

THE DEVELOPMENT OF A METHODOLOGY  
FOR TRANSPORTATION SAFETY PLANNING IN VIRGINIA

by

Clinton H. Simpson, Jr.  
Research Scientist

and

Amy J. Plevin  
Research Assistant

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(The opinions, findings, and conclusions expressed in this  
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## ABSTRACT

Senate Bill 85, passed by the General Assembly in 1978, renamed the former Highway Safety Division of Virginia the Department of Transportation Safety (VDTS) and authorized it to assume control over safety activities in all modes of transportation. This volume is the first attempt at formulating a methodology for transportation safety planning. Future transportation safety plans will become annual documents which identify long-range goals, analyze current problems, and offer planned solutions for non-highway transportation mode\* problems. This initial document presents a current overview of the Commonwealth's programs and safety activities in water, air, rail and mass transit transportation. Future programs and federal sources of funding are discussed. The report is designed to provide an indication of safety problems and propose some possible solutions to these problems. Finally, this document establishes guidelines for use as an aid in future transportation safety planning in Virginia.

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\*It should be noted at the outset that it is recognized that most mass transit activity in Virginia utilizes rubber-tired vehicles travelling by highway. However, for purposes of simplicity, this report refers to all of the above cited transportation modes as "non-highway".



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INTRODUCTION

The Virginia General Assembly passed Senate Bill 85 in its 1978 session (see Appendix A). The Bill directed that as of July 1, 1978, the Virginia Department of Transportation Safety (VDTS) was to become successor to the Highway Safety Division. This change in status broadened the Department's responsibilities to encompass safety in all modes of transportation where before its purview had been restricted to highway safety.

As a result of this action, the Department became authorized to evaluate current safety measures and to recommend to the General Assembly and the Governor corrective measures, policies, procedures, plans and programs needed to make the movement of passengers and property in and through the Commonwealth as safe as reasonably practicable.

Ideally, in the preparation of a Transportation Safety Plan (TSP), data from various state agencies and local governments would be collected, tabulated, and evaluated. Multivariate and correlation analysis could then be used to identify accident trends. Although work is under way to procure the necessary data, they are not now available; thus, the isolation of problem areas through analytical methods is not yet possible. Moreover, state agencies responsible for the non-highway transportation modes are currently adjusting to the newly assigned functions of the VDTS. Presently, the agencies are reviewing the role of the VDTS and developing a satisfactory interface with the Department for the maintenance and implementation of various safety programs.

The VDTS has made a number of contacts with the non-highway transportation agencies to discover the safety programs being conducted by them and to develop measures whereby it can assist in safety activities. Through contacts, progress has been made in developing the lines of communication necessary for future functions.

The initial step in compiling this document began with a series of meetings with key representatives from all concerned agencies (see Appendix B). The purposes of the meetings were (1) to explain the goals and objectives of the document, (2) to alleviate fears of counterproductive intervention by the VDTS, and (3) to gather information relevant to Virginia's transportation safety activities. While all of the agencies were quite cooperative and able to furnish some data pertaining to the operations of their programs, they were able to provide only a small amount of information helpful in identifying safety problems.

### STUDY CONSTRAINTS

While preparing this report, some significant constraints emerged and an acknowledgement of their existence was reasoned to be warranted. A lack of program information, data for problem identification, and budget information was identified as being the primary constraint to the study.

There are several variables which account for the information voids. As noted earlier, the VDTS has recently been authorized to assume control over safety activities in all transportation modes. Since assuming this responsibility the VDTS has worked to establish an interagency interface. As one might expect, there are problems with the nature and scope of the information being reported to the Department by the non-highway agencies. Since reporting guidelines for the agencies have not been established by the VDTS, little could be expected in the way of program reporting consistency and information quality control.

### Program Information

In preparing this report a lack of program information was noted. Apparently, the agencies do not publish an "annual report" or a similar document which would allow access to materials concerned with overall program operations (i.e. manpower, equipment, training, communications, etc.).

### Data for Problem Identification

Isolating problems is quite difficult without an in-depth data analysis. Presently, available information consists largely of the total numbers of accidents, injuries, and fatalities. The use of detailed information in transportation safety problem analysis should allow causal relationships to be derived. Information which could be useful and should be procured in conducting problem identification within the non-highway modes includes the

hour, the day of the week, and the location of the accident. The type of collision and travel conditions at the time of the accident are also important. Additionally, studies such as those relating accidents to the age and sex of operators are sometimes useful when determining program target groups.

### Program Budget Information

During the data collection phase of this project, it became apparent that there was a lack of readily accessible information pertaining to financing for safety programs in the non-highway modes of transportation. Of the financial reports reviewed by the authors, the only document found to be helpful was the Commonwealth of Virginia Budget. Unfortunately, no data contained in this publication report adequately the state and local safety activities in the air, water, rail, and mass transit modes of transportation. The Commonwealth of Virginia Budget outlines the functions and expenditures of each Virginia agency and reports the total appropriation for each agency's activities. However, it does not include financial data on particular safety programs. Appendix C contains the Commonwealth of Virginia Budget sections on the activities of the Commission of Game and Inland Fisheries, and is included only to provide an example of the type of financial information currently available.

While the constraints mentioned above had an impact on the development of this document, it should be obvious to the reader that resolution of these limitations can be obtained. These issues are addressed in subsequent sections of this study.

### PURPOSE AND SCOPE

This is the first attempt to identify, analyze, and plan for improved safety programs in non-highway modes of transportation in Virginia. The VDTs intends that the Transportation Safety Plan (TSP) will evolve into an annual planning document which examines safety problems in mass transit, water, air, and rail transportation; identifies both long- and short-range goals; and delineates specific programs aimed at improving Virginia's transportation system safety performance.

This first TSP provides an overview of current air, water, rail, and mass transit safety activities in Virginia. Accident reporting, data collection, and existing countermeasure programs for these modes are discussed. Additionally, problems in data collection and analysis, alcohol related accidents, and the transportation of hazardous materials are identified. Some

mode-specific and multimodal countermeasures are presented as possible solutions to these problems. Finally, this TSP provides a blueprint for the development of future plans by establishing a methodology for future use and developing guidelines for reporting program and countermeasure costs.

## PROGRAM OVERVIEW

### Water

#### Program Status

In 1972 the Virginia General Assembly amended the Motorboat and Water Safety Act (Va. Code § 62.1-166 et. seq.) to conform to the Federal Boating Act (PL 92-75). This change required that all motor-propelled boats be registered with the Commission of Game and Inland Fisheries. The Commission of Game and Inland Fisheries has the authority to enforce and administer all of Virginia's boating safety regulations, to keep records, and to investigate accidents, deaths, and injuries. Virginia waters are also patrolled by the Coast Guard and Marine Resource Commission. Both organizations have the authority to board a boat, to note violations of state and federal regulations, and to make arrests.

In 1978 the Virginia General Assembly passed Senate Bill 382, which amended the Code of Virginia by establishing the Boating Advisory Committee in the Office of the Secretary of Commerce and Resources. The Committee is given no legislative power, and serves strictly in an advisory capacity. The Committee makes recommendations — to the Secretary and interested state agencies for which the Secretary is responsible, including the Commission of Game and Inland Fisheries — concerning any proposed rule, regulation, or administrative policy which would directly affect the boating public.

The Commission of Game and Inland Fisheries collects Virginia boating accident reports. From these reports the Department keeps records of the numbers of total, fatal, personal injury, and property damage accidents. However, only the number of fatalities is accurate because the less serious accidents resulting in injury or property damage often go unreported. The Coast Guard collects a significant amount of data which is published in Boating Statistics. The only information compiled for individual states is the total number of accidents, the type of accident, and the number of accidents in each jurisdiction. The remaining information is reported for the United States in general. Without detailed data specific to Virginia it is difficult to identify water safety problems.

### Current Safety Programs

Current water safety programs are almost entirely education and training oriented. The Virginia Commission of Game and Inland Fisheries offers an optional home study course entitled "Virginia Better Boating, A Guide to Safety Afloat". Those who complete the course and pass an exam are given a certificate and ID card. The Commission publishes a boating safety newsletter and each month contributes an article pertaining to boating to Virginia Wildlife. A primer of boating safety is made available for school groups and organizations. The Commission has designed safety equipment posters that are sent to marinas, boat dealers, and schools. Boating courses stressing safety and navigation are taught by the U. S. Power Squadron and the Coast Guard Auxiliary.

### Future Program Plans

The Virginia Alcohol Safety Action Program (VASAP) office recommends that a water safety section be included in the VDTS regional safety conferences in areas of the state containing navigable waterways. These conferences would provide an opportunity to stress alcohol awareness training. In addition, a public information campaign stressing water-alcohol safety has been proposed. Films concerning water-alcohol safety should be included in the VASAP film library and their availability promoted through the Coast Guard and the Game and Inland Fisheries Commission. Literature for public distribution should also be produced. The VASAP also plans to work with the Coast Guard and the Game and Inland Fisheries Commission to include alcohol awareness training in all of their boating safety courses, seminars, and training programs, and to conduct public seminars stressing water-alcohol safety for marine operators, boat owners, operators, and boat rental operators. Finally the VASAP officials plan to encourage the Coast Guard, the Game and Inland Fisheries Commission, and other enforcement agencies to establish accident investigation criteria which would include a determination of possible alcohol involvement in water accidents.

