management needs, MRC must also be provided with sufficient organizational flexibility. After agency priorities and objectives have been clearly identified, the commission should seek the General Assembly's agreement to modify legislation which it can show impedes achievement of goals. For example, legislation governing the surveying of oyster leases, the collection of ground rents, and the collection of shucking house taxes, can readily be amended to reflect modern practices and needs. Broader delegation of authority will allow MRC to respond promptly to changing needs of management in the State.

RESEARCH MANAGEMENT AT THE VIRGINIA INSTITUTE OF MARINE SCIENCE

The Virginia Institute of Marine Science (VIMS) is an agency under the Secretary of Commerce and Resources with responsibilities for conducting marine research. VIMS research program has grown dramatically over the past ten years. State and federal appropriations to the agency have increased from \$1.8 million during the 1966-68 biennium to \$10.6 million for 1976-78. As of June 30, 1976, VIMS had approximately 150 projects worth \$15.6 million in grants and contracts underway. During this period of growth, VIMS has made a conscious management decision to emphasize research expansion. As a consequence, such important managerial activities as the setting of priorities, project administration, and research financial management now must receive attention.

On July 26, 1976, the Joint Legislative Audit and Review Commission submitted a report (Appendix II) on management problems found at VIMS to the Governor and to the Chairman of VIMS Board of Administration.³ Since the submission of this special report, several of the commission's recommendations have been implemented:

- The Auditor of Public Accounts completed an audit indicating VIMS had a deficit of \$1,981,805 on June 30, 1976. Adjusting for amounts collectable under existing grants and contracts, there is a net deficit of \$735,741. This amount includes \$319,814 spent to renovate a leased vessel which is proposed to be recovered by charges made to future research projects; up to \$63,239 proposed to be recovered by litigation, and \$30,000 due from MRC as final payment from the sale of VIMS' yacht "Virginia Belle".
- The comptroller has issued guidelines for all State agencies to ensure cash on hand is sufficient to meet current obligations;⁵ and
- The Department of Management Analysis and Systems Development has assisted VIMS in the development of an automated billing procedure and completed an organizational study in February, 1977.⁶

VIMS Research Mandate

VIMS legislative mandate to conduct a marine research program is found in Section 28.1-195 of the *Code of Virginia*. VIMS particular responsibilities are the following:

- To conduct studies and investigations of all phases of the seafood and commercial fishing and sport fishing industries;
- To consider means by which fisheries resources may be conserved, developed, and replenished and to advise the Commission of Fisheries and other agencies and private groups on these matters;
- To conduct studies and investigations of problems pertaining to the other segments of the maritime economy;
- To conduct studies and investigations of marine pollution in cooperation with the State Water Control Board and the Department of Health and make the resulting data and possible corrective recommendations available to the appropriate agencies;
- To conduct hydrographic and biological studies of the Chesapeake Bay and the tributaries thereof and all the tidal waters of the Commonwealth and the contiguous waters of the Atlantic Ocean; and
- To make such special studies and investigations concerning the foregoing as it may be requested to by the Governor.

Research activities are to include "consideration of the seafood and other marine resources including the waters, bottoms, shorelines, tidal wetlands, beaches and all phenomena and problems related to marine waters and the means by which these marine resources might be conserved, developed, and replenished".⁷

Research Performance. JLARC staff conducted an extensive review of all active and recently completed research projects for consistency with VIMS legislative intent. The staff also conducted interviews with division and department heads at VIMS and with State and federal agency personnel who use VIMS research. By all indications, VIMS has carried out a broad and diverse program of research. Furthermore, there is every indication that the quality of VIMS research is high, and because of this quality VIMS has developed a nationwide reputation. Interviews with State and local officials also indicate that the institute's research and scientists have made a valuable contribution to marine resource management in Virginia.

Strengthening Marine Research Planning

While the quality of VIMS research remains high, the research program at VIMS has not been given consistent direction. The lack of a clear program focus is a result of the institute being a State agency and providing both research and educational services. Furthermore, there is no formal research

priority-setting process involving VIMS, MRC, and other marine interests. It should be pointed out that the primary mission of VIMS is to serve the marine research needs of the Commonwealth and the seafood industry. This mission is clearly underscored by the following:

- VIMS current mission as defined in Section 28.1-195 of the *Code of Virginia*;
- Section 28.1-197 of the *Code of Virginia*, providing that VIMS employees are subject to the State Personnel Act;
- recent legislation on wetlands management;
- recommendations of the Commission on State Governmental Management that VIMS remain under the Secretary of Commerce and Resources; and
- VIMS own agency tradition as the Virginia Fisheries Laboratory.

However, it now seems that VIMS intends to emphasize its educational role by conducting an expansive research program and be considered, like an institution of higher education, more independent of the marine resource needs of the State. In this regard, VIMS has asked the Governor and other State officials to provide some VIMS employees academic freedom and exempt them from the State Personnel Act.⁸ Furthermore, according to a recent institute publication, VIMS operational area has expanded far beyond Virginia's territorial waters to include an area from Cape Cod to Cape Hatteras and extending hundreds of miles off shore, and VIMS has acquired and is refurbishing a vessel for deep-water research at a cost of more than \$300,000.⁹

Defining appropriate marine research responsibilities and priorities for VIMS is important because the agency relies upon State funds for a major portion of its research budget. In fiscal year 1976, the General Assembly provided VIMS with more than \$1.5 million. To ensure limited State funds are directed toward the Commonwealth's most critical marine problems, a formal priority-setting process must be established involving VIMS and other marine resource-related agencies. The Secretary of Commerce and Resources, with the assistance of the seafood industry and other State agencies, should develop broad priorities for marine research. These priorities would be periodically reviewed, updated, and used by the VIMS Board of Administration as a general guide in developing an agency-wide research plan. Such a plan would outline areas of research concentration. Proposed costs for carrying out the plan would be organized by department and division. On the other hand, this program plan should be flexible enough to accommodate emergency projects demanding immediate scientific attention, such as Tropical Storm Agnes. Agency plans should enable VIMS to determine the impact of emergency projects on other, ongoing project work schedules. The initiation of a research planning process would require the Board of Administration to become actively involved in overseeing VIMS research activities.

Project Management

It is important that the VIMS director and other central administrators provide effective management of the overall research program. Despite the growth of VIMS research effort, the institute does not have a central project administrator. The VIMS director, therefore, assumes overall management responsibility for this phase of activity, along with responsibility for the education program, VIMS advisory service programs, serving on various advisory board, and overseeing VIMS administration. The institute now lacks a research planning process by which, through the director, marine research priorities and fund allocations can be transmitted to the division and department levels.

Project Initiation and Review. Current procedures for project initiation and review do not provide for an assessment of individual projects in light of State research priorities and financial constraints. Under the present system, individual scientists are free to initiate research projects and solicit funds from federal authorities and other funding sources. Occasionally, scientists at the institute respond to federal agency requests for specific research. In either case, the project is directed by a principal investigator who is responsible for initial preparation of grant proposals, job descriptions, and budgets; supervision of scientific, technical, and clerical personnel; and publication of final reports.

Proposals developed by the principal investigators are reviewed at four levels. First, the department head reviews proposals with respect to the interests and capabilities of his particular department. Second, the division head reviews the technical feasibility of the proposal. Third, the finance officer reviews the proposal from a budgetary viewpoint. Fourth, the director reviews each proposal for consistency within VIMS broad research mandate. This procedure ensures each project receives technical review at several levels of responsibility. However, it does not provide a way for making sure that the cost of a proposed research project falls within priority and budget constraints.

Clearly, because of the amount of State funds involved and the need for VIMS to be responsive to State research needs, the initiation and review process must be changed to include a thorough review of project proposals. The development of a research plan would be helpful, but only if strongly supported and clearly conveyed by VIMS central staff. Divisions themselves then could develop tentative work schedules based on proposed areas of research concentration and budget allocations outlined in the plan. The establishment of a research plan would balance necessary State control with relative individual autonomy. The investigator will, within the bounds of the concentrations and allocations developed from State marine research needs, be unrestrained in project initiation. VIMS project review could be further strengthened by giving the division head--who now only reviews the technical feasibility aspects--the responsibility for ensuring that allocations of State funds will not be exceeded if the grant is funded.

In addition, VIMS grant and contract proposals have not received adequate review by other State agencies. Although the former Division of State Planning and Community Affairs was designated by the Office of Management and Budget as the State's clearinghouse for review of federal grant proposals, 95 percent of the institute's research projects were not included under federal review guidelines. As VIMS was not required to submit supporting materials with

project notification forms, no substantive review of grant or contract applications was carried out by either DSPCA or the former Division of the Budget. In the future, VIMS project proposals should be reviewed by the Department of Planning and Budget for availability of State matching funds, and by the Secretary of Commerce and Resources for general consistency with marine resource management needs. Such review procedures should be completed *before* proposals are submitted, not *after* grants or contracts have been accepted. This timing is important because it permits a preliminary review of proposals before the principal investigator, the agency, and limited State funds are committed to it.

Project Completion. Once a project has been initiated and reviewed at each level of responsibility, VIMS board and its director are ultimately responsible for project performance, including timely submission of research reports by the principal investigator. However, the director suggests that VIMS assumes little real responsibility at this time because "The Dean of a School or College, a President of a College or University, and even the Academic Department Head assumes no responsibility for the performance of a Principal Investigator".¹⁰ This assertion is not persuasive because the institute is a State agency, not an institution of higher education. (As the *Code of Virginia* indicates, VIMS relationship with institutions of higher education exists only for the instructional activity, not research. Even in instructional matters VIMS does not become a higher educational institution, nor do VIMS scientists become employees of one.) The director of a State agency is responsible for effective and efficient disbursement of State funds; where projects initiated by an employee can and frequently do involve disbursements of State funds, the director must assume oversight responsibility.

As the Board of Administration has statutory authority for personnel management, this board should take an active part in defining project completion responsibilities of the principal investigator and the director. Once defined, the role of the principal investigator and the responsibilities of the director should be stated in the project proposal and, perhaps, in an employment manual prepared for VIMS scientific staff.

Financial Management of Research

Another major administrative problem at VIMS has been the lack of sufficient financial management. The dramatic growth in research contracts demands that VIMS develop accurate and timely budgeting, accounting, billing, and financial reporting mechanisms appropriate for a large research organization. Although the board and institute director have been aware of problems in financial management since 1973, improvements in developing the required management organization have not kept pace with the expanded research program. During the course of this review, a number of management recommendations and suggestions have been offered by the Department of Management Analysis and Systems Development, Auditor of Public Accounts, and JLARC. Many of these recommendations are directed at remedying the problems cited below.

VIMS Fund Deficit and Vessel Financing. Based on staff review of VIMS finance records and loan history, JLARC adopted a resolution in June, 1976, calling for the Auditor of Public Accounts to perform an audit with special attention given to the validation of anticipated revenues. On January 10, 1977, the final auditing report was prepared and forwarded to the Governor.¹¹

The auditor reported that, after reviewing and evaluating financial schedules submitted by VIMS, he could not confirm the accounts receivable by the usual confirmation requests because federal and State funding agencies will not certify that they owe VIMS money until projects are completed or subjected to final audit. Therefore, financial statements were prepared on the modified accrual basis of accounting. (Under this method, revenues are recorded only when received in cash, but expenditures are recorded at the time the liabilities are incurred.) Using this method of accounting, the auditor found that VIMS fund deficit stood at \$1,981,805 on June 30, 1976. However, based on VIMS adjusted schedule, the auditor concluded there were receivables of only \$1,246,064. Consequently, VIMS net deficit was \$735,741, of which about \$413,053 may be recoverable over the long term.

VIMS net deficit problem is largely caused by project expenditures being in excess of the amount of research grants and contracts. A major factor contributing to this problem has been the alteration costs associated with converting a 144' U. S. Navy minesweeper to an oceangoing research vessel, named the *Virginian Sea*. (Refer to Appendix II, p. 13.) The State approved the acceptance of the minesweeper under the condition that no general fund monies would be obligated for operating or equipping the vessel. Conversion costs were to be recovered from special revenues over a five-year period, beginning in July, 1975, by including depreciation charges in user fees. A substantial portion of the costs were to be recovered from fees charged to a three-year, Bureau of Land Management (Department of Interior) contract for research on the outer continental shelf. The Director of VIMS in a letter to the Director of the Division of the Budget stated that "It [minesweeper] can be used almost immediately and costs to improve her for immediate use and long-term use will be relatively modest."* Originally, VIMS estimated that the vessel would be used 50 days each year, and research contractors would be charged \$1,800 per day. (Since then, VIMS has increased the user fee to \$2,350 per day, of which \$800 is charged to depreciation.)

Since July, 1975, the costs of converting the minesweeper have escalated rapidly, and the use of the vessel is far below initial estimates. As of June, 1977, approximately \$439,000 had been expended to modify and equip the vessel for research purposes, and it had been used only 28 days during the past two years. Furthermore, VIMS estimates that it will cost another \$150,000 through August, 1977, to install a large winch and to modify the hydraulic and electrical systems. VIMS hopes to recover about \$50,000 of the conversion costs from the BLM contract, but this project is scheduled to terminate in mid-1978. As of now, there are no other research contracts that call for the use of the *Virginian Sea*. Eventually, VIMS may be able to recover the alteration costs, but it will take considerably longer than five years. Of immediate concern is the extent of the State's obligation to finance the operation and maintenance of the research vessel if special revenues are not forthcoming. Clearly, the condition that no general funds be obligated for the vessel has been seriously abused by VIMS.

Collection of Accounts Receivable. Collection of accounts must be substantially strengthened if VIMS is to avoid additional cash deficits. As of this writing, billings are not being prepared on a timely and systematic basis.

*Letter from Dr. William J. Hargis, Jr. to Mr. John R. McCutcheon, Director, Division of the Budget, dated June 23, 1975.

To illustrate the seriousness of the problem, about \$2.2 million in project costs had not been billed since January, 1977. An automated billing procedure scheduled for implementation on July 1, 1976 is not operational despite the assistance of the Department of Management Analysis and Systems Development. VIMS management has failed to place a high priority on upgrading revenue collection procedures.

Furthermore, VIMS accounting records are not organized to provide a list of ongoing research projects classified by department and division, indicating costs incurred during the fiscal year for each project. In fact, cost reports submitted to investigators are delayed as much as six months. Delays in project cost reporting make the task of project management more difficult for both the principal investigator and VIMS central administration.

VIMS could develop an automated inventory of research projects. Once a project has been initiated, reviewed, and funded, the project name, source of funding, principal investigator, and other pertinent information would be recorded. (Unlike the existing project monitoring chart maintained by the assistant to the director, this automated inventory would include all projects and be linked to financial data.) When such information as time-of-submission is changed, this master inventory would be updated. Progress reports and their date of submission to contractors would be noted. The billing procedure and cost reporting could be linked to the inventory.

General Fund Loans. Delays in project completion, excess expenditures, delayed billings, and slow federal reimbursement for project expenses have created serious cash flow problems. Several times in the past the institute has borrowed from the General Fund to cover cash deficits at the end of a fiscal year. Many of the loans were not repaid on schedule, and VIMS loan balance reached \$931,772 by June 30, 1975. The Division of the Budget notified VIMS in August, 1975, of its concern that over half this amount had been outstanding for over fifteen months, while certain loans dated as far back as 1968. Between September, 1975, and June, 1976, the institute succeeded in repaying the temporary loans. However, these payments depleted VIMS cash account and additional loans of \$750,000 in March, 1976; \$1.6 million in May, 1976; and \$1.8 million in December, 1976.

The \$750,000 loan was repaid on schedule in November, 1976, when the comptroller, on his own initiative, transferred the loan amount from the VIMS account to the General Fund.¹² However, because of insufficient cash on hand, VIMS defaulted on the \$1.6 million loan due May 1, 1977, and requested a new loan for \$2.2 million. The loan was approved and will be due in June, 1978. Of the \$2.2 million, \$1.6 million was used to repay the May, 1976, loan. As of June 15, 1977, therefore, the institute had an outstanding loan obligation of \$4.0 million. Apparently, VIMS has needed to borrow from the General Fund to replace cash used to retire past due loans which were to have been repaid from special revenues. This practice is neither consistent with Section 190 of the 1976-78 Appropriations Act nor terms and conditions of the loans.

Improving Temporary Loan Management. State and agency review of temporary loans must be strengthened. For example, it does not appear that VIMS can provide sufficient information to the Department of Planning and Budget to justify loan requests. In particular, VIMS is unable to provide the current financial status of each ongoing project. The following recommendations should improve the review of temporary loan requests at both the State and agency level:

- VIMS should improve its estimates of accounts receivable in the future, and should plan its work schedule in such a way as to avoid overcommitting its limited resources;
- the Department of Planning and Budget should evaluate accounts receivable more carefully in the future to ensure that temporary loans can be repaid on schedule; and
- once temporary loans are granted, terms and conditions should be enforced by the Department of Planning and Budget in accordance with provisions of the Appropriations Act.

The Auditor of Public Accounts has suggested that VIMS be charged interest on temporary loans from the General Fund, and that these interest charges be passed on to federal or other contracting agencies. This would appear to be an appropriate indirect cost of research projects. In addition, VIMS may wish to reexamine its indirect cost rate to determine whether the actual costs of managing a greatly enlarged research organization are reflected in overhead rates.

Temporary loans provided at the end of a fiscal period may not be the most satisfactory means of financing VIMS research activities. It may be more appropriate for a special loan account to be created at the beginning of the fiscal year, with an amount posted to that account based upon the best estimate available of VIMS cash requirements for the coming year. Attached to the loan instrument, however, should be a specific list of all projects undertaken for which funds will be required, as well as the amount required for each project. As project reimbursements are received, they would immediately be repaid into the same loan account until the account is closed. Each year a new account could be created, but VIMS would be expected to close out each account within a reasonable period of time. This procedure would be consistent with requirements of Section 190 of the 1976-78 Appropriations Act.

Administrative Organization

VIMS accounting procedures were criticized in several federal project audits in 1972. In response to these audits, VIMS former Division of Administration Services was abolished, and a temporary Administrative Group was created under the supervision of the associate director. However, the associate director did not assume the day-to-day management responsibilities required of this position, and many of the deficiencies were not corrected. Also, responsibilities of the former head of the Division of Administrative Services have been significantly curtailed even though the personnel classification and job description for this position have not been revised. At this time, a permanent administrative organization is needed with well defined lines of authority and responsibility.

A Finance Office was created in 1974 to improve VIMS accounting procedures. The present head of this office has made significant improvements but lacks adequate support to address long-range needs while still meeting day-to-day demands. This individual is classified as an Accountant C, yet appears to be fulfilling responsibilities more appropriately assigned to a higher level administrative position. Additional support for the Finance Office is required

to provide adequate control of VIMS growing research program. For example, an additional accountant position may be required to supervise development of an encumbrance procedure for accounts payable, as well as improved cost accounting, and financial reporting procedures. The Department of Management Analysis and Systems Development has assisted the Finance Office in the development of automated billing procedures and automated monthly cost reports for each project.

VIMS management should also strengthen the personnel function. The JLARC preliminary report indicated problems in organization and personnel classification. In response to that report, the Director of the Department of Personnel and Training noted VIMS personnel office has emphasized record keeping and clerical processing aspects of the personnel function, rather than personnel management assistance. Moreover, the administrative supervisor and associate director had not fulfilled personnel management responsibilities as would be expected. It would appear the responsibility for upgrading the personnel function now lies with the VIMS director.

VIMS should be able to provide appropriate research management by reorganization and without need for additional general funds. Renegotiation of VIMS indirect cost rate may be one method for expanding the administrative staff at some time in the future.

AGENCY VESSEL OPERATIONS

Motor vessels are essential to marine resource management and are used for law enforcement, water sample collection, research, and education. Three agencies and several educational institutions maintain and operate over 100 motor vessels (Table 5). Although precise figures are not available, JLARC

Table 5

MOTOR VESSELS OWNED BY VIRGINIA MARINE RESOURCE ORGANIZATIONS

<u>Agency</u>	<u>Number of Large Vessels (30' or longer)</u>	<u>Number of Small Vessels (under 30')</u>	<u>Agency Total</u>
Marine Resources Commission	20	43	63
State Department of Health Bureau of Shellfish Sanitation	0	11 ^a	11 ^a
Virginia Institute of Marine Science	6	29	35
Old Dominion University Institute of Oceanography	1	0	1
Virginia Department of Community Colleges	<u>1</u>	<u>6</u>	<u>7</u>
Total	28	89	117

^aThis figure includes eight 17' outboard vessels used for regular sample collection and three 14' jon boats for intermittent use in extremely shallow waters.

Source: Organizations indicated.

estimates the value of this fleet to be more than \$1 million with an annual maintenance cost of approximately \$60,000.

JLARC reviewed several different aspects of agency vessel management including: vessel use, economy of operation, organization for vessel management, and record keeping. There are several ways vessel use can be improved. For example, data provided by MRC show that the agency does not fully utilize its large patrol cruisers. VIMS has not adequately managed its vessel control and maintenance function.

Vessel Use

One measure for determining the efficiency of vessel usage is to compare operating time reported for comparable missions. Based on this criteria, ODU appears to make good use of its research vessel, particularly in view of its educational and research mission. However, marked variations in the operating time of MRC cabin cruisers indicate that some boats may not be efficiently utilized. The absence of any operating data on VIMS fleet precluded any analysis of VIMS vessel use.

Comparison of Agency Vessel Use. Variations in vessel use (Table 6) reflect fundamental differences in agency missions. MRC law enforcement is a full-time activity which is conducted over a large geographic area. Consequently, MRC cabin cruisers logged over 20,000 hours of operating time during fiscal year 1976. ODU and BSS, on the other hand, do not use vessels full time; research trips and sample collection represent only a part of the two agencies' program activities. As a result, BSS and ODU vessel use is considerably less

Table 6

MARINE RESOURCE MOTOR VESSEL USE (Fiscal Year 1976)

<u>Agency/Vessel Type</u>	<u>Total Hours Operation</u>	<u>Number of Vessels</u>	<u>Yearly Average</u>
MRC			
Cabin Cruiser	20,888	19	1,099 hrs.
Outboards	NA ^a	43	NA
BSS			
Outboards	3,366	8	421 hrs.
ODU			
Research Vessel ^b	1,320	1	1,320 hrs.
VIMS			
Research Vessels	NA	6	NA
Outboards	NA	29	NA

^aNA = Data not available.

^bCalendar year 1975.

Source: Agencies indicated.

than MRC (3,366 and 1,320 hours, respectively). The annual average use per vessel is comparable for ODU (1,320 hours) and MRC (1,099 hours), but BSS utilization is substantially less (421 hours), a reflection of the need to maintain vessels in widely scattered areas (Norfolk, Eastern Shore, and Northern Neck) to perform an integral part of its overall mission.

While specific data on use of community college vessels are not available, indications are that Thomas Nelson uses its six small boats approximately 1,300 hours per year. One large vessel is shared by Rappahannock and Thomas Nelson and has been used only 56 days since September, 1974. This level of use indicates that the large boat is not fully utilized, and suggests that the community colleges cannot efficiently operate this vessel given present enrollment in marine science education programs.

MRC Vessel Use. As Table 7 shows, during fiscal year 1976, there was considerable variation in the use of cabin cruisers by MRC for law enforcement. Such boats as the Thimble Shoal and Hornet, for example, were used for patrol purposes more than six times as much as the Exeter. Assuming that normal use for a full-time patrol cruiser is 1,600 hours of operation each year (2,000 hours less 20 percent for maintenance and miscellaneous activity), six MRC

Table 7

USE OF MARINE PATROL VESSELS
(Fiscal Year 1976)

<u>Number</u>	<u>Motor Vessel</u>	<u>Operational Time (Hours)</u>	<u>Rate of Use (Percent)</u>
1	Thimble Shoal ^a	3,036	190%
2	Hornet	2,085	130
3	Rappahannock ^a	1,846	116
4	Prowler ^a	1,842	116
5	Lynhaven	1,685	105
6	Nansemond ^a	1,610	100
7	Coan River	1,259	79
8	Mobjack	1,204	75
9	Sandy Point ^a	1,140	72
10	Wasp	882	55
11	W. F. Kellam	688	43
12	Weems	572	36
13	James River	527	33
14	Broadwater	426	27
15	Chesapeake	400	25
16	Accomack	371	23
17	Exeter	349	22
18	Anna Marie	246	15
19	White Cap ^a	127	8

^aDenotes double crew vessel.

Source: Marine Resources Commission.

cruisers were used at rates better than this standard. However, six of nineteen MRC cruisers were actually operating less than one-third the normal hours of a full-time patrol cruiser.

One strategy employed by MRC that improves boat utilization is to assign two crews to the same boat. This permits a possible 16 hour day for patrol operations. Five of the six cruisers with two crews assigned were operated more than 1,600 hours during 1976. Of all vessels with two crews, only the Sandy Point was utilized less than the 1,600 hour standard.*

Although two crews promote greater use of each patrol cruiser, Tables 7 and 8 also show that nearly all of the marine patrol crews are actually using the cruisers less than 1,600 hours per year. The crew of the Broadwater, for example, the single MRC cruiser berthed on the ocean side of Virginia's Eastern Shore, patrolled but 426 hours in this cruiser, even though marine patrol was their only responsibility. What the crew of the Broadwater and the crews of the other little-used cruisers are doing the rest of their time is an important question. In 1976, MRC instructed all crews to make more use of smaller outboard vessels when operating from shore. Unfortunately, MRC did not develop a boat log for each of these small outboards at the same time. Now, as clearly shown in Tables 7 and 8, very little use is made of the cruisers by a number of MRC crews, but MRC has no way of measuring the utilization of the small outboards. The development of these logs should be made a top priority; the use of the more efficient outboards reduces costs and, according to MRC, has had no adverse effect on MRC's ability to enforce marine resource laws.

Table 8

VESSEL AND CREW USE FOR CABIN CRUISERS WITH TWO CREWS
(Fiscal Year 1976)

<u>Motor Vessel</u>	<u>Operational Time (Hours)</u>		<u>Rate of Use (Percent)</u>
	<u>Total</u>	<u>Each Crew</u>	
Thimble Shoal	3,036	1,518	95%
Rappahannock	1,846	923	58
Prowler	1,842	921	58
Nansemond	1,610	805	50
Sandy Point	1,140	570	36

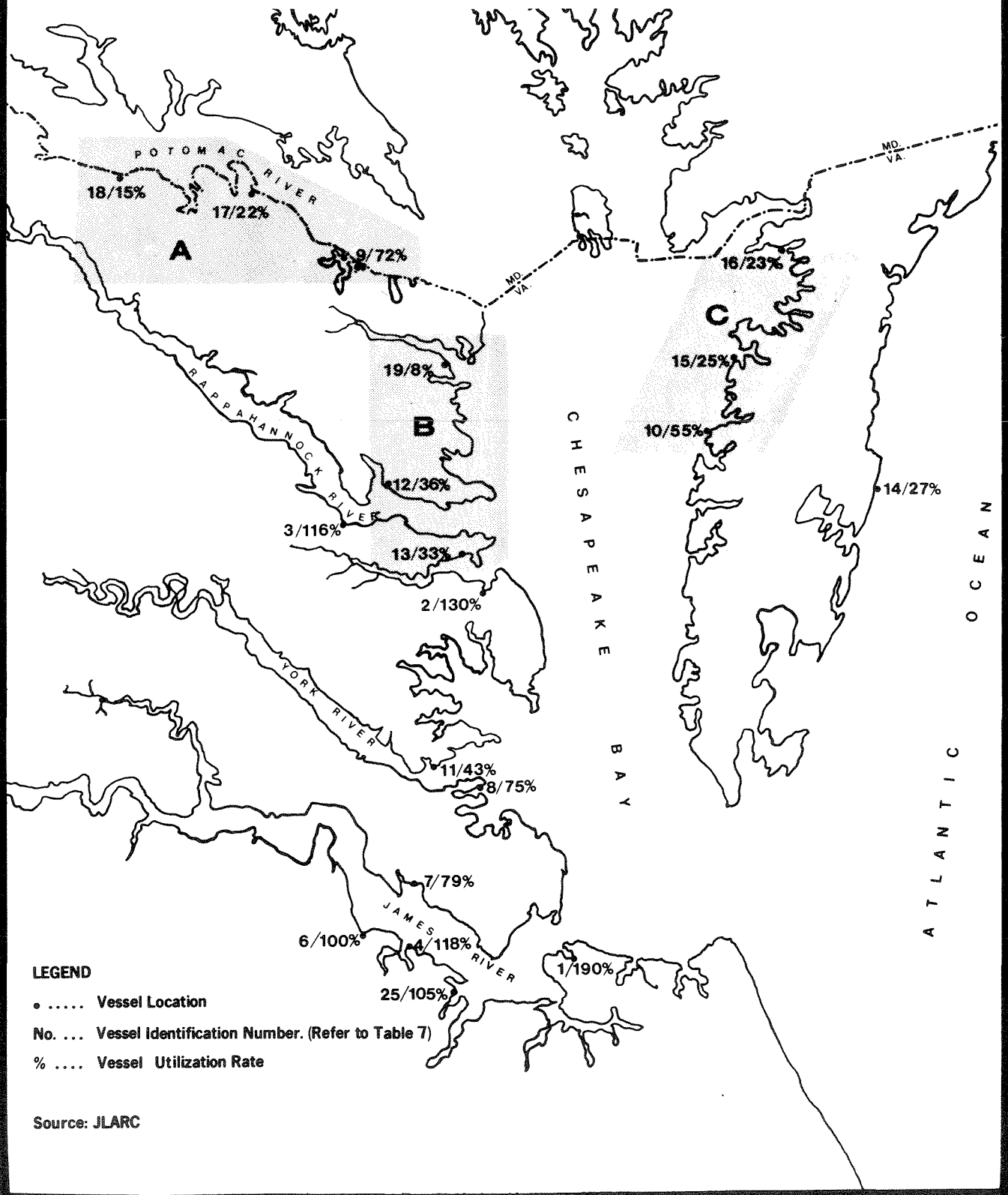
Source: Marine Resources Commission.

As shown in Figure 11, cruisers are used extensively to patrol the rich shellfish producing grounds of the Hampton Roads-James River area. With the exception of two cruisers stationed on the Rappahannock and Piankatank Rivers, cruiser utilization in other areas is low. Three areas exhibit particularly low vessel use:

*One vessel, the *White Cap*, was virtually unused because of its poor condition and high cost of operation. This vessel has since been replaced.

Figure 11

Location and Use of MRC Patrol Vessels



- *Potomac River.* (Area A) The three cruisers stationed along the Potomac operated 1,735 hours. Two-thirds of this time was produced by one vessel manned by two crews. Average use per vessel was 36 percent. However, the average use per crew was 27 percent.
- *Upper Bay and Rappahannock River.* (Area B) Three cruisers (3 crews) in this area patrolled 1,226 hours. One vessel with two crews provided only 10 percent of this total. Average use per vessel in this area was 26 percent.
- *Eastern Shore.* (Area C) Three cruisers (3 crews) on the bay side of Eastern Shore operated 1,653 hours, over half of which was produced by one vessel. Average use per vessel was 34 percent.

The need for large cabin cruisers for patrol purposes in these areas has not been satisfactorily demonstrated by MRC. Greater economy of operation could be achieved by eliminating one cruiser in each area and continuing use of small boat patrols. Furthermore, the wide variation in cabin cruiser use suggests that these vessels are not all equally needed as presently deployed. Only when MRC clearly identifies its marine patrol needs can the agency determine the types of vessels required to meet patrol needs and the most effective deployment of personnel and equipment.

Economy of Operation

BSS has the lowest average maintenance cost per hour of vessel operation (Table 9). Hourly costs for the BSS outboards averaged \$.85 during fiscal

Table 9
MAINTENANCE COST FOR MARINE RESOURCE MOTOR VESSELS
(Fiscal Year 1976)

<u>Agency/Vessel Type</u>	<u>Hours of Operation</u>	<u>Total Maintenance</u>	<u>Cost Per Hour</u>
MRC			
Cabin Cruiser	20,888	\$38,230	\$ 1.83
Outboards	NA ^a	NA	NA
BSS			
Outboards	3,366	2,867	.85
ODU			
Research Vessel ^c	1,320	21,000	14.88
VIMS			
Research Vessels	NA	NA	NA
Outboards	NA	NA	NA

^aNA = Data not available.

^bHours engine time.

^cCalendar year 1975.

Source: Agencies indicated.

year 1976 compared to \$1.83 at MRC and \$14.88 at ODU. Much of this variation can be attributed to the size differences between vessels and engines.

Overall, MRC patrol cruisers are economical to maintain. Total maintenance cost for these vessels for fiscal year 1976 was \$38,230, or \$1.83 per hour of patrol. One exception to this maintenance trend is the vessel Chesapeake, a 51-foot yacht substantially larger and more luxurious than the cabin cruisers (Table 10). Both the higher maintenance cost per hour (\$19.00) and average yearly costs between 1970 and 1976 (\$5,137) for the Chesapeake are considerably above the median figures for MRC. As the Chesapeake is berthed in an area of very low vessel use, Area C, this vessel is uneconomical and unnecessary for law enforcement activities.*

Table 10
MAINTENANCE COST FOR MRC CABIN CRUISERS

<u>Motor Vessel</u>	<u>Average Annual Cost FY 1970-1976</u>	<u>Cost per Hour FY 1976</u>
Chesapeake	\$5,137	\$19.00
Thimble Shoal ^a	2,790	1.18
Prowler	2,557	1.39
Wasp	2,116	2.17
Broadwater	2,061	8.81
W. F. Kellam	1,900	2.81
Mobjack	1,899	0.92
Coan River	1,810	3.86
Exeter	1,810	2.38
Lynnhaven	1,756	0.90
Hornet	1,744	0.77
Nansemond ^b	1,400	1.02
White Cap	1,253	6.38
Accomack ^b	1,110	1.83
James River	1,001	2.14
Rappahannock ^a	894	0.48
Anna Marie	814	2.64
Weems	538	1.54
Sandy Point ^a	332	1.17

^aFour years only.

^bThree years only.

Source: Marine Resources Commission.

Maintenance costs for the vessel shared by Rappahannock and Thomas Nelson Community Colleges were \$1,734 for fiscal year 1976. Total use for this

*MRC replaced the "old" *Chesapeake* with a new yacht in June of 1976. The "new" *Chesapeake* is a 57' aluminum hull vessel built in 1968. Because it is a newer vessel, maintenance costs may be reduced. However, the new vessel appears no more appropriate for law enforcement patrol purposes than its predecessor.

period was approximately 111 hours, or \$15.60 per hour of operation. The high operating cost for this vessel is a product of its limited use. Since the community college vessel is berthed at VIMS and is comparable to some of the institute's research vessels, it appears that increased efficiency could be achieved through combined maintenance and shared use with the institute.

Organization of VIMS Vessel Operations

VIMS has not organized its vessel management function. When JLARC began its review in July, 1976, there was little evidence of a vessel management program. A central Vessel Operations Group had responsibility for six of VIMS 35 vessels. The remaining boats were assigned to the various scientific departments. VIMS mechanics were similarly dispersed. Three engineers, one electrician, and one marine motor repairman maintained the six large research vessels. Two marine motor repairmen were assigned to the departments, and various technicians in the departments also performed routine maintenance. As a consequence, responsibility for vessel operations was not clearly defined.

One result of this decentralized responsibility was the lack of an established program of regular and preventative maintenance. Maintenance was the responsibility of crews of departmental personnel, and there were no standard procedures. Consequently, vessel maintenance was irregular and poor. For example, the research vessel *Langley*, described as one of the institute's most useful vessels, was scheduled for a major overhaul at a cost of \$32,000 after ten years of relatively irregular maintenance. Similarly, the VIMS fleet presents a poor physical appearance, and many of its vessels show peeling paint and rusting fixtures.

Prior to the initiation of the JLARC review, VIMS had begun to consolidate vessel operations in its Operations Group. During the course of this review, VIMS centralized all purchasing for motor vessels under the director of vessel operations to provide control over the need for new or replacement equipment and to facilitate economy of purchasing. A storekeeper was hired to maintain a central storeroom. These changes will enable VIMS to benefit from volume purchasing and will provide materials when needed. However, these steps are only a beginning. VIMS does not have adequate storage space for parts and equipment and has no maintenance facility. Moreover, VIMS must clearly establish responsibilities for vessel management and promote efficiency in the use of personnel and scheduling of vessels for maintenance by consolidating all vessel operations in the operations group. MRC and BSS have established maintenance procedures and organization which may serve as models for VIMS as the agency centralizes its vessel operations.

Management Information for Vessel Operations

Accurate, up-to-date records of property, equipment, and vessel use are necessary to efficiently manage marine resource vessels. Property records at MRC, ODU, and BSS are satisfactory; VIMS records are not. MRC maintains files for each patrol boat under the name of its primary captain, and for each small boat under the name of the district inspector to whom it is assigned. These files show permanent equipment issued to each individual or vessel and all expendable items issued. BSS records show boats and trailers located in each

area office and the equipment issued to each individual or vessel and all expendable items issued. A recent report by the Auditor of Public Accounts indicates that VIMS property records are not sufficient for identifying equipment and other fixed assets, including vessels.¹³

Data on use and operation of motor vessels are available from some agencies, but they are not uniform or comprehensive. BSS and ODU were both able to provide JLARC with complete information on maintenance costs and use for all vessels. MRC provided data only for large patrol vessels after compiling it from the individual boat logs. The effort required to collect this data is an indication that MRC does not regularly review vessel operations to determine efficiency of deployment or use. MRC needs to develop a reporting system which will provide accurate and timely information on all vessel operations.

VIMS was unable to provide any motor vessel operation data. On several occasions during the study, JLARC staff requested data on vessel use, maintenance cost, and capitalization; but neither the Assistant Administrative Director, to whom the Vessel Operations Group reports, nor the Financial Officer was able to provide this information. As a result, VIMS has no basis on which to evaluate vessel use or to promote greater efficiency. Development and evaluation of vessel operations data should be a major priority in VIMS consolidation of vessel operations.

CONCLUSION

Numerous administrative problems were observed at the Marine Resources Commission and Virginia Institute of Marine Science. Neither agency has adequately responded to the increased administrative demands created by agency growth and by changing program needs. The ability of MRC to efficiently manage its many fisheries responsibilities is hampered by restrictive legislation. Over 200 sections of the *Code* specify, in detail, how the agency is to carry out such activities as oyster ground administration, surveying of oyster leases, and collection of ground rents. Although revisions in legislation are necessary for MRC to achieve maximum program efficiency, the commission, on its own initiative, can take several actions that would greatly strengthen program management. For example, the commission should establish an agency-wide program planning process, modernize its personnel classification system, and clearly define its law enforcement operations needs.

VIMS scientists have made a valuable contribution to marine resource management in the Commonwealth. However, administration of agency research programs has not kept pace with the institute's expanding research activities. Shortcomings in project management, financial controls, vessel operations, and administrative organization do not facilitate effective management of a rapidly growing research organization. To correct these problems, the VIMS board must make a determined effort to improve financial management of the agency and to develop a research planning process which meshes the institute's research efforts with State marine research needs.

EDUCATION AND ADVISORY SERVICES

Virginia funds six education and advisory service programs to provide manpower and technical assistance in support of marine resource management and various marine industries. Annual expenditures for the programs are about \$675,000, or one-tenth of the yearly budget for marine resources.

The Virginia Institute of Marine Science (VIMS), a recognized leader in marine research, has attracted a large student body to its graduate program. VIMS strong research orientation, however, interferes with its educational response. The educational affiliative relationship with William and Mary is poorly defined and has not provided effective administrative oversight or coordinated instructional planning. Furthermore, differences in educational mission between VIMS and William and Mary reduce the opportunities for joint research and instruction.

In 1967, two study committees recommended that a graduate marine science program be established at Old Dominion University (ODU) in Norfolk. The Institute of Oceanography program is now closely integrated with other academic departments at ODU. Careful planning of course offerings has resulted in some reduction in instructional costs, but also has provided a broad instructional program and teaching experiences. The addition of a Graduate Studies Director improved program evaluation at the institute.

Despite efforts of the State Council of Higher Education to preserve some differences between the two programs, VIMS and ODU appear to offer similar courses. One reason for the similarities is that the two programs are not coordinated. A joint coordinating committee established in 1974 has met only once.

Though the technical advisory service programs sponsored by VIMS and Virginia Polytechnic Institute and State University are authorized by the General Assembly, both receive more than one-half of their annual budgets from the federal Sea Grant program. Little coordination exists between the two programs. Overlap in the wetlands and seafood advisory service programs indicates that the two programs may be competing for federal dollars, rather than complementing each other.

Lack of coordination among marine science educational programs and problems in educational administration must be overcome. Several options are available for improving marine science education in Virginia. One option is to strengthen the affiliative relationship between VIMS and William and Mary by revising the Code to clarify the educational roles and relationships of both institutions. Another approach would be to affiliate VIMS educational activities with ODU, with primary program responsibility assigned to the Institute of Oceanography.

IV. EDUCATION AND ADVISORY SERVICE PROGRAMS

The goal of marine science education and advisory service programs is to provide manpower and technical assistance to State and local resource management agencies, and to various marine industries. Despite the sound academic reputation of several of these programs, overall program management is not efficient and is uncoordinated. Clearly, Virginia needs a coordinated response for education and advisory services to ensure efficient and effective support for marine resource management.

As part of its marine resources study, JLARC reviewed the management of four marine science educational programs and two advisory service programs. The first section of this chapter focuses on the large marine science programs at VIMS and Old Dominion University (ODU). Particularly emphasized is the academic oversight at VIMS, the similarity between the ODU and VIMS programs, and the absence of program coordination. The second section examines the competition between VIMS and VPISU for funding of advisory service programs. A concluding section provides some alternative frameworks for coordinated/comprehensive education and advisory service programs consistent with existing legislation.

EDUCATION

The success of Virginia's marine resource management programs and marine industries depends, in some measure, on the availability of skilled manpower. In response to various manpower needs, the State supports marine education programs at three colleges and one State agency, VIMS. Expenditures for these programs totaled approximately \$450,000 for 1975-76, exclusive of boat and equipment costs at VIMS. In addition, five other public colleges offer courses dealing with marine affairs, thereby contributing to overall community awareness of marine resource management problems and challenges facing the Commonwealth.

Thomas Nelson Community College (Newport News) and Rappahannock Community College (Warsaw-Glenns) offer associate degrees in marine science, with a programmatic emphasis on boat handling, engine mechanics, and navigation. These two small programs enroll about 40 students. By contrast, the graduate level programs at Old Dominion and VIMS, as a result of rapid growth the last few years, enroll a total of 180 masters and doctoral level students. Based on this enrollment, these two programs should contribute a substantial number of trained scientists and teachers to Virginia's manpower pool.

VIMS Affiliative Relationship

The legislative basis for the VIMS education program is found in Section 28.1-195 of the *Code*. VIMS may offer educational programs *in affiliation* with accredited institutions of higher education, but the administrative and educational details of the affiliative relationship are left to VIMS and the college(s) involved. The graduate program at VIMS has been affiliated with the College of William and Mary since 1964. Nevertheless, VIMS and William and Mary have not developed formal procedural relationships. As a result, the roles and

responsibilities of the VIMS and William and Mary boards remain unclear; and the VIMS instructional program remains quite separate and isolated from instructional programs at William and Mary.

Administrative Accountability. JLARC cannot determine which board-- the William and Mary Board of Visitors or the VIMS Board of Administration-- bears responsibility for program oversight, particularly the evaluation of personnel, performance, and program quality. In a typical academic setting there should be a clear line of responsibility and accountability; the director of an academic program reports to a dean, who reports to a vice-president or president, who in turn reports to a board. At VIMS, the Board of Administration is responsible for the selection of personnel. On the other hand, the William and Mary Board of Visitors is responsible for overseeing all activities at the college, including oversight for all academic programs and the granting of degrees. VIMS educational activities are considered a part of the William and Mary program. The director of the VIMS program is considered a dean or department chairman, and VIMS program graduates receive degrees from William and Mary.

Confusion over roles and responsibilities may well have prompted the William and Mary Board of Visitors in 1972 to request "a study and report on VIMS and its relationship to the college" be conducted. In January, 1973, the Vice-President for Academic Affairs at William and Mary submitted to the Board of Visitors an interim report, but this report did not identify the board's particular responsibilities.¹ No final report has been submitted.

The relationship between the VIMS Director and various William and Mary administrators, and the VIMS program and the William and Mary programs remains equally unclear and imprecise. For example, VIMS program is called the School of Marine Science. The heads of the other schools at William and Mary are called deans, and report to the Vice-President for Academic Affairs. Nevertheless, VIMS is treated administratively as a separate department *within* the School of Arts and Science. Admissions and course registrations (after initial processing at VIMS) are handled through the School of Arts and Sciences along with other departments such as history and english. In addition, the Dean of the Faculty of Arts and Sciences indicates that VIMS will be evaluated through his school by a team of Arts and Science faculty members at some time in the future. JLARC cannot determine whether VIMS is a school or department, nor determine which officer is responsible for evaluating the director's academic performance or the overall performance of the program. Interviews confirm that these officers are generally unclear about their responsibilities to VIMS, and have not performed formal evaluations in the past.

One opportunity for identifying and resolving these shortcomings is accreditation self-study. The self-study conducted by William and Mary in 1974 mentions problems in graduate program management. Conspicuously missing from the administrative analysis is discussion of the well documented problem with VIMS. In a broader context, JLARC staff finds very little discussion of the marine science program itself in the study, or in the *Virginia Plan for Higher Education*, a State Council of Higher Education publication of institutional missions and emphases, although marine science is numerically the largest graduate program at William and Mary.²

In the absence of specific legislation, VIMS and William and Mary have not built a sound base for academic oversight, evaluation, or planning. Management of VIMS marine science education program, therefore, appears independent of

educational management at William and Mary. In the future, college officials need to define VIMS role at William and Mary to strengthen their affiliative relationship.

Instructional Relationships. The marine science program at VIMS and the graduate instructional programs on the Williamsburg campus are not coordinated or educationally supportive. In 1967, a committee of oceanographic experts from the National Academy of Sciences, Oregon State University, and the Woods Hole Oceanographic Institute on Cape Cod stated the VIMS academic program was educationally narrow. According to these experts, "the staff at VIMS has not taken full advantage of the experience of educating students...available...at William and Mary..."³ To rectify this situation, these experts recommended all VIMS students "be required to take a substantial part" of their course work at William and Mary. The Director of the State Council of Higher Education concurred.⁴

The administration at VIMS has not implemented these recommendations. For example, an educational brochure published by VIMS for prospective students states "the great majority of the courses are taught at Gloucester Point by VIMS scientists so that students seldom need to visit the campus at Williamsburg".⁵ Data provided by the State Council of Higher Education for the year 1975-76 confirm that over 96 percent of all course hours taken by VIMS students were in marine science. Only four VIMS students elected to take a course on the Williamsburg campus during 1975-76.

Table 11
COURSE WORK OF MARINE SCIENCE MAJORS, 1975-76

<u>Department</u>	<u>Student Credit Hours</u>	<u>Percent</u>
Biology	24	3.0
Mathematics	3	.4
Marine Science	<u>771</u>	<u>96.6</u>
Total	798	100.0

Source: State Council of Higher Education.

Few instructional or professional contacts exist between William and Mary faculty and VIMS professional staff. A JLARC survey of William and Mary department chairmen and school deans has indicated that only six contacts took place in 1976, but three of these are relatively minor (See Table 12). The Department of Chemistry and VIMS have an informal agreement to share chemicals when shortages arise, but none did during the year. Furthermore, two biology faculty members are considered by VIMS to hold joint appointments, as indicated in Table 12. Nevertheless, according to the biology department chairman, these faculty members have offices and research space in Williamsburg, and are paid only by William and Mary, thus may not really qualify as joint appointments.⁶

The William and Mary accreditation study of 1974 presented another opportunity for professional contact. Accreditation studies are normally

Table 12

PROFESSIONAL CONTACTS IN 1976:
VIMS AND WILLIAM AND MARY DEPARTMENTS

<u>W&M Dept. or School</u>	<u>Joint Faculty Appointments</u>	<u>Joint Courses</u>	<u>Joint Research</u>	<u>Shared Resources</u>
Biology	2	2	0	0
Business	0	0	0	0
Chemistry	0	0	0	1
Economics	0	0	0	0
Law	0	1	0	0
Physics	0	0	0	0

Source: JLARC survey of department chairmen and school deans,
October, 1976.

carried out by campus committees, each with responsibility for evaluating an aspect of college program or life. Committees are generally staffed by faculty and administrators, some of whom are given release time from normal duties. Though VIMS extensive research program is not connected with William and Mary's program in any way, VIMS Director (or the Associate Director in his place) served on an oversight committee that reviewed research efforts at Williamsburg. However, no VIMS staff (scientific or administrative) served on any of the other committees, instructional, or otherwise.

One reason for the lack of professional contact is the basic difference in organizational mission between VIMS and William and Mary. As William and Mary has a traditional emphasis on undergraduate liberal arts instruction, faculty members at the college are expected to concentrate on instructional activities. In 1975, the General Assembly requested a study of the work activities of all faculty members at public colleges in Virginia. The State Council of Higher Education study confirms that William and Mary faculty members average approximately 38 hours per week on instructional activities, but only about nine on research.⁷ On the other hand, VIMS primary mission is conducting advanced scientific research, so its professional staff concentrates on research. Although VIMS scientific staff teaches courses for which William and Mary credit is granted, VIMS scientific staff members did not participate in the legislatively mandated study, so accurate work records for them are not currently available. The following points, however, indicate the lack of emphasis on the instructional program at VIMS:

- VIMS scientific staff members who teach courses are not normally paid from instructional funds, but rather from contracts or grants.
- The ratio of VIMS "faculty" members to students is approximately 2:1. This is sixteen times the ratio established by the State Council for colleges and universities.

- Only about one-third of VIMS scientific staff are involved in instruction during any one term. (Data for fall, 1976, for example, shows that 30 were teaching that term.)
- Of those staff members who are teaching, a portion are teaching only one student, and none teach more than half time.
- According to interviews with VIMS scientific staff, the granting of faculty status by William and Mary is perfunctory, and is of value primarily in getting future employment at academic institutions.

The failure to develop close instructional ties is a serious oversight. As the oceanographic experts pointed out, closer relationships would provide VIMS students broadened educational opportunities. Consolidation of courses in such areas as statistics, furthermore, could reduce instructional costs. The need for greater central direction and coordination in the area of instruction is clear.

Financial Arrangements. Poor financial coordination between VIMS and William and Mary has resulted in excess appropriations of about \$475,000 since 1969.⁸ In that year, the Director of the Budget notified the administrations at VIMS and William and Mary that both were requesting and receiving funds for the marine science educational program.⁹ However, neither took action to rectify this double funding. In 1974, the State Council of Higher Education--taking the only action it could--subtracted VIMS student count from William and Mary's total enrollment projections, thus eliminating funds received by William and Mary for the program for the biennia.

A financial Memorandum of Agreement signed in 1976 (two years after State Council action) specifies that VIMS, rather than William and Mary, shall request funds for the program. Therefore, as VIMS is an agency under the Secretary of Commerce and Resources, the graduate education budget will not be reviewed by the State Council of Higher Education, nor subject to the enrollment projections as developed by that coordinating agency. As VIMS has authority to issue construction bonds for educational purposes (Section 23.14 of the *Code of Virginia*), neither the State Council of Higher Education or William and Mary will be able to evaluate bond and general fund requests for new academic facilities. Furthermore, the arrangement mixes budget requests for the education program and for several public service programs together into the "instructional" budgeting activity for VIMS. This will make the task of evaluating the budget request more complicated. These situations must be changed so that the appropriate review agencies can monitor marine educational requests.

Two aspects of the memorandum may raise the cost of the marine science education program at VIMS. One item provides that William and Mary will retain a portion of all tuitions collected from VIMS students. For the fall term, 1976, the portion retained could vary from \$38 per student to a maximum of \$118.¹⁰ Because VIMS handles much of the paperwork for admissions and course registration, even the minimum appears excessive and detrimental to VIMS. In addition, VIMS is obligated to use William and Mary's computer for a portion of VIMS computer work. Costs for computer time at William and Mary appear excessive. Based on a budget of \$30,000 per year for EDP service at William and Mary, and a

Table 13

CHARGES PER HOUR OF COMPUTER USE (CPU)^a
(Fall 1976)

<u>Center</u>	<u>Machine Type</u>	<u>Usage Priority</u>		
		<u>Urgent</u>	<u>Standard</u>	<u>Overnight</u>
W&M	IBM 370/158	\$625.00	\$450.00	\$300.00
ODU	DEC 10	\$130.00	\$ 60.00	\$ 32.50
VPI	IBM 370/158	\$240.00	\$ 85.00	\$ 42.50
VCU	IBM 370/158		\$180.00	

^aWhile charges for Central Processing Unit (CPU) time represent the major cost for data processing, additional charges for such items as printing, memory use, and tape mounting should also be considered.

Source: Agencies.

total EDP request of \$265,100 for the year 1976-77, VIMS might well reduce EDP costs if linked to another educational center as illustrated by the comparisons shown in Table 13 above.¹¹

Academic Program Support

Academic programs can neither be planned nor efficiently managed without the allocation of sufficient resources for program support. This section compares the VIMS and ODU Institute of Oceanography programs for providing marine science education. Both institutions need to review their resources and manpower budgeted for support activities such as course evaluations, facilities planning, student advising, and information gathering.

Facilities Planning. VIMS does not have an accurate and current inventory of space use at the Gloucester Point campus, and has no formal process for planning new facilities and renovations. Due to these problems, cost estimates prepared by VIMS and submitted to the Division of Engineering and Buildings are often too low. A new marine technology building is only partially complete and stands vacant because its cost was underestimated by 20 percent. A seawall and bank stabilization project at the Wachapreague facility on the Eastern Shore is no more than 50 percent complete, but all requested and appropriated funds for the project have been expended.

VIMS should designate a facilities administrator, preferably someone involved in both the instructional and research programs. This administrator should initially conduct a comprehensive room-by-room audit of equipment and space use, and be held responsible for keeping the audit up-to-date.¹² When new facilities are required, a planning committee including junior and senior scientists should use the audit as a base for identifying building priorities. As priority projects reach the project submission stage, professional architects and draftsmen should be consulted to aide in cost estimation.

At Old Dominion, facilities now used by the Institute of Oceanography are inventoried and planned by ODU's central administration. Based on a tour of

the facility and a review of the room-by-room inventory submitted by ODU for 1976-77, JLARC staff finds that a reasonable base exists for planning and renovation. What is missing, however, is a systematic plan for purchasing new and renovating older equipment. Development of an accurate inventory of equipment on hand, measuring utilization of this equipment, costing of new or replacement items, prioritizing, and budgeting should be a part of the Institute of Oceanography planning cycle.

Program Information. Both VIMS and the ODU Institute of Oceanography have neglected efforts to gather and organize certain routine data on their students, courses, and graduates. When information is not gathered, or gathered but not organized in a form readily useable by departmental committees and administrators, efforts to plan and evaluate departmental activities are weakened.

The recent appointment of a Graduate Studies Director at the Institute of Oceanography strengthens efforts in this area. Since his appointment, this officer has upgraded the quality and consistency of data on students, applicants, and program graduates. Though enrollments at the institute are increasing, these new data should provide support for the institute's efforts in contacting prospective students. As time permits, the Graduate Studies Director should redirect his efforts toward upgrading course evaluation procedures and toward development of computerized data files using ODU's DEC 10 computer. Reallocation of clerical support to help in both these tasks appears desirable.

VIMS has the resources for building and managing an academic program information system. VIMS has two professional level information specialists on the staff, computer operators, programmers, a newly acquired IBM 370/115 computer, and telephone linkages with the large computer at William and Mary, as well as for potential for linkages with other academic computer centers. Nevertheless, VIMS has not gathered information in a number of areas including course evaluations, annual reports, faculty workload, and graduate follow-ups.

The neglect of course evaluations and graduate follow-ups is particularly important. The students and nearly all the scientists interviewed at VIMS indicated concern about the uneven quality of instruction, the course catalog, and the variations in course content from year to year. Recognizing this, the Ad hoc Curriculum Review Committee recommended to the director in 1975 that the institute develop an evaluation procedure to assist in their reviews, but no procedure has been adopted. Graduates of VIMS academic program have never been canvassed to learn their views on the instructional program.

Presently, program information is gathered by a clerk typist in the director's office. Based on this individual's job description and work responsibilities, additional manpower will be necessary to conduct course evaluations and produce workload reports. In 1975, the Ad hoc Curriculum Review Committee requested the director to reallocate a portion of time of the information specialists, but they are not currently involved in gathering such program information.¹³ An alternative would be to regularly provide release time to a division chairman or the associate director.

An initial task that could be focused on is the reprogramming of "time and effort" forms. These forms, required by federal auditors of VIMS personnel working on federal contracts, are submitted every two weeks to the finance office and computerized. With a minimum of reprogramming, these forms could be

summarized as workload reports, then returned to division chairmen for their review and use. In addition, these summaries could have been used as a base for completion of portions of the tenure/workload study mandated by the General Assembly in 1975.

Academic Program Planning. Although department faculties have the primary responsibility and, in some cases, almost exclusive authority for planning new courses and revising curricula, the Ad hoc Curriculum Review Committee at VIMS has generally been ineffective for the reasons noted below:

- As the term *ad hoc* implies, this committee does not meet on a routine basis. According to the former chairman, there have been only three curricula reviews since 1968.
- The focus of the committee is narrow. Most the recommendations made during the three reviews dealt with the course catalog and revisions to it. The committee has not dealt with such broader issues as evaluation of course content, which is left up to the instructor, or new methods of instruction.
- The committee is not a committee of the faculty, but rather a committee of scientific staff members selected and called together by the director. The findings and recommendations of the committee are forwarded to the director, who may accept or reject them.
- Some of the committee members are not involved in the instructional program. The former chairman has not taught a course since 1969. The newly selected chairman has not been particularly involved in the instructional program for 17 years.
- Faculty are not heavily involved in review process unless selected as committee members. According to the former chairman, faculty members are often called to provide information. A number of faculty members interviewed by JLARC, however, were generally unfamiliar with the committee and could not identify what it had done.
- Students have little voice in the review process. Two VIMS students presented their ideas during the 1975 review. However, these students were not considered members, and did not vote on final recommendations. JLARC notes that two students have been asked to serve on the current committee. Their roles, however, are not clear to them at this time.
- The committee lacks sufficient information. As discussed earlier, recommendations have been made to the director for expanding the program information base, but these have not been acted upon.

The maintenance and improvement of a curriculum responsive to the Commonwealth's education needs should be a first priority at VIMS. To accomplish this, VIMS must upgrade and expand the responsibilities of the Ad hoc Curriculum Review Committee. At a minimum, membership should be broadened to include

faculty members and students interested in the curriculum and planning it. A second step could be to expand the scope of the committee, and give it some authority to act on its own.

The planning process for the ODU Institute of Oceanography is focused in the offices of the Director for Graduate Studies and Department Chairman. Because the size of the faculty is smaller than at VIMS (9 versus 58), the director, other faculty members, and students have been able to plan the institute's program on an informal basis. The entire curriculum, course-by-course, term-by-term, has been scheduled for the next three years. Both the content of individual courses and the overall objectives of the program have been reviewed. Faculty members have been assigned specific teaching responsibilities.

The director and the department chairman have strengthened the Institute of Oceanography's instructional ties with other departments at the university. Currently, course work taken in biology, engineering, physics and geophysics, and mathematics are applicable to the degree programs, and master's degree students are required to take a minimum of six hours in these other departments. This arrangement broadens the academic program and helps ensure that the institute will not offer courses that duplicate the offerings of other departments. The Department of Biology, for example, offers a basic and an advanced course in Ichthyology (the study of fish) so the institute has not planned courses in this area. Similarly, costly duplication is avoided by not offering an extensive number of courses in statistics and technical writing. While these are positive steps, the administration at the Institute of Oceanography should also consider establishing a permanent curriculum review committee. This would reduce the planning burden of the director, involve more of the faculty in the process, and place the process on a regular schedule.

Program Coordination

Though VIMS and the ODU Institute of Oceanography have similar enrollments and are only 40 miles apart, there is no program coordination between them. In 1974, ODU and VIMS signed a formal cooperative agreement that established a Joint Coordinating Committee. This committee is designed to coordinate the following activities:

- joint use of facilities;
- joint or coordinated programs in such areas as marine meteorology and physical oceanography;
- joint research by faculty and/or staff; and
- development of programs of mutual interest.

The Joint Coordinating Committee has met one time, approximately one month after the cooperative agreement was signed. No joint projects or policies have been identified. Two subcommittees were organized, but each met once. This lack of coordination between VIMS and ODU is a serious weakness in the marine science education program. Coordination of any one of the activities above would reduce costs and, at the same time, increase effectiveness. Coordination of all four

would result in substantial savings, broaden educational and research opportunities, and provide a framework for joint program planning.

Program Similarities. In 1967, and then again in 1974, the State Council of Higher Education acted to prevent program overlap and duplication by restricting the degree offerings and course orientations at VIMS and ODU.¹⁴ Despite the restrictions and stipulations imposed by the State Council, JLARC staff can find few real differences between the programs.¹⁵ In fact, available data shows that the student bodies, program layouts, and course orientations at the two are similar.

Because of its nationwide reputation, VIMS receives many more applications for each student position and, therefore, is more selective in its admissions. However, a review of data on students actually admitted shows that VIMS students score only slightly higher on the Graduate Record Examination test, and have similar undergraduate grade averages.¹⁶ Students at both institutions are required to have an undergraduate science background, and some math is desirable.

Students in both programs initially enroll in a series of "core" courses, each designed to provide an introduction to marine science (oceanography) from the perspective of one of the basic sciences. In unusual circumstances, a student in either program may waive a core course with faculty approval. Once beyond the core courses, students take a similar number of course hours, take examinations at similar points in their programs, and conduct research leading to their respective graduate degrees.

The State Council stipulated that the ODU Institute of Oceanography would stress the physical aspects of marine study while VIMS would continue its traditional emphasis on the biological. Such emphasis have been difficult to maintain. A survey of catalog entries, as shown below, indicates that both VIMS and ODU offer a reasonably comprehensive group of courses. To find out whether ODU and VIMS offer the same or similar subjects, JLARC asked faculty members at each to identify, from lists of subjects taught at the other institution, those subjects available in their program. Both VIMS and ODU respondents indicated that more than three-fourths of the subjects taught in the other program were available in some form.

Table 14

DISTRIBUTION OF COURSES BY SUBJECT FIELD^a

Program	Subject Fields				
	Physical	Chemical	Geological	Biological	Engineering
Old Dominion ^b	11	2	3	10	4
VIMS	10	1	3	16	0

^aIncludes courses such as statistics and technical writing.

^bIncludes courses taught by other departments, but listed with Oceanography and counted as requirements or electives.

Source: 1975-76 College Catalogs.

If the Joint Coordinating Committee were reconstituted, areas of coordination between VIMS and the ODU Institute of Oceanography should be expanded to include basic instructional activities. Core courses, for example, could be combined or taught jointly. Computer linkages, closed circuit television, and videotaping could be used to link the campuses and reduce instructional costs. However, instructional coordination should capitalize on the unique strengths of the two programs: VIMS strong orientation toward research and the institute's emphasis on teaching and the formal classroom setting.

Meeting Virginia's Manpower Needs

A major weakness in planning marine science education programs is the absence of information about manpower needs in the Commonwealth. Because education programs are primarily aimed at fulfilling manpower needs in Virginia (and, to a lesser extent, the nation), the colleges in Virginia could well benefit from a comprehensive study of employment opportunities in various marine settings. Since this study would include economic projections for a variety of marine and marine-related industries, the Marine Resources Commission might logically sponsor its preparation. Federal funding for the project may be available.