Training is another integral component of accident prevention. The Transportation Safety Training Center at Virginia Commonwealth University has proposed to develop and assist with the presentation of boating safety programs. These sessions would include general boating safety programs, and more specialized training programs for individuals who are involved with enforcing boating safety. Initially, general boating safety programs may focus upon topics such as alcohol. The training programs would emphasize specialized topics such as mechanical defects and their relationships to boating accidents, emergency and rescue procedures in boat explosions or fires, or hazard and casualty

reduction and prevention in boating accidents. This type of program would be specialized in certain areas and supplement the one-week boat accident investigation course presently conducted by the National Boating Safety School in Yorktown. The courses would be conducted by the Coast Guard or Coast Guard Auxiliary. The Center also proposes to coordinate a one-week program in boating accident investigation for local or state police and other enforcement or regulatory agencies.

The Boating Advisory Committee foresees the need for a long-range effort in boating education. The Committee plans to design an educational program aimed at the schools. The course could possibly be taught at three levels: first at the elementary school; again during the middle grades; and, finally, at the high school level. The Committee is planning to integrate the courses into the physical education curriculum.

## Air

### Program Status

In its 1979 session the Virginia General Assembly passed Senate Bill 76, which created the Department of Aviation. This new organization replaced the State Corporation Commission's Division of Aeronautics, which had administered Virginia's aviation laws since 1928. The Director of the Department of Aviation is appointed by the Governor. A seven-member Aviation Commission, also appointed by the Governor, will promulgate aviation rules and regulations, approve airport improvements, and generally oversee aviation activities. The State Corporation Commission will continue its role in certain regulatory functions, including the issuance of permits and certificates of convenience and necessity.

The Bureau of Aviation of the National Transportation Safety Board (NTSB) is responsible for aviation safety activities, including the investigation and analysis of aircraft accidents involving civil aircraft within the United States. Certain aircraft accident investigations, usually those not involving fatalities, may be delegated to the Federal Aviation Administration (FAA). In order to standardize accident reporting, an aircraft accident is defined by the NTSB as "an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all persons have disembarked in which any person suffers death or serious injury as a result of being in or upon the aircraft or by direct contact with the aircraft or anything attached thereto, or the aircraft receives substantial damage". Fatal injury, serious injury, and substantial damage are also defined by the NTSB.

Rule 66, Aviation Law of Virginia, requires that aircraft accidents be reported to the Virginia State Police. Rule 66 defines "accident" differently than does the NTSB. The Department of State Police defines an accident as an incident resulting in personal injury expenses in excess of \$100 or damage to the aircraft in excess of \$200.

The Department of Aviation receives accident reports from the NTSB. From the information contained in the reports, the Department extracts only the total numbers of aircraft accidents, substantial damage accidents, aircrafts destroyed, fatalities, serious injuries, and minor injuries. The pilot's rating and monthly distribution of accidents are also recorded. At the federal level, the NTSB publishes an Annual Review of Aircraft Accident Data. This publication contains a great array of useful statistics. Unfortunately, because very little of the data are state-specific, the document is of limited use in identifying Virginia's air safety needs.

#### Current Safety Programs

In cooperation with the FAA, the Department of Aviation conducts two Flight Instructors' Courses annually and a Mechanics' Seminar semiannually. The Flight Instructors' Course lasts three days, with each participant receiving 24 hours of intensive ground school training. The one-day Mechanics' Seminar instructs mechanics and airmen on new developments in aircraft products, aircraft equipment, and maintenance techniques.

The Department makes available to pilots an annual Aviation Weather Seminar. These seminars are held each year at a different location so that all Virginia pilots have an opportunity to attend. The Department also publishes and distributes the following: a quarterly newspaper containing notice of aviation activities and articles pertaining to aviation safety, a cloud chart for identifying unfavorable weather, and a Virginia Airport Directory. Public information and education projects conducted currently in cooperation with the Department of Aviation include seminar flight clinics for pilots and instructors stressing the effects of alcohol in the flight environment.

#### Future Program Plans

The VASAP office recommends that a maximum BAC level be established and that pilots with BACs which exceed that level be presumed to be flying while under the influence. They also plan to recommend and assist in establishing an implied consent law which would provide for breath or blood analysis, by local law

enforcement officials, of any pilot reported by aircraft officials, FAA medical examiners, local law enforcement officials, or other designated representatives of the FAA having reason to suspect drinking before or during flight. Finally, the VASAP office has proposed to establish criteria, similar to present Driving Under the Influence (DUI) criteria, for the arrest of pilots suspected of flying while under the influence by local law enforcement officials.

The VDOTS public information office has proposed several programs dealing with air safety. They feel it would be worthwhile to produce literature, films, and exhibits with the FAA and Department of Aviation and to promote their availability through public information and education. The public information office also plans to assist the Civil Air Patrol in promoting and conducting flight clinics open to all general aviation pilots.

Due to the absence of federal funding, the Department of Aviation does not provide regional safety seminars for pilots. The Transportation Safety Training Center proposes to assist in the development and implementation of these regional seminars. Similar to the bicycle, motorcycle, and moped conferences presently conducted by the Center, the aviation safety seminar would include speakers from the FAA, the Department of Aviation, or Virginia aviation groups to discuss current safety problems. The expense of coordinating such a seminar would be nominal.

To comply with Virginia law governing airport licensing, each airport must possess an airport disaster plan to meet emergency situations. However, many of Virginia's airports do not possess such a plan. Moreover, those plans that have been developed are generally not uniform or applicable to other state airports. The Transportation Safety Training Center proposes to work with the FAA and the Department of Aviation to develop a uniform airport disaster plan or model that can be utilized by the different state airports. Such an effort would benefit from the Center's experience in developing similar manuals. The manual would provide a general format for the development of individual disaster plans. Possible sources of funding may include the FAA and the individual airport authorities.

## Rail

### Program Status

The Federal Railroad Administration (FRA) was created by the Department of Transportation Act of 1966 (49 USC 1651). Until 1970 the authority of FRA was limited to those areas specified by Acts of Congress. By 1970, it had obtained the authority to

issue and enforce railroad safety standards with respect to (1) hours of service by railroad employees, (2) locomotive safety, (3) railroad safety appliances, (4) railroad brakes and drawbars, (5) signal systems, and (6) railroad accident reporting. The states retained railroad safety authority in all other areas.

In the latter part of the 1960's there was a sharp increase in railroad accidents involving derailment, explosions, and grade crossings. Train accidents increased 93.5% from 1961 to 1968.<sup>(1)</sup> Railroad regulations tended to vary from state to state. The interstate nature of rail transportation, coupled with the sharp increase in the accident rate, created the need for complete and uniform federal regulatory authority. The Federal Railroad Safety Act of 1970 was enacted to reduce railroad related accidents, deaths, and personal injuries. Rather than vesting regulatory authority within specifically designated areas, the Act granted to the Secretary of Transportation the authority to prescribe rules, regulations, orders, and standards for all areas of railroad safety. However, Congress did provide the states with the opportunity to participate with the federal government in carrying out investigative and surveillance activities related to prescribed railroad safety regulations. It should be noted that until a state chooses to participate, its authority to conduct safety inspections is preempted.

A bill is now pending in the Virginia Legislature which, if passed, will authorize Virginia to participate in the federal rail safety program. If participation is authorized, the Division of Railroad Regulations of the State Corporation Commission is prepared to employ the necessary inspectors to implement the program. The SCC feels that program participation would greatly enhance Virginia's rail safety record. State inspectors are much more familiar with Virginia's railroads than the federal inspectors and thus have a greater opportunity to note safety deficiencies.

The FRA records all rail and subway accidents and incidents on computer tape. This year the FRA has sent the accident tape to the Virginia Highway and Transportation Research Council where a program has been written to extract Virginia-specific information.

#### Future Program Plans

The VASAP office has proposed several programs targeted to the railroads. The programs might include:

- a. instruction on the effects of alcohol on judgement, visual perception, and coordination;

- b. in-service training programs for engineers, switchers, brakemen, conductors, and firemen; and
- c. the addition of rail safety programs to the VDOT Regional Safety Conferences.

The VDOT could also purchase and promote the availability of films and literature stressing alcohol awareness.

To reduce the number of grade-crossing accidents the National Safety Council designed a joint state and federal program called Operation Lifesaver. Operation Lifesaver operates on the premise that a successful grade-crossing safety program depends on engineering, education, and enforcement. The federal responsibility lies largely in engineering, operations, and maintenance. At the state level, the program strives to fund and implement projects to improve, accelerate, and continue effective grade-crossing programs. The VDOT can help to coordinate this type of program. Educational activities can consist of safety movies to be shown in schools, on TV, or in movie theaters.

### Mass Transit

#### Program Status

At this time mass transit plays a relatively small role in Virginia's transportation network. There are 15 intraurban bus companies operating in Virginia. In July 1977 the first segment of the Metro rapid rail system began operating in Virginia.

Each transit company is responsible for keeping its own accident and operation records. At present there are no uniform guidelines for reporting accidents and, consequently, there are only limited data bases at both the state and federal levels. Metro data are reported to the FRA for compilation and analysis.

#### Current Programs

Most transit companies are concerned with safety and have established driver training programs incorporating aspects of operations safety and preventive maintenance. It is also common for bus companies to sponsor driver incentive programs designed to promote the safe operation of transit vehicles.

The Virginia Highway and Transportation Research Council is studying the possibility of developing a uniform public transit records system.<sup>(2)</sup> The objectives of the study are to:

1. examine the safety-related data collection and analysis procedures currently used by transit agencies in Virginia and in other states;
2. identify specific areas where the existing safety data of transit agencies are incomplete (i.e., identify needs);
3. develop criteria for the identification of a transit accident;
4. develop comparative measures of safety for public transit operations;
5. formulate a standard transit accident reporting procedure; and
6. develop guidelines for the implementation of the transit records system.

#### Future Program Plans

The VASAP office has proposed several alcohol programs. These include alcohol awareness training and mass transit safety programs. Alcohol safety films and literature could also be made available for mass transit operators.

Public information can serve as an effective yet relatively low cost means of preventive safety. The VDTS public information office suggests that literature should be made available to mass transit operators. This material should include techniques for dealing with intoxicated passengers and defensive driving. Different approaches might be needed for public and private bus operators and for drivers of vehicles in special transportation services for the elderly and handicapped. Films, public service advertisements, and portable displays can also be utilized to carry safety information.

Efforts are under way to examine the need for the development of a "curriculum package" or "training program" for Virginia transit bus operators. If determined by the Transportation Safety Training Center to be a feasible and desirable activity, it will be recommended that an advisory committee be established for guidance during the development phase and to provide communication and administrative liaison with local transit operations during implementation. An "Instructor Training Institute" would be the most likely avenue for dissemination of the package and promotion of its use throughout the state.

## SOURCES OF FUNDS

Federal

In October 1978, the Virginia Highway and Transportation Research Council conducted a review for the Department of Transportation Safety of possible federal sources of revenue to support safety activities in non-highway modes of transportation.(3) The report identified those Virginia agencies eligible for or receiving funds, and described non-highway safety activities conducted in the Commonwealth. The study revealed that although a number of federal programs promote safety in non-highway modes of transportation, only a few provide a source of revenue for state safety activities.

Water

The U. S. Coast Guard's Boating Safety - Financial Assistance program is designed to encourage state participation and consistency in boating safety efforts, particularly in safety patrol and enforcement activities. The program provides up to one-third of the cost of an approved state boating safety program. A wide range of safety activities, including research, may be included in the state program. The Virginia Commission of Game and Inland Fisheries has been receiving funds under this program since 1976.

Air

No federal programs offer funds for state aviation safety activities.

Rail

Two programs administered by the FRA provide funds for state railroad safety activities. The Grant-In-Aid for Railroad Safety - State Participation program provides up to 50% of the cost of state participation in the enforcement of federal track and equipment standards. However, the role of a state in the regulation of railroads, both through this program and generally, is narrowly restricted by federal statute. As noted earlier, the State Corporation Commission's Division of Railroad Regulation expects to become involved in the program in the near future. The Railroad Research and Development program seeks to encourage research to solve critical railroad safety problems. Although there has been little state involvement in this program, and Virginia has never received funds, the U. S. Office of Rail Safety Research is interested in promoting state safety research under this program.

## Mass Transit

There are no Urban Mass Transportation Administration (UMTA) assistance programs with funds specifically earmarked for mass transit safety activities. The Urban Mass Transportation Technical Studies Grants provide a limited amount of money to finance state mass transit programs and to be distributed to small urban areas not dealing directly with the UMTA. This money has not been and is not likely to be allocated to safety activities. The Mass Transportation Technology program is a potential source of revenue for safety research. Although the program primarily sponsors state-of-the-art hardware research, discretionary funds may be available to finance an unsolicited safety research proposal. The University Research and Training Program awards grants to institutions of higher learning. Research proposals may call for cooperation of university researchers with public agencies. However, proposals must be closely tied to one of the topic areas of priority interest established each year. This program can thus be a revenue source only if urban transportation is listed as a priority.

## State

No comprehensive study has yet been made of state revenue sources available in Virginia agencies promoting safety in non-highway modes of transportation. However, one might generally assume that safety activities are in part funded by some percentage of an agency's annual appropriation. A second source of revenue would be money generated by use of the particular mode of transportation. An example of this second source would be motor boat registration fees, gasoline taxes, and title transfer fees collected to help fund activities of the Commission of Game and Inland Fisheries. Also, the Department of Aviation finances safety activities through a special fund made up of taxes on aviation fuel and oil.

As a direct result of the need to procure project-specific budget information concerning state transportation safety monies, the Virginia Highway and Transportation Research Council is undertaking a study, similar in purpose to the aforementioned report, to identify and make use of state revenue sources. Exhibit 1, compiled as a result of the work already completed, presents those agencies and organizations which have transportation safety related appropriation requests before the Virginia General Assembly for the 1980-82 biennium. This information was excerpted from the Budget Bill and the Executive Budget. In the case of many of these agencies, a safety role is one of several of their objectives and often is not their highest priority. Also, the documentation was not sufficiently specific in several instances to allow the identification of funds which would be directed toward the safety aspect of the agency's operations. Therefore,

the monetary figures reported may be misleadingly large if viewed as a reflection of the actual transportation safety role. It should also be noted that several of these agencies' roles are to promulgate regulations that directly or indirectly impact transportation safety and thus their role may be under- or over-estimated as to its actual influence on safety if only the monetary appropriation is considered.

#### PROGRAM ANALYSIS

The analysis of data on non-highway transportational modes presents some difficult problems to safety analysts. Before such an analysis can be useful for comparative problem identification, terms must be standardized. The problem begins at definition; it is difficult for experts to agree on a definition of "accident". Some definitions include a minimum dollar amount of vehicle property damage. A single property damage figure probably could not be applied to all modes. For example, the NTSB and the Virginia State Police use different definitions for an air accident. A standard definition of "accident" is needed, on the intramodal level.

A second problem involves choosing the appropriate measure of modal exposure. Exhibit 2 illustrates that fatalities occurring in non-highway modes of transportation constitute a small proportion of the total fatalities in Virginia transportation. But the small proportion doesn't necessarily lead to the conclusion that there are no significant safety problems associated with non-highway modes. The number of accidents is meaningless without an accompanying measure of modal exposure (i.e. passenger miles, vehicle miles, number of trips, time, etc.). Modal exposure is necessary for problem identification on both intra- and intermodal levels. On the intramodal level, the terms of modal exposure chosen to express the accident experience make a significant difference. For example, it has been observed that air accidents occur most frequently during takeoff and landing. Thus, one would expect a higher accident rate per number of trips than per mile. This leads to increasingly difficult problems on the intermodal level. Because the most valid exposure terms for the various modes are probably not consistent, it is very difficult to compare safety performance.

## EXHIBIT 1

## TRANSPORTATION SAFETY RELATED APPROPRIATION REQUESTS

Mode	Agency	Program	Budget Bill Reference	Executive Budget Reference	Goal - relation to Transportation Safety	Authority	Requested Appropriation
Air	Dept. of Aviation	Air transportation regulation & safety	§1-145 p.156	p.G-458	Conduct aviation safety & education program inter alia	Code: Title 5.1 Chpt. 1	\$317,840.00
	Civil Air Patrol	Non-State agency	§1-151 p.165	p.G-476	Conduct research and rescue missions	Discretionary Inclusion	80,000.00
	State Corporation Commission	Air transportation regulation & safety	§1-154 p.171	p.G-482	Oversight role re. air carriers	Code: Title 5.1 Chpt. 9	22,940.00
Water	Commission of Game and Inland Fisheries	Boating safety information & education Boating safety regulation & law enf. Boat registration	§1-61 p.43	p.G-142	Self-explanatory	Code: Title 62.1 Chpt. 17	37,930.00  504,815.00  398,425.00
	Virginia Port Authority	Port facility planning Maint. of Port facilities & security services	§1-147 p.163	p.G-467	Provide port security services and operational management inter alia	Code: Title 62.1 Chpt. 10	426,400.00 3,413,000.00
Mass	Department of Education	Ground transp. system safety	§1-79 p.61	p.G-179	Reduce accidents & injuries from pupil transportation	Code: §§22 - 235.1,46.1-357	608,300.00
	Washington Metro Area Transit Commission	Interstate compact regional and National contributions	§1-150 p.165	p.G-474	To promote safety inter alia of transp. services	Code: §§56-529, 530 Chpt.627 1958 Acts of Assembly Chpt. 67 1962 Acts of Assembly	75,000.00
Rail	State Corporation Comm.	Ground Transp. regulation - rail regulation	§1-154 p.172	p.G-482	Regulation of rail-road industry including safety inter alia	Code: Title 56 Chpt. 13	169,335.00