In a nationwide study supported by federal funds, Edwin Mackin and Roger Anderson indicate that opportunities may increase in a variety of marine occupational fields between 1975 and 1980.¹⁷ In the fields of marine construction, waterway and ocean engineering, and shipbuilding, for example, an estimated 110,000 job opportunities will be created by 1980. Similar increases are projected for other paraprofessional occupational families. Virginia, on the other hand, has no bachelor's degree programs in marine science. Only the small two-year programs at Thomas Nelson and Rappahannock are producing paraprofessional individuals with marine skills. Expansion of these programs and the development of new programs may be desirable if a significant manpower need exists in the State.

Mackin and Anderson indicate that 5,200 new positions, nationwide, will be created at the professional level in the "marine science" occupational field (Table 15). Because Virginia's graduate programs are primarily directed toward producing scientists and teachers employed in this field, and because the graduate programs emphasize near shore waters, bays, and estuaries, graduates of the programs may face significant competition for available job openings in the next few years if nationwide trends are correct. Educational program managers and planners at VIMS and ODU might consider broadening their programs to include a greater emphasis on engineering, and, at VIMS, some emphasis on teaching. A study of future manpower needs in the Commonwealth would provide direction in this process.

ADVISORY SERVICES

Provision of advisory services to marine industries is another important aspect of marine science educational efforts. The Commonwealth now supports two such programs--at VIMS and at Virginia Polytechnic Institute and State University (VPISU). While VIMS and VPISU are both authorized under the *Code of Virginia* to offer advisory services, the programs have not been coordinated and there may be unnecessary competition for federal funds.¹⁸

Table 15

ADDITIONAL MARINE SCIENCE MANPOWER NEEDED, 1975-80,
MARINE SCIENCE OCCUPATIONAL FIELD

Manpower Type	Occupational Setting				Total
	Advisory Services	Education	Regulatory & Environmental	Research & Development	
Scientific	80	400	770	130	1,560
Engineering	60	90	800	890	1,840
Technical	<u>70</u>	<u>180</u>	<u>870</u>	<u>670</u>	<u>1,790</u>
Total	210	670	2,440	1,690	5,190

Source: Mackin and Anderson.

The Sea Grant Program

Virginia's advisory service programs receive more than one-half of their annual budgets from the federally sponsored Sea Grant program. This program is intended to promote development of marine resources through advisory services to commercial and recreational fisheries, the seafood industry, and other marine interests, as well as through development of skilled manpower, facilities, and equipment at Sea Grant colleges. Educational institutions and State agencies that participate in the program are supported at one of four distinct funding levels:

- *Project Grants:* Grants are awarded for specific projects to be conducted over a limited period of time with specific goals.
- *Coherent Project Programs:* An organization may advance to this status by developing a multidisciplinary approach to regional marine-related problems and opportunities. Achievement of this status by an educational institution may signify an intent to develop the broad capabilities required for institutional status.
- *Institutional Programs:* An institution or consortium of institutions may advance to this status through development of a broad-based competence in marine affairs, involving a multidisciplinary program of research, education, and advisory services.
- *Sea Grant Colleges:* The eight Sea Grant colleges have been selected from among those receiving institutional status for at least three years, must demonstrate outstanding leadership in the region they serve, and must perform well in research, education, and advisory services.¹⁹

VIMS, because of its longer and broader participation in the program, has been given *coherent project status* by the managers of the Sea Grant program. VPISU has requested their Sea Grant status be upgraded to the coherent project level, but VPISU now is considered only a *project grant* participant in the program.

VIMS Advisory Service Program. VIMS advisory service program is designed to provide information to marine resource managers and users. Workshops, seminars, and publications on such fisheries as the herring, surf clam, and shellfish have been organized by the VIMS Department of Advisory Services. Funding for these activities has risen rapidly since 1969, as shown below. VIMS 1977 Sea Grant application includes a request for \$603,000 in Federal funds to be matched with \$394,000 in State funds, a 58 percent increase over 1976.

In the past, VIMS has not had an advisory committee to participate in the selection of projects for federal funding. A recent proposal for forming a committee appears to represent an appropriate first step. Under this proposal, the committee would include representatives of MRC, the Office of Commerce and Resources, and institutions of higher education. Participation of these groups is necessary because VIMS lacks marine-related programs in business, transportation, social sciences, mathematics, engineering, and the physical sciences--areas which receive funding through Sea Grant.

Table 16

SEA GRANT PROGRAM FUNDING
(Virginia Institute of Marine Science)

<u>Calendar Year</u>	<u>Federal (NOAA)</u>	<u>State</u>	<u>Total</u>
1969	\$ 99,590	\$ 50,000	\$ 149,590
1970	200,500	101,656	302,156
1971	249,600	134,578	384,178
1972	325,000	173,662	498,662
1973	335,000	181,297	516,297
1974	355,000	173,342	528,342
1975	395,000	217,600	612,600
1976	<u>405,000</u>	<u>226,700</u>	<u>631,700</u>
Total	\$2,364,690	\$1,258,835	\$3,623,525

Source: Department of Advisory Services, VIMS.

VPISU Seafood Technology Program. Seafood technology programs have been developed at Virginia Polytechnic Institute and State University (VPISU) by the Departments of Food Science and Technology, Agricultural Economics, and Technical Resources. Over \$164,200 in Sea Grant Project funding has been provided since 1971, with an additional \$118,250 in State matching funds, as indicated in Table 17.

The purpose of the seafood technology program is to disseminate technical information and to develop educational programs related to the utilization of marine food products.²⁰ Two extension specialists devote about half of their time to product development, packaging, sanitation, and marketing consultation. A number of publications have been produced, and the departments have sponsored fifty-seven conferences or workshops since 1971. In addition, a seafood processing laboratory at Hampton is in the initial stages of development.

Table 17

SEA GRANT PROGRAM FUNDING
(Virginia Polytechnic Institute and State University)

<u>Fiscal Year</u>	<u>Federal (NOAA)</u>	<u>State</u>	<u>Total</u>
1971-1974	\$ 52,800	\$ 34,587	\$ 87,387
1974-1975	26,400	26,300	52,700
1975-1976	40,000	28,400	68,400
1976-1977	<u>45,000</u>	<u>28,964</u>	<u>73,964</u>
Total	\$164,200	\$118,251	\$282,451

Source: Department of Food Science and Technology, VPISU.

Coordinating Advisory Services

As early as 1971, questions were raised about the apparent overlap and competition developing between the VPISU and VIMS advisory service programs, particularly as they relate to Virginia's seafood industry. The President of VPISU and the VIMS Director wrote the Sea Grant manager in Washington, D. C. that the programs were not in conflict:

The seafood programs at Virginia Polytechnic Institute and State University (VPISU) are not in conflict with those established at the Virginia Institute of Marine Science (VIMS). The efforts of this University concentrate on seafood processing through the disciplines of Food Science, Agricultural Economics, and Engineering. There are no plans in this endeavor to include or develop any programs which duplicate those of VIMS and other State agencies or institutions having competency in these areas. In order to minimize duplication of effort and utilize effectiveness, all of our resources for the economic development of the seafood industry, a committee composed of three members each from VPISU and VIMS was recently established. It is anticipated that this committee will make significant contributions to the total seafood industry.²¹

Unfortunately the coordinating committee mentioned in the letter has not met in five years.

In the absence of coordination, both VPISU and VIMS are continuing their efforts to serve the seafood industry. A telephone survey of Virginia Seafood Council members shows, for example, that VIMS staff participated in meetings of the Virginia Oyster Packer Association at the Virginia Seafood Council during 1975 and 1976. VPISU has developed an industry advisory committee to monitor their program and to discuss industry needs. The committee includes representatives from VPISU, MRC, BSS, and Virginia Department of Agriculture and Commerce, and the Virginia Seafood Council, and several seafood processors, but has no representative from VIMS. Although Seafood Council members indicate that the VPISU program is more helpful at this time, without

effective coordination and cooperation between VIMS and VPISU, Virginia's efforts for the seafood industry could easily become overlapping and duplicative.

The VPISU request for coherent project status, and the award of a wetlands project to the VPISU Department of Agricultural Economics, signal the beginning of competition between VPISU and VIMS for advisory programs in other areas. The project, supported with \$49,700 of Sea Grant funds, is designed to evaluate Virginia's wetlands program and to propose alternate wetlands management strategies. VIMS, as detailed elsewhere in this report, has a wetlands research section already providing services to local wetlands boards and MRC, thus the study will involve an evaluation of VIMS efforts. While evaluation is important in improving efficiency and effectiveness, the wetlands project is not consistent with VPISU's mission statement as defined by VPISU's President in the letter above, or as outlined in a program overview submitted to JLARC in October, 1976.

The relative priority of such an evaluative study, furthermore, must be questioned in view of the scarcity of Sea Grant funds and the unmet advisory needs of other marine industries. After the wetlands project was approved by Sea Grant, the Commissioner of the Marine Resource Commission, Virginia's lead agency for marine resource management, expressed his concerns to Sea Grant in the following manner:

As head of the State agency responsible for the management of Virginia's wetlands in accordance with the State Code, I would have expected to be consulted regarding *the need for such a study*.

I am particularly concerned that apparently none of the State agencies were consulted. There was no apparent effort to establish a *legitimate requirement for this research* or to interface the effort with our ongoing CZM planning program.

I honestly believe there are numerous areas of inquiry more deserving of these research funds.²²

The director of the federal Sea Grant program replied that Sea Grant approval of the wetlands project was based primarily on the competency of the investigators and the promise of new economic research. He continued, "It may be, as you suspect, that the [project] output will not be useful in Virginia, specifically with regards to the Wetlands Program. We hope in that case that you might at least find some of the information which is gathered to be of interest."²³

Poor coordination, unnecessary competition, and program overlap seriously weaken the effectiveness and responsiveness of advisory service programs. Because federal and State funding is likely to remain limited unless Virginia achieves Sea Grant status, Virginia must develop a mechanism for coordinating Sea Grant efforts and establishing some advisory service priorities for the State. One model worth considering is the "sea grant consortium" system set up by South Carolina and other states to improve their advisory services.

IMPROVING PROGRAM COORDINATION

Virginia needs a better framework for planning and coordinating the education and advisory services programs which support marine resource management. Today, internal and interagency administrative problems are weakening these support programs. Some of the internal problems discussed in this review can be addressed by the individual agency or academic department acting alone. On the other hand, problems of coordination and competition continue to exist despite the extensive efforts of the State Council of Higher Education, the General Assembly, and the agencies themselves.

Strengthening the Affiliative Relationship

One option for improving coordination is to strengthen the affiliative relationship between VIMS and the coordinating colleges. This would require revising the *Code of Virginia* to clarify the roles and responsibilities of the various boards and administrators. In particular, role clarification should involve the focusing of overall planning and finance responsibilities at the coordinating colleges. This would integrate the instructional programs and provide for review of capital requests, enrollment projections, and instructional budgeting by the State Council of Higher Education.

An advantage of this option is that it continues a long-standing tie between VIMS and William and Mary, an institution of national reputation located only 17 miles from Gloucester Point. According to VIMS, this reputation has helped VIMS develop a strong staff and student body. This option, however, does not provide a solution for a number of interorganizational problems:

- the vastly different educational missions of William and Mary and VIMS will continue to hinder the development of close instructional relationships, and limit VIMS ability to expand program offerings;
- the VIMS physical plant may require expansion in order to meet educational standards set by accrediting agencies and the State Council for Higher Education;
- coordination between the Old Dominion oceanography program and the VIMS marine science program is not improved; and
- a framework is not provided for improving the coordination of advisory service programs.

To expand instructional opportunities VIMS could, with this option, develop affiliative relationships with other colleges along with William and Mary.

Affiliating VIMS With ODU's Institute of Oceanography

Another option available is to affiliate VIMS education program with the Institute of Oceanography at ODU. This would require revision of the *Code*

of Virginia in two ways: (1) to identify ODU as the affiliative institution of higher education for VIMS; (2) to strengthen the responsibilities of the affiliative institution for the VIMS educational program. In operational terms, this would require the transfer of educational planning and fiscal responsibilities to ODU. In addition, this option would strengthen VIMS responsibility for and commitment to their research effort.

This option focuses the marine science educational program at ODU. Development of a single program should provide a clear line of responsibility and accountability to the Old Dominion Board of Visitors, and should provide a way for eliminating educational overlap. Consolidation of first year courses such as statistics, technical writing, and the "core" offerings would result in cost savings. Pressure at VIMS for additional classroom and instructional laboratory space would be reduced. Advance students could take practicums and seminars, work as research assistants at VIMS, or gain practical teaching experience in undergraduate courses at ODU. As before, degrees would be awarded through the affiliated institution.

Designating a Sea Grant College. An important advantage of this latter option is that it provides a strengthened opportunity for achieving Sea Grant college status. In passing the Sea Grant program, Congress limited the status to "any suitable public or private institution of higher education..."²⁴ Though VIMS conducts most of the State's marine research, VIMS is not an institution of higher education nor has it displayed a strong interest in coordinating with others to manage research. Old Dominion, on the other hand, is Virginia's major regional university serving the Tidewater region. Development of a single strong, comprehensive program focused at ODU, and the designation of ODU as a Sea Grant college by the General Assembly would strengthen Virginia's chances for receiving Sea Grant college status.

The benefits of this status are not limited to education. In all likelihood, increased federal funding would be available for both research and advisory services. Based on VIMS orientation toward and strong performance in research, and the performance of the VPISU and VIMS advisory service programs, much of this additional revenue would be channeled to these agencies. Several states have developed Sea Grant councils or consortiums to help disperse education, research, and advisory service funds. In Virginia, development of such a council or consortium under the leadership of a Sea Grant college could revitalize the process of program coordination, as well as provide a forum for setting priorities.

END NOTES

Chapter I - Marine Resource Program

1. Virginia, State Department of Health, *Interim Report on the Economic Impact of Kepone Pollution on the Major Industries of the Chesapeake Bay Area and the Commonwealth of Virginia*, (Richmond, 1976), p. 12.
2. U. S., National Marine Fisheries Service, *Participation in Marine-Recreational Fishing Northeastern United States 1973-74*, (Washington, D. C., January, 1975)., p. 3.
3. Virginia, State Department of Health, *Interim Report on Kepone*, p. 7.
4. Ibid., p. 13.
5. Virginia, Marine Resources Study Commission, *Marine Resources of Virginia-Their Use, Conservation, and Development*, (Richmond, 1967), p. 8.
6. Virginia, *Acts of Assembly*, Regular Session 1968, Chapter 746, p. 1341.

Chapter II - Management of Marine Resources

1. Virginia, Virginia Institute of Marine Science, "An Indepth Study of the Virginia Oyster Industry", (Gloucester, Virginia).
2. Telephone conversation between Philip Leone, JLARC, and Dexter S. Haven, Marine Biologist, Virginia Institute of Marine Science, January 13, 1977.
3. Virginia, Marine Resources Commission, letter from James H. Wallace, Statistical Project Manager, to Mark Fleming, JLARC, November 15, 1976.
4. Virginia, Marine Resources Commission, letter from James E. Douglas, Jr., Commissioner, to John E. Corrigan, Regional Director, U. S. Department of Commerce, Economic Development Administration, May 23, 1975.
5. Virginia, Marine Resources Commission, *Seventy-Second and Seventy-Third Annual Reports*, Fiscal Years Ending June 30, 1970 and June 30, 1971, p. 16.
6. The Council of State Governments, *To Stem the Tide, Effective Marine Fisheries Management*, (Lexington, Kentucky, September, 1975) p. 4.
7. J. Claiborne Jones, "Local Environmental Management - A Case Study: The Virginia Wetlands Act, 1972-1974 (Masters Thesis, College of William and Mary, 1976), p. 50.

Chapter III - Administration of Marine Resource Agencies

1. *Code of Virginia* (1950), Section 28.1-108 and 109.
2. *Code of Virginia* (1959), Section 28.1-109(11).

3. *JLARC Special Report: Certain Financial and General Management Concerns; Virginia Institute of Marine Science*, July 26, 1976.
4. Virginia, Auditor of Public Accounts, "Report on Audit: Virginia Institute of Marine Science, for the Fiscal Year Ended June 30, 1976", January 10, 1977.
5. Memorandum from Charles B. Walker, Comptroller, to Members of the Governing Boards and the Heads of All State Agencies, August 2, 1976.
6. Report of MASD presented to VIMS Board of Administration, February 2, 1977. Recommends strengthening Finance Office, improved service center operations, and a possible major reorganization of the administrative group.
7. *Code of Virginia* (1950), Section 28.1-195.
8. Virginia Institute of Marine Science, *Study Report: State Police Investigative Report - Case No. 75-09825*. Submitted to the Governor January 26, 1977. The Board of Administration suggests that VIMS employees--to carry out their work--need certain employment benefits and freedoms enjoyed by college faculty members. As they point out, VIMS scientific staff are trained researchers for the most part, and share some of the same interests and qualifications as their counterparts in higher education. But VIMS staff is not alone in this regard; staffs at other State agencies such as the State Council of Higher Education, the Department of Health, and the Consolidated Laboratories are equally well qualified in their professional fields. What is different at VIMS and these other State agencies is that--while the quality of their work must remain professionally high--these agencies must remain responsive to State needs as transmitted by such appropriate groups and individuals as MRC, the Secretary of Commerce and Resources, the Governor, and the General Assembly.
9. Virginia Institute of Marine Science, *Virginia's Official Marine Science, Engineering, and Advisory Program*. October, 1974, p. 18.
10. Letter from Dr. William J. Hargis, Jr., to Richard E. Hickman, Jr., dated June 15, 1976.
11. Virginia, Auditor of Public Accounts, "Report on Audit: Virginia Institute of Marine Science, for the Fiscal Year Ended June 30, 1976", January 10, 1977.
12. Letter from Lawrence E. Davis to Timothy M. Garner, dated February 14, 1977.
13. Virginia, Auditor of Public Accounts, *Report...p. 3*.

Chapter IV - Education and Advisory Service Programs

1. George R. Healy, *Interim Report on Virginia Institute of Marine Science*, unpublished report to the William and Mary Board of Visitors, January 12, 1973.

2. The College of William and Mary, Accreditation Study, (Williamsburg, Virginia: The College of William and Mary, 1974). Particularly note chapter on administration.
3. Vetter, Richard C., et. al. *Future Development of Virginia's Oceanography Programs*. Unpublished report to the State Council of Higher Education for Virginia, May 10, 1967, p. 7.
4. Healy, *Interim Report on Virginia Institute of Marine Science*, p. 16-17.
5. Virginia, Virginia Institute of Marine Science, *Academic Programs at the Virginia Institute of Marine Science*, p. 1.
6. Paul Dressel, et. al., *Allocating Resources Among Departments*. (San Francisco: Jossey-Bass, 1976), p. 72.
7. Virginia, General Assembly, *Faculty Tenure and Activity in Virginia*, Senate Document No. 7, (Richmond, 1977) p. iv and Appendix D.
8. VIMS instructional budget for the years 1969 through 1974 is approximately \$718,000. An estimated 1/3 of this amount (using the current ratio) was for public service programs, 2/3 (or \$475,000) was for the instructional program. See also Virginia, Joint Legislative Audit and Review Commission, *Special Report: Certain Financial and General Management Concerns at Virginia Institute of Marine Science*, (Richmond, July 26, 1976).
9. Virginia, Division of the Budget, letter from L. M. Kuhn, Director, to Davis Y. Paschall, Edgar Shannon, and William Hargis, November 10, 1969.
10. VIMS internal memorandum from Wanda J. Coffey to Peter Poherence (October 5, 1976) states that VIMS students paid \$26,697 for tuition for fall term, 1976, or approximately \$296 per student for ninety students. William and Mary may retain from 13% to 40% of this expenditure for overhead.
11. Even though two computers may be the same, because of differences in internal configuration, they may not process a computer program at the same speed. This makes direct comparisons between computers more difficult. See, for example, Louis J. Desiderio, et. al. *Measuring Computer Performance for Improvement and Savings*. (Coopers and Lybrand: Philadelphia, 1974)
12. The State Council of Higher Education has developed several detailed facilities, planning manuals, any one of which could be used as an audit guide.
13. VIMS, letter from the Ad Hoc Curriculum Review Committee to Dr. W. J. Hargis, Jr., Director, April 16, 1975.
14. See Healy, *Interim Report on Virginia Institute of Marine Science*, p. 17. See also State Council of Higher Education, letter from Daniel E. Marvin, Director, to Thomas R. Graves, President, the College of William and Mary, August 23, 1973. See also State Council of Higher Education, proposal summary submitted by the State Council staff to the State Council, August 7, 1973.

15. Marine science is the application of the basic sciences (physics, biology, chemistry) to the study of marine problems. Oceanography is a more holistic approach, and treats the study of oceans as a study of inter-related systems. There appears to be little operational difference between the two programs, however. JLARC found that William and Mary continued to call the VIMS program "oceanography", *Hegis code 1919, through 1975*. See also *Virginia Institute of Marine Science, Virginia's Official Marine Science, Engineering and Advisory Program*, (Gloucester, VIMS, 1974), p. 10.
16. Data on GRE scores (mathematical and verbal) and undergraduate grade averages gathered from ODU student records. VIMS records from Committee on Graduate Studies, *Annual Report of the Committee on Graduate Studies to the Faculty of Arts and Sciences and the Faculty of the School of Marine Science*, October, 1976.
17. Edward F. Mackin and Roger D. Anderson, "Marine Manpower: An Initial Assessment", *MTS Journal*, May, 1976, Vol. 10, n. 4, pp. 26-37.
18. Section 28.1-195(b) of the *Code of Virginia* authorizes VIMS to advise the Commission of Fisheries (now the Marine Resources Commission) as well as other agencies and private groups on means by which fisheries resources may be conserved, developed, and replenished. On the other hand, VPISU is authorized under the Extension Division Act of 1966 (Section 3-44.1 and 3-44.2) to conduct educational programs and disseminate information in such fields as agriculture, business, industry, home economics, and resource development.
19. United States, Office of Sea Grant, National Oceanic and Atmospheric Administration, Department of Commerce. *Goals and Objectives of the National Sea Grant Program: 1976-1980*, (Washington, D. C., January, 1976), pp. 7-8.
20. Draft review of VPISU Seafood Technology Programs submitted to JLARC by Dr. George Flick, Department of Food Science and Technology, VPISU, in October, 1976, p. 1.
21. VPISU, letter from T. Marshall Hahn, Jr., President, to Dr. Robert D. Wildman, Sea Grant Manager, September 30, 1971. The letter was also signed by Dr. William J. Hargis.
22. Virginia, Marine Resources Commission, letter from James S. Douglas, Director, to Dr. Robert Abel, Sea Grant Manager, July 21, 1976.
23. United States, Office of Sea Grant, National Oceanic and Atmospheric Administration, Department of Commerce, letter from Dr. Robert Abel, Sea Grant Administrator, to James E. Douglas, Director, Marine Resources Commission, July 23, 1976.
24. Title 11 of the Marine Resources and Engineering Development Act of 1966, PL89-688, Section 204(b) (3).

APPENDICES

JLARC Special Report, Virginia Institute of Marine Science, July 26, 1976	A-1
--	-----

Agency Responses	A-37
------------------	------

APPENDIX I

SPECIAL REPORT
CERTAIN FINANCIAL AND GENERAL MANAGEMENT CONCERNS
VIRGINIA INSTITUTE OF MARINE SCIENCE

July 26, 1976

Joint Legislative Audit and Review Commission
823 East Main Street
Richmond, Virginia 23219

July 26, 1976

The Honorable Mills E. Godwin, Jr.
Governor, Commonwealth of Virginia

Chairman Gilbert L. Maton
Board of Administration
Virginia Institute of Marine Science

C O P Y

Appropriate Commonwealth Officials

Gentlemen:

Under provisions of Section 30-58.1(c), *Code of Virginia*, a special report regarding certain financial and general management practices of the Virginia Institute of Marine Science is submitted for your attention. The report was initiated in April, 1976 as a result of conditions observed at the Institute.

Contents of the report were discussed by the Commission on June 9, 1976, and have been reviewed by appropriate agencies. Formal comments received to date are attached. Portions of this special report as well as other findings concerning program management will be contained in the Commission's evaluation of marine fisheries programs planned for submission to the General Assembly prior to its 1977 session.

Please note the actions of the Commission contained on pages 14 and 15. The Commission recognizes the valuable technical and scientific contributions made by the Institute to the Commonwealth. We believe, however, it is urgent that the financial and general management deficiencies noted in this special report be corrected at the earliest opportunity. On behalf of the Commission, I am

Sincerely yours,

Edward E. Lane

Edward E. Lane
Chairman

EEL:blh

SPECIAL REPORT
CERTAIN FINANCIAL AND GENERAL MANAGEMENT CONCERNS
VIRGINIA INSTITUTE OF MARINE SCIENCE

Concern about the adverse effects of water pollution on Virginia's fishing industries and the need to perform continuing research in marine science led to the establishment of the Virginia Fisheries Laboratory in 1940. Originally, the Laboratory was a cooperative research venture between the College of William and Mary and the Virginia Fisheries Commission. The Laboratory became an independent research and service agency in 1946, was moved from Yorktown to Gloucester Point in 1951, and was named the Virginia Institute of Marine Science (VIMS) in 1962.

The various duties assigned the Institute are contained in Section 28.1-195 *Code of Virginia* and generally include:

- studies of fishing resources and industries;
- research on the State's maritime problems, and in regard to marine pollution, cooperation with the State Water Control Board and Department of Health;
- research and education in the marine sciences; and,
- investigations and special studies concerning marine resources as requested by the Governor.

The Institute is governed by a nine member Board of Administration and is subject to provisions of the State personnel and appropriations acts. VIMS is required to make an annual report to the Governor and General Assembly.

Today, VIMS serves as the graduate school of marine science for the College of William and Mary, offering both a masters and doctorate degree. Marine research and resource development, however, still constitutes the principal workload of the Institute. In recent years, VIMS has become an increasingly important source of scientific knowledge to Virginia's maritime economy.

The Joint Legislative Audit and Review Commission staff became involved with VIMS during the conduct of an evaluation of marine fisheries management programs. That review is designed to assess the extent to which marine programs are consistent with legislative intent; and, the efficiency and effectiveness with which marine programs are carried out. Immediate concerns about certain VIMS financial management and administrative practices resulted in a special staff report to the JLARC Commission on June 9, 1976. This special report details those concerns and transmits specific recommendations made by the Commission. Agency responses are included as Appendix 5. The marine fisheries study is still in progress and scheduled to be presented to the Commission prior to the 1977 General Assembly session. Appropriate portions of this memorandum as well as other findings regarding program management, will be contained in the JLARC Commission's final report on Marine Fisheries Programs.

VIMS Financial Condition

VIMS operating budget has shown a significant growth since the early 1960's. As displayed in the exhibit below, biennial expenses have grown from just over \$918,000 to an estimated \$10.6 million for 1976-78. The proportion of special fund support, largely from contract and grant research, is now sixty percent of the total appropriation.

Exhibit 1

VIMS APPROPRIATIONS SUMMARY (Operating Expenses)

<u>Biennium</u>	<u>General Fund</u>	<u>Special Fund</u>	<u>Total</u>
1962-64	\$ 918,515	\$ ---	\$ 918,515
1964-66	977,300	---	977,300
1966-68	1,393,370	439,800	1,833,170
1968-70	1,949,180	706,545	2,655,725
1970-72	2,352,435	1,501,160	3,853,595
1972-74	2,781,005	3,053,310	5,834,315
1974-76	3,462,810	4,259,900	7,722,710
1976-78	4,227,165	6,383,265	10,610,430

Source: Budget summaries and appropriation acts, years indicated. (See Appendix 1 for annual detail.)

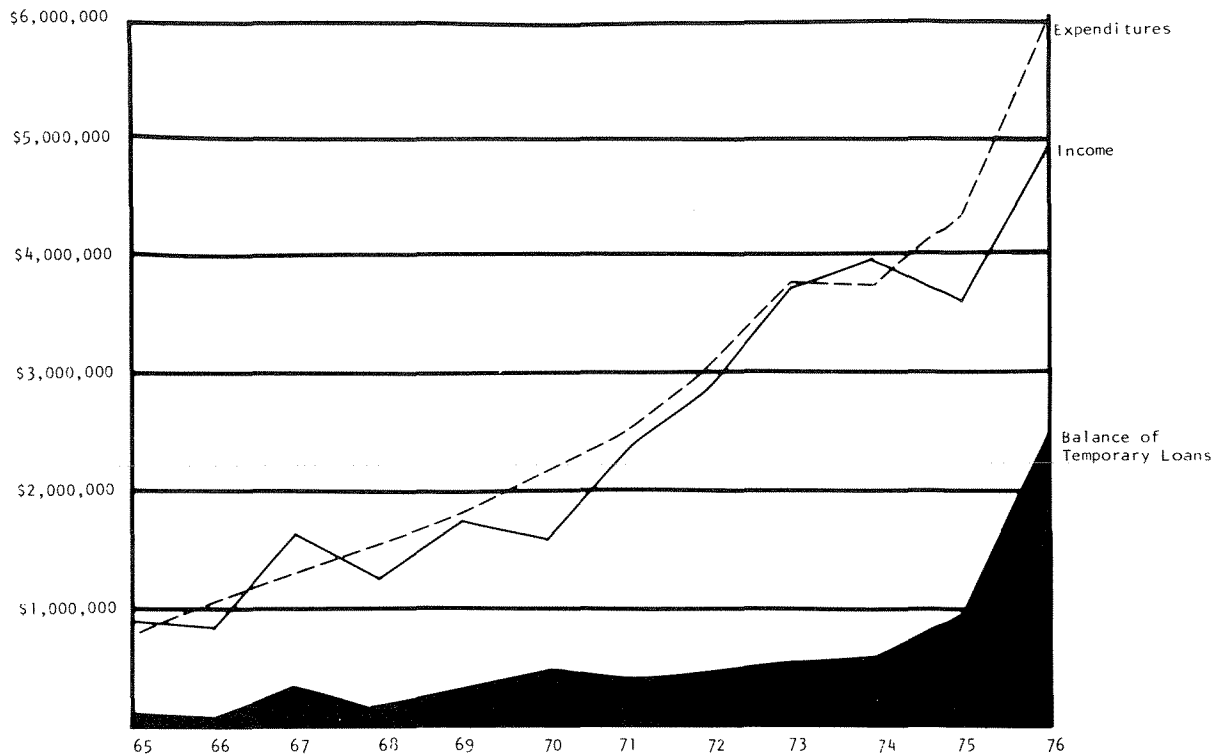
Because of the nature of VIMS research activities, and in accordance with accepted governmental accounting procedures, an appraisal of the Institute's financial condition is best obtained by considering assets and liabilities accrued as of a specific date. VIMS' liquid assets and short-term liabilities as of June 30, 1976 indicate the Institute is in a deficit position. Cash on hand and accrued receivables (\$1,551,377) fall short of liabilities¹ (loans payable - \$2,350,000) by about \$800,000. This finding is not surprising since VIMS has overspent money available from both general fund appropriations and special fund revenues in nine of the last twelve years. In fact, since 1968, income from all sources has consistently fallen short of expenditures as illustrated in Exhibit 2. Most of the shortfall is attributed to contract reimbursement procedures. Temporary loans were obtained from the general fund to cover the difference between income and expenditures.

Temporary Loans. Temporary loans are permissible under General Provisions of the appropriations act to pay for certain previously authorized obligations that are reimbursable from special revenues. Section 190 of the 1976-78 Appropriations Act provides:

"...any State agency may, with the prior written approval of the Governor, borrow the required sums on such terms and from such sources as may be approved by the Governor and the State Treasurer; such loans shall not exceed the amount of the anticipated collections of such special revenues and shall be repaid only from such special revenues when collected."²

Exhibit 2

INCOME, EXPENDITURE AND TEMPORARY LOAN BALANCES Virginia Institute of Marine Science (Fiscal 1965-1976)



Note: Income consists of general fund appropriations and special fund revenues.