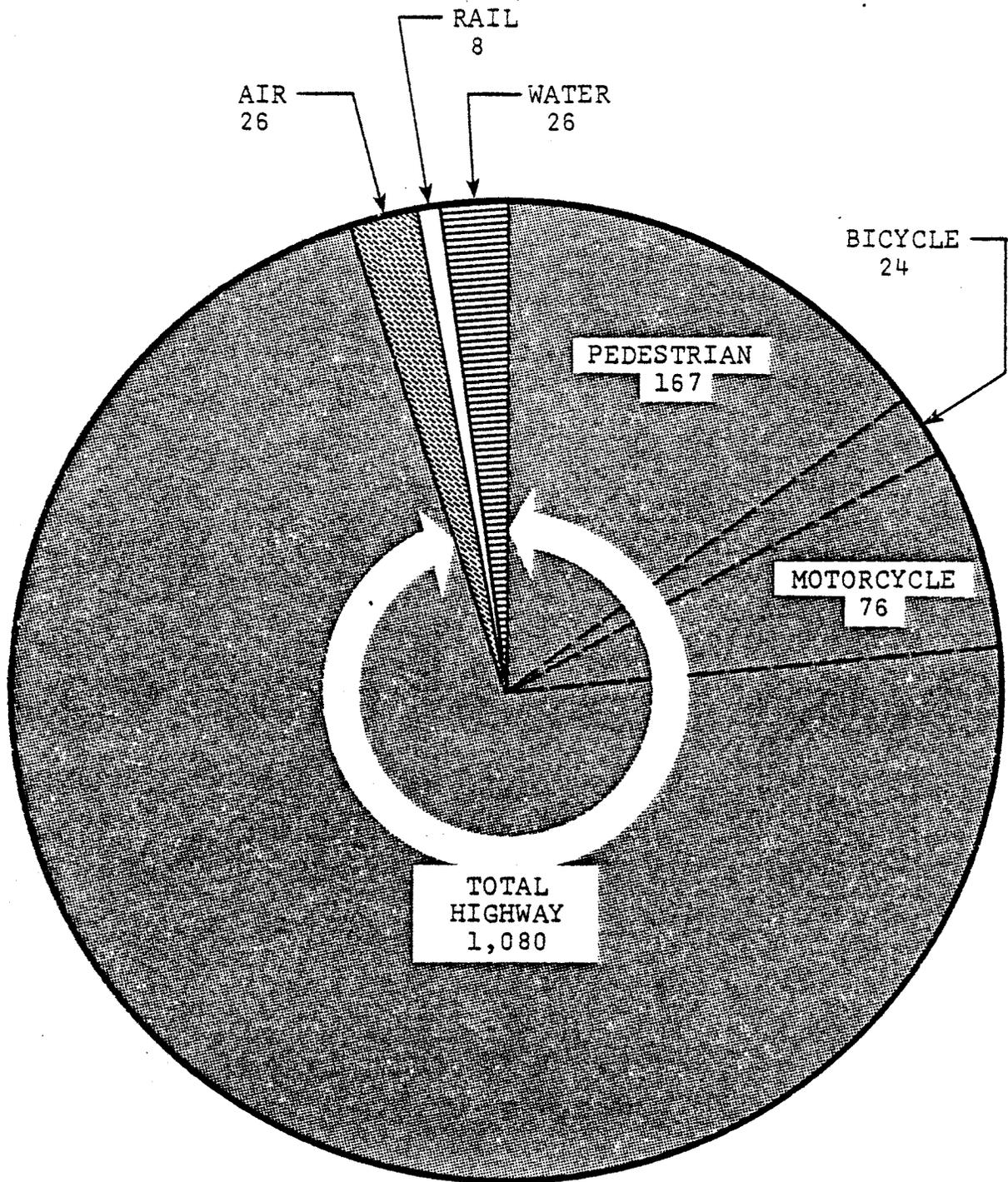


EXHIBIT 2

Transportation Deaths in Virginia, 1,140 in 1978.

### Magnitude of the Problem

Because of data deficiencies, problem identification is quite difficult. However, trend analysis using existing data can help one conceptualize the magnitude of Virginia's non-highway mode safety problems. The researcher must carefully scrutinize the measure of modal exposure used in the analysis to ensure that it is appropriate. Furthermore, trend analysis is subject to various interpretations. Increasing or decreasing accident rates do not impute causal relationships and often can be attributed to any number of reasons.

#### Water

The number of boats registered in Virginia more than doubled between 1969 and 1978. In 1969, boat registrations in Virginia totaled 70,005; by 1978 there were 141,775. This increase is largely in recreational boats, and the number is predicted to grow despite rising fuel prices. The Commission of Game and Inland Fisheries predicts that while boaters may utilize waters closer to home, they will continue to spend their recreational time boating.

This increase in the number of recreational boaters in Virginia is significant. More people are becoming involved in boating both as owners and passengers and thus public information, training, and education must reach a greater number of Virginians.

In 1978 there were 160 reported boating accidents resulting in 26 deaths and 46 reported injuries (see Appendix D). The 1978 fatality rate was 18.3 fatalities per 100,000 registered boats. This represents a 31% decrease over the 1977 fatality rate. Certain types of boating accidents can be thought of as being preventable. In other words, with proper training and caution such accidents might not occur. For example, in 1978, 11 of the 23 fatal accidents were very likely preventable. Five persons died because of excessive speed, 2 persons died because a boat had been overloaded, and 4 persons died while boating in hazardous water. These accidents probably occurred because the boater was not adequately trained.

#### Air

In 1969 there were 1,615 airplanes registered in Virginia. By 1979 the number of registered planes had risen to 2,477, representing a 53% increase. However, the number of accidents did not change significantly during this period. In 1978 the Virginia State Police reported 75 general aviation accidents resulting in 26 fatalities (see Appendix E).

Pilot error and equipment failure combined with pilot error were responsible for nearly 57% of Virginia's property damage accidents in 1978. Weather conditions plus pilot error was the stated cause of 33% of the fatal accidents. Thus, one can see that pilot error is a significant problem, but it can be made less severe by training pilots more rigorously. Preventable accidents can't be eliminated completely, but they should decline with increased training and situation awareness.

### Rail

In 1978 Virginia experienced 202 rail accidents of which 38% were determined to be caused by defects of a structure, of the track, or of the roadbed (see Appendix F). Collisions between trains and motor vehicles at railroad-highway grade crossings still occur at an alarming rate. In 1978 in Virginia there were 138 rail-highway grade-crossing accidents resulting in 7 fatalities and 46 injuries. This figure represents a 5% increase in grade-crossing accidents over 1977.

Grade-crossing accidents remain a significant problem for the following reasons:(4)

1. Grade-crossing accidents account for approximately 60% of railroad accident fatalities.
2. The desirable rate of improvement in grade-crossing accident problems as indicated by the Department of Transportation in its 1972 Report to Congress has not been met.
3. Jurisdictions and responsibilities are shared by the federal government (FHWA funding), state government (rail-highway intersections), and the individual railroad (design, installation and maintenance).

### Mass Transit

At this time there is no conclusive evidence of mass transit safety problems. The low operating speeds and large size of intracity buses seem to make bus safety problems minor in comparison to problems associated with other modes of transportation.

However, an expectation of increased ridership and expanded service to be provided by public transportation may lead to unforeseen safety problems. To smooth the transition to increased mass transit, public information and training programs are necessary.

## Data Collection and Analysis

Data collection and analysis was discussed previously in the study constraint section. Before data analysis in non-highway modes can be useful for comparative problem identification and in the development of countermeasures, adequate safety statistics for each mode are needed. The VDTs has been working to assist the non-highway modal agencies in improving problem identification. The Virginia Highway and Transportation Research Council has expanded the 1978 Virginia Mini Crash Facts to include the non-highway modes. Air, water, and rail accident reports were processed to produce locality-specific information, including the causes of the accidents, for use by the localities in their development of safety programs. At present, the information is not sufficiently detailed for use in statewide transportation planning. Thorough analyses of information such as accident location, cause, and prevailing weather conditions are necessary for statewide use.

Identifying and prioritizing problem areas is essential to the development of cost-effective programs at both the intra- and intermodal levels. Needs assessment seminars are a means of identifying and ranking safety problems in a transportation mode. These seminars have been conducted by the Transportation Safety Training Center at Virginia Commonwealth University. In 1978 the Center held a needs assessment seminar for mass transit representatives. Two or three more seminars for key representatives in each mode are planned for 1980. The seminars employ nominal group theory to identify problems. Each participant rank orders all the specific problems or issues he can think of related to safety. The group leader then asks each participant to read his top priority problem which has not been previously mentioned. After all issues are mentioned, the group clarifies any problems through discussion. Each member then reprioritizes his list and assigns points to each item. A final list is compiled based on the total number of points a particular item receives. This method enables each member to give input, gain insight from other members, and contribute to a mutually prioritized list.

Goal workshops are another way that the VDTs can assist non-highway transportation modes in safety planning. After the problem identification process, the formulation of short-term objectives and long-range goals is necessary to achieve effective management of the safety program. The development of long-range goals seems most likely to develop first from the Boating Advisory Committee. The Committee's new officers, elected in September 1979, are expected to organize a subcommittee to formulate long-range goals and to institute a management-by-objective style of organization. This style of organization will allow programs to be developed in response to specific safety problems.