Source: Department of Accounts.

Since 1965, VIMS has obtained a loan under this provision every year except 1974. Each loan was to have been repaid during a subsequent biennium. Unfortunately, expenses remained well ahead of income, some claims for reimbursement were disallowed, loans were not repaid on schedule, and the loan balance has continued to grow. As shown in Exhibit 3, the accumulated loan balance owed the State Treasury is \$2,350,000.

In August, 1975, the Division of the Budget notified VIMS of its concern that a half million dollars in temporary loans had been outstanding for fifteen months or more. Actually, an analysis of loans payable on July 1, 1975 (shown in Appendix 2) indicated some dated back to 1968. Moreover, VIMS had just received another loan of \$370,000 to cover its cash deficit as of June 30, 1975. Under terms and conditions of that loan, all current and overdue balances were to be repaid by June 30, 1976.

Exhibit 3

VIMS TEMPORARY LOANS
(1964-1976)

<u>Fiscal Year</u>	<u>Loan Balance (July 1)</u>	<u>New Loans</u>	<u>Payments</u>	<u>Loan Balance (June 30)</u>
1965	\$ 17,504	\$ 48,417	\$ 7,391	\$ 58,530
1966	58,530	129,500	124,366	63,664
1967	63,664	271,900	14,245	321,319
1968	321,319	254,399	468,041	107,677
1969	107,677	300,000	107,677	300,000
1970	300,000	250,000	74,011	475,989
1971	475,989	115,605	202,562	389,032
1972	389,032	30,690	6,952	412,770
1973	412,770	151,048	1,048	562,770
1974	562,770	---	1,048	561,722
1975	561,722	370,000	---	931,722
1976	931,722	2,350,000	931,722	2,350,000

Source: Department of Accounts.

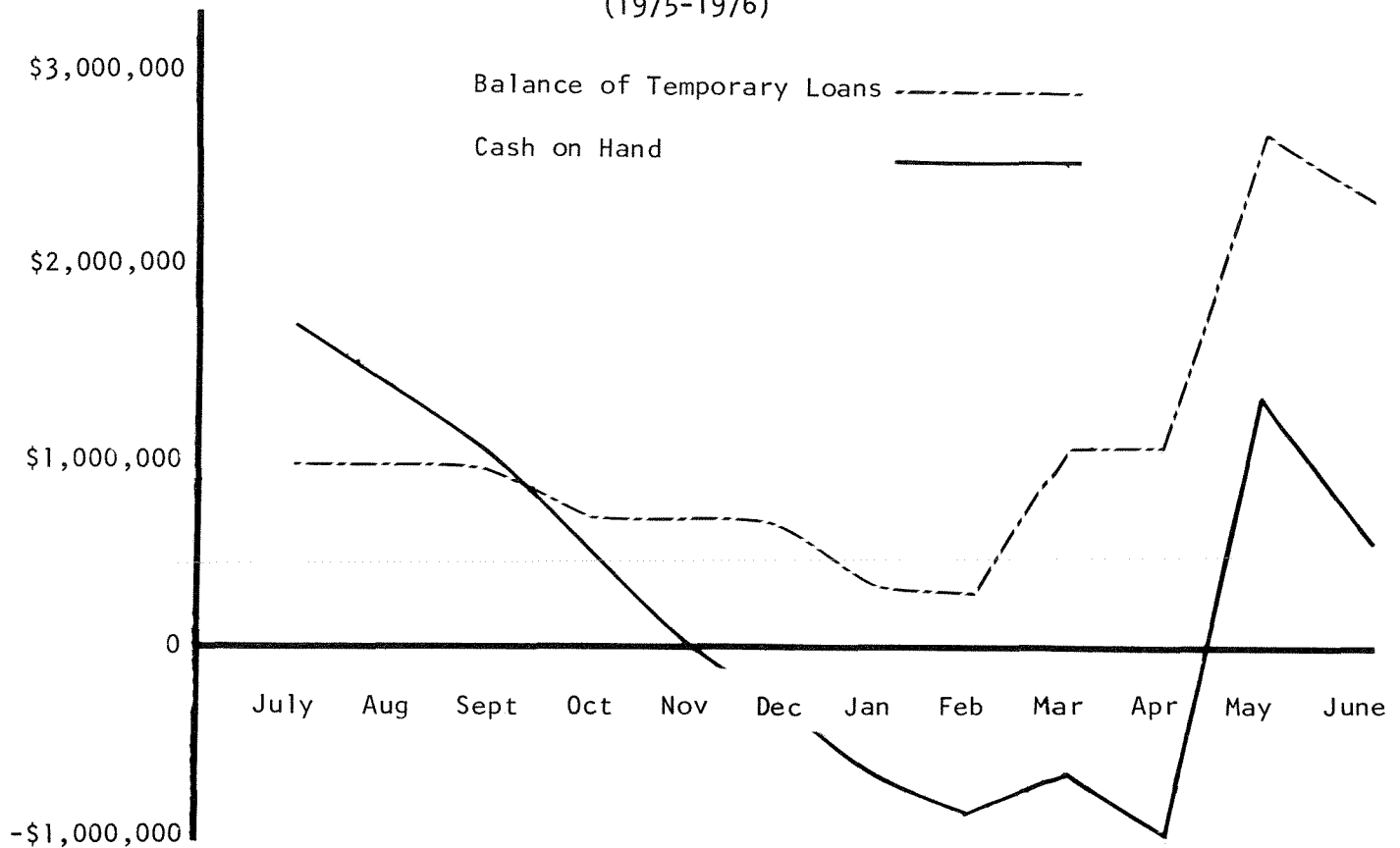
By February, 1976 the Institute did pay all past due loans and reduced the loan balance to \$290,000. However, as illustrated in Exhibit 4, the Institute's cash account at that time had already been overdrawn for three months and these loan repayments merely resulted in increasing the agencies cash deficit. VIMS immediately requested and received another loan of \$750,000 but it was not sufficient to make up the cash shortage. The Institute's cash position continued to deteriorate until finally an additional loan of \$1,600,000 was authorized in May, 1976. By that time, VIMS cash account had been overdrawn for six months.

It is clear that while VIMS justified loans from the general fund to provide money in advance for cost reimbursement research contracts, in fact, the loans were necessary to cover a cash deficit at the end of the fiscal year. It is equally clear that loans have not been repaid on schedule and some repayments have been made by overdrawing a cash account already empty. These financing practices are not in line with sound financial management principles, violate provisions of the temporary loan terms and conditions, and are in violation of deficit spending provisions of the appropriations act.

Deficit Spending. The General Assembly has, for many years, legislated specific provisions aimed at controlling deficit spending. Section 189 of the 1976-78 Appropriations Act prohibits an agency from spending funds in excess of its general fund appropriation and special fund revenues or at a rate that will exceed them, except in an emergency situation and then only with the prior written approval of the Governor. So far as can be determined, VIMS has not obtained the required advanced approvals for deficit spending nor has any emergency been found to exist. Indeed, the temporary loan process seems to be a routine year-end fund balancing procedure.

Exhibit 4

BALANCE OF LOANS PAYABLE AND CASH ON HAND
VIRGINIA INSTITUTE OF MARINE SCIENCE
(1975-1976)



Source: Department of Accounts.

In addition to prohibiting deficit spending, the Act indicates the seriousness of overspending by identifying the kinds of action that might be taken when an unauthorized deficit occurs:

"...the Governor is hereby directed to withhold his approval of such excess obligation or expenditure. Further, there shall be no reimbursement of said excess, nor shall there be any liability or obligation upon the State to make any appropriations hereafter to meet such unauthorized deficit. Further, those members of the governing board of any such agency who shall have voted therefor, or its head if there be no governing board, making any such excess obligation or expenditure shall be personally liable for the full amount of such unauthorized deficit, and, in the discretion of the Governor, shall be deemed guilty of neglect of official duty, and be subject to removal therefor. Further, the Comptroller is thereby directed to make public any such unauthorized deficit, and the Director of the Division of the Budget is hereby directed to set out such unauthorized deficits in the next biennium budget."

The JLARC staff has found no evidence to indicate that any of these actions have been taken--including the requirements of public notice.

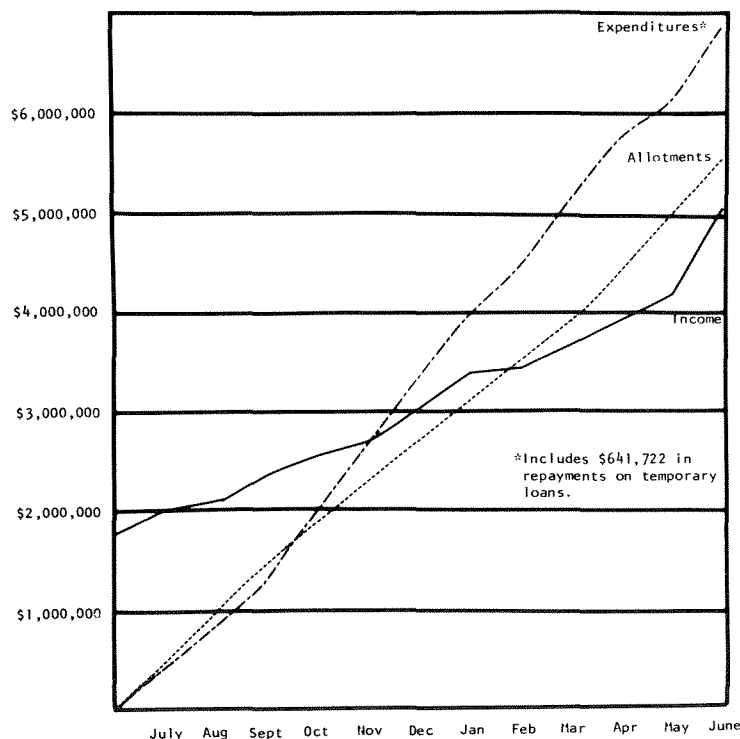
Allotments. The allotment process, administered by the Division of the Budget, is supposed to provide a tool for financial control of agency expenditures. The process allows the Governor to establish a level of agency expenditures on a quarterly basis which ensures spending is kept within appropriations and anticipated revenues. Section 2.1-224 *Code of Virginia* specifies:

"No appropriation to any department, institution, or other agency of the State government, ... shall become available for expenditure until the agency shall submit to the Director of the Division of the Budget quarterly estimates of the amount required for each activity to be carried on, and such estimates shall have been approved by the Governor."

Clearly, VIMS did not exert sufficient financial control during the past year to ensure expenditures were within allotments. Expenditures exceeded allotments beginning early in the second quarter of 1975 and began to exceed income about the same time. Expenditures for 1975-76 are shown in Exhibit 5.

Exhibit 5

INCOME, EXPENDITURES, AND ALLOTMENTS Virginia Institute of Marine Science (Fiscal 1975-1976)



Source: Department of Accounts. (See Appendices 3 and 4.)

The Division of the Budget and Department of Accounts, however, must also share part of the responsibility for VIMS' deficit spending. The Division of the Budget has authorized allotments without sufficient analysis of anticipated special fund revenue and, as a result, allotments for 1975-76 exceeded income by about \$600,000. In addition, the Division has not issued allotments on schedule. For example, the fourth quarter allotment, due before April 1, was not furnished to the Comptroller until June. The Department of Accounts, on the other hand, did approve expenditures in excess of allotments for the second, third, and fourth quarters although the Department has indicated verbal authorization was received for the increases. Moreover, the Comptroller reports having refused to make further payments against VIMS accounts until loan assurances were received. Nevertheless, checks were drawn against a depleted cash account for nearly six months and expenditures exceeded allotments by \$1,236,626.

Repayment of Loans. VIMS is now faced with temporary loans totalling \$2,350,000 which consists of \$750,000 due not later than November 1, 1976 and \$1,600,000 to be repaid not later than May 1, 1977. The likelihood that it can repay these loans from special fund revenues and continue to finance present levels of operation at the same time, depends on the Institute's current asset position. As of June 30, 1976, the Institute's cash account had a balance of \$551,377. This amount, combined with special revenues earned but not collected, determine the value of current assets. Unless the amount of special revenues earned makes up the difference between cash and loans payable--about \$1,800,000, the prospect that present loans can be repaid on schedule without adversely affecting the Institute's continued operation is highly doubtful. VIMS has estimated the value of special revenues earned but not collected at about \$1,000,000. If this estimate is correct, the Institute will fall short of meeting loans payable by about \$800,000 and will face another financial crisis during the forthcoming biennium.

Need for New Financial Controls. Based on a review of appropriations, allotments, income and anticipated revenue, VIMS has been and may still be in a deficit position. A major problem with VIMS financial management practices has been commingling of General and Special funds. Research to be paid from special fund sources often must be completed before reimbursement is received. In the past, VIMS has charged its general fund account to complete special fund research and await reimbursement. Since the proportion of total special fund activity has increased significantly, and since contract management has become more and more complex, general fund and special fund obligations should be accounted for separately. Loans obtained in anticipation of special revenues should identify income from either a specific research project or a group of projects which will be used for repayment. The Institute and the State's financial control agencies must maintain sufficiently detailed records to continuously monitor and identify expenditures and income by specific research project. And, temporary loans ought to be requested, approved and recorded in advance as required by law. The Division of the Budget could prepare separate allotments for general and special fund expenditures and require accurate documentation of anticipated revenues prior to loan approvals. Finally, the Comptroller needs to ensure that Institute expenditures remain within allotments and available cash.

State Audits. Indications of VIMS financial difficulties were noticed as early as April, 1969, by the Auditor of Public Accounts. At that

time, an audit was released indicating a deficit of \$47,308 for the year ending June 30, 1968. In addition, the auditor noted certain deficiencies in record-keeping. Audits covering fiscal 1970, 1972, and 1974 reported additional deficits of \$572,231, \$526,592, and \$640,778, respectively.

It appears these warning signals did not attract agency attention until federal audits disclosed serious weaknesses in VIMS' accounting practices. The State audit released in June, 1975, pointed out: "...substantial amounts of federal reimbursements for costs claimed by the Institute have been withheld due to lack of adequate supporting documentation...Because of the manner in which the Institute's records had been maintained, we were unable to determine the amount(s) of federal reimbursements which might be expected..."³

Federal Audits. The Department of Interior conducted audits in 1972 and 1973 to validate project costs eligible for federal reimbursement. For 1970 through 1973, \$468,716 out of \$499,000 claimed by VIMS was challenged. Deficiencies noted included:

- Lack of daily time and activity reports to support personnel costs charged directly and as part of boat rental charges;
- Lack of documented vessel acquisition and capital improvement costs to verify depreciation charges included in boat rental rates; and,
- Lack of documentation to verify costs of project office space.⁴

Documentation of this sort is required under OMB Circular A-29 of 1969 and other federal regulations which provide uniform principles for determining costs under grants and contracts.

A January, 1974, Department of Commerce audit of Sea Grant funds disclosed further deficiencies in allocating and documenting indirect costs to be charged to the National Oceanic and Atmospheric Administration (NOAA). Although the Sea Grant Act of 1966 (PL 89-688) specifically prohibited grantees from claiming capital expenditures, the audit disclosed many such costs had been charged to the Sea Grant program in VIMS' overhead rate. NOAA later found similar violations by Sea Grant institutions in other states, and, as a result, the Comptroller General decided in late 1975 to accept those capital expenses charged to overhead.

The Sea Grant audit report issued in March, 1974, challenged \$468,892 of the \$498,805 claimed by VIMS and noted proper care had not been exercised to ensure that direct charges were not duplicated as indirect or overhead charges.⁵ According to federal regulations, direct costs must be documented in order to properly allocate an individual's time and effort to particular projects. In many instances such documentation was not available. As a result, the auditors charged VIMS was recovering certain costs twice--on a direct as well as an indirect basis.

A number of other federal audits during this period involved similar challenges to VIMS' record-keeping and accounting procedures. While some of these challenges are still being negotiated, VIMS maintains it has collected most of the funds originally withheld by federal agencies. In the meantime, general funds must carry these reimbursements delayed principally by poor record-keeping practices.

Hurricane Agnes Audit. The latest report of the State Auditor released in March, 1976, found VIMS was unable to account for expenditures incurred during the aftermath of Hurricane Agnes. Between June and December 1972, VIMS was supposed to charge expenses for hurricane-related research to a separate account. Instead, expenditures were charged to a number of existing research accounts without proper identification. In late 1972, VIMS submitted an estimate of its costs to the Office of Emergency Preparedness (OEP) for federal reimbursement. The Auditor of Public Accounts was responsible for auditing the claim. Over half of the \$160,000 request was disallowed because of inadequate documentation.⁶

Institutional Management

In addition to the serious financial problems which have plagued VIMS over the years, several other administrative areas have been identified as requiring review including: the need for an agency organization tailored to administer current Institute workload and programs; improved financial and personnel administration; work scheduling and project review that is better related to funding; review of funding for graduate education; and more detailed records regarding control and financing of vessel operations. The VIMS Director acknowledged these areas have generally been set aside in a letter to JLARC dated June 8, 1976:

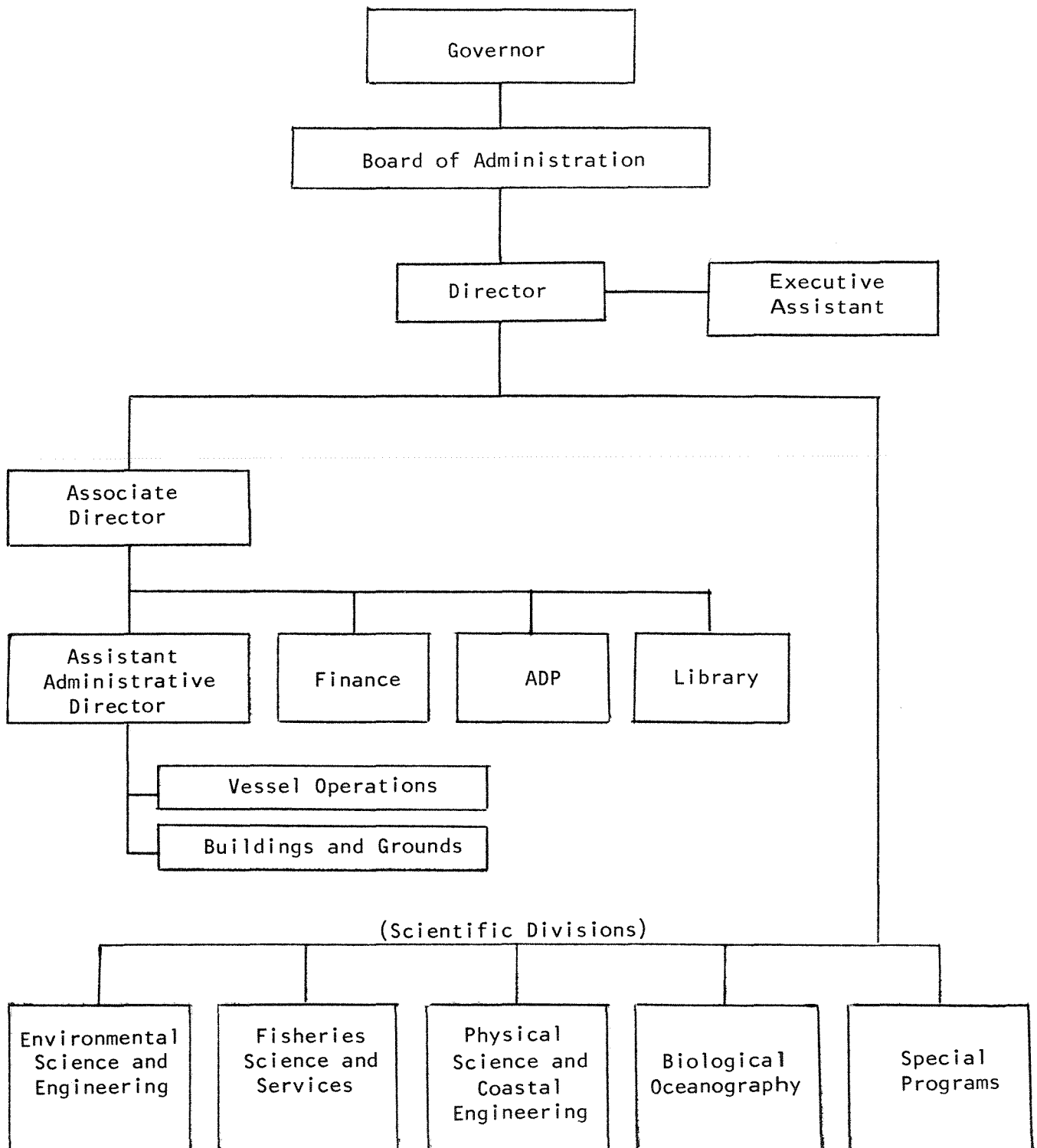
"A deliberate decision was made to emphasize the development of the scientific, engineering and academic programs on a priority basis. It was intended that development of non-scientific administration, which was primarily in the hands of others at that time, would be left until later: The first priority was to get the scientific and engineering information and capability for acquiring and imparting it. This was the plan. It was followed and it worked."⁷

There are few who would argue with the emphasis on program implementation; but, it is unfortunate that important administrative matters have been set aside for over a decade. Furthermore, it is unlikely that VIMS first priority can continue to be achieved effectively without greater attention to basic institutional management.

Organization and Personnel. The Board of Administration appointed by the Governor, in turn appoints a Director responsible for overall agency management.⁸ The Institute's formal organization depicts the administrative support functions as assigned to an Associate Director, while research activities are supervised by five Assistant Directors each heading a specific scientific division (Exhibit 6). But the organization chart is misleading and lines of authority as well as personnel classification and compensation need careful internal review and Department of Personnel concurrence. The Associate Director position is designed to serve as the Institute's Deputy Director; however, he does not participate in day-to-day agency management which blocks his potential effectiveness in that role. The Director personally supervises most of the functions assigned to the Associate Director and is also deeply involved in operating activities at the divisional level. The classification of this position needs review.

Exhibit 6

VIMS ORGANIZATIONAL STRUCTURE



Source: Prepared by JLARC staff from information provided by VIMS.

The Assistant Administrative Director was formerly responsible for budget and financial matters but subsequent to federal audit reports in 1973 and 1974 a new position was established to supervise the financial area. Today, the Assistant Administrative Director's responsibilities are limited to building and grounds maintenance and vessel operations, yet the position title and classification have not been altered.

Several division heads complained during on-site agency visits that many job descriptions are outdated and other positions require a thorough classification review. For example, the Institute's ADP Director is classified as a Marine Scientist--a classification that carries a substantially higher level of compensation.

Financial Administration. The finance office has made a number of changes in accounting procedures to improve documentation required under federal auditing guidelines. A computerized system has been developed to account for direct costs by research project. However, there is still an excessive delay in billing due to manual allocation of indirect costs. In addition, there are a number of other areas which deserve management attention including:

- Development of comprehensive departmental and divisional budgets for both general and special funds;
- Development of automated monthly cost reports on all grants and contracts for management review;
- Development of an encumbrance procedure for accounts payable; and,
- Development of a cost accounting system for all auxiliary enterprises.

Planning and Control. VIMS does not have a comprehensive agency plan, work schedule, and information system for effective internal management. In an organization as complex as VIMS, planning, coordination and control are essential to ensure each of the various work programs are directed toward explicit organizational goals and objectives. While planning for scientific research may well need to be flexible, inadequate research progress information can seriously impair the Institute's financial stability as well as inhibiting adjustments of priorities to meet new conditions required by research contractors or by the Commonwealth.

The JLARC staff requested VIMS assemble information concerning the extent to which contract reports have been submitted on schedule over the past two years. The Director responded:

"...we are having some difficulty filling your request, since we keep no record which will readily give this information. It becomes, therefore, a matter of reviewing each contract individually.

I feel that any figures we might produce in response to your request would have little significance for the following reasons:

- Time for submission of reports is often extended telephonically as a result of conversations between the Principal Investigator (PI) and the contractor, thus leaving no record. Variations are also made by personal letter.
- Draft reports, which technically fulfill expectations of timing, are often held for a period of months by the contractor before being returned to the PI for completion.
- Often contract reporting requirements are changed at the request of the contractor to include elements not considered in the initial grant or contract document or not agreed to by the PI."⁹

While each point certainly seems reasonable, the Institute should have sufficient information to determine progress toward completing research projects and to fit that information into an ongoing agency status report. While much project detail may be available only in separate project files, the lack of ready access to supervisory kinds of data in a form useable for institutional decision-making is a serious shortcoming of agency management processes.

Funding Graduate Education

In the past, both the College of William and Mary and the University of Virginia have been funded for students enrolled at each respective institution but taking courses at VIMS. In addition, each school received the full tuition paid by VIMS students. VIMS also received general fund appropriations for instruction which resulted in double-funding marine science students. In November, 1969, the former Director of the Budget called the issue of double-funding to the attention of the presidents of William and Mary and the University of Virginia, and the Director of VIMS. The matter remained unresolved until the Director of the State Council of Higher Education raised the issue again in a November, 1973 letter to the Director of the Budget. The Council rediscovered the duplication of funding while reviewing the University of Virginia's participation in the marine science program. (The University subsequently agreed to terminate its program because of low degree productivity.)

The funding problem remained, however, because the two remaining institutions were unable to reach agreement on a mutually satisfactory solution. VIMS was reluctant to have its instructional budget dependent on faculty/student ratios based on projected enrollment, while William and Mary did not wish to lose the tuition generated by VIMS students. By early 1974, the Council of Higher Education acted to eliminate the double-funding in the 1974-76 budget during discussions before the House Appropriations Committee by reducing the William and Mary student count by a number equal to enrollment at VIMS. On March 1, 1976, a Memorandum of Agreement was approved between William and Mary and VIMS which provides that:

- FTE student enrollment for William and Mary is to be reduced by the number of students enrolled in the marine science program; and,

- Sixty percent of all application fees and tuition received by William and Mary from VIMS students is to be returned to VIMS.

In light of this agreement, the General Assembly should reassess the amount of general fund appropriation required to support graduate instruction at VIMS.

Review of VIMS' Instructional Budget. The instructional portion of VIMS' budget still is not developed on Council of Higher Education budget guidelines. In the past, VIMS argued its budget should not be tied to enrollment projections because its teachers are also research staff who spend only a small portion of their time in class. Recognizing that many other graduate degree programs involve a great deal of applied research but are still budgeted according to Council guidelines, it would appear reasonable that the marine science program could receive the same kind of budget review.

Application of the Council's graduate guidelines to the 1976-78 budget indicates VIMS has been generously funded for instruction. The Council of Higher Education has established standard faculty/student ratios for funding instructional positions on the basis of 1:10 for a first year graduate course, and 1:8 for advanced graduate courses. It may be that such ratios can not be applied uniformly to all programs and a thorough review of marine science instruction may be required to develop an appropriate ratio. However, if the 1:8 ratio had been applied to VIMS' FTE enrollment of 31 students in 1975-76, it would have been funded for 3.88 faculty positions. Using the average salary for a Marine Senior Scientist, the instructional budget would have been \$89,434 for personal services. Adding funds to pay for other VIMS' instructional expenses would bring the educational portion of the budget to just over \$104,000. Yet for 1975-76 VIMS was budgeted \$157,215 for instruction. Moreover, the budget has been increased to \$201,695 for 1976-77 with no expected increase in FTE enrollment.

Vessel Operations and Financing

VIMS' fleet includes a 57-foot research vessel, a landing craft on loan from NASA, and 34 other launches and outboard boats. VIMS had requested a capital appropriation for a large, seagoing research vessel for the past three biennia which was not approved. The 1976-78 budget did, however, recommend that federal funds be used to outfit, maintain, and operate such a vessel. On July 1, 1975, VIMS accepted a 144' minesweeper (named the *Virginian Sea*) from the U. S. Navy under a five-year, no-cost renewable lease. The Governor's office approved acceptance of the lease under the condition that no general fund monies would be obligated. It was understood that a sizable portion of the operating costs were to be recovered from fees charged to a Bureau of Land Management (Department of Interior) contract for research on the outer continental shelf. Numerous alterations were necessary to equip the vessel for research use and it did not become operational until almost one year after acceptance. In the meantime VIMS chartered another ship to carry out the research project.

VIMS reports approximately \$290,000 had been expended on the minesweeper as of late May, 1976. These costs were paid from the general fund account and coded as expenses chargeable to the Bureau of Land Management contract. However, these expenses may not be reimbursable under terms contained

in the Bureau contract and may be disallowed. VIMS may be able to recover a portion of the alteration costs over the remaining years of the lease by including depreciation charges in user fees. Nevertheless, at this time the condition that no general funds be obligated for the vessel has been circumvented. It should also be noted that expenditures for required capital improvements were made during the six months in which the Institute's cash account was exhausted. Deficit expenditures for capital projects are expressly prohibited by Section 189 of the 1974-76 Appropriations Act.

Commission Review and Action

The information contained in this memorandum was discussed by the Joint Legislative Audit and Review Commission on June 9, 1976. The following resolution and recommendations were adopted by unanimous vote of members present and are submitted for such consideration and action as is appropriately required by law.

With respect to State level controls on agency expenditures, a resolution was adopted that:

WHEREAS, it has been brought to the attention of the Joint Legislative Audit and Review Commission that expenditures by the Virginia Institute of Marine Science have exceeded both approved allotments and cash available during this fiscal year, and

WHEREAS, the Commission is concerned that this condition may exist in other State activities receiving funds appropriated by the General Assembly, and

WHEREAS, such practices are not in keeping with principles of sound financial management; now, therefore, be it

RESOLVED that the Joint Legislative Audit and Review Commission suggests the State Comptroller should take appropriate action to begin to ensure that expenditures for activities receiving appropriations do not exceed either approved allotments or cash on hand.

With respect to financial and general management deficiencies noted at the Virginia Institute of Marine Science, the Commission recommends:

1. That a copy of the report be transmitted to the Institute's Board of Administration advising them of the Commission's concern regarding the financial and management issues discussed in the report. Request the Commission be kept advised of the Board's actions.
2. That the Auditor of Public Accounts perform a comprehensive audit of VIMS with special attention to validation of anticipated revenues.
3. That the Comptroller establish necessary procedures to ensure that VIMS expenditures do not exceed allotments of funds available and advise the Commission of actions taken.

4. That the Division of the Budget (Department of Planning and Budget) ensure that allotments for the Institute are based on reliable estimates of special fund revenues anticipated during the allotment period. Further request allotments be provided to the Comptroller in advance of the allotment period.
5. That the State Council of Higher Education develop appropriate budget guidelines for the instructional portion of VIMS' budget and participate in the budget review process.
6. That the Department of Management Analysis and Systems Development undertake as high priority an organizational study of VIMS.
7. That the Governor be provided with an information copy of the report and that he be advised of the actions taken by the Commission.

END NOTES

1. A loan of \$750,000 was authorized on March 1, 1976, to be repaid no later than November 1, 1976. A loan of \$1,600,000 was authorized on May 26, 1976, to be repaid no later than May 1, 1977.
2. *Acts of Assembly, 1976*, Chapter 779, Section 190. Approved April 12, 1976. Also, specific terms and conditions are established for each loan as approved by the Governor's office.
3. Auditor of Public Accounts, *Report on Audit, Virginia Institute of Marine Science, For the Fiscal Year Ending June 30, 1974*. Richmond: June 24, 1975.
4. U. S., Department of Interior, Office of Audit and Investigations, *Audit of Bureau of Sport Fisheries and Wildlife Grants to VIMS*. Washington, D.C.: June 13, 1974.
5. U. S., Department of Commerce, Office of Audits, *Final Audit of Costs Claimed Under Sea Grant No. NG-5-72*. Washington, D.C.: March 13, 1974.
6. Auditor of Public Accounts, *Report on Audit, Virginia Institute of Marine Science, Relating to Damages Resulting from the Flood of June 21-25, 1972*. Richmond: March 16, 1974.
7. Letter from Dr. William J. Hargis, Jr., Director, Virginia Institute of Marine Science, dated June 8, 1976.
8. *Code of Virginia (1950)*, Section 28.1-197.
9. Letter from Dr. William J. Hargis, Jr., Director, Virginia Institute of Marine Science, dated June 15, 1976.