### Alcohol Related Accidents

Although there are few data available to confirm that alcohol is a contributing factor in non-highway transportation accidents in Virginia, it seems likely that alcohol does play a significant role, especially in the water and air modes. National studies have indicated that alcohol seriously affects the performance of boaters and pilots and thus is likely to contribute to accidents. A report published by the Coast Guard and entitled "Alcohol and Pleasure Boat Operators" summarizes the effects of alcohol use with respect to boating.(5) This report indicates that alcohol can contribute to boating accidents because (1) peripheral vision decreases, (2) risk taking is likely to increase, (3) balancing abilities decrease, (4) information processing capabilities decrease, and (5) performance on divided attention tasks is lowered.

At present, boaters are not tested for alcohol level. Without testing, the extent to which alcohol contributes to boating accidents cannot be determined. Safe blood alcohol levels have not been established for boating. In Virginia an automobile operator with a 0.10% blood alcohol content is considered to be driving while intoxicated. The Coast Guard report points out that because water is an added hostile environment, the safe BAC is even lower than that for automobile operators. Balancing, exposure, and inexperience (relative to the number of hours one spends in a car) are added problems in the water environment.

The General Accounting Office has recently studied air accidents caused by pilot drinking. "During the 11-year period 1965-75, the National Transportation Safety Board, an independent agency responsible for investigating and determining the probable causes of aircraft accidents, cited alcohol impairment of pilot judgement and efficiency as a probable cause or contributing factor in 485 general aviation accidents, of which 430 resulted in fatalities".(6) The complex coordination requirements and task multiplicity such as reading instruments, maintaining course and communicating with air traffic control make even the smallest amount of alcohol potentially lethal. In addition, the FAA has found that pilots don't always fill out their medical history questionnaire honestly with respect to driving convictions. One state reported that "of 72 pilots with alcohol-related convictions before their last medical history submission, 69 failed to disclose this fact".

The number of alcohol related accidents, the severe effects of alcohol on pilots, and the failure to disclose driving records have prompted the FAA to recommend:

1. that the Congress provide the Secretary of Transportation with authority to furnish the FAA, upon request, information contained in the National Driver Register with respect to an individual's application for an FAA certificate;

2. a review of appropriate medical research to enable better identification of problem drinkers;
3. revision of Federal Aviation Regulations to include a maximum blood-alcohol level;
4. the adoption of implied consent provisions as a condition of pilot licensing; and
5. enlisting the aid of law enforcement authorities to administer sobriety tests.

The Virginia Alcohol Safety Action Program (VASAP) office, in conjunction with the public information office of the VDTS, has proposed several alcohol programs. VASAP proposals fall into the two general categories of public information and education, and BAC analysis and enforcement. Research is needed to determine the full effect of alcohol on non-highway transportation accidents. The VASAP office recommends the expansion of the Transportation Safety Training Center's accident investigation course to include the determination of alcohol as a cause of or factor in accidents.

#### Transportation of Hazardous Materials

In 1977 approximately 4 billion tons of hazardous materials were shipped through the various transportation modes.<sup>(7)</sup> The transportation of hazardous materials through non-highway modes resulted in 242 injuries and almost \$8 million in property damage.<sup>(8)</sup> Rail accidents contributed to the bulk of both injuries and property damage.

Four problem areas concerning the transportation of hazardous materials have been identified by the Fire Protection Association.<sup>(9)</sup> The first problem concerns the regulatory system. The system of codes and regulations contains exceptions, biases, and room for subjective judgements by officials. Unfortunately, the system designed to protect against disasters resulting from accidents involving hazardous materials is in many ways deficient. The second problem is the enormous increase in the shipment of hazardous materials. The National Safety Congress reports that frequency of exposure is directly related to accident frequency. Therefore, one should expect the accident rate to continue to increase if countermeasures are not employed. Intermodal shipping is the third identified problem. Hazardous cargo may be shipped by two or more modes of transportation. This is a significant problem because hazardous materials properly packed for one mode may be unsuitable for another. The last problem identified is the impact of a hazardous material accident on social and environmental factors. Many localities do not have disaster plans to deal with this type of situation.

Presently, Virginia doesn't have much information concerning the movement of hazardous materials in non-highway corridors. However, the Research Council is funding research which will develop profiles of hazardous materials shipments. The study, to be done by the Virginia Polytechnic Institute and State University Safety Projects Office, will estimate the nature and volume of hazardous materials carried by rail and air in Virginia. The project will include:

1. geographic identification of each segment of the rail system in Virginia;
2. identification of the primary air corridors in Virginia with particular emphasis placed upon corridors used by commercial air carriers;
3. quantity of hazardous materials crossing each rail section per day, in total and by hazard class where possible;
4. number of rail cars carrying hazardous materials across each rail section per day, in total and by hazard class where possible;
5. quantity of hazardous materials crossing each air corridor per day, in total and by hazard class where possible;
6. number of aircraft carrying hazardous materials across each air corridor per day, in total and by hazard class where possible;
7. quantity of hazardous materials arriving at and departing from each air terminal in Virginia per day, in total and by hazard class where possible; and
8. number of aircraft carrying hazardous materials arriving at and departing from each air terminal in Virginia per day, in total and by hazard class where possible.

With regard to air transportation, the estimates mentioned above will be broken down to the extent possible according to the type of air carrier involved as follows:

1. Single engine private
2. Multiengine private
3. Commercial passenger (small, medium, heavy)
4. Commercial cargo (small, medium, heavy)

The Transportation Safety Training Center has proposed a two-day seminar on the contact persons, agencies, and programs that are available to investigative and rescue personnel when a railroad derailment involving hazardous materials occurs. In addition to instructing the participants on the chemical properties of the materials, the seminar would identify local, regional, state, and federal resources that can be utilized in emergency situations. Possible sources of funding for this seminar are:

1. DOT - FRA
2. DOT - Materials Transportation Bureau
3. Interstate Commerce Commission
4. Association of American Railroads
5. Manufacturing Chemists Association
6. Chemical/Railroad Task Force (joint effort of AAR and MCA above)
7. Various chemical companies (DuPont, etc.)
8. Private railroad companies

In addition to the seminar, Virginia is in dire need of a manual providing background information and descriptions of the various types of materials that may be shipped. The Center proposes to include the seminar proceedings and additional information concerning the handling of hazardous materials in a manual for emergency and rescue personnel having responsibilities in cases of railroad derailments. The manual would also include guidelines from which local communities or regional and state agencies could develop a disaster plan. Sources of funding for this project would be similar to the ones mentioned previously.

Public information programs concerning hazardous materials could be developed for water, rail, and air modes of transportation. Each mode has a unique environment, and persons shipping hazardous materials must be aware of the possible consequences of an accident. Water presents special problems in the case of fertilizers and other highly reactive substances. Everyday household items may become explosive in the atmospheric conditions of an airplane and thus must be carefully restricted. Public information and education programs designed to increase public awareness and concern should be an integral part of a hazardous material countermeasure.

### Public Information and Education

The dissemination of information to the public is a means by which the VDTS can readily promote safety in all non-highway modes of transportation. Literature, films, and exhibits stressing safety can be made available to interested persons.

The public information office of the VDTS has also suggested a program on surviving a transportation disaster; i.e., on how to live through a plane, train, bus, or boat crash or crisis situation. This program was proposed in response to a recent article in Family Safety Magazine entitled "Game Plan for Survival". The article claims that many passengers die unnecessarily because they are not prepared to survive. They pay no attention to safety briefings by flight attendants, fail to carry emergency equipment on their boats, fail to wear safety belts, and fail to notice the location of exits or to find out how to open emergency doors.

The public information office plans to supply the public with descriptions of specific actions taken by survivors of various types of emergencies. Television or film media can be utilized to cover all modes of transportation and reflect the diverse interests of the VDTS.

### FUTURE TRANSPORTATION SAFETY PLANNING PROCESS

As of this writing, the non-highway modes of transportation do not report in a uniform and systematic fashion on their respective safety activities to the Department. Needless to say, it is extremely difficult to coordinate all Virginia transportation safety activities, as required by Senate Bill 85, without first establishing a viable program reporting and planning system. In attempting to develop an effective planning process for the non-highway modes an approach has been developed which is based on Virginia's current highway safety program reporting and planning process. This system, which has been in existence for a number of years, is highly regarded by the National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA), and has proven itself to be amenable to both locality-specific and statewide transportation safety planning. Consequently, the authors believe that, with appropriate modifications, the current program reporting process for highway safety activities should satisfy the planning and programming needs of the Virginia Department of Transportation Safety as outlined in Senate Bill 85.

## Structure

### Planning

Planning is the key phase in the reporting process. The following discussion highlights the primary components of this process.

#### Overall Program and Resource Assessment

This part considers resources utilized and results of past transportation safety activities, status of legislation, and state/local management capability, including acceptance and willingness of state/local operating agencies to carry out programs.