Appendix 1

INCOME, EXPENDITURES AND ACCUMULATED SURPLUS (DEFICIT) Not Including Temporary Loans or Repayments (Fiscal 1965-1976)

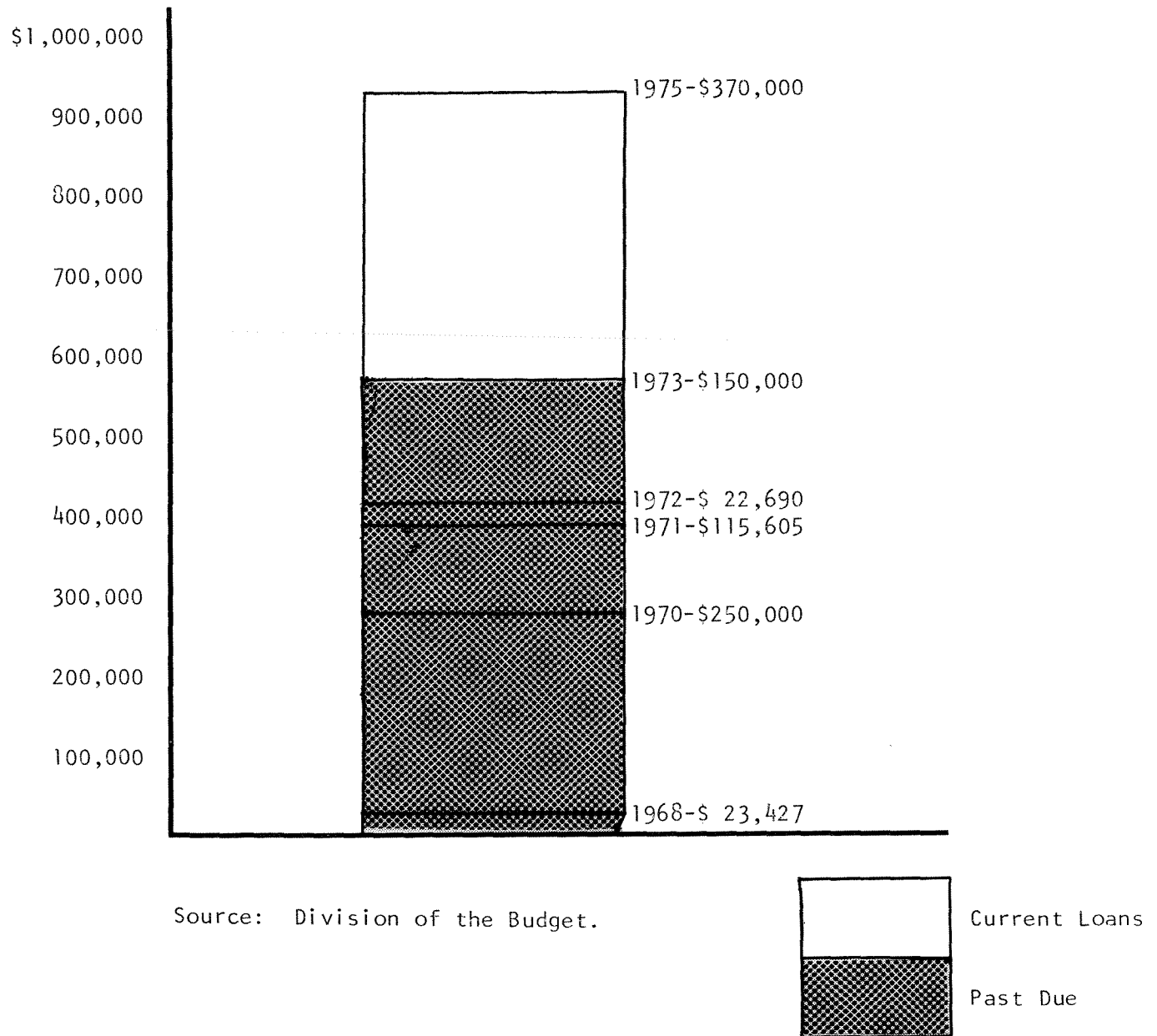
Fiscal Year	Income			Expenditures	Surplus (Deficit)	Accumulated Surplus (Deficit)
	General Fund	Special Fund	Total			
1965	\$ 723,900	\$ 160,164	\$ 884,064	\$ 773,944	\$ 110,120	\$ 110,120
1966	630,550	209,600	840,150	987,130	(146,980)	(36,860)
1967	1,355,600	278,400	1,634,000	1,247,655	386,345	349,485
1968	760,300	493,600	1,253,900	1,536,557	(282,657)	66,828
1969	1,157,500	587,500	1,745,000	1,786,000	(41,000)	25,828
1970	1,023,000	566,000	1,589,000	2,129,700	(540,700)	(514,872)
1971	1,178,000	1,134,300	2,312,300	2,501,010	(188,710)	(703,582)
1972	1,180,500	1,671,100	2,851,600	3,003,600	(152,000)	(855,582)
1973	1,831,000	1,915,500	3,746,500	3,747,000	(500)	(856,082)
1974	1,612,000	2,349,020	3,961,020	3,731,300	229,720	(626,362)
1975	1,842,000	1,762,485	3,604,485	4,348,947	(744,462)	(1,370,824)
1976	1,750,000	3,200,000	4,950,000	5,814,000	(864,000)	(2,234,824)
Total	\$15,044,350	\$14,327,669	\$29,372,019	\$31,606,843		

Source: Department of Accounts.

Special Note: Income and expenditure figures have been rounded to the nearest \$100 in many cases.

Appendix 2

ANALYSIS OF VIMS' TEMPORARY LOANS DUE
(As of July 1, 1975)



Appendix 3

VIMS INCOME AND EXPENDITURES
(1975-76)

	Income			Expenditures		
	General Fund Appropriation	Special Revenues	Total Income ^a	Operating Expenses	Loan Payments	Total Expenditures ^a
July	\$1,752,005	\$ 227,428	\$1,979,433	\$ 392,902		\$ 392,902
August		91,408	2,070,841	449,641		845,543
September		244,981	2,315,822	441,920		1,284,463
October		204,675	2,520,497	485,267	\$ 241,722	2,011,452
November		149,591	2,670,088	506,840	80,000	2,598,292
December		316,008	2,986,096	623,398		3,221,690
January		357,921	3,344,017	458,099	320,000	3,999,789
February		165,699	3,509,716	351,818		4,351,607
March		93,057	3,602,773	701,701		5,053,308
April		316,328	3,919,101	600,415		5,653,723
May		81,971	4,001,072	369,755		6,023,478
June		943,022	4,944,094	432,240	290,000	6,745,718
Total	\$1,752,005	\$3,192,089	\$4,944,094	5,813,996	\$ 931,722	\$6,745,718

^aYear to date.

Source: Department of Accounts.

Appendix 4

VIMS' QUARTERLY ALLOTMENTS AND EXPENDITURES (1975-76)

			Expenditures			
	Allotment	Year to Date	Not Including Loan Payments		Including Loan Payments	
			Expenditures	Year to Date	Expenditures	Year to Date
First	\$1,487,525	\$1,487,525	\$1,284,463	\$1,284,463	\$1,284,463	\$1,284,463
Second	1,225,200	2,712,725	1,615,505	2,899,968	1,937,227	3,221,690
Third	1,117,905	3,830,630	1,511,618	4,411,586	1,831,618	5,053,308
Fourth	1,678,462*	5,509,092	1,402,410	5,813,996	1,692,410	6,745,718

*Includes \$489,503 as a supplemental allotment for third quarter.

Source: Division of the Budget, Department of Accounts.

Appendix 5
AGENCY RESPONSES

Office of the Comptroller, Department of Accounts

Council of Higher Education

Department of Personnel and Training

Department of Planning and Budget

Board of Administration, VIMS

Virginia Institute of Marine Science (The Institute response also included an extensive commentary on each point raised in a preliminary staff report which may be inspected on request at the Commission offices.)

JUN 29 1976



COMMONWEALTH of VIRGINIA

Office of the Comptroller

CHARLES B. WALKER, C.P.A.
COMPTROLLER

V. J. PROSS, JR.
ASST. COMPTROLLER

P. O. BOX 6-N
RICHMOND, VIRGINIA 23215

June 28, 1976

MEMORANDUM

TO: Bill J. Kittrell
FROM: Charles B. Walker *CBW*
SUBJECT: VIMS - Comments

Please make mention in your report that the Comptroller did recognize this situation and took action on several occasions to bring about satisfactory solutions by involvement of the Budget Division. We were assured by Budget that action was being taken to clear necessary paperwork.

cc. John R. McCutcheon



JUN 30 1976

COMMONWEALTH of VIRGINIA
COUNCIL OF HIGHER EDUCATION

DANIEL E. MARVIN, JR.
DIRECTOR

~~CONFIDENTIAL~~
700 Fidelity Bldg., 9th and Main Streets, Richmond, Va. 23219

(804) 786-2143
~~CONFIDENTIAL~~

June 28, 1976

Mr. Billy J. Kittrell, Assistant Director
Joint Legislative Audit and Review Commission
Suite 200, 823 East Main Street
Richmond, Virginia 23219

Dear Mr. Kittrell:

Thank you for your letter of June 22 concerning the Virginia Institute of Marine Science. Your letter asks for comments on the preliminary report prior to July 2. I believe it would be consistent with the responsibilities of the Council to confine my remarks to pages 15-17 of the report and to the section entitled "Funding of Graduate Education."

I appreciate your bringing to the attention of the Commission the fact that the Council took action to eliminate the previous practice of double funding for students in marine science graduate programs at the Marine Science Institute. I would note that the Council took steps to remove the duplicate General Fund appropriation for the 1974-76 Biennium, repeated this action for the 1976-78 Biennium, and continued to encourage the Institute and The College of William and Mary to reach agreement on an appropriate allocation of student-generated special fund revenues.

I am certain you recognize that VIMS engages in instruction at a number of levels ranging from field trips for elementary and secondary students through the doctoral program in Marine Science at The College of William and Mary. The final dollar figure and staff requested for the instructional portion of the VIMS budget represents a combination of all of these instructional activities.

I would agree with the point made on page 16 of the report that "it is possible that such ratios (standard faculty/student ratios) should not be applied uniformly to all programs and a thorough review of marine science programs may be required to develop an appropriate ratio." If it is the wish of the Commission, the Council would be pleased to review the graduate instructional portion of the Institute's budget requests for future biennia. If I interpret the report correctly, such a recommendation is implied if not stated.

A-25

Mr. Billy J. Kittrell

- 2 -

June 28, 1976

We are pleased to have assisted in this work of the Commission and continue to be available to cooperate in every possible way on matters pertaining to higher education.

Sincerely,

A handwritten signature in cursive script, appearing to read "Dan".

Daniel E. Marvin, Jr.
Director

DEM/r

JUL 6 1976



John W. Garber
Director

COMMONWEALTH of VIRGINIA

Division of Personnel
302 State Finance Building

Post Office Box 654
Richmond, Virginia 23205
(804) 786-3801

June 30, 1976

Mr. Billy J. Kittrell, Assistant Director
Joint Legislative Audit and Review Commission
823 East Main Street, Suite 200
Richmond, Virginia 23219

Dear Mr. Kittrell:

I have the following comments pertaining to the areas of personnel management at the Virginia Institute of Marine Science, which are reviewed in your preliminary report dated June 21, 1976.

A position was classified as an Agency Personnel Supervisor A at Virginia Institute of Marine Science in 1973 for the purpose of providing professional assistance to the Marine Institute Administrative Director in personnel administration. Emphasis, however, appears to have been given to record keeping and clerical processing aspects of the personnel process, rather than personnel management assistance. The positions of Marine Institute Administrative Supervisor and Marine Institute Associate Director also do not appear to have fulfilled personnel management responsibilities as would be expected.

Professional staff members from the Division of Personnel have met with and counseled VIMS' staff on needed personnel management improvement, particularly in the area of position classification. Initiative is needed at the agency level, however, in order to have the personnel function properly fulfilled.

Over the past years, Dr. Hargis has discussed some of these problems with us and has recently advised us that a plan is being developed to organize a personnel department at VIMS. In connection with this, we will be reviewing the Fiscal Officer position and the Marine Institute Administrative Supervisor position for their proper classifications as a result of the changes made in their assignments.

We are hopeful that the agency will place sufficient emphasis on personnel management so as to carry out a continuous program of services, particularly in the area of position classification.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "John W. Garber".
John W. Garber
Director of Personnel

A-27



JUL 2 1976

COMMONWEALTH of VIRGINIA

Department of Planning and Budget

~~Division of the Budget~~

445 Ninth Street Office Building

JOHN R. McCUTCHEON
DIRECTOR

POST OFFICE BOX 1422
RICHMOND, VIRGINIA 23211
(804) 786-3154

July 2, 1976

Mr. Billy J. Kittrell, Assistant Director
Joint Legislative Audit and Review Commission
Suite 200, 823 East Main Street
Richmond, Virginia 23219

"Preliminary Report on Selected Management Issues - The Virginia Institute of Marine Science," Dated June 21, 1976

We understand from staff discussion that your June 22, 1976 request for a reply to the referenced by July 2 designated a target date which could be changed.

Accordingly, with this acknowledgement and to avoid a fragmented statement, we ask your concurrence in our providing the full response when we obtain fiscal information as of June 30, 1976 from the Institute and the State Comptroller. This should be during July, but we should not interfere with the Institute's biennium-closing activities.

A handwritten signature in cursive script, reading "John R. McCutcheon".

John R. McCutcheon

JUL 6 1976

4525 Logsdon Drive
Annandale, Virginia 22003

June 30, 1976

Mr. Billy J. Kittrell
Assistant Director
Joint Legislative Audit
and Review Commission
Suite 200
823 E. Main Street
Richmond, Virginia 23219

Dear Mr. Kittrell:

Your letter and Preliminary Report on "Selected Management Issues - The Virginia Institute of Marine Science" was received on 25 June. It was apparently delayed having been mailed as third class book rate.

The Board of Administration of VIMS has instructed the Director of the Institute to staff a report analysis and to provide factual commentary to your office by 2 July 1976, as you have requested. Since your deadline does not provide the Board itself with adequate time to review, analyze, and conclude its own appraisal of your material and the to-be-prepared VIMS staff observations and commentary, the Board reserves the privilege for subsequent comment if needed.

It seems appropriate to note here that on the basis of a precursor review, the Preliminary Report could bear reorganization. It seems to me that the order ought to be reversed. First, the programs and their conformance to legislative intent should be presented. Next, presentation and discussion of the VIMS organization and procedures should logically follow. And, finally, the cost picture. This sequence makes more sense and would make the contents much more understandable.

I believe also that the words "deficit" and "loan balance" are used interchangeably. They have distinct and different meanings in my vocabulary and I expect in that of others.

You may be assured of our deep interest and full cooperation with you on this effort.

Very truly yours,



Gilbert L. Maton
Chairman of the Board
of Administration
Virginia Institute of
Marine Science

GLM/sgm



JUL 6 1976

COMMONWEALTH of VIRGINIA

Virginia Institute of Marine Science

Gloucester Point, Virginia 23062

WILLIAM J. HARGIS, JR.
DIRECTOR

Phone: (804) 642-2111

2 July 1976

Mr. Billy J. Kittrell
Assistant Director
Joint Legislative Audit and Review Commission
Suite 200, 823 E. Main Street
Richmond, Virginia 23219

Dear Mr. Kittrell:

Mr. Gilbert A. Maton, Chairman of the Board of the Virginia Institute of Marine Science, has asked me to respond to the draft of the preliminary staff progress report on the Virginia Institute of Marine Science. I am doing so, although as of 1930 hrs. 24 June, he had not received the copy mailed to him by book post.

This report came to my attention on 23 June 1976 via telephone. As soon as I became aware of its existence, I called for the various Institute officers involved to "staff-it-out." That process is still in progress. I did not actually see the report until 24 June, when I returned to my office. Since then, several administrative staff meetings have been held and I have communicated with you twice by phone.

You indicated in the first of those telephone conversations that the response date of July 2 requested in your letter of transmittal was based upon an earlier operational decision of the Commission to require a 10-day response time of everyone. You also indicated that, where complete information such as financial data would not be available until after the books are closed, we should respond with what we could, and indicate that the rest is to be supplied later. As we agreed, it will not be possible for us to supply detailed fiscal data for the current fiscal year or the biennium, to which much of the JLARC preliminary staff progress report is devoted, until the a) books are closed, b) Comptroller's Report is received, c) VIMS review is completed, and d) VIMS has reported to the Comptroller as required on 15 August. I also informed you at the same time that other elements of the report, such as a detailing of the research programming procedures and the educational activities--which require considerable compilation, review and thought--

Mr. Billy J. Kittrell
2 July 1976
Page 2

likely could not be prepared and transmitted by July 2.

Concerning these two important items, we are convinced from the statements made in the report that we failed to make the JLARC representatives who visited here fully aware of the details relating to those activities.

Incidentally, from the 22nd (the date of preparation of your letter) to the 2nd of July is 8 working days, even allowing for no time in transit. In order to examine carefully each item and develop a reasonable response, I have sought input from all of the administrative persons involved. The attached response, while still quite rough due to the lack of time, incorporates a number of thoughts from others besides myself.

The draft of the preliminary staff progress report as it stands does not constitute a balanced review of the Virginia Institute of Marine Science! It does not ". . . assess the extent to which agency programs are consistent with legislative intent and the efficiency and effectiveness with which these programs are being carried out." Of this you are already aware since the JLARC Report indicates in its first page that these are "issues" which the JLARC staff "feels deserve attention before the evaluation of all Marine Institute management programs is completed."

Unfortunately, this preliminary draft progress report in its present form has been distributed and has caused difficulties. Most of the "issues" selected for attention deal with topics of which VIMS management has been aware for some time. In fact, on most, steps have been taken to reduce or remove procedural and other management difficulties.

The financial analysis used to develop the several points about an unfavorable financial condition is based upon concepts and interpretations foreign to VIMS financial managers. Apparently, we have failed to make clear the nature of grant and contract funding and the financial phenomena related thereto. No one can reasonably expect there not to be a gap (if this be called a deficit) between expenses and income at any point in time where growth is due to grant and contract activities and income therefrom.

VIMS does not anticipate an actual or true deficit for FY 1975-76, except where emergency operations and inflation have run expenditures higher than expected. Remedies for such deficits

Mr. Billy J. Kittrell
2 July 1976
Page 3

are available. Remedies to the lack of grant and contract relevant documents such as Time and Effort sheets, vessel-use charges, other service center charges, indirect costs, etc. have already been achieved. Is it the JLARC staff's purpose "to beat a dead horse?" Incidentally, few if any of these documents are required, even now, by state rule or regulation.

Many of the comments relevant to the state auditors reports are not in accordance with the documents, themselves, or reasonable interpretation thereof.

As indicated above, criticisms and findings of the federal auditors delivered to VIMS in 1973 have already been acted upon. The state auditor has already commented on this compliance in his covering letter of June 1975 to his audit of VIMS financial situation of FY 1973-74.

Settlement negotiations with the federal agencies involved in these audits are underway. Those already completed have been in VIMS favor. (The Agnes Audit, it should be noted, does not affect VIMS financial situation!) No problems are anticipated in achieving settlements of the rest. Such negotiations are common-place, as other agencies of the State and industry have found out. We have, to my knowledge, always delivered the products we agreed to supply. The money is owed us. To my knowledge, no payments have ever been permanently withheld in over twenty years of grant and contract operations at VIMS. We do not anticipate that any will be!

Other management issues noted by JLARC staff which includes Organization, Financial Administration, Personnel Administration are already being attended to. Improvements have been underway for some time. Organization is constantly being changed and new arrangements for financial management have been made. The same is true for personnel management.

Criticisms are leveled at VIMS for "lack of" a "comprehensive agency plan and work schedule for internal management control." We are not sure we understand what these things are.

VIMS does have plans and it does have responsive organization. The basic comprehensive "plan" is provided in the Code. From this, all other plans are developed as necessary. The most comprehensive and detailed internal plan is that around which the Biennial Budget Request, which is reviewed by Executive and Legislative alike, is developed. Long-term planning is due on a 4- and 6-year basis. Plans for programs and projects are developed from these guidelines and conceptions. Planning must,

Mr. Billy J. Kittrell
2 July 1976
Page 4

indeed, be flexible! Also it must be done but it must be done realistically.

A detailed work schedule which will cover all of the primary basic functions of the Institute and all of the programs and projects required is not possible. Development of such a document would be time consuming, costly, and, likely, of little continuing value.

The Section on Education is composed of incomplete, inadequate, or untimely information. Many of the comments about the universities and colleges involved, have little to do with VIMS and are beyond our ken. We do not understand why they are included.

We have evidently failed to clearly explain the origin, rationale behind, and nature of VIMS budget for Instruction (02) which is not solely for graduate education and cannot for many reasons be related to FTE or any other externally-developed formula. Guidelines of the Council of Higher Education, cannot be applied to the instructional portion of VIMS budget, since graduate education is just one part of the total budget for Instruction (02). VIMS has not been excessively funded for instruction!

The section on vessel operations and funding is also outdated and incomplete. The VIRGINIAN SEA is operational and has been out. Conversion took longer than expected--vessels are vessels. On them, Murphy's Law operates very effectively, but it has been out and earned money.

We did not agree nor contend that BLM would pay the full costs of the vessel. Nor have we circumvented the condition that no General Funds be used to cover the costs of conversion and operation. Instead Special Funds are and will be used. We have borrowed money to bring the conversion as far along as it has been possible. It is our intention to pay it back.

Using temporary loans to create service centers or provide other types of front-end money is the only way VIMS has to accomplish these objectives or to cover emergencies. We have sought advanced appropriations to allow establishment of a "cash reserve" from the General Fund appropriation to VIMS but have never been successful in our plea.

Accumulation of Special Funds, in significant quantity has been impossible, since all income is used to cover the costs

Mr. Billy J. Kittrell
2 July 1976
Page 5

of doing business or providing the wherewithal to continue in business. It is not possible to make a profit or to establish significant cash reserves.

I commend our responses to you. They will be followed by further information as the time for preparation allows.

The Director has not been involved in the detailed discussions of most of the topics raised in the report. Had he been, perhaps many of these comments would not be necessary since a number of apparent misconceptions could have been avoided. However that may be, we wish to assist constructively in a reasonable assessment of VIMS, its programs and performance.

It is necessary to add several additional comments. The phrase on p. 14 of the report "In the absence of such a plan there is no guarantee that VIMS activities serve Commonwealth objectives and goals." Are there ever any such guarantees? Can a plan provide a guarantee? I think not. VIMS activities do, however, serve Commonwealth objectives and goals as indicated in the Code and other legal documents and by appropriate oversight and review procedures.

Another interesting phrase on p. 14--"If the General Assembly is to hold VIMS accountable for conducting research useful to Virginia's marine resources, VIMS must develop an overall agency plan designed to direct that research."

I was not aware that there was ever any question of accountability to the Legislature. VIMS has had no questions on this score--we are accountable. There is no if; the Legislature must hold us accountable. The Legislature has provided guidelines in the Code which are followed.

As indicated above, planning is done at VIMS! There may be disagreement from time to time about the plans, and some of the Directors have undoubtedly so indicated! There always will be differences of opinion in an institution such as ours; we do plan! And we plan relatively far ahead.


We are anxious that any report which is issued by JLARC staff be as current, factual, complete, balanced and unbiased as possible. We welcome careful evaluation and responsible, reasonable advice.

Mr. Billy J. Kittrell
2 July 1976
Page 6

We will be available to the JLARC staff so that it may accomplish the goals it has in mind. Please do not hesitate to call me for whatever additional help is required.

With best wishes to you, I am

Sincerely yours,


William J. Hargis, Jr.
Director

WJHJr:cw

Enclosure

Appendix II

AGENCY RESPONSES

JLARC policy provides that each agency involved in a program review be given an opportunity to comment on an exposure draft. This process is one part of an extensive data validation process. Nine marine resource-related agencies were asked to comment on the exposure draft of this report. Written responses were received from seven agencies including:

- Marine Resources Commission
- Department of Health
- Virginia Institute of Marine Science
- Council of Higher Education
- College of William and Mary
- Old Dominion University
- Virginia Polytechnic Institute and State University

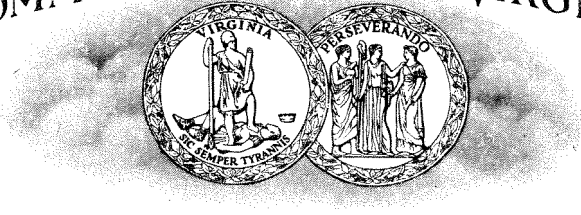
These responses are printed on the following pages. It should be noted that page references in the responses relate to the draft report and do not necessarily correspond to the page numbers in the final report. Appropriate corrections resulting from the written comments have been made in the final report. The JLARC staff has also prepared explanatory notes where necessary.

In addition to the written replies, agencies were invited to attend a special meeting of the JLARC on June 28, 1977, to respond formally to selected findings of the report. Public officials and agencies attending this meeting included:

- Secretary of Administration
- Secretary of Education
- Virginia Institute of Marine Science
- College of William and Mary
- Old Dominion University
- State Council of Higher Education

Commission actions resulting from the special meeting are presented at the conclusion of the legislative summary (p. S-12).

COMMONWEALTH OF VIRGINIA



APR 11 1977

MARINE RESOURCES COMMISSION

P. O. BOX 756

NEWPORT NEWS, VIRGINIA 23607

OFFICE OF THE COMMISSIONER

April 7, 1977

Mr. Philip A. Leone
Joint Legislative Audit and Review Commission
Suite 200, 823 E. Main Street
Richmond, Virginia 23219

Dear Phil:

Thank you for the opportunity to review the draft JLARC report "Marine Resources Management Programs In Virginia". At the outset permit me to compliment your staff on a very ambitious task of assessing the complex subject of marine resources management. I can honestly say that those JLARC staff members who visited my agency were always courteous and certainly seemed intent on learning the intricacies of our mission and organization. This willingness to listen and learn was certainly a welcomed variety from others who propose to examine and criticize. On balance, I compliment you on a reasonable report.

I am sure you recognize the difficulty in responding to the JLARC draft. The tendency is to pick it apart, word by word; or to write reams upon reams either criticizing the critics (e.g. not based on sound data, no experience or knowledge, lack of understanding, etc.) or defending current programs. Neither of these responses seems appropriate - or even fair - given the obvious attempt by your people to be thorough in their examination. Without any criticism intended, I will point out those factual errors (heavens, they were bound to make some!) and add to your data base via an appendix to this response. In that way I hope that my reply can be more meaningful by succinctly addressing the major points presented in the JLARC draft. Finally, but importantly, I shall address only those points relating to the Marine Resources Commission.

For your further edification copies of your draft were sent to the Associate Members of the Commission and to each Division Head for their comments. While this reply will use the first person, be advised that many people assisted in formulating this reply. Accordingly, I believe that this reply fairly represents a consensus of opinion of those key people within the Commission.

My response will be in format generally similar to the division of the JLARC draft. However, in the draft a similar point may be addressed in several divisions, thus I have extracted four major topics that I consider important

enough to discuss, rebutt, or advise concerning current actions. They are as follows:

- I Goals, Planning and Responsibilities
- II Oyster Management
- III Environmental Management
- IV Administration

I Goals, Planning and Responsibilities

JLARC, at several points in the draft, points to a lack of "a comprehensive policy toward marine resources". Later appears the statement "that decisions to use marine resources be guided by explicit policies". Another quote states, "no legislation exists setting forth an explicit policy toward the comprehensive management of marine resources". But the draft is solely deficient, in my humble opinion, in that it fails to fix the responsibility for a comprehensive policy.

Within this whole area of goals and policies lies the single most important issue facing marine resources management and in particular fisheries management in Virginia. There must be some statement of purpose, some statement as to what we should be trying to achieve in using our fisheries. Call it a policy, a goal, or whatever, there is at present no statement with respect to what the citizens of the Commonwealth wish to achieve. The JLARC draft does not help clarify this gap in the Commonwealth's approach. Part of this lack of clarity may be semantic and part may be a basic difference of opinion as to wherein lies the responsibility to develop such goals. Permit me then to advance my philosophy in this respect.

I do not consider a statement such as "to promote the general welfare of the seafood industry and to conserve and protect marine resources" a very helpful goal. If it says anything, it says we desire to use our marine resources primarily to the benefit of the seafood industry. Yet there are those who could argue with great effectiveness that I am stretching mightily to reach that interpretation. My principal point here is that if someone would give a reasonably clear statement of goals to be achieved in using fisheries resources, then most competent fisheries executives could develop plans, design programs, and implement regulations that would in large measure achieve these goals. An example of some goals that are definitive enough to be helpful would be:

- a) to maximize available protein
- b) to maximize recreational opportunities
- c) to maximize employment opportunities
- d) to give greatest possible guarantee of return on investment to those engaged in the fishery

Clearly, some of these and other goals will be in conflict with one another, and this list is by no means complete. But, I consider the enunciating of these goals to be the responsibility of the Legislature.

These are the people elected by the populace to express their opinion as to what social and/or economic benefits are to be expected from the use of their fisheries resources. Indeed, the Marine Resources Commission might suggest appropriate goals, but so might any citizen of the Commonwealth. For the Commission to assume the role of political decision-maker would be contrary to our philosophy of government. Similarly, for the political arm to mandate the detailed programs, protocols, and procedures to be used to achieve stated goals is similarly in error as only the combination of professionals (economists, biologists, ichthyologists, engineers, etc.) can assure the most effective and efficient attainment of these goals. In Virginia we have a dearth of stated goals and a plethora of specific procedures.

But mind you, in spite of such management, Virginia has not done too bad a job. It is one thing to sit with pen in hand and talk of goals, policies, plans, and procedures, but it is quite another to gain reasonable consensus as to what such goals should be. If we were starting from scratch certainly the time frame for success would be shortened if not the chances of success per se greatly enhanced. But we are not starting from scratch. In fact, Virginia is starting with the longest history of fishery of any state (at least by English speaking people). I do not expect, nor would I advise or ask, that the Legislature suddenly wipe out all laws, substituting only a statement of policy and goals with carte blanche to the Commission to plan and implement same.

But what I do want is for the Legislature to assume their responsibility - or tell me that such responsibility is the Commission's - to establish social goals to be achieved in the use of our fisheries resources, and from time to time sit with me as we examine on a systematic basis the best approaches to achieving those goals within the various segments of our total fisheries. Then, and only then, would I advocate and expect a comprehensive change in the laws and the role of the Commission with respect to each segment. Done systematically, I believe this approach has a chance for a more successful marine resources management program for the Commonwealth. And we just might be closer to this approach than realized as will be shown in the discussion of the next topic.

With reference to a total policy aimed at an integration of all aspects of coastal management (fisheries, environment, water quality, upland development, population dynamics, offshore development, etc.). I would point to the present efforts by the Commonwealth to develop a Coastal Resources Management Plan pursuant to the federal Coastal Zone Management Act. At present, this effort is our best hope for such a total integrated scheme.

In conclusion, I consider it essential that the Legislature and Executive (Commission) branches of government define and then assume their respective responsibilities. And remember, a nebulous policy or goal is quite likely to produce nebulous programs with nebulous accomplishments.

II Oyster Management

JLARC spends considerable time on oyster management. Perhaps this is because the laws are most voluminous, or the Commission spends a large amount of time and money on oysters. I was tempted to deal with all fisheries management programs thus hoping to show that the Commission does accord other fisheries attention and regards them essentially equal in their call upon the Commission for that attention. However, permit me to merely point out that all of the fisheries under the jurisdiction of the Commission share in our attention, and all have the common property nature mentioned in the draft and thus belong to all of the citizens of the Commonwealth. (Giving further rise to my belief that it is the elected official who must enunciate what goals we should be achieving via the use of this resource.)