#### Identification of Transportation Safety Problems

In this part, national, state and local data sources are identified for possible use in data analysis. Several analyses or "cuts" of the data are made, first to gain a general indication of statewide problems and then to focus in detail on possible impact target areas. Problems identified in the most recent analyses are compared or validated with those identified in prior years. This comparison is followed by a problem priority ranking based on magnitude, degree of overrepresentation, and possibility of impact.

#### Establishment of Initial Goals and Objectives

Following the overall assessment and identification of problems, and on the basis of initial program determinations, goals and objectives are established for each major problem area and for the state's overall transportation safety program.

#### Program Selection and Development

At this stage, contacts are made with state/local agencies to discuss their plans in relation to the problems identified, proposed programs, and the initial goals and objectives established. Here, it is determined what specific programs are being considered by the agencies, negotiation and acceptance of programs to meet the established goals and objectives, and the financial support that might be needed to carry out these programs. On the basis of these contacts, potential programs are selected and ranked to most efficiently and effectively meet the initial goals and objectives, utilizing benefit-cost or cost-effectiveness techniques.

### Development of Evaluation Plan

In this part, an overall TSP evaluation plan and Program Module evaluation plans are developed.

### Estimation of Resources to Accomplish Planned Programs

This final part identifies the federal, state and local funds, personnel, equipment, etc. necessary to accomplish the TSP goals and objectives, including the evaluation function.

### Programming

The programming phase of this structure, via project development, refines programs, costs, and evaluation requirements, and establishes final goals and objectives. The various programming units are addressed below.

#### Project Development

First-year program priorities are established and state and local agencies are contacted for detailed project development. Details of objectives, performance, milestones, costs, equipment, training, constraints, and problems are worked out. Also, evaluation and reporting requirements are defined for internal project control and for program monitoring and review. Here, projects are ranked and selected for first-year activities.

#### Refinement of Goals, Objectives and Evaluation Plan

Based on the projects developed and resources available, goals and objectives are refined and adjusted. At the same time, the evaluation plan is modified.

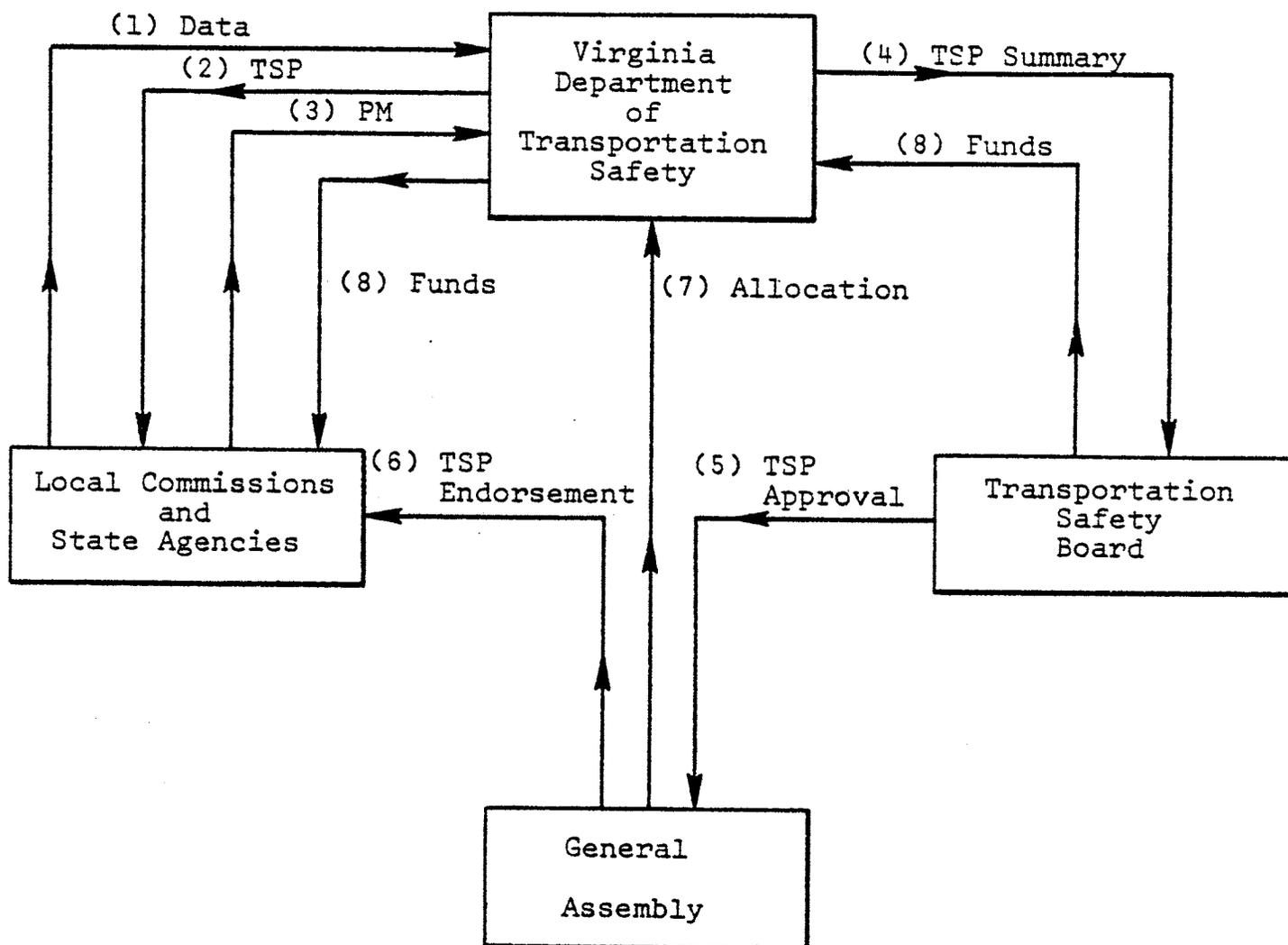
#### Allocation of Resources

In conjunction with the previous parts in this programming phase, cost estimates are adjusted and incremental program funding levels established. Ideally, all projects to be implemented should be ready for approval once funds are made available to the VDTs for obligation.

Once the components of the planning and programming structure are satisfied, the TSP should be complete and ready for approval and implementation on a statewide basis. Exhibit 3 depicts the organizational framework for the implementation of the proposed program reporting process as espoused in this section of the report.

## EXHIBIT 3

## Proposed Transportation Safety Planning/and Programming Process



## LEGEND

- (1) VDTs obtains data from local commissions and state agencies to prepare TSP.
- (2) VDTs sends TSP problem identification packets to local commissions and state agencies.
- (3) Local commissions and state agencies submit program modules (PM), including funding requests to VDTs.
- (4) VDTs summarizes PM and sends to TSB for review and approval.
- (5) TSB recommends approval of the TSP by the General Assembly.
- (6) General Assembly endorses the local commissions' and state agencies' TSP.
- (7) General Assembly allocates funds to VDTs for the administration of a statewide TSP.
- (8) VDTs allocates project grants which have been approved by the TSB.

## Reporting Content

If the Department elects to initiate a reporting process, it should request each of the appropriate state agencies and local commissions to specify a time schedule for implementation of safety programs and an outline of program expenditures. The reporting system should eventually provide VDOTS with detailed information on financial, legislative, organizational, and operational activities for each non-highway mode of transportation. This information will aid the Department in compiling a multi-year TSP which identifies Virginia's safety problems, establishes goals and objectives to be achieved, estimates the resources required to achieve these goals and objectives, and specifies the activities which are planned to solve identified problems. The process is addressed below.

### Program Module

A program module should serve as the basic organizational reporting tool for transportation safety planning and programming. It provides the framework for defining, scheduling and estimating the costs of program activities required to solve problems identified from analyses of accident data and existing transportation safety systems. Each module will represent a set of programs designed to countermeasure a particular problem and will focus, in detail, on the upcoming fiscal year.

The program module will consist of five components as described below.

1. A Problem Statement — Contains a description of the problem area and related analyses. The description should indicate the magnitude of the problem area and its relationship to other identified problems.
2. A Problem Solution Narrative — Outlines the countermeasures to be undertaken to meet anticipated program module goals, as well as any incremental timetable for meeting the goals over the period covered by the TSP.
3. An Evaluation Plan — Explains how the evaluation of transportation safety projects will be conducted and identifies the criteria to be used in measuring objectives as they relate to program module goals.
4. A Problem Solution Plan (PSP) — Specifies problem solution objectives, lists the tasks to be implemented within an established time frame, and specifies funding sources to be allocated. Since a PSP should be developed for each major countermeasure to be implemented in a program

module, it may be necessary to prepare several PSPs with different objectives, tasks, and time frames to achieve the goal(s) of each module. Exhibit 4 represents a proposed reporting form for transportation safety planning. Exhibit 5 provides instructions for completion of the form.

5. A PSP Task Narrative — Describes the activities to be carried out under each planned task and explains how the task relates to the PSP objective(s). Where applicable, tasks should be expressed in terms of quantifiable items of activity with milestones for implementation. Target populations to be serviced by each task item should be identified and performance indicators should be expressed in terms of a predicted numerical and/or percentage change from a given pre-task baseline.