JLARC has been very perceptive in understanding some of the problems of the oyster industry, and JLARC has been even more astute in presenting some potential solutions to these problems. Aside from some exceptions to some specific wording as indicated in the appendix to this response, I am in general agreement with this portion of the draft. And in particular, I agree with some of the suggested remedies, all of which will require legislative change.

One point should be made, and that is that statistics on oyster "production" can be misleading. I do not debate the fact that the waters of the Commonwealth "produce" far less oysters now than twenty years ago. However, nearly all knowledgeable persons attribute the drastic decline to the disease MSX. "Production", as used in the statistics, is an economic production rather than a natural production. In other words, when talking of supply and demand in the oyster game, supply is whatever the harvester will gather at a given price, and demand is whatever the planter or packer will buy at a given price. Thus economic supply may be different than the actual supply of available oysters on the bottom. All of our statistics are what is bought and sold and not what the bottoms are producing, although I will concede an extremely high correlation.

I would also refer you to the added graphs (pages I-B and I-C of appendix) which will give a better depiction of "production" from the various segments. It is private production that has declined drastically, while public production has remained relatively stable. These data are for shucking oysters only. A separate graph (page I-F of appendix) shows seed oyster production. Care must be taken to understand that the Commission operates on the "natural oyster beds, rocks and shoals" which in general have a greater proclivity for setting of young oysters than do the private grounds. As a consequence the Commission has concentrated in producing seed, which is in turn sold to the private planter and shows up in two to three years as shucking oyster production from private grounds.

I do not subscribe to the thoughts that management of the public grounds has contributed materially to the decline in private production; MSX, environmental changes, pollution, economic conditions, rapid increases in the cost of labor and materials, legally required inefficiencies, a resistance to modernization,

and other things have all increased the risk and brought about the demise of the industry far more than management of the public grounds. However, there are other laws that I feel have been restrictive and have constrained the Commission from offering some remedial assistance to the industry, and JLARC has been perceptive in identifying some of these.

Without going into details these constraints primarily are associated with the leasing system and the fact that a tremendous acreage of public ground is unproductive, will undoubtedly remain so in the near future due to financial restraints, and cannot be leased.

The basic conclusion that I draw from my personal analysis is that: a) Public production has remained relatively constant since MSX or at least as constant as could be expected given the vagrancies of nature; b) the level of public production (both shucking and seed) could be raised by an infusion of additional financial resources, but not necessarily at the same cost/benefit ratio now enjoyed as we would undoubtedly start using more marginal bottoms; c) that the industry's problems are for the most part not a result of State management of public bottom; d) that while there is an apparent correlation between the production of seed from public grounds and the production of shucking oysters from private grounds, the major cause of decline in all production was MSX; and e) that certain changes could be made in the Commonwealth's approach to the oyster industry that would provide greater opportunity for self-help to the industry without jeopardizing the stability or continuity of public ground production.

In the final analysis it is a basic philosophical decision; shall the Commonwealth adopt a policy of primary reliance on public management and public production, in which case substantially greater amounts of public funds must be made available to subsidize this approach (see page 4A of appendix for present expenditures); or shall the Commonwealth adopt a policy of encouraging free enterprise and private capital, in which case some minimum level of public production must be maintained and our laws must open up additional opportunity for the infusion of private capital.

I mentioned in the discussion of Topic I that some progress is on the horizon. Indeed in an unusual but understandable action, the House Committee on the Chesapeake and its Tributaries in the 1977 session defeated a Resolution which would have studied this very problem of the Commonwealth's policy and approach toward the oyster industry, while at the same time requesting that I develop all data pertinent to this very subject and meet with the entire Committee, augmented by appropriate members of the Senate, in order to educate the legislators and discuss any redirection of policy or goals and prepare any agreed to legislative changes. Not yet a solution, but a beginning!

III Environmental Management

Environmental management is relatively new to the Commission, at least in comparison to fisheries management. Nevertheless it has become one of our most time consuming tasks. JLARC appropriately displays the extremely rapid growth of activity in this area, and I am very pleased with the Commission's discharging its responsibilities with a minimum of

cost. In fact, I'll challenge any other agency to have accomplished this task (both wetlands and subaqueous bottoms) with so few people.

One problem always present under the current system is the division of jurisdiction between the Commission and local wetlands boards and the geographical division between subaqueous bottom and wetlands respectively. Having been law for five years, the Wetlands Act and local wetlands boards are functioning in a more routine manner and their jurisdiction and that of the Commission is more readily accepted.

The above jurisdictional question is in part the key to the problem of follow-up on existing permits and follow-up to insure no work without a permit. Wetlands permits are primarily a local responsibility. (See pages 5A and 6A of appendix.) However, since a majority of projects require both a wetlands and subaqueous permit, a Commission Engineer is charged to report any violation he may observe to the applicable local wetlands board. Our experience shows that any lack of follow-up is generally directly attributable to the lack of personnel at the local level. The Commission can do no more than at present without also requiring additional personnel.

One further comment with respect to follow-up is appropriate. Effective follow-up includes prosecution. In order for prosecution to be effective the applicable Commonwealth's Attorney must play a major role, and the court must deliver decisions and penalties that will serve as deterrents. History has shown some reluctance on the part of the judiciary to be aggressive in this field. JLARC might include some such statement indicating the role of the judiciary.

IV Administration

JLARC suggests a variety of deficiencies in the general area of administration, and it is within these suggestions that I take greatest exception to the draft. I suppose this should not come as any surprise since any executive feels he is doing the best possible job or else he would be effecting changes. I do not debate that there is room for improvement and indeed I shall shortly comment on certain steps now underway to effect changes that I believe will be beneficial. However, it is somewhat disconcerting to have deficiencies published, no matter how minor, when we are in the midst of such austere financial circumstances. I made a conscious decision to bear the brunt of this austerity within the administrative area wherever possible rather than run the risk of impairing our service to the public. I could have opted for what would have been a more typically bureaucratic route of "look after thyself first", but chose not to. Needed changes, already identified, were delayed in the interest of short term cost savings.

Specific examples of steps being taken to assist in strengthening those areas declared deficient by JLARC would be: a) the filling of the position of Assistant Commissioner for Finance and Administration (held vacant for cost reasons); b) hiring an additional clerk (held vacant for cost reasons); c) realignment of responsibilities to bring together the planning (CZM) and operational (permits) missions under one Assistant

Commissioner of Environmental Affairs (held vacant for cost reasons); d) requesting the Division of Management Analysis and Systems Development to recommend a system for direct billing and payment of oyster ground rent; and e) leasing additional office space to obtain better physical division of space and better efficiency of all personnel, albeit there are inherent agency-wide inefficiencies resulting from two different geographical locations. Many of these things would have been intrain at the time of the JLARC visits, and most completed by now, if we had been under more favorable financial circumstances. In fairness, and if you agree with me, I would hope that the final publication would make mention of the austerity under which many of us were working at the time your staff was compiling its data.

With regard to the use of districts, I invite your attention to pages 7A and 8B of the appendix that shows only seventeen (17) effective districts with respect to assignment of inspectors. Many other files, such as all oyster planting ground leases, are by district, and the task of changing all such files was deemed to outweigh the benefits of a cleaner map.

Similarly the listing on page 8A of the appendix would, in my opinion, dispell any idea of "entrenchment" of inspectors because of the continued use of districts. I believe that such assignments of a geographic area to one man has certain advantages to the Commission and to the public that only local knowledge gained with experience can provide. Nevertheless I am flexible, and if other events, such as the MASD study, show changes to be in order then change we will.

I take no exception to the JLARC conclusion that job descriptions are out-of-date. They are!

With respect to the backlog of oyster ground lease applications it appears that JLARC opinions that it was inappropriate to ask for additional surveyors. Rather we could, according to JLARC, "reallocate funds or personnel from other agency program areas (particularly law enforcement)". But precisely two pages prior in the draft I find the following, "Effort should also be made to upgrade and expand patrol activities ...". Now these are the dilemmas an agency head wrestles with every day and must solve within the fiscal constraints placed upon him. When we submit a budget, all programs are funded at a level of equal priority by our assessment. When the Legislature or Governor fully funds one program as requested but cuts back on another then they are reassessing our priorities. This is what has happened in the instance of surveying. Requests have been entered in the last two biennial budgets for help in this area, but in each case we have been denied. I wonder then if the comments in the draft relative to this question isn't a bit unfair to the Commission?

I've given considerable thought to trying to understand and give appropriate response to JLARC's position with respect to the manner in which we schedule patrols. In particular, the statement, "...MRC has not developed a system for determining patrol needs for each region. As a result, patrols are still scheduled on the estimates of need made by enforcement personnel...", gives me concern. I don't mean to be curt or too critical of the JLARC staff, but I couldn't disagree more! I can't find any system that is more appropriate, more efficient, nor more effective than relying on the judgement of the men who are in the

field and know what is going on on the water in that area! Naturally, we expect and get a report of patrol activity. I am particularly distressed at being asked to develop some mechanical system for patrol needs and yet I am told I don't have the flexibility to deploy men to meet immediate enforcement needs! Flexibility is an essential requirement. We must respond instantaneously to emergencies (e.g. an overdue vessel, patrol at a disaster site such as the Hopewell bridge) and quickly to the ever changing patterns of the seafood industry. The decisions relative to patrol activities are not solely those of the patrolling inspector but is a coordinated decision of the inspector, the area supervisor, and perhaps even the Chief of Law Enforcement. I firmly believe this to be the very best method, and I believe it is inappropriate for JLARC to suggest that such decisions are not objective. Furthermore, the tenor of the text on page 42 tends to link the present system to that apparently used prior to 1970. I don't feel this is true, and I am very concerned that we were unable to present a better picture and rationale for our patrol activities. In fact, as I review page 42 et seq of the draft I am convinced there was a breakdown in communications between our people and your staff. I believe JLARC ought to take another look at this portion of the report, and perhaps here lies the need for the additional meeting we discussed over the telephone.

Similarly I am concerned that some of the conclusions drawn from data presented in the section dealing with vessel operations may not be totally accurate. By comparison, the Commission's vessel operations fare quite well, but in all fairness I wonder if JLARC was comparing comparable accounting figures? And I know the operations of VIMS and BSS differ widely from ours and thus would not permit them some of the advantages enjoyed by the Commission (e.g. assignment of each vessel to one man or one crew).

Patrol requirements vary tremendously according to the season and the area involved. Uniform use of our large vessels will never occur. Cold winter weather dictates the use of large vessels in many instances where a small outboard would suffice in warm weather. Similarly, sea conditions require the safety of a large vessel, particularly if the duration of the patrol is long enough to encounter changes in the weather. Necessary electronics can not be maintained on open boats. Also I feel very keenly about being able to respond to emergency calls at all times, and only a large vessel can give this capability.

Here again, perhaps some additional discussion will be of help. But I sense that JLARC and I may just have a difference of opinion on this element of our operations. My summation or interpretation of this part of the draft might best be expressed by an analogy; "if you are crossing the Atlantic Ocean weekly then you need the United States, however, if you cross only once a year then a rowboat will suffice". I disagree, and frankly I don't think JLARC wanted to give that impression.

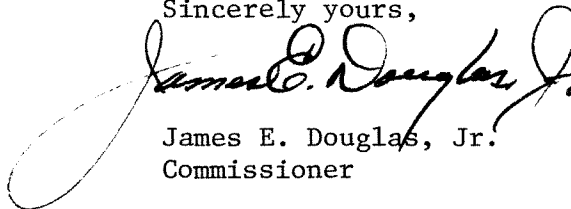
Phil, in looking over this response I have been much too long-winded and have tended to violate the very plan I laid out in the second paragraph. For this I apologize. I reiterate my earlier commendation to your staff for their courtesy and manner in which they went about their

April 7, 1977

task. On balance the report should be of more help than hinderance, particularly where it addresses the need for goals and policies and where it points to needed legislative changes. I've been saying some of these same things now for some time. Maybe the weight of the JLARC report will help. I sincerely hope so.

Please give a call after you have looked over this reply.

Sincerely yours,

A handwritten signature in cursive script, reading "James E. Douglas, Jr.", written in dark ink.

James E. Douglas, Jr.
Commissioner

JED, JR./k1
CO

JLARC Staff Note: The MRC technical response is available for review at the JLARC office. Many of the factual changes suggested by MRC were included in the final report.



APR 8 1977

COMMONWEALTH of VIRGINIA

Department of Health
Richmond, Va. 23219

JAMES B. KENLEY, M.D.
COMMISSIONER

April 7, 1977

Mr. Ray D. Pethtel, Director
Joint Legislative Audit and Review Commission
Suite 200, 823 E. Main Street
Richmond, Virginia 23219

Dear Mr. Pethtel:

The Virginia State Health Department has reviewed the Joint Legislative Audit and Review Commission's recently issued draft on Marine Resource Management Programs in Virginia.

We are very concerned over statements made in the report implying low utilization of marine equipment assigned to the Bureau of Shellfish Sanitation and the high maintenance cost for such equipment. We are equally concerned over the report's recommendation that the Marine Resources Commission collect seawater samples for the Bureau of Shellfish Sanitation's water quality monitoring program as a means of reducing expenditures.

I. However, it is believed the following facts and data support the conclusions that Bureau of Shellfish Sanitation (BSS) equipment is well utilized and maintenance costs are considerably below those for other agencies possessing similar equipment.

A. BSS has a precise record keeping system for monitoring all marine equipment utilization and expenditures. The JLARC report indicated this system was very adequate and perhaps the best in use by any state agency.

B. All regularly used BSS boats have hour meters which indicate the exact number hours each boat is operated in the water.

Consequently, BSS has a solid data base for computing its maintenance costs. Other state agencies cannot accurately verify their utilization time or maintenance costs for outboard motor boats according to the report.

C. BSS has a continuous inspectional and maintenance program for its marine equipment in order to keep it in the best possible operational condition and also increase its utilization expectancy.

D. All maintenance and repairs to BSS marine equipment are carried out by permanently employed personnel as time permits, after they have completed their primary responsibilities. All of the personnel who assist in the marine equipment maintenance program have full responsibilities for other Shellfish Sanitation control efforts. BSS has no full time marine engine mechanic as do other agencies. However, very little marine equipment maintenance is "farmed out" to commercial repair shops.

BSS makes 90% of its outboard motor repairs through the double services of a Sanitarian Aide who possesses exceptional mechanical ability. This person also has a full program assignment for seawater sampling and shoreline survey surveillance.

- E. While BSS actually has eleven outboard motor boats, three are 14' aluminum Jon Boats which are required on an intermittent basis for collection of seawater samples in extremely shallow growing areas. There is no other way to collect such samples. The Jon Boats are too small for any other water usage such as the rivers and bay. These boats have no hour meters and were not included in the original operational figures supplied to JLARC.

Consequently, the actual number of boats in regular use by BSS is eight instead of eleven.

- F. While the 1700 hours/year cited in the JLARC report is actual "running time" in the water, no allowance was made for the necessary "trailer time" associated with the monitoring of each shellfish growing area.

From both an economic and time element, trailering to the growing area for sample collection is the only feasible method of operation for BSS.

Operating boats to all sampling areas in Tidewater Virginia from a specific point would be extremely expensive and would often be precluded due to bad weather.

BSS is required to sample the water overlying all shellfish growing areas in the state a minimum of once per month and even more frequently when problems arise.

There are approximately 5,000 miles of shoreline in Tidewater Virginia encompassing hundreds of thousands of acres of shellfish growing area. Water quality monitoring of this resource is a tremendous responsibility.

BSS sample collection runs often average 50-60 miles/day after the boats have been trailered to the specific area to be studied.

Consequently, fast boats are required in order to collect the samples and get them back to the laboratory in the shortest possible time for analysis. The sooner samples are analysed after collection, the more accurate they are.

The total trailering time for BSS boats last year was 1596 hours.

When this figure is added to the 1770 hours of actual engine running time the total usage time of BSS boats increases to 3366 hours per year.

When the total of 3366 hours is computed on the basis of only 8 regularly used boats, the yearly average use increases to 421 hours/boat/year instead of the 161 hours/boat/year expressed in the report.

- G. The JLARC report indicated it cost \$3.36/hour to operate BSS boats. However, when the increased utilization time of 3366 hours/year is substituted in the calculations, the per hour costs drop to \$1.77/hour.

The hourly maintenance cost further declines when consideration is given to the fact that the total yearly maintenance cost of \$5959 supplied the study team included pro-rated salaries of BSS staff members permanently assigned to other activities. The amount of such salaries included in the total maintenance cost was \$3092.

Therefore, when the salaries of permanently employed people, who have other responsibilities and only work on marine equipment when they can find the time, is deducted from the total maintenance figure of \$5959, the actual maintenance cost is \$2869/year or \$0.85/hour.

- H. When the revised actual BSS maintenance cost of \$0.85/hour is compared to other state agency estimated costs, the BSS costs for the maintenance of outboard motor boats are the lowest for any state agency.
- I. Further, it is difficult to compare cabin cruiser and outboard motor operational costs. BSS operations are at a cruising speed from station to station while a portion of MRC activity is to anchor in an area for observation purposes.

BSS and MRC methods of operation are quite diverse and therefore, not comparable.

- II. The Joint Legislative Audit and Review Committee's report also recommended that cost reduction could be made by having MRC collect seawater samples for BSS while they patrolled restricted shellfish growing areas. It is believed this recommendation is unfeasible for the following reasons:

- A. BSS could not carry out its responsibilities assigned under the Code of Virginia and the requirements of the National Shellfish Sanitation Program (NSSP) if its ability to monitor the water quality over shellfish growing areas was removed. If BSS is to continue to adequately protect the public health and properly regulate the shellfish industry in Virginia, it is vital that the Bureau continue to have complete control over all phases of the shellfish sanitation program. The logistics of trying to coordinate an extensive monthly seawater monitoring program that is constantly changing with another state agency would be enormous, if not impossible.

There are a number of other factors involved which makes this recommendation entirely unacceptable. As indicated above, the BSS participates in the NSSP. Endorsement by FDA allows national and international marketing of shellfish by certified dealers which contributes approximately \$140,000,000 overall to the Virginia economy.

- The FDA endorses the Virginia shellfish control program on the basis of compliance with recommended practices.
- This program, voluntary in the past, is currently being legalized by FDA.
- The total impact of legalization is yet unknown. However, it undoubtedly will greatly increase the responsibilities of state control agencies.
- The current program has two main thrusts; processing plant sanitation and shellfish growing area protection.

This is partially accomplished through the laboratory examination of seawater samples overlying shellfish growing areas.

-BSS complies with Standard Methods, "Recommended Procedures for the Examination of Shellfish and Seawater".

-The recommended practice is to analyze seawater samples within 1 hour after collection or as soon thereafter as possible.

-The logistics of coordinating between agencies the collection, handling, refrigeration, storage, transfer of glassware, performance of special tests, collection of hydrographic data, chlorine residuals, etc. makes this alternative untenable in all respects.

- B. BSS personnel are scientists trained to collect various scientific data and perform scientific investigations.

MRC personnel are not generally scientifically trained, but are conservation, regulatory, and law enforcement oriented.

- C. In order to verify the accuracy of all water quality data used in the classification of shellfish growing areas, BSS must have complete custody of samples at all times. The samples must be collected with sterile glassware using aseptic techniques. The samples must be properly stored, refrigerated and transported to prevent contamination.

-Various scientific tests such as salinity, pH, chlorine residuals, etc. must be performed at the time of the sample collection.

-Various hydrographic data must also be recorded at the time of sample collection.

-The samples must be delivered to the laboratory in the shortest possible time to assure the greatest accuracy of results.

- D. Failure to properly collect, handle, store or transport water quality samples could result in erroneous data that would require the closure of valuable shellfish growing areas.

We must not close shellfish growing areas unjustifiably as a result of improper sampling techniques.

- E. On an emergency basis, MRC has graciously assisted BSS personnel in the collection of special samples.

-However, rightfully so, MRC personnel have been reluctant to expose their \$25-30,000 craft to shallow water hazards.

-Most of BSS work is in relatively shallow areas.

- F. Approximately 10% of Virginia's shellfish growing areas require sampling by small, flat bottomed Jon Boats. MRC has no boats of this type. Some areas require launching 5 separate times. MRC is not equipped to do this. It would be most difficult for MRC to meet the collection requirements of once/month or more often under NSSP constraints for all of the 107 shellfish growing areas and maintain their routine patrol.
- Unquestionably, this effort would require additional boats and manpower by MRC which would override all economy motivated efforts.
- G. MRC does not routinely patrol many of the shellfish growing areas BSS must monitor monthly because there are no condemnations in them. MRC patrols condemned shellfish areas which are only approximately 20% of the shellfish growing areas within the state. MRC's large boats could not physically cover the areas and distances that require monitoring by BSS. The major portion of BSS work is in approved growing areas gathering data that will substantiate to FDA that the areas are properly classified and meet approved area criteria.
- H. Recently, through its extensive seawater monitoring program, BSS has been able to release from condemnation thousands of acres of prime shellfish beds.
- I. Without the flexibility to monitor water quality under all tidal conditions as is necessary to properly classify shellfish growing areas, it is very possible many presently approved growing areas would have to be condemned.
- J. The closure of additional shellfish growing areas would have a serious economic effect on Tidewater Virginia and completely ruin the shellfish industry. Additional shellfish closures would require increased expenditures by the state to properly post and patrol condemned areas. There would be no savings.
- K. In addition to collecting and analysing 20,000 seawater samples/year overlying shellfish growing areas, BSS also performs 12-14,000 sanitary survey property inspections/year. BSS marine equipment is extensively utilized in the shoreline survey effort.
- L. BSS marine equipment is also vitally needed to conduct current flow studies for pollution control; boat reconnaissances of growing area problems; collection of shellfish, and bottom sediments samples for bacteriological examinations.
- M. In conclusion, it is believed seawater sample collection by MRC for shellfish growing area control is completely unworkable and would result in additional state expenditures as well as the possible reclassification of many shellfish growing areas because of their inability to collect adequate data under all hydrographic conditions as required by FDA.

- III. The State Health Department is the "Prime Agency" in Virginia charged with enforcement of the NSSP. MRC is mainly responsible for patrolling condemned areas and overseeing relaying operations.

Consequently, the State Health Department has more contact and interaction with FDA than MRC.

While we have no major concern over some of the other statements and conclusions set forth in the JLARC report, we offer the following additional comments on several points for clarification:

A. (page 21)

"Since 1971, Virginia has encountered major difficulties in meeting federal shellfish sanitation regulations. As a result, the General Assembly has had to appropriate over \$1 million to finance program improvements in the areas of regulation and enforcement. Despite these improvements, disagreement still exists between federal and state agencies over acceptable bacteriological levels in growing areas and the need for increased regulation."

A crisis situation was precipitated in 1972 with FDA over growing area classifications. Rather than risk decertification, Virginia closed some 17,000 acres of shellfish growing area. While we didn't agree with action and felt there was no undue risk to public health, the possible alternative of decertification was unacceptable. Subsequently, after making sanitary surveys and eliminating essentially minor deficiencies, we have subsequently opened approximately 10,000 acres of shellfish growing area.

During subsequent meetings and discussions of the difference in philosophy FDA has indicated that Virginia must accept full responsibility for its classification of shellfish growing areas. Virginia has always accepted this responsibility.

Virginia has never had any epidemics associated with the consumption of shellfish.

The State Health Department didn't receive the total emergency appropriation of \$1.4 million. The appropriation amount was divided between MRC, VIMS, SWCB, and BSS.

Efforts are underway to convince FDA that the application of the Virginia Standards to the classification of shellfish growing water will give adequate public health protection.

- B. "The Bureau of Shellfish Sanitation, Department of Health, is responsible for meeting NSSP health regulations, and the Marine Resources Commission enforces the regulations."
(page 21)

The MRC enforces only a small portion of the NSSP regulation, namely posting and patrolling of condemned shellfish areas. The BSS meets and enforces the NSSP standards.

C. (page 22) Compliance with NSSP.

"Virginia's program failed to pass FDA's 1971 evaluation. The primary criticism was that BSS was permitting the removal of oysters from water with high bacteriological counts and that MRC was not adequately enforcing the closures of shellfish grounds. In response to this criticism, the state developed an action plan to correct the problems cited by FDA and the General Assembly appropriated \$1.3 million to implement various elements of the plan, including the addition of 13 marine police and a chief inspector at MRC."

While the Bureau of Shellfish Sanitation was criticized for permitting the removal of oysters from water with high coliform bacteriological counts, the NSSP manual states specifically "The foregoing limits need not be applied if it can be shown by detailed study that the coliforms are not of direct fecal origin and do not indicate a public health hazard." We submit that the problem is one of FDA rather than BSS. No problems were experienced when the program was administered under PHS. FDA historically is an enforcement oriented agency. There is no room in FDA philosophy for the exercise of professional judgment in assessing public health hazard.

The BSS also hired 17 additional persons and purchased boats and laboratory equipment in order to be able to give the needed assurances to FDA that indeed we were operating a valid program with integrity.

D. (page 22)

"FDA did not perform another evaluation until 1975, allowing sufficient time to determine the effectiveness of the 1972 action plan. In its 1975 review, FDA found that Virginia had made considerable progress, but several problems were identified with BSS growing area classifications:

*Classification is inconsistent--some areas are closed solely on the basis of the bacteriological results, while other with high bacteriological counts remain open."

It appears the FDA philosophy didn't change very much in the intervening 4 years. FDA accepted the Virginia plan. Through close cooperation, LHD, BSS, and SWCB removed, eliminated, or reduced human and animal pollution drastically. There are areas in the state that don't have any houses or development with light farming operation which naturally contravene the bacteriological standard for an approved growing area standard. The State Health Department doesn't consider it necessary to close such areas until it can be demonstrated that they pose a public health hazard. We have no qualms about condemning areas that have a public health hazard, i.e., areas around sewage treatment plants, industrial waste discharges, animal operations, etc.

E. (page 22)

"Questions raised by sampling data in some growing areas require further analysis or special investigations, but none have been done."

FDA states over and over that Virginia accepts full responsibility for its classification of shellfish growing areas. However, it appears that they

still want this responsibility. Where public health considerations dictate, additional investigations have been made or new surveys are underway. The shellfish growing area bacteriological standard allows 10% of all samples to exceed by almost 3 times the standard. Actually, the bacterial tool in use, while it develops a number, it is "a most probable number" which in reality may be only one third or maybe three times the actual number of organisms in a given sample. FDA wants to apply a precision to the bacterial standard that just doesn't exist.

F. (page 22)

"Some BSS evaluations fail to identify stations which do not meet the established criteria."

This statement is hard to understand when BSS evaluation folders have a map showing sample location on the left hand cover and the actual results and medians for each station on the right hand cover.

G. (page 22)

"Areas which show excessively high bacteriological counts with no apparent sources of pollution are not considered health hazards."

The NSSP growing area criteria allows exceptions when the standards are exceeded, provided, through professional judgment based on knowledge of the area assurances can be given that no public health hazards exist.

H. (page 22)

"In response to FDA's criticism, BSS is developing guidelines to specify when a growing area should be opened or closed. However, BSS and FDA still disagree over what constitutes an acceptable bacteriological level. FDA specifies 14 fecal/100 ml (a level of bacteria which indicates the possible presence of harmful organisms) as the minimum water quality standard for all types of wastes--of human and animal origin."

FDA allows either the "coliform" or "fecal coliform" test to be used for the classification of shellfish waters. However, it is on an either or basis. In Virginia, the least net loss of shellfish area is sustained by utilizing the Fecal Coliform Standard.

The growing area "standards" development and involvement was historically concerned with human wastes. Certain fecal coliform bacteria in themselves are pathogenic. Fecal coliform, presupposes having been in the human alimentary tract, therefore serve as indicator organisms for potential problems.

I. (page 23)

"BSS applies this standard to wastes originating from human sources (septic tanks and waste disposal plants) but not to wastes from non-human sources. If the pollution source is determined to be non-human (animal wastes and feed lots), BSS tolerates a higher bacteriological level--23 fecal/100 ml. Virginia is able to exercise this option because the NSSP guidelines specifically state that areas with high fecal count must be closed unless it can

be shown by a scientific study that the fecal count does not indicate a public health hazard. A study conducted for BSS found no evidence that disease could be passed from animal feces through shellfish to humans."

Dr. "Skip" Klein, on assignment from CDC to the State Health Department researched the literature and found no record of disease being passed from animals to shellfish waters, to shellfish, and then to man.

J. (page 23)

"BSS officials contend that the FDA fecal coliform standard can be exceeded if certain criteria are applied and "professional judgment" is exercised. The area guidelines now being developed will require consideration of the following before a growing area is closed: location and discharge of sewage treatment plants, salinity content, population density, drainage characteristics, and dispersion of shoreline deficiencies such as septic tanks. While FDA does not entirely agree with Virginia's "professional judgment" policy, it considers the development of guidelines a step toward uniformity in classifying growing areas.

FDA, because of its enforcement nature, has never really wanted the shellfish program responsibility. The unfamiliarity with the program has invoked an overly cautious response in all they do. Even though they are beginning to look at our classification with less skepticism, they shield themselves with "Virginia must still assume full responsibility for the classification of its water." Again, Virginia has done this since 1925. We feel Virginia's successful program speaks for itself.

K. (page 23)

"Proposed Federal Regulations. The effectiveness of NSSP regulations in protecting the consumer was seriously questioned by the General Accounting Office in a 1973 evaluation and by FDA internal appraisals."

The General Accounting Office rightfully questioned the consumer health protection of the NSSP as administered by FDA. Many of the states reviewed were the southern states that have loose-knit or token shellfish control programs with little enforcement. However, since FDA had been administering these programs, it is indeed their responsibility for lack of uniform enforcement rather than any failure per se of the NSSP. For example, Virginia is active in the NSSP and continues to be a leader with no doubt the best control program in the USA.

L. (page 35)

"Water pollution has had a devastating effect on the commercial fisheries of Virginia. As of January, 1977, the Bureau of Shellfish Sanitation had closed over 169,000 acres of classified shellfish growing areas, of which about half is capable of shellfish production."

No doubt water pollution has had an adverse effect on the shellfish industry. However, there have been epizootics of gigantic magnitude which haven't been

related to pollution. For example, in 1958 MSX wiped out 90% of the Virginia oyster production from Mobjack Bay to the Carolina line. In addition fungal infections "Dermocystidium" has destroyed thousands of bushels of oysters along the east coast.

M. (page 35)

Pollution problems resulting from waste disposal have always been a major concern of watermen in southeastern Virginia. Several legislative study commissions have dealt with the problem and made numerous recommendations to reduce the impact of discharged wastes on the commercial fisheries. However, as the population grows, more waste is produced and additional sewage treatment facilities are required. Even though water pollution abatement programs have substantially reduced the amount and type of pollutants discharged into state waters, serious water pollution problems still remain in fisheries areas. For example:

"Discharges of chlorine has been blamed for killing oyster larvae. Following the 1973 fish kill on the James River which was attributed to chlorine, a special task force was assembled to determine whether cutbacks in chlorine could be permitted during spawning season without jeopardizing public health. VIMS has found that the level of chlorine found in treated sewage is three times greater than the amount needed to kill fish and oyster larvae.

The State Department of Health, as a matter of practice, condemns one-quarter mile around a sewage treatment plant outfall for the taking of shellfish."

There is some question regarding the chlorine kill of finfish. There may have been some synergistic effect with Kepone. Brominization will need considerable testing before it can be introduced as an alternate to chlorine.

The State Department of Health does not as a matter of practice condemn $\frac{1}{4}$ mile around a sewage treatment plant outfall for the taking of shellfish. The following professional judgment factors are taken into consideration when assessing the impact of a sewage treatment plant effluent of primary, secondary, and tertiary plants:

1. Type and significance of discharge.
2. Flow rate.
3. Point of discharge.
4. Proximity of shellfish beds.
5. Assimilation capability of receiving stream.
6. Travel time.
7. Die off potential.
8. Salinities.
9. Concentration of deficiencies.
10. Number and type of deficiencies.
11. Reliability - duplicity, auxiliary power, alarm system, etc. (24 hr. manning)

Mr. Ray D. Pethtel, Director

Page 11

April 7, 1977

12. Type, degree of treatment.
13. Notification time in case of breakdown.
14. Time required to close additional area.
15. Productivity of shellfish area.
16. Non-point potential hazards.
17. Evaluate need for resurvey.