The implementation of this proposed program reporting system is subject to the review and approval of the non-highway transportation agencies and the VDTs. If the system is implemented, the VDTs will need to conduct information seminars and training workshops to familiarize transportation safety officials with the prescribed program-reporting requirements.

#### Review and Approval

Projects for which funding has been requested in the future TSPs must be reviewed and approved by the VDTs and the Transportation Safety Board before implementation. The approval of a project will be based on the availability of funds and demonstrated need for the project as exhibited in the TSP submission and grant application. Since funding monies are limited, the projects must be prioritized according to need. Thus, the funding requests should be documented with statistics demonstrating the need for the project. All project specifications must be clearly defined and funding expenditures explained in detail.

EXHIBIT 4. PSP REPORTING FORM

PROBLEM SOLUTION PLAN (PSP)	1. PSP TITLE		2. PAGE NO.	
3. OBJECTIVE(S)	6. MILESTONES			
4. TASK TITLES	CURRENT FISCAL YEAR 1981			
5. PLANNED QTY.	1st Q	2nd Q	3rd Q	4th Q
7. CURRENT YEAR COST BY TASK (000's)	TOTAL	STATE	LOCAL	FEDERAL
	GRAND TOTAL			

## EXHIBIT 5

## Guidelines For Preparing A Problem Solution Plan

1. PSP TITLE — Self-explanatory.
2. PAGE NO. — Self-explanatory.
3. OBJECTIVE(s) — Enter the objective(s) of the PSP in terms of what the PSP is to accomplish during the program year to meet the goal of the Program Module. Objective(s) should be expressed in quantifiable terms and relate to the major accomplishment of collective tasks; e.g., "to increase alcohol-related arrests from 1500 to 2500 in County X by the end of the fiscal year".
4. TASK TITLES — List the tasks to be undertaken according to the planned sequence required for solution. Tasks should be expressed, where applicable, in terms of the separate items required for implementation which can be scheduled and costed over the period of implementation. All tasks which are critical to achieving the PSP objective(s) should be identified and scheduled even though they may not require funding; e.g., enactment of legislation.
5. PLANNED QUANTITY & 6. MILESTONES — Under the Planned Quantity column, opposite each task item the total planned quantity for the current year is entered, where applicable, and under the Milestones columns each task item is scheduled over the four quarters of the fiscal year and/or the planning years by means of a horizontal bar (black for the current fiscal year and cross-hatched for the planning years). Actual incremental quantities, or verbal entries (as "draft"), may be entered in lieu of a time-bar or added over the time-bar segments.
7. CURRENT YEAR COST BY TASK (000's) — Since tasks may contain more than one item of expenditure, current year costs for each task item are entered and totalled according to a breakdown of state, local and federal funding sources.

## Evaluation

Evaluation assists management in measuring countermeasure effectiveness and program performance efficiency. It also serves as an input to other management functions, such as planning, program redirection, countermeasure selection, and the assignment of resources. Transportation safety projects should be subjected to an administrative and/or effectiveness level of evaluation. These types of evaluation are described below.

### Administrative (Performance) Evaluation

An administrative evaluation is concerned with measuring the operational efficiency of task activities as they relate to the accomplishment of established goals and objectives. In measuring actual task activities, it compares them to (a) the baseline or pre-task levels of the same activities, (b) the targeted levels of activity established for the task, and (c) the planned use of funds.

### Effectiveness (Impact) Evaluation

An effectiveness evaluation determines the extent to which task operations and activity have contributed to the achievement of an objective related to crash involvement. Three aspects of an impact evaluation are:

1. determination of the change in crash involvement,
2. determination of the relationship of task activities to achieving this change, and
3. determination of the relationship of costs to benefits derived from the task activities and accomplishments.

The following outline represents the basic scope of an evaluation plan.

- A. Restatement of Major Program Module Goals(s) and PSP Objective(s) in the TSP
- B. Overall Module Evaluation
  1. Effectiveness Evaluation
    - a. Evaluation Questions

In this and each countermeasure evaluation section, the detail of the evaluation questions will define the scope of the analysis and evaluation to be performed. These questions are derived from the objectives of

the project. Often they are the objectives stated in question form. Difficulty in developing a question pertaining to a certain objective is a good indication that the objective is unclear and should be revised. For these reasons, the project operations and evaluation personnel should work together to develop the evaluation questions.

The evaluation questions should be clearly stated so that they are understandable to all project personnel. They should also be specific. One way to ensure specificity of the questions is to cite the evaluation measure in the question which will be used to answer that question. Usually, there will be more than one question posed for each objective, because there are often several factors to be considered in deciding whether an objective has been accomplished. Finally, the questions listed in this section should pertain to the project's overall operation or impact.

Effectiveness level questions are those which pertain to relationships between overall project activity and impact measures. The cause and effect relationships that will be explored should be listed here in the form of questions.

b. Evaluation Measure

In this section, list the specific evaluation measures that will be used to answer the evaluation questions posed in the preceding section.

c. Data System Specification

For the evaluation measures listed above, the following specific data system information should be provided for both the operational and baseline periods (where appropriate):

- (1) Data Source — what agency or group is providing the data?
- (2) Collection Responsibility — for example, is project management, project evaluation, or an operation component responsible for collection?
- (3) Reporting Frequency — will data be reported daily, weekly, monthly, etc.? (Quarterly reports will require monthly data.)
- (4) Reporting Delays — for example, what is the time lapse between the actual occurrence of an event and when it is reported to the project?

- (5) Problems in Collection or Reporting — for example, are there any gaps in system or potential problems with missing data?
- (6) Data System Flow — include a flow chart.

Be sure to indicate which evaluation measures will include baseline data and the length of the baseline period.

d. Evaluation Design

In this section, describe how the proposed design has been adapted to your particular project situation, highlighting any major deviations from the original design. The design description should address the following questions:

- (1) What hypotheses are to be tested?
- (2) What is the sample size?
- (3) If a comparison community is to be used, how is it similar to and different from the demonstration site?
- (4) If a control group is to be used, what is the procedure for selection? If randomized, how is this achieved? If a post-matching process, what are the factors on which the matching will be based?
- (5) What are the key statistical techniques to be used in the analyses?

2. Administrative Evaluation

a. Evaluation Questions

Administrative level evaluation questions should relate to project implementation, operations, and efficiency and to the ability of the project to meet targets set for operations and functioning. Questions related to official and public acceptance of the project or countermeasures are considered administrative. In this particular section, list only those questions related to overall operational aspects.

3. Management Information System

The objective of the management information system is to provide timely information on key project operations to

project management for purposes of monitoring and, if necessary, improving project operations and efficiency. In this section, you will need to:

1. Document the formal management information system you will use (manual, computerized, or a combination of these).
2. Indicate the key evaluation measures which will be included in the MIS reports (e.g., dollars spent, number arrested, number fatal crashes, etc.).
3. Indicate the frequency with which reports will be prepared (should be no less often than monthly and preferably more often).
4. Describe the data sources, the collection and reporting responsibility, and any potential problems (if not already identified above).
5. If surveys are to be used, describe the survey approach, sample size, questionnaire, etc.
6. What are the particular weaknesses in the evaluation design and the particular threats to validity?

#### 4. Schedule of Major Evaluation Tasks/Milestone Charts

List the major tasks to be accomplished in the above evaluation and the timing of those tasks required to meet operational and reporting deadlines (for example, if surveys are planned, note frequency and duration). Also, a milestone chart (Gantt chart) should be included.

#### 5. Evaluation Responsibilities

Clearly indicate the organizational responsibility and, where appropriate, the individuals who will complete the evaluation identified in this section. If you find that one agency is responsible for surveys and another for analyses, please note this.

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## SENATE BILL 85

*An Act to amend and reenact §§ 2.1-51.18 and 2.1-51.24 and to amend the Code of Virginia by adding in Title 33.1 a chapter numbered 10, consisting of sections numbered 33.1-390 through 33.1-396 and to repeal in Title 2.1 a chapter numbered 7.2, consisting of sections numbered 2.1-64.15 through 2.1-64.22, the amended, added and repealed sections relating to transportation and highway safety.*

[S 85]

Approved APR 10, 1978

Be it enacted by the General Assembly of Virginia:

1. That §§ 2.1-51.18 and 2.1-51.24 of the Code of Virginia are amended and reenacted and that the Code of Virginia is amended by adding in Title 33.1 a chapter numbered 10, consisting of sections numbered 33.1-390 through 33.1-396, as follows:

§ 2.1-51.18. Agencies for which responsible.—The Secretary of Public Safety shall be responsible to the Governor for the following agencies: Alcoholic Beverage Control Board ~~Commission~~, Department of Corrections, Rehabilitative School Authority, Criminal Justice Officers Training Standards Commission, Division of Justice and Crime Prevention, Department of State Police, Division of Motor Vehicles, ~~Highway Safety Division~~, Office of Emergency Services and the Department of Military Affairs. The Governor may, by executive order, assign any other State executive agency to the Secretary of Public Safety, or reassign any agency listed above to another secretary.