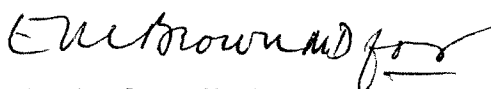
In conclusion, the Virginia State Health Department has accepted the responsibility for the Shellfish Control Program as mandated under the Code of Virginia and the NSSP. Through the concerted effort of the various phases of the Bureau of Shellfish Sanitation Program and those of other state agencies, the Virginia Shellfish Industry has been maintained in a viable condition. It would be disastrous to change the program whereby BSS could not continue to give FDA adequate assurance that shellfish are being harvested and processed in a manner adequate to protect public health.

Accordingly, it is recommended that the revised data for utilization time and maintenance costs of BSS marine equipment be considered in the final report. These figures (using total maintenance cost of \$2867/year; utilization time of 3366 hours/year; and 8 regularly utilized boats indicate an actual maintenance cost of \$0.85/hour) and negate the need for the recommendation that MRC collect BSS samples.

Your favorable consideration for revising the Draft Report - Marine Resources Management Programs in Virginia in accord with the above data and discussions will be most appreciated.

Please let me know if I can be of further assistance to you in this matter.

Sincerely yours,



James B. Kenley, M. D.
State Health Commissioner

Enclosures

Technical Data

Suggested data changes for tables 5, 6 and 9 of JLARC Report 3-14-77 entitled "Marine Resource Management Programs in Virginia":

Table 5 (page 63)

Motor Vessels Owned by Virginia Marine Resource Organizations

Agency	Number of Small Vessels (under 30')	Agency Total
State Department of Health, Bureau of Shellfish Sanitation	11(8)*	11(8)*

*Three 14' jon boats are located in area offices (3) for sampling shallow areas. These boats are not used daily but are needed for specific purposes.

Table 6 (page 64)

Marine Resource Motor Vessel Use (Fiscal Year 1976)

Agency/Vessels	Total Hours Operation	Number of Vessels	Yearly Average
BSS/Outboards	3366	8	421

Table 9 (page 69)

Maintenance Cost For Marine Resource Motor Vessels (Fiscal Year 1976)

Agency/Vessel Type	Hours of Operation	Total Maintenance	Cost/Hour
BSS/Outboards	3366	2867	\$0.85

Explantion of Technical Data

1. BSS submits that while the total inventory of outboard motor vessels is 11, 3 of these are 14' aluminum jon boats which are used only on a limited intermittent basis. These boats are used for dye studies and collection of water samples in extremely shallow water areas. The engine running time figures originally supplied to JLARC did not include operational time for these boats. These boats do not have hour meters. Accordingly, we feel that Tables 5 and 6 should be changed as indicated above regarding number of vessels.

2. Additionally, it is believed that the total hours operation figure of 1770 hours in Tables 6 and 9 should be changed to reflect the time needed to trailer these rigs to the respective growing areas. We have learned that this is the most feasible method both from an economic and time standpoint. During Fiscal Year 1976, trailering time was 1596 hours. Trailering time plus hours of engine time gives a total utilization of 3366 hours. With this change, the yearly average per boat also changes to 421 hours. These figures more accurately reflect the actual use of BSS vessels.
3. In table 9 the figure of \$5959 previously submitted included \$3092 of wages of personnel already employed by BSS for other primary duties and consequently did not reflect any additional costs. Therefore the actual total maintenance cost was \$2867 which gives a per hour cost of \$0.85/hour of operation.

JLARC Staff Note: Based on the more current data supplied by BSS, appropriate changes were made to the section dealing with vessel management.



APR 11 1977

COMMONWEALTH of VIRGINIA
Virginia Institute of Marine Science
Gloucester Point, Virginia 23062

WILLIAM J. HARGIS, JR.
DIRECTOR

Phone: (804) 642-2111

April 5, 1977

Mr. Ray D. Pethtel, Director
Joint Legislative Audit and Review Commission
Suite 200, 823 E. Main Street
Richmond, Virginia 23219

Dear Mr. Pethtel:

This letter is written in response to yours of 14 March 1977 which requested our comments on the exposure draft prepared by the Joint Legislative Audit and Review Commission (JLARC) entitled "Marine Resource Management Programs in Virginia".

Our comments, which are listed below, are limited to those aspects of the report which deal with the Virginia Institute of Marine Science (VIMS).

Please note that we have commented only on those portions of the report which the brief time for response allowed us to. Failure to comment does not imply agreement, only lack of adequate time to conduct an appropriate analysis.

Before commencing our discussion of the report, we would like to bring to light what seem to us to be some of the more serious misconceptions in the minds of the investigators concerning the basic nature of VIMS.

First, the Institute, contrary to the statements in the report, (pgs 54,57,81,98) is an institution of education. This is set forth in the Code of Virginia, § 23.14. It has recently been reaffirmed by the General Assembly in their just-concluded session, where this specific language was used in Senate Bill 667, which was passed by both the Senate and the House of the General Assembly of Virginia and has just been signed into law by the Governor.

Mr. Pethtel
5 April 1977
Page 2

Also, the Institute, itself, is the organization which, under the Code and reinforced by Executive Order (copy attached), has the lead responsibility for marine research and engineering, for marine advisory services and for marine education. Other organizations do not have this explicitly-stated responsibility! Hence, VIMS has the lead role in determining the marine research program of the Commonwealth. No other institution or agency does! VIMS Director is the marine science advisor to the Commonwealth as well as the chief executive officer of the Institute (see attached letter).

The Code clearly assigns three activities (1) research and engineering development, (2) advisory services, and (3) education as the primary functions of the Institute. Education is one of three coequal ones, not an afterthought! It has been so since the program began evolving in the period 1930-1940.

In presumtuously ascribing a non-existent tradition as a fisheries laboratory to VIMS, JLARC staff has set a false and improper stage for many of its criticisms. It was once the Virginia Fisheries Laboratory and it has that history, but history is not tradition. VIMS is what the law says it will be -- a well-rounded institution specializing in oceanography and engineering of estuarine and ocean shelf waters. It has been involved in more than fisheries research since about 1948, or over eighty percent of its life span.

From this draft and the unduly critical and damaging special report released last year, it is clearly evident that JLARC investigators badly misunderstand the nature of the institution. Furthermore, they also misunderstand the nature of programs and programming in marine research and engineering. Programs and realities of financing and management of marine science and engineering programs are evidently only dimly perceived. Apparently, failure on the part of the JLARC investigators to understand certain vital points has led to many misconceptions of the nature and purposes of the Institute which color the entire section devoted to VIMS in the current JLARC staff exposure draft. These basic misunderstandings cast a pall -- a lack of reality and credibility -- over the entire report and most of the detailed discussion and hence most of the recommendations. As a consequence the draft hardly seems worthy of comment. These very basic flaws, plus the fact that VIMS personnel are already fully committed, make a full response within the short time frame allotted difficult. Parenthetically, we estimated we have expended some thousands of

Mr. Pethtel
5 April 1977
Page 3

dollars of VIMS monies with no possibility of compensation in preparing this and past responses and in contacts with JLARC staff. The money and time invested are serious losses to the Institute, with little apparent benefit. It is only the hope that we can set the record straight that leads us to respond, even at the cost of further financial involvement and time losses.

A great deal of attention is devoted by JLARC staff in this draft to criticisms of the management of the research program at VIMS. A few of its comments may have some merit, but most do not. Indeed, JLARC staff betrays certain unawareness of the nature of science program development and funding as it now exists within the State and Nation. It evidently does not understand the planning and management activities that are required or possible.

To correct the misunderstandings which apparently exist would require a monograph on research and on research planning, development and funding. Time does not allow preparation of such a monograph.

The implications or outright statements by JLARC staff that research planning and coordination are non-existent at VIMS are not true! Acting within the guidelines provided by the Code, the previous policies established by the Board, the requirements laid down by joint resolutions of the Virginia General Assembly and by executive orders on guidance, and considering stated or recognized needs of appropriate state, federal, local and regional agencies (MRC, SHD, SWCB, Parks, SEC etc. as required by law) and of other users, VIMS Executive Officers lay research plans as far as six years in advance. These are updated biennially. Programming is flexible enough to allow insertion of "change orders" to meet emergencies (provided monies are available or can be secured). Programming is also flexible enough to allow recognition and integration of initiatives of other institutes and agencies at all levels. In each case the test of relevance to Commonwealth needs, to scientific needs, to programmatic need and to VIMS goals and purposes is applied before new projects and programs are incorporated. Priorities are established but programming is kept flexible to handle emergencies and the needs and programs initiated and inserted by others in the interim -- as it must be. Programming for the scientific effort at VIMS, and elsewhere for this matter, must be sufficiently flexible as to allow us to consider new opportunities for funding as they arise. This, too, must be. In order to approach fulfillment of Virginia's needs,

Mr. Pethtel
5 April 1977
Page 4

VIMS must use large quantities of non-general fund monies. Without these funds we would be much more ignorant than we are, in the scientific Dark Ages so to speak, and our ability to serve the people of the Commonwealth would be severely impaired. Were we to be forced to eschew use of grant and contract funds, Virginia and her people and marine interests would be very poorly served indeed.

Interaction in the programming and conduct of research at VIMS with users and special interest groups is regular and frequent and they and their needs are involved in our planning. VIMS regularly interacts with over 100 manager and user groups, public and private, in development and conduct of its programs and projects.

[Incidentally criticism by Virginia Seafood Council during 1976 was not surprising -- it was the year of Kepone and great economic hurt within many segments of the industry. Some members of industry especially fishermen and persons dependent upon James River crabs, feeling that VIMS damaged its interests by making data available to the public as required by sunshine law and good practice, were not happy with the Institute during 1976. In all probability, the shellfish segments of the industry which were happy over VIMS Portsmouth refinery findings might have given (if queried by themselves) a different evaluation of VIMS worth to its purposes during the same period. Obviously, samples intended for evaluating state research and educational programs such as those at VIMS should be made scientifically to be meaningful.

In this regard it is relevant that the Commissioner of VMRC acknowledges that of all institutes and agencies it receives more direct support and assistance from VIMS than any other. So would many other state and federal users as well as other different marine related industries. Given the complexities of the marine resources and the competition and other interaction that exists among uses and users it is, in fact, highly probable that at any one time one or more segments will be unhappy with VIMS or any other State entity.]

Of course, the state of scientific knowledge must also be considered in the programming and conduct of research on the marine environment and its resources and uses and users. Only the scientists "at the bench" can know these things! Despite JLARC's staff's deprecation of the role of the scientists in research planning and of its overstatement of that part that they do really play, research planning cannot ignore individual scientists and their knowledge and requirements.

Mr. Pethtel
5 April 1977
Page 5

Marine Science and Engineering is an interdisciplinary venture requiring participation of specialists from many fields of science and engineering and for sociologists, economists and legal specialists: as many as twenty-five or more disciplines and subdisciplines are involved. Neither the Board, nor the Director nor the Division Directors "know it all". In fact they do not know much about specifics outside of their own fields of training and competence. Individual scientists and engineers in the different disciplines are the only ones who can remain abreast of the current state of knowledge. They must be involved in research planning and management! No single administrative office or officer can lay out a plan without the involvement of individual scientists. Frequently, the individual scientists must take the lead in recognition of problems and development and conduct of research to solve those problems.

Furthermore, we not only must solicit and receive input for individual scientists, but we must use reviews and studies of research needs by other institutions and agencies and groups of scientists and engineers -- and we do! Deliberate efforts such as the consideration of the research needs for Chesapeake Bay carried out in 1969-70 by the Chesapeake Research Consortium, the Virginia Erosion Task Force, the Water Quality criteria group of FWPCA, the Chesapeake Bay study of the Corps of Engineers, the Governors Conference on the Chesapeake Bay and dozens of other planning efforts and documents reporting examinations of research needs have been and are employed in planning the research programs of the Institute. Not uncommonly we must work through the General Assembly or the Congress or through state and federal executive agencies to develop both programs and funding. These activities require planning and extremely sophisticated coordination. There is no lack of either in development of VIMS research programs. Evidence from the records of state and federal legislative hearings and other review efforts to support these statements can be provided.

The mere fact that VIMS funding for research has gone from \$793,330 G.F. and \$347,404 S.F. (or total of \$1,140,734) in 1967 to est. \$2,037,203 G.F. and est. \$5,520,240 S.F. (or an estimated total of \$7,557,443) for 1977 is proof of success in planning and management of research, advisory services and educational programs at VIMS. For anyone to imply or state otherwise is unreasonable! Research at VIMS is planned and coordinated as much as a complicated and dynamic

Mr. Pethtel
5 April 1977
Page 6

symphony is. The conductors do know what is going on!

JLARC staff has complimented in a half-hearted and backhanded way the quality of VIMS research activities. VIMS is not only known for objectivity and quality in research and engineering and in its work with students, but it is especially renowned for incorporating the needs of management entities with and for its contributions to the users and managers of marine resources, private and public. It is closely coupled to users and attempts to meet their needs in a useful and timely fashion. VIMS is known all over the United States and in many foreign countries to have one of the most if not the most interactive of all oceanographic programs. The "Virginia Experiment" has been successful and is viewed as a model by many. This reputation is real. It is one of the reasons that we are successful in raising application-oriented money. The Virginia marine research advisory service and educational program, which is unique in the U.S., is successful. This fact alone raises severe doubts as to the validity of most of JLARC staff's criticism of VIMS research programming. It also supports the concept that suggestions for reprogramming or reorganization are not justified.

This is not to say that improvements cannot be made! They can and should be! It is to say that VIMS is working; that it is running reasonably successfully (in fact better than most), and that it obviously needs tinkering to correct minor ills, but not a major overhaul.

As with the research planning evaluations in the draft report many of the comments on the education program do not seem reasonable or necessary. VIMS is carrying out its part of the educational activity in accordance with reasonable practices and within the rules of the academic institutions with which it works. Students for the School of Marine Science (W&M) or the Department of Marine Science (U.VA) are reasonably well prepared and are competitive and productive after graduation. Furthermore, prospective students are referred to these programs from all over the country and the world. Experience tells us that VIMS (W&M and U.VA) students are in demand. Indeed, they now occupy many responsible posts throughout the United States. It is worth noting that the educational program at VIMS is an economical one for the people of the Commonwealth and the Nation who support it jointly. It is run by the same faculty in the same facilities as the research program is. This interaction between the research and educational programs is good for both serving to keep their

Mr. Pethtel
5 April 1977
Page 7

programs active and fresh and enabling attraction of good professionals and students and of funds.

It must be noted that financial operations at VIMS (and with many state institutions and agencies in the state system) are often uncertain ventures. This fact alone makes financial management an interesting and often frustrating chore. VIMS Board of Administration and Executive group can recognize programatic needs and request M&O and C.O. funds for same, often far in advance of time for appropriate action. These can be genuine needs called for in the Acts of Assembly or by legislative resolution or Executive order. (At times, the institution is not consulted when programatic requests are eliminated in the budget-making process!) That does not guarantee inclusion of those requests in the Executive's budget nor does it guarantee an Assembly appropriation. Furthermore, Assembly appropriation does not assure that the Executive will comply as the Assembly originally wished and make appropriated monies available to the Institute. In fact, it may not be able to do so. The Executive must balance the budget. Also the Executive can reappropriate money even when an unbalanced budget is not imminent. Vagaries of state financing are uncertain. It is within this framework of financial uncertainties that VIMS must work.

In recent years VIMS has been forced to return or suffer withdrawal of monies which the Assembly intended for it to have -- often long after the biennium has been started. This has forced severe reductions in operations and restricted our financial flexibility. The lack of funds or of fund reliability has prevented or slowed corrections of previously recognized administrative faults and needs. This has impinged on all primary programs at VIMS. We have struggled valiantly to bring in outside funds to offset these damaging state financial activities and with some success, but have not been able to cover all of them. VIMS would be pleased were this not so but it is a fact of life! Many of the problems JLARC staff has pointed out are related to the hazards and vagaries of public finance. As far as we at VIMS know there is no easy remedy for these financial uncertainties. We would be pleased if JLARC staff could provide one. It does little good to be beaten about the head and shoulders for real or imagined transgressions, if remedies are not available!

So much for the introductory remarks on research, educational and financial management of the Institute and of JLARC staff's comments thereon. The following comprises those

Mr. Pethtel
5 April 1977
Page 8

detailed comments which we have had time to prepare.
Absence of comments on any specific critical point in the
expressive draft does not imply acquiescence or agreement,
only absence due to lack of time for comment:

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
10-26		The section dealing with the oyster industry given (in general) on these pages was not developed by JLARC investigators as one might be led to believe. Rather, it was abstracted -- without clear acknowledgement of source -- from an unpublished report developed over several years by Dr. Hargis and Mr. Haven of this Institute. Adequate citations should be made. There is one minor footnote reference as to source on page 18. Incidentally it is improperly cited.
26	4	Menhaden overfishing is cited as an "emerging concern" for offshore waters. Actually, the Virginia menhaden fishery is largely carried out in the Bay as stated on page 28. It is, therefore, a concern for coastal and estuarine waters as well as offshore waters.
32	4	The problem cited here does not reflect lack of follow-up but rather a failure of the legal system to take action upon a violation.
38	2, last sentence	Public meetings such as those suggested here have been held for at least the last two years.
51	6, first line	To say that VIMS has responsibilities for conducting marine research, while true, is a gross understatement. VIMS also has

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
51	6, first line	<p>an advisory function and an educational function specified in the Code of Virginia. Additionally, the term "marine research" although basically descriptive, must be understood to include:</p> <ul style="list-style-type: none">-all phases of the seafood and commercial and sport fishing industries.-conservation, development and replenishment of fisheries resources.-investigation of problems of other segments of the maritime economy.-studies of marine pollution.-hydrographic and biological studies of the Chesapeake Bay, its tributaries and contiguous waters of the Atlantic Ocean.-studies of seafood and other marine resources -- including waters, bottoms, shorelines, tidal wetlands beaches, and all phenomena and problems relating to marine waters and the means by which these marine resources might be conserved, developed and replenished. <p>These items and others are specified as VIMS responsibilities in the Code of Virginia.</p>
52	1, first line	<p>It should be indicated here that the considerable increase that has occurred in grants and contracts (special funds) is due to the quality of VIMS scientific performance. These funds were <u>won</u> for the state by VIMS scientists and administrators in open competition with scientists and institutions from all over the United States, not awarded by formula grant. They are an excellent measure of the respect the Institute commands in the marketplace of grant and contract competition, and a tribute to VIMS scientific expertise and over-all management capabilities.</p>

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
52	2, second sentence	Most of the valid "recommendations" of the previous JLARC report were simple restatements of problems of which VIMS management personnel were already aware and on which action had already commenced before they were "discovered" by JLARC investigators.
53	last	The Institute cannot truly be characterized as simply "a state agency". It is described in the Code of Virginia as "an independent research and advisory agency" and an "institution of education". The most recent legislation (S 667, passed and signed into law in March of 1977) says that the Institute is "an Institution of higher education". See the opening statement to this letter.

The statement concerning the primary mission of VIMS is not correct. The phrase "and the seafood industry" should be deleted or expanded. (By itself and in context, it is too confining -- not reflecting the true situation!) The term "marine research" must be understood to include the areas listed in our previous comments on items included on report page 51, and the advisory and educational functions must be included. A simple perusal of VIMS legislative mandate listed on pages 52 and 53 of the JLARC staff draft clearly reveals these facts. Further, there is no indication in the Code of Virginia in any of the pertinent sections, and there are several, that one of VIMS mandated responsibilities is pre-eminent over the others.

In support of the mission that JLARC staff has supposed or conjured up for VIMS the draft cites "Recommendations of the Commission on State Governmental Management" and "VIMS tradition as the Virginia Fisheries Laboratory". These are hardly foundations upon which one can base an evaluation of the mission of the Institute.

Mr. Pethtel
5 April 1977
Page 11

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
53-54		<p>Indeed, if the Institute were to base its missions on these footings, it could be rightfully castigated and criticized. It is our opinion that JLARC staff has invented a "tradition" since we know of none.</p> <p>It is even more important to note that none of the documents selected by JLARC staff as a basis for its opinions support this statement. In fact, the Hopkins Commission report stated only that the "Virginia Institute of Marine Science would remain an independent entity serving as both an institution of higher learning and a research institute."</p> <p>For our comment on the remarks about VIMS educational program see the introductory remarks to this letter.</p> <p>In regard to the last sentence in this section concerning the recently acquired research vessel, the facts are these:</p> <p>The R/V VIRGINIAN SEA is valued by the U.S. Navy at about \$2,000,000.00. The Institute, through its own efforts, acquired it at no cost. The Navy spent about \$1,000,000.00 for the last overhaul which it gave the vessel. VIMS has now invested about \$350,000 converting it to an ocean research vessel. The conversion <u>has been done without the use of General Funds even though General Funds should have been made available for its conversion since such a vessel was needed for state-related work.</u> Further, such a vessel had been approved by the Board of Administration of VIMS and requested from and considered by the General Assembly for several biennia. The suitability of the conversion is attested to by the fact that the Navy is using it for a model for other conversions of this same class ship. Further, the Oceanographer of the Navy, RADM. Snyder, expressed his admiration for the work during a recent inspection.</p>

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
53-54		<p>The need for such a vessel for Virginia's marine research program is clear to all but the most obtuse. Virginia's fishermen have routinely fished the shelf for literally hundreds of years. There is a recently established lobster fishery on the edge of the shelf, and VIMS scientists have uncovered a considerable biomass of large crabs (<u>Geryon sp.</u>) in deep water which may prove to be a significant future fishery. Additionally, the pending development of the petroleum resources of the Outer Continental Shelf and the recent extension of the fisheries limits to 200 miles both profoundly affect Virginia's maritime interests. Furthermore, what happens in and on the shelf affects the internal waters and lands of Virginia quite directly. In recognition of these factors, the Code authorizes and requires that VIMS conduct research on the contiguous waters of the Atlantic Ocean. To imply some devious intent in securing, converting and using such a vessel as the <u>Virginian Sea</u> is absurd.</p>
54	last	<p>The Institute currently receives about 25% (estimated at \$2,037,203 G.F. appropriation for FY 1976-77) of its funding from the Commonwealth, and the remaining 75% (estimated at \$5,520,240 for FY 1976-77) is gained competitively (up \$5,172,836 for FY 1976-77 from \$347,404 for FY 1966-67) as discussed in our comments for page 52.</p> <p>These funds are <u>all directed</u> towards relevant marine problems of the Commonwealth. MRC, whose Commissioner sits as an ex-officio member of VIMS Board of Administration and regularly attends the meetings, controls or has influence on several sources of funds employed by VIMS and has every opportunity for input to VIMS research. The Commission or the Commissioner has frequently made such an input. The Institute</p>

Mr. Pethtel
5 April 1977
Page 13

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
54	last	<p>as the technical advisor to MRC responds almost without delay to requests for advice and services. At least one and usually more professional staff members from the Institute attend the monthly MRC meetings to offer assistance and respond to questions involving their areas of expertise. We have considered every solid, realistic and reasonable request that the Commission has made to us and incorporated almost all of those that could be funded into our program. The same can be said for the other agencies with whom we must work by law or need, e.g. State Water Control Board, State Health Department, and many others. That this liason has been productive is implied by JLARC's comments on page 53, under "Research Performance". It is difficult to see how the procedure suggested by JLARC could improve this performance.</p> <p>Under the Code and by executive decree and agreements, the Institute is the lead organization in Virginia in marine research and engineering, in marine advisory services and in marine education!</p>
55	2	<p>The Institute has established a position for a Research Administrator "C", and is actively recruiting to fill this position now. However, this position is to enhance financial management and not to direct science and education. This is the function of the Director and his scientifically-trained deputies and their assistants at all levels. <u>The Director will retain overall responsibility for the performance of all areas of the Institute under the Board.</u> Does JLARC really intend to imply -- as it does here -- that he does not and should not?</p>

Mr. Pethtel
5 April 1977
Page 14

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
56	1, last sentence	<p>The Director insures that both priority and budget constraints are considered. The finance officer -- as stated in the same paragraph -- also reviews all of the proposals which leave and which are received by VIMS with budget considerations in mind.</p> <p>It is difficult to perceive how JLARC investigators could gain the impressions that the Director approves proposals without considering budgets and priorities. It is simply not true, no matter how perceived.</p> <p>It is also worth noting that all solicitations and acceptances of grant and contract programs, projects and monies must be and are approved by the Governor's Office and have been for years. None have ever been rejected because of inappropriateness.</p>
56	2, 2nd sentence	<p>The preceeding paragraph of the JLARC staff draft has outlined a complete, four-level review process. Even though the process as described does not fully represent the actual procedure, it is hard to think of it as less than "thorough".</p> <p>The last sentence in this paragraph is inaccurate. Naturally, the Division Director is concerned with technical feasibility, but requirements of personnel, finances, equipment and spaces are also considered, as a moment's thought will indicate. They simply must be.</p>
56	last	<p>The notion commenced here and continued at the top of page 57, is interesting. It suggests that VIMS contract and grant proposals be reviewed by Department of Planning and Budget for availability of matching</p>

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
56	last	funds, and MRC for consistency with "marine resource need".

First, VIMS was wisely established as an independent entity by the legislature. It has been so maintained through general and legislative reviews. Specific Executive orders (attached) have reinforced this position as pointed out above, the Institute is preeminent in the planning and conduct of marine research and engineering development and of marine advisory services (and marine education). This procedure suggested by JLARC would put about 75% of VIMS funding under the control of two other organizations, each of which could deny any one project, or all of them, and neither of which has the legally-assigned responsibility to lead in marine research development and conduct.

Second, to adequately establish needs and priorities for research and education would require trained personnel in the agencies or offices involved in leading or "second guessing" VIMS. The Institute's Director and its science administrative officers are supposed to do this job and they do! JLARC staff seems to be urging and encouraging duplication and additional costs. Not only would introduction of such requirements be contrary to provisions in the Code but it is unnecessary and would be unwise to do so.

Third, as far as matching funds are concerned, there have been only meager amounts assigned to VIMS for several years. In order to accept grants that require matching funds, therefore, VIMS has furnished "in kind" services in lieu thereof. We seem to be doing quite well in this regard. The Institute has parlayed about \$727,000 of "in kind" match into several millions in research and education activities for the

Mr. Pethtel
5 April 1977
Page 16

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
56	last	<p>the Commonwealth in this year alone. It is difficult to understand how the Department of Planning and Budget could have a useful input to this problem.</p> <p>Fourth, introduction of such requirements into the cycle of planning, solicitations, and approvals which must now be carried out would be an unnecessary proliferation of check points, paper work and personnel. Further, it would destroy the Institute as an effective working scientific and educational organization. It would also place the Institute at a severe competitive disadvantage, destroy its base of financial support, cause financial difficulty and possible eventual bankruptcy.</p>
57	2	<p>This section again reiterates the mistaken belief that VIMS is not an institution of education, and builds an argument on this false premise. See the opening statement to this letter.</p> <p>Further, the statement that the Director of VIMS suggests that the Institute assumes no responsibility in regard to project performance is a gross misinterpretation of a letter written by the Director of the Institute to Mr. Richard E. Hickman of JLARC staff, on 15 June 1976 (copy attached).</p> <p>Actually, VIMS Director was speaking to the usual arrangements in academic institutions. <u>In the same paragraph</u>, the letter states: "Here at VIMS, as you know, we are much more involved in the fulfillment process than are our sister academic institutions. We feel a deeper sense of responsibility for performance. . ."</p>

Mr. Pethtel
5 April 1977
Page 17

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
57	2	Items such as this will not lend credibility to this JLARC report!
58	2	<p>The Director was aware of problems in financial management considerably before 1973. His own recollections and writings and the Minutes of the meetings of the Board of Administration testify to this fact. The Executive Group of the Institute and its Board of Administration together set about the process of strengthening administrative programs in late 1973 and early 1974. Lags caused by the required approval and recruiting procedures and by the complex finances of the Institute have delayed implementation of the planned improvement more than we would like. Headway was being made before this series of evaluations began. Its progress is accelerating.</p> <p>Reorganizations have also been carried out as a part of VIMS internal management improvement program. The chart attached shows growth of personnel in two principal administrative areas (finance and personnel). Improvements have been noted by all auditors and investigators. At our request, MASD and the Auditor of Public Accounts have assisted us and have been most helpful.</p> <p>JLARC staff should make no extravagant claims for beneficial accomplishments in or from its own reviews. Its one positive accomplishment has been to help VIMS to get MASD attention and services, and provide to VIMS the leverage to secure needed new positions and to correct certain other shortcomings more rapidly than would otherwise have been the case.</p> <p>The entire problem of the presence or absence of a financial deficit may be</p>

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
58	2	summed up as follows: -VIMS financial officer says there is no deficit. -The Auditor of Public Accounts says there is no real deficit. -MASD representative says there is no deficit. -JLARC investigators say there is a deficit.

When various experts (although the background of JLARC investigators is not known) disagree, one must simply choose. We believe that the JLARC staff does not adequately understand the complex financial situation that must pertain to VIMS.

63-73

It is not reasonable to state that there is virtually no vessel management at VIMS. We have been operating large and small boats at VIMS since 1940 with never a serious mishap to vessel or person, and with missions accomplished. How can this be done with "no vessel management"? There is management!

The pages listed discuss vessel operations at all marine resource related "agencies". In several places comment is made to the effect that "VIMS does not keep adequate records of vessel operations." Our records are in fact adequate for our purposes, since they enable us to justify our operating costs to federal auditors. JLARC staff report shows no data in its table because JLARC was unable to wait until records could be supplied. Such records as were made available were obviously not adequate for JLARC's purposes, since they apparently hoped to be able to determine

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
63-73		<p>some form of cost-effectiveness therefrom. In fact, cost-effective or not, VIMS must have available certain numbers of vessels. During the slack season, winter, and during periods of rough weather, many of them may lie idle; however, during the period of peak use, i.e. the sampling season, every available boat is in nearly constant use.</p> <p>All our major vessels have logs which are kept by the vessel operators. Small vessels do also.</p>
71	2	<p>VIMS, long before any arrival of personnel from or receipt of comment from JLARC staff, had decided to centralize vessel operations and this adjustment has been underway for some time. This is still proceeding but there are problems in doing so of which JLARC staff is apparently not aware. For example, certain of the small boats were bought by principle investigators with money allotted for that purpose in their grants. Bookkeeping for these vessels becomes problematical, since charges for the use of these vessels would have to be handled differently from state purchased vessels. Further, as JLARC notes (pg 72) there have been no adequate facilities for such a centralized operation.</p> <p>Several other factors have operated: (1) there has been no solid agreement within the Institute administration that centralizing vessel operation would be useful, (2) development of an adequate vessels staff has been difficult due in part to low state salary scales <u>which are not competitive</u>, the difficulty of <u>financing</u>, and personality problems. Until adequate facilities and staff were to become available, a deliberate decision was made not to disrupt an arrangement which was</p>

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
71	2	<p>working despite its deficiencies as long as the outcome of such a change was uncertain. One does not change course without having a new one which is likely to be an improvement. To put it another way, one does not change horses in mid-stream, especially if the condition of the remount is uncertain. It must also be pointed out that withdrawals of General Fund support money from previously made appropriations has forced VIMS to cut back or squeeze in places during the last 3-4 years which are not good to do so, such as in maintenance of vessels and buildings and grounds.</p> <p>The \$200,000 in General Fund money which has been withheld in FY 1976-77 was operations and maintenance money, in part. VIMS was ordered to cut. Guess where the cut occurred!</p>
71	3	<p>The R/V LANGLEY has operated successfully for many years with only routine maintenance. We agree that it would be preferable to haul her every 3 years, but we simply cannot afford to do so. Incidentally, she was hauled in February 1977.</p> <p>The poor "physical appearance" noted by JLARC staff was true in the case of two vessels. This was the result of a conscious decision to reduce maintenance on these and other vessels in view of the Governor's reductions in general funds. Cuts must be made somewhere, and cosmetics have been delayed. Incidentally, both vessels have since been repaired and repainted with monies found elsewhere.</p>
76	2	<p>The statement "The legislative mandate for VIMS education program is permissive" is clearly incorrect. The exact wording of the Code is:</p>

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
76	2	<p>"To engage in research in the marine sciences and with proper affiliation with one or more accredited institutions of higher learning, provide education therein."</p> <p>This is not permissive! It is a direct mandate, an order.</p> <p>This paragraph in the JLARC staff report is incomplete, as well as being incorrect. VIMS is also the Department of Marine Science for the University of Virginia and has graduate students at present from that institution, although the program is being phased out.</p>
80	last two	<p>Both statements in these two subparagraphs are incorrect. Staff members may be paid from either general funds or special funds or both. This is another example of VIMS utilizing special funds to provide services (in this case, instruction) that would otherwise not be available to the Commonwealth.</p> <p>VIMS staff members are required by the Classified Personnel Act to work 40 hours per week. Most work far more. There is no requirement as to how work time is broken down between education and research, except where a federal grant or contract pays 100% of a person's time. In such cases, the individual must work at least 40 hours per week (the "official" work week) fulfilling obligations to that grant or contract. Teaching or instructional duties not specifically provided for in the grant or project would be above and beyond the 40 hours per week required, and would be a "donation" by that individual to the Institute and the Commonwealth.</p>

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
80	last two	VIMS has not yet reached the size where a formally designated committee is necessary for planning new facilities and renovations. There is an informal committee consisting of the Director, the Associate Director, the Executive Assistant, the Administrative Supervisor and the Building and Grounds Supervisor who meet to discuss capital outlay (new facilities and renovations). All are thoroughly familiar with VIMS present inadequate facilities and with the needs. When buildings are decided upon and funded, a building committee is always established.
83	2,3	<p>The reasons for lack of completion of buildings is not necessarily inadequate estimating, though there has been some of that during this time of rapid inflation -- even with architects, but primarily to (1) long delays between estimates and requests and fundings, (2) inadequate initial funding (often below our estimates) and/or (3) rampant inflation.</p> <p>Furthermore, it used to be possible at VIMS to finish out underfunded projects from within its own resources. In recent years budget withdrawals and reversions ordered by the Governor have destroyed that flexibility. We do not like these disruptions in our financial operations, but know of no remedies. We have been ordered to cut. If JLARC staff can arrange to get VIMS relieved of the necessity of reverting the almost \$200,000 we are currently threatened with, we would be most appreciative and could finish this building forthwith! If such relief cannot be provided, pointing out shortcomings in VIMS operations and management which cost money is tantamount to beating a dead horse! It is criticism without purpose!</p>

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
83	2,3	<p>There are no luxurious buildings, expensive foyers or other luxuries as at many other educational institutions, just bare spaces. Further, we are forced to use the greatest assortment of junk buildings, converted dwellings and trailers of any scientific and educational organization in State government, and probably of most others.</p> <p>We would be most appreciative of the luxury of hiring professional architects and draftsmen to aid in our cost estimation; unfortunately, such personnel cost money which is not available until after the building has been funded through the legislative process, and the estimates are required before that process can commence. We are in somewhat of a Catch-22 position here, having rarely been given money to plan C.O. projects even when we have requested same.</p> <p>It must be noted by JLARC staff and others that VIMS use of space is most economical and we have been instrumental in providing (paying for) much of it. Criticism is not justified!</p> <p>VIMS has always been forced to operate "on the cheap". The Commonwealth has been parsimonious in this regard! Frequently, we have had to raise some or most of the money to carry out or complete Capital Projects and usually we have had to use our own labor to build or modify needed facilities, even those with General Fund support. Building costs at VIMS to the General Fund are very modest, and space use is very high. VIMS should be complimented, not castigated. We are willing to proceed on a more adequate basis, but it will take about \$60,000 a year on a regular basis, and Capital Outlay projects will have to be more adequately funded from the</p>

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
83	2,3	General Fund. We will be pleased if JLARC staff will arrange with its Commission to urge improved funding for VIMS.
85	2,3	T & E forms are required of all VIMS employees, not merely those working on federal contracts. Further, they are submitted every two weeks, not every week.
86	last	It is not practical -- nor would it be useful -- to plan VIMS curriculum for 3 years in advance. VIMS is primarily a <u>graduate</u> program, and we supply courses that the individual students require. Since we have no idea, 3 years in advance (or even one year in advance), what specific interests the incoming students will have and what programs they will be working on, such planning is not feasible except for core courses. We do plan and conduct regular core courses.
90,91	-	Dr. Roger Anderson, a VIMS employee whose work with Dr. Mackin is used as a reference by JLARC, has the following comment:

"The references to Virginia's manpower needs are shocking! Since the key resource document cited was written by a VIMS employee (Anderson), it should be obvious that the expertise is at VIMS, not MRC! The JLARC authors did not carefully read, nor do they apparently understand the publication of Mackin and Anderson (1976) does not support their interpretation."

Further, to the comment that Virginia has no bachelors degrees program in marine science, it would seem that JLARC staff has skimmed the surface of a subject and made

Mr. Pethtel
5 April 1977
Page 25

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
90,91	-	criticism based on an incomplete understanding. Perhaps there are some among JLARC staff's contacts who believe that bachelors degrees in marine science would be useful and should be supported. Many around the country do not and that is why there are few such programs, as is described below. At present VIMS higher educational program is primarily oriented toward graduate education -- toward training successful baccalaureates as scientists and marine affairs specialists. We are also able to work with qualified upper-classmen. We have deliberately eschewed developing a bachelor's program. There are in fact only a few such programs -- only two come readily to mind, in the United States. Most authorities agree that the undergraduate level is too soon to specialize in marine science, and that a broad understanding of a particular field, such as geology, which can then be utilized as a base for the study of geological oceanography at the graduate level is preferable. Re-evaluation may cause a change of mind, but it is not likely. In any case we are carrying on all we can afford at this point. It would obviously cost money to install a bachelor's-level oceanography program at VIMS or anywhere else. We do not feel that the outcome would be worth it to the Commonwealth. If JLARC staff solidly finds such a program to be useful and will urge financial support, VIMS will be pleased to place a higher priority on its re-evaluation of the need for same.

97	2	That portion of the JLARC staff draft report which deals with the Sea Grant program is of doubtful value. Virginia is receiving Sea Grant support. Virginia is slated to get more Sea Grant support. VIMS can and should coordinate Sea Grant for the state! It is doing so now for all practical
----	---	---

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
97	2	purposes. In fact, George Mason University, ODU, American University and Marshall Wythe School of Law of W & M are current participants in the Virginia Sea Grant program which VIMS coordinates, contrary to implications by JLARC staff. VIMS can be named a Sea Grant College with the continued involvement of others and it should! Our program is planned along these lines and we anticipate no serious hitch in passing through the steps from coherent program which we are to institutional status to Sea Grant College status for the Virginia program with VIMS in the lead and with many others (including VPI & SU) participating. Sea Grant office wants VIMS to coordinate. We already have a coordinated program in essence. VPI and SU shows signs of coming along. JLARC staff should do nothing to interfere with these plans.

The General Assembly does not name Sea Grant Colleges, NOAA and the Secretary of Commerce do. The cry about Virginia being deprived of Sea Grant support because of VIMS is old hat and trivial. We have heard it many times before. It usually emanates from other institutions who would like to wrest the lead from VIMS despite contrary provision of the Code and of history. One must wonder if it did this time.

97-98		The suggestions that VIMS be part of ODU as opposed to W & M ignores history. W & M was originally involved in establishing the need for and selling such a program during the period 1930 to 1940. The program started at W & M in 1940. It was in existence when ODU was still part of W & M. VIMS was the only one in the state then. ODU's program developed significantly after separation from W & M. The W & M program was largely structured as it is, before
-------	--	---

Mr. Pethtel
5 April 1977
Page 27

<u>Page</u>	<u>Paragraph</u>	<u>Comment</u>
97-98		ODU's program began to develop significantly. There is little question that development of parallel programs has been intentional. The record is clear on this point. It may even be justified. Certainly both seem quite active.

When one is first with the mission and the programs, who is the duplicator?

However, unless one intends to argue over historical precedence of programs and use the outcome to some useful purpose a rehash of old discussions would be fruitless and wasteful. VIMS can work with ODU and others and is willing to. We look forward to closer cooperation with all. This too, to be effective will require more General Fund support -- support which has been requested for six years.

The JLARC conclusion that ODU be named a Sea Grant College seems rather odd. In fact it seems a non-sequitur. It is VIMS and VPI & SU who have the Sea Grant money now. VIMS, the legal leader, can be the lead institution in the Virginia Sea Grant college program. There are no legal or regulatory bars to its doing so and it is our plan to do so. Why should an institution which does not now figure prominently in Sea Grant in Virginia be given the lead?

This ends our specific comments.

In closing, I feel it necessary to indicate that the Institute has been aware of and working to solve almost all of the valid problems that JLARC investigators have "uncovered". As a matter of fact, it must be noted that VIMS personnel were responsible for bringing most of all of these points to the attention of the JLARC investigative staff. The investigators have apparently taken the unfortunate tactic of reporting problems well known to the administration or other responsible personnel of VIMS as though they were discovered by the investigators themselves. Two examples will suffice.

-Boat consolidation. This has been in progress

Mr. Pethtel
5 April 1977
Page 28

for some time prior to the arrival of JLARC.

-Special Loan Account for VIMS. This was suggested by VIMS several times in the past, but was deemed by the state hierarchy to be impermissible.

Overall, we have the feeling that certain JLARC investigators conducted their work with a preconceived notion of the desired final result. If this is so, it would indeed be regrettable. We hope that we have not given JLARC staff reason to be seriously unhappy with VIMS as an institution or with the principal units or persons involved in VIMS. We have tried to be fully cooperative and provide the information requested (even where it did not seem particularly applicable as requested). We have invested much time, in attempting to fill JLARC staff needs. We looked forward to an objective and factual evaluation of VIMS and its missions and program. We still do!

Sincerely,

A handwritten signature in dark ink, appearing to read 'William J. Hargis, Jr.', with a long, sweeping horizontal stroke extending to the right.

William J. Hargis, Jr.
Director

WJHJr/lrb

cc: Members of the Board of Administration



LINWOOD HOLTON
GOVERNOR

-18-

COMMONWEALTH OF VIRGINIA
GOVERNOR'S OFFICE
RICHMOND 23219

September 24, 1970

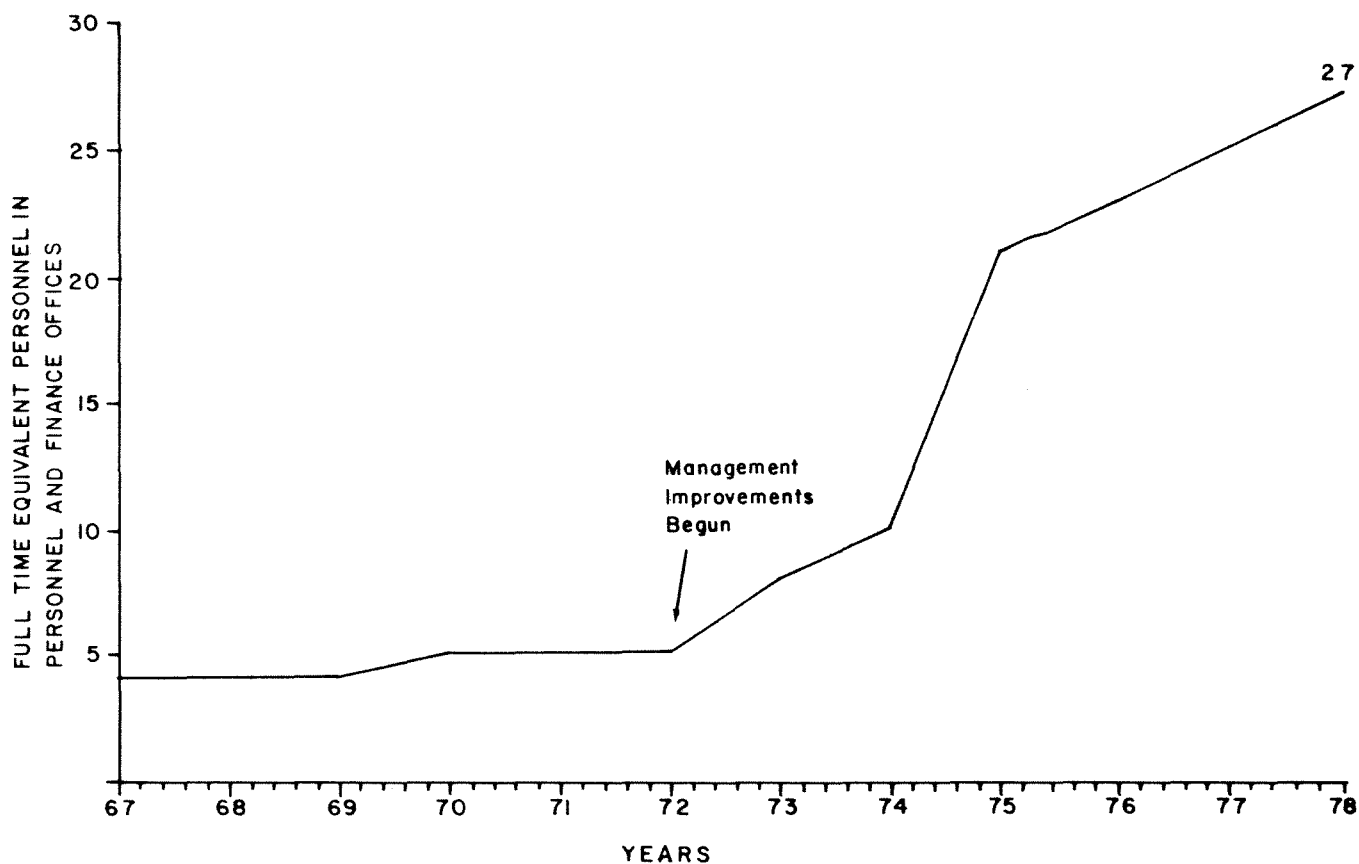
To Whom It May Concern:

Under provisions of Chapter 9, Title 28 of the Code of Virginia, the Virginia Institute of Marine Science is the principal state agency or institution for marine science and marine science affairs. Inasmuch as the Institute, under the law, is also the state advisory agency on matters pertaining to marine science, marine environment and marine resources, its principal professional executive officer, the Director, is the Marine Science Advisor to the Commonwealth.

Any assistance that you can render Dr. William J. Hargis, Jr., Director of the Institute, in developing a sound program in Marine Science for Virginia and the nation will be greatly appreciated.

A handwritten signature in cursive script, reading "Linwood Holton", written over a horizontal line.
Governor

GROWTH IN NUMBER OF EMPLOYEES IN
VIMS PERSONNEL AND FINANCE OFFICES*



* NOTE: Individual responsibilities have also been reduced.

15 June 1976

Page 2


As Mr. Pleasants mentioned to you, a better picture of satisfaction or dissatisfaction with the Institute's work could be gathered from the readiness of the various contractors to initiate other contracts with the Institute. In this, as you know, we have been very successful.

Another way suggests itself to gather the impressions towards which I sense you are striving. Rarely--but sometimes--significant payment is withheld by the contractor until completion of work. Since this involves financial records, we can produce these data fairly readily. There have been in this fiscal year two of these cases, totaling approximately \$5, 591.83 in delayed funds. When one considers that there are now in progress 58 non-state (or special fund) projects, ranging in size from one for \$1,000 from the Link Foundation, to one of more than \$1.8 million from the Bureau of Land Management, I believe our responsiveness becomes clear. Incidentally, this fiscal year these special funds have amounted to a total of about four million dollars.

We feel this record is eminently satisfactory.

Finally, there is a facet of protocol for academic, scientific institutions in regard to grants and contracts of which you may not be aware. The contracts are really between the PI and the contractor, with the institution acting as a channel for the funds and, of course, providing the facilities, equipment, and general support, for which a portion of the monies received is set aside. Thus, it is generally the PI's reputation--and only peripherally the Institute's--that suffers with any defaulting in a contract. Thus, the Dean of a School or College, a President of a College or University, and even the Academic Department Head assumes no responsibility for performance of a Principal Investigator. This seems to be slowly changing but still applies widely. There is considerable confusion over these matters at this time. Here at VIMS, as you know, we are much more involved in the fulfillment process than are our sister academic institutions. We feel a deeper sense of responsibility for performance but here are the facts nonetheless. Unless the Director's name is on the grant or contract as Principal Investigator or Program Manager, it is problematical as to whether the Institute has any ultimate responsibility for performance.

Sincerely,


William J. Hargis, Jr.
Director

WJHJr/cr

cc: Mr. Pleasants
Mr. Pohorence
Dr. Wood
Dr. Anderson

A-90



LINWOOD HOLTON
GOVERNOR

COMMONWEALTH OF VIRGINIA
GOVERNOR'S OFFICE
RICHMOND 23219

June 22, 1970

To Whom It May Concern:

This is to inform you that under the provisions of Chapter 9, Title 28 of the Code of Virginia, the Virginia Institute of Marine Science is the principal agency responsible for research, advisory services and education in the marine sciences. It is, therefore, the Coastal Zone Laboratory program of the Commonwealth. We hope that Virginia and the Institute will be able to contribute significantly to and participate in the developing Coastal Zone Management System.

A handwritten signature in cursive script, reading "Linwood Holton", written over a horizontal line.

Governor



COMMONWEALTH of VIRGINIA

Virginia Institute of Marine Science

Gloucester Point, Virginia 23062

WILLIAM J. HARGIS, JR.
DIRECTOR

Phone: (804) 642-2111

June 15, 1976

Mr. Richard E. Hickman, Jr.
Legislative Audit and Review ✓
Commission
823 E. Main Street
Richmond, Virginia

Dear Mr. Hickman:

This is written in response to your request for information concerning the timely submission of contract reports. As Mr. Pleasants has explained to you, we are having some difficulty filling your request, since we keep no record which will readily give this information. It becomes, therefore, a matter of reviewing each contract individually,

I feel that any figures we might produce in response to your request would have little significance for the following reasons:

- Time for submission of reports is often extended telephonically as a result of conversations between the Principal Investigator (PI) and the contractor, thus leaving no record. Variations are also made by personal letter.
- Draft reports, which technically fulfill expectations of timing, are often held for a period of months by the contractor before being returned to the PI for completion.
- Often contract reporting requirements are changed at the request of the contractor to include elements not considered in the initial grant or contract document or not agreed to by the PI.

Each late report would have to be discussed individually to give a true picture, and the reasons--and there are usually valid ones--given for its tardiness.



APR 5 1977

COMMONWEALTH of VIRGINIA

COUNCIL OF HIGHER EDUCATION

DANIEL E. MARVIN, JR.
DIRECTOR

~~700 FIDELITY BUILDING, 9TH AND MAIN STREETS, RICHMOND, VA. 23219~~
700 Fidelity Bldg., 9th and Main Streets, Richmond, Va. 23219

(804) 786-2143
~~700 FIDELITY BUILDING~~

April 4, 1977

Mr. Ray D. Pethtel, Director
Joint Legislative Audit and Review Commission
823 East Main Street, Suite 200
Richmond, Virginia

Dear Ray:

Thank you for providing me with a draft copy of the Joint Legislative Audit and Review Commission's review of marine resource management programs. I found the study particularly interesting from the Council's viewpoint and I appreciate the opportunity to offer some observations. Although I will confine my comments to Section IV, which deals with education and advisory service programs, I think the study is excellent overall, and will deserve careful attention by those interested in marine resource management in Virginia.

I was particularly interested in the sections of the report that discussed the apparent lack of program coordination between the Virginia Institute of Marine Science and Old Dominion University. The Council, as you reported, has long been concerned that no unnecessary duplication of effort occur between the programs at VIMS and ODU, and that efforts be made to insure maximum coordination. Its approval of the ODU program was predicated upon an understanding that the programs were, in fact, different. Once a program is approved, however, it is inevitable that certain changes will occur in its content and structure. The extent to which these changes alter the nature and purpose of programs is difficult to determine but does require review. I believe the Council would support the study's suggestion that the Joint Coordinations Committee be reconstituted. This would leave the educational program decisions in the hands of those responsible for education, while at the same time providing a means to focus more clearly upon the problems you have identified. If you wish, it might be appropriate to suggest in your report that the Council of Higher Education take the initiative in reconvening this committee. As part of its normal activities, the Council reviews all programs for productivity every two years; the ODU and William and Mary programs are scheduled for review during 1977.

A-93

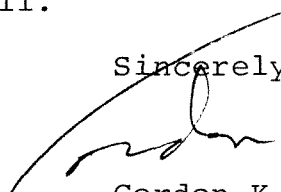
April 4, 1977

The Council has, as you know, been working with William and Mary and VIMS to ensure that enrollment reporting and budget data are accurate. For enrollment and degrees conferred purposes, the activities at VIMS are reflected by William and Mary. For budget purposes, all enrollments related to VIMS are backed out of William and Mary's enrollment figures. This procedure can be traced on William and Mary's DPB Form 2-B (the enrollment form upon which budget requests are based). We are, at this point, relatively certain that the budget requests of VIMS and William and Mary do not contain duplicate entries for these students.

Although I support most of the suggestions made in this report, I do have a few general questions about some aspects of the study. The study suggests two alternatives for affiliating VIMS' education programs with existing colleges: first, strengthen the existing ties between itself and The College of William and Mary; second, affiliate VIMS with ODU. Affiliation with ODU is suggested primarily to correct management problems caused by the special structure of VIMS and its non-educational functions. I am not sure, however, that an affiliation with ODU would solve any of these difficulties. It would certainly be desirable to have a Virginia university designated as a Sea Grant college, but the Commonwealth should move carefully toward this end so that it does not disrupt the very valuable services provided by VIMS and the higher education institutions involved.

Thank you again for the opportunity to comment upon the marine resource study. If we can be of any further assistance, please do not hesitate to call.

Sincerely,



Gordon K. Davies
Acting Director

GKD/r



APR 11 1977

CHARTERED 1693

COLLEGE OF WILLIAM AND MARY

OFFICE OF THE VICE PRESIDENT
WILLIAMSBURG, VIRGINIA 23185

April 7, 1977

Mr. Ray D. Pethtel, Director
Joint Legislative Audit and Review Commission
Suite 200, 823 East Main Street
Richmond, Virginia 23219

Dear Mr. Pethtel:

President Graves has sent me the exposure draft of the JLARC Report on "Marine Resource Management Programs In Virginia", which contains a number of references to the College of William and Mary, respecting our relationship with the Virginia Institute of Marine Science. Your letter to President Graves invited written response from us if we wished.

The draft report contains a number of observations concerning the relationship between the VIMS Educational Program and William and Mary, upon which it is impossible to comment in a reasonably brief manner. For example, while I would certainly agree that the educational relationships between VIMS and the College are somewhat unusual, as compared to more common or more orthodox university/institute relations, I would not agree with the value judgment expressed in the JLARC report that this relationship "is poorly defined and has not provided effective administrative foresight or coordinated instructional planning". To respond adequately to such a conclusion, however, would require a fairly extensive report in itself, which we have not been able to produce within the time limits suggested.

I will restrict my comments, therefore, to a couple of observations in the JLARC report that can readily be addressed.

It is not a matter of great import, but I should note that my title at William and Mary is and has been Vice President for Academic Affairs rather than Executive Vice President, as I am identified at least twice in the report.

Page 2

Mr. Ray D. Pethtel

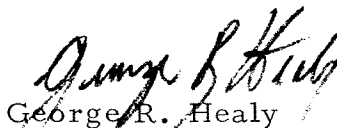
April 7, 1977

I must also take exception to the table on "Computer Costs Per Hour Of Use" on page 82 of the report, which is intended graphically to demonstrate that "cost for computer time at William and Mary appears excessive." I am not prepared to argue the conclusion, though I firmly believe such an argument could be made. I would, however submit that the table in the JLARC draft is misleading.

A valid comparison of the costs of computing on different machines cannot be made solely on the basis of quoted "hourly rates for central processing unit (CPU) time." Many other factors are included at most computer centers in the formula for calculating the costs; this is the case at the University of Virginia, VPI and State University and the College of William and Mary. Among the factors are amount of real storage used, the length of time during which the terminal is connected to the computer, and access to proliferal equipment such as disks, tapes, card readers, printers, etc. The relative importance assigned to the factor varies widely; only by using the complete formula, or by running a set of complicated benchmark test on the machines being considered, can reliable comparisons be obtained. I might note that we are presently running benchmark tests against the machines at Virginia and VPI, and hope to have some truly meaningful cost comparisons regarding those machines by early May.

I quite realize the great difficulties faced by your Committee, as it undertakes in very short time frames investigations of institutions and relationships that are varied, complex and sometimes hard to understand even by persons who are regularly much closer to the activity than any visiting committee can be. I thus hope you will accept these few remarks as extended in a spirit of helpfulness, as they are intended to be.

Yours sincerely,



George R. Healy
Vice President for Academic Affairs

cc: President Thomas A. Graves, Jr.

Dean William J. Hargis, Jr.

GRH:vc

JLARC Staff Note: As of June 29, 1977, JLARC had not received any data on computer costs from William and Mary.



OLD DOMINION UNIVERSITY
NORFOLK, VIRGINIA 23508

Office of the President

March 31, 1977

Commonwealth of Virginia
Joint Legislative Audit and Review Commission
Suite 200
823 East Main Street
Richmond, Virginia 23219

Gentlemen:

The recent report, Marine Resource Management Programs in Virginia, prepared by the Joint Legislative Audit and Review Commission, is in our judgment a valuable document that insofar as educational aspects are concerned presents worthwhile suggestions for improvement and change.

A program of graduate education in oceanography was approved by the Commonwealth for initiation at Old Dominion University in Norfolk in 1968. The doctoral program was approved in 1974. Since initiation, the Institute has been extraordinarily productive and educationally efficient. In the period to date, for example, a total of 90 master's degrees in oceanography and one doctoral degree in the same field have been awarded. With few exceptions these persons have obtained useful employment as marine scientists in both private and public sectors, in practical, academic, and policy pursuits, and have in many instances given evidence of the adequacy of their education by their rapid rate of advancement and overall success and achievement.

Citizens of the Tidewater area have from the start perceived the relevancy of the oceanographic program at this University to the economy, well-being, and future development of this marine-dominated region of the Commonwealth. Their judgment of potential worth and merit has been manifested in the establishment of endowment funds for oceanography now substantially in excess of \$1 million. A distinguished faculty engaged in oceanographic teaching and academic research has been assembled and is presently serving 85 master's students and 12 doctoral students.

This University aims to serve the needs of this urban region. Our plans for oceanography include:

1. Installation of an emphasis in Port and Harbor Systems Management, a nationally unique interdisciplinary effort

that includes our School of Engineering, Institute of Urban Studies, and the various departments of the School of Sciences and Health Professions.

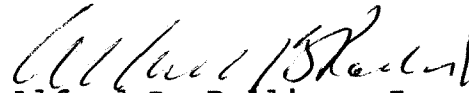
2. A Marine Culture Laboratory for teaching and graduate research related to the biotic environment, disease, reproduction, predation, and nutrition in selected marine and estuarine species suited to such study.
3. A Marine Radiochemistry Facility for teaching and graduate research in this critical field as a joint program with our Departments of Chemical Sciences, Biological Sciences, and Physics and Geophysical Sciences, with some input also from the interdisciplinary theoretical fluid mechanics group.

Old Dominion University is a broadly based academic institution whose chief goals in oceanography are:

1. The training of competent scientists at doctoral and master's levels for service in the future to the Commonwealth of Virginia and to the nation.
2. The creation and dissemination of new basic and applied knowledge ultimately needed to solve and manage the problems of Virginia's marine and estuarine environments.
3. The provision of appropriate professional marine-related services to eastern Virginia and the Commonwealth.

I, the faculty of this University, and the citizens of the area would welcome any forward-moving change in procedure, policy, or legislation that would materially further our progress toward these legitimate goals. Many of the recommendations in the subject report appear to me to be designed so as to accomplish exactly this purpose.

Sincerely yours,



Alfred B. Rollins, Jr.
President

ABR/dtf

cc: Dr. Charles O. Burgess, Vice President for Academic Affairs and Provost
Dr. Dale W. Lick, Dean, School of Sciences and Health Professions
Dr. John C. Ludwick, Director, Institute of Oceanography

MAR 29 1977

VIRGINIA'S LAND-GRANT UNIVERSITY



VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

OFFICE OF THE PRESIDENT

March 25, 1977

Mr. R. D. Pethtel, Director
Joint Legislative Audit & Review Commission
Suite 200, 828 E. Main Street
Richmond, Virginia 23219

Dear Mr. Pethtel:

Thank you for your letter of March 14, 1977, and for the JLARC report on marine resource management programs. We have reviewed the portion pertaining to VPI&SU and appreciate having the opportunity to comment on several issues raised in the report.

We sincerely believe that competition with VIMS is not a factor at this time. Since our advisory program deals with the food science, economics, engineering, and information services aspects of seafood processing, there is no competition for funds insofar as VIMS is concerned. The original agreement which we have with VIMS is still being implemented. The same is true for duplication of effort. VPI&SU has no intention of duplicating the efforts of VIMS.

The VPI&SU Advisory Services program is a completely integrated aspect of the state-wide Cooperative Extension program. Extension specialists associated with the program are located in Blacksburg and Hampton, and the cooperation and assistance of the State network of extension agents and home demonstration agents are an integral part of the program.

The wetlands research project would appear to complement in a desirable way the research efforts of VIMS. Our Department of Agricultural Economics was contacted at the national meeting in Columbus, Ohio, in 1975 and encouraged to submit a research proposal to the Sea Grant Office. Dr. Batie of that department was interested in the wetlands problems; therefore, she submitted a proposal which was subsequently funded, in part, because the Sea Grant office is interested in getting more social science research into their program. This research does not duplicate the biological science efforts of VIMS, nor does VIMS have staff with competency in the disciplines necessary to carry out this particular research project.

It is true that the coordinating committee has not met recently. However, the need is not as great as it was when the committee was first formed. We now have a person located in the Hampton area, and he has more contact with personnel at VIMS. This should result in a continuing improvement in program coordination between VIMS and VPI&SU.

Mr. R. D. Pethet1

March 25, 1977

Several possibilities should be considered with respect to an integrated Sea Grant program in Virginia. We would suggest that the several institutions in the State that are interested in marine resources get together and discuss the pros and cons of the several ways the Sea Grant program might be organized. This might be a consortium of institutions using the regional approach to take advantage of the different competencies at the institutions. This consortium then could be designated as the Sea Grant College of Virginia. The directorship of this consortium could be rotated among the institutions on a scheduled basis. There are other means of integrating the total program which could be explored. In fact, a state-wide institutional program was suggested to VIMS in a letter of May 14, 1975, from our former Dean of the Research Division. We would be pleased to provide you with a copy of that letter if it would be helpful. We feel confident that a unified program would benefit the State of Virginia and that, as a result, the Sea Grant program would grow considerably.

I trust these comments are useful to you. Please feel free to contact me if additional information is needed.

Sincerely,



W. E. Lavery
President

WEL/kp

cc: Dr. E. N. Boyd

JOINT LEGISLATIVE AUDIT AND REVIEW COMMISSION

Professional Staff

L. Douglas Bush, Jr.

Mary F. Carrico

Peter C. Clendenin

Mark S. Fleming

Timothy M. Garner

Kent S. Jamison

R. Kirk Jonas

Billy J. Kittrell

William E. Landsidle

Russell T. Larson

Philip A. Leone

Ray D. Pethel

William E. Schuerch

Paul W. Timmreck

Susan L. Urofsky

Mark D. Willis

Administrative Staff

Linda Grear

Linda Lawler

Sandy Saunders

Missy Spear

823 EAST MAIN STREET—RICHMOND, VIRGINIA 23219—(804) 786-1258