§ 2.1-51.24. Agencies for which responsible.—The Secretary of Transportation shall be responsible to the Governor for the following agencies: Department of Highways and Transportation, Virginia Airports Authority, Division of Motor Vehicles and ~~Highway Safety Division~~ *Department of Transportation Safety*. The Governor may, by executive order, assign any other State executive agency to the Secretary of Transportation, or reassign any agency listed above to another secretary.

## CHAPTER 10.

*Department of Transportation Safety.*

§ 33.1-390. *Declaration of policy.—The General Assembly recognizes that the availability of safe and adequate transportation service in all modes contributes both to the economic well-being and to the convenience of the citizens of the Commonwealth. Further, the General Assembly recognizes a legitimate public interest in the safe operation of transportation throughout the State. Accordingly, it shall be the policy of the Commonwealth of Virginia to investigate, evaluate and promote the safe movement of people and property by all modes—highway, railway, waterway, airway, and mass transit.*

§ 33.1-391. *Creation of Department; appointment of Director.—There is hereby created in the executive branch, responsible to the Secretary of Transportation, the Department of Transportation Safety. The Department shall be headed by a Director who shall be appointed by the Governor, subject to confirmation by the General*

*Assembly, to serve at the pleasure of the Governor for a term coincident with his own. Nothing herein shall affect the powers and duties of the State Corporation Commission with respect to the regulation of aviation, railroads and motor carriers.*

*§ 33.1-392. Director to supervise Department.—The Director of the Department shall, under the direction and control of the Governor and the Secretary of Transportation, be responsible for the supervision of the Department and shall exercise such other powers and perform such other duties as may be required of him by the Governor and the Secretary of Transportation.*

*§ 33.1-393. General powers of Director.—The Director shall have the following general powers:*

*A. To employ such personnel as may be required to carry out the purposes of this chapter.*

*B. To make and enter into all contracts and agreements necessary or incidental to the performance of the Department's duties and the execution of its powers under this chapter, including, but not limited to, contracts with the United States, other states, agencies and governmental subdivisions of this Commonwealth.*

*C. To accept grants from the United States government and agencies and instrumentalities thereof and any other source. To these ends, the Department shall have the power to comply with such conditions and execute such agreements as may be necessary, convenient or desirable.*

*D. To do all acts necessary or convenient to carry out the purposes of this chapter.*

*§ 33.1-394. Additional powers and duties of Director.—A. The Director shall have the following additional powers and duties related to transportation safety in general:*

*1. To evaluate the safety measures currently in use by all transport operators in all modes which operate in or through the Commonwealth, with particular attention to the safety of equipment and appliances and to the safety of methods and procedures of operation.*

*2. To recommend to the Governor and to the General Assembly any and all corrective measures, policies, procedures, plans, and programs which are needed to make the movement of passengers and property in and through the Commonwealth as safe as reasonably practicable.*

*3. To engage in training and educational activities aimed at enhancing the safe transport of passengers and property in and through the Commonwealth.*

*4. To cooperate with all relevant entities of the federal government, including, but not limited to, the Department of Transportation, the Federal Railway Administration, the Federal Aviation Administration, the Coast Guard, and the Independent Transportation Safety Board in matters concerning transportation safety.*

*5. To initiate and conduct special studies on matters pertaining to transportation safety and to issue periodically reports concerned with transportation safety.*

*6. To evaluate the transportation safety efforts, practices, and procedures of the departments, divisions, boards, agencies, or other*

entities of the government of the Commonwealth, and to make recommendations to the Governor and to the General Assembly on ways to increase transportation safety consciousness or improve safety practices.

7. To offer such assistance to entities of State government and to towns, counties or other political subdivisions of the State as may enhance their efforts to ensure safe transportation, including the dissemination of relevant materials and the rendering of technical or other advice.

8. To collect, tabulate, correlate, analyze, evaluate, and review the data gathered by various entities of the State government in regard to transportation operations, management, and accidents, especially the information gathered by the Division of Motor Vehicles, the Department of State Police, and the State Corporation Commission.

B. In recognition of the special role played by highway transportation in the Commonwealth, the Director, shall also have the powers and duties:

1. To develop, implement and review, in conjunction with relevant State and federal entities, a comprehensive highway safety program for the Commonwealth, and to inform the public thereon.

2. To assist towns, counties and other political subdivisions of the State in the development, implementation, and review of such local highway safety programs which shall be approved as part of the State program.

3. To review the activities, role and contribution of various State entities to the State's highway safety program and to report annually and in writing to the Governor and General Assembly on the status, progress and prospects of highway safety in the Commonwealth.

4. To recommend through the Director to the Governor and to the General Assembly any and all corrective measures, policies, procedures, plans and programs which are needed to make the movement of passengers and property on the highways of the Commonwealth as safe as practicable.

5. To design, implement, administer and review such special programs or projects as are needed to promote highway safety in the Commonwealth.

6. To integrate highway safety activities into the framework of transportation safety in general.

§ 33.1-395. Board of Transportation Safety established.—There is hereby established a Board of Transportation Safety, hereafter the "Board", to advise the Director, the Secretary of Transportation and the Governor on transportation safety matters. The Board shall elect its chairman and shall meet at his call. The Board shall seek to identify the elements of a comprehensive safety program for all transport modes operating in Virginia. In addition, the Board may consider, study, and report on the following issues: (i) the identification of the unique safety needs of each particular mode; (ii) the identification of the common elements of safe transportation operation, regardless of mode; (iii) the adaptation of proven safety practices and technology in use in one mode to other modes; (iv) the identification of the common elements of accident situation; and (v) consider and approve the allocation of grant funds made

available to the Department.

*§ 33.1-396. Appointment, term, compensation of Board members. -The Governor shall appoint, for four-year terms, and in a number not to exceed fifteen, such employees and officials of the State government, such representatives of the transport carrier industry, and such members of the public at large as he shall deem advisable to achieve a membership which is both competent and representative of all transportation modes. All such appointments shall be subject to confirmation by the General Assembly. The members of the Board shall be reimbursed for their necessary and actual expenses incurred in the performance of their duties.*

2. That §§ 2.1-64.15 through 2.1-64.22 in Chapter 7.2 of Title 2.1 of the Code of Virginia are hereby repealed.

3. That the Governor may transfer an appropriation or any portion thereof within a State agency established, abolished or otherwise affected by the provisions of this act, or from one such agency to another, to support the changes in organization or responsibility resulting from or required by the provisions of this act.

4. That as of the effective date of this act, the Department of Transportation Safety shall be deemed successor in interest to the Division of Highway Safety. All right, title and interest in and to any real or tangible personal property vested in the Division of Highway Safety as of the effective date of this act shall be transferred to and taken as standing in the name of the Department of Transportation Safety.

5. That the provisions of this act shall be effective on and after the first day of July, nineteen hundred seventy-eight.

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President of the Senate

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Speaker of the House of Delegates

Approved:

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Governor

## APPENDIX B

## KEY TRANSPORTATION REPRESENTATIVES

Kenneth A. Rowe  
Department of Aviation  
4508 South Laburnum Avenue  
Richmond, VA.

William Elmore, Transportation Specialist  
Commerce Council's Office, SCC  
Blanton Building  
Richmond, VA.

James N. Kerrick  
Safety Officer  
Education Division  
Commission of Game and Inland Fisheries  
4010 W. Broad St.  
Richmond, VA.

Thomas E. Bell  
Greater Richmond Transit  
P. O. Box 27323  
Richmond, VA.

Edward Pigman  
State Public Transportation Coordinator  
1221 E. Broad St.  
Richmond, VA.

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APPENDIX C

Commonwealth of Virginia Budget

COMMISSION OF GAME AND INLAND FISHERIES

Authority:  
Sections 39-1 through 29-182; 29-230 through 29-237; 62.1-166 through 62.1-186, Code of Virginia

Purpose:  
To provide opportunities for hunting and fishing; to acquire and/or manage hunting lands and fishing lakes for public use; and to promote safety for persons and property in the use of vessels on public waters.

Service Area:  
Statewide

Clients:  
General Public, particularly sportsmen

Programs:  
Administrative and Support Services  
Boating Safety and Regulation  
Wildlife and Freshwater Fisheries Management

Comment:  
Recommendation provides for a continuation of present level of activities.

	<u>1976-78</u>	<u>1978-80</u>	<u>Increase</u>
	<u>Appropriations</u>	<u>Recommendations</u>	<u>(Decrease)</u>
CF	\$ _____	\$ _____	% _____
NGF	\$ <u>14,721,225</u>	\$ <u>16,224,505</u>	\$ <u>1,503,280</u>
Total	\$ <u>14,721,225</u>	\$ <u>16,224,505<sup>a/</sup></u>	\$ <u>1,503,280</u>
			% <u>10.2</u>

a/ Recommendation reflects change in method of compensating license agents. Rather than remitting gross revenues and receiving payment for services rendered, license agents now retain their fees and remit net revenue.

VIRGINIA BEACE ERESION CONTROL COMMISSION (NON-STATE AGENCY)

	APPROPRIATED 1976-77	EXPENDED 1976-77	APPROPRIATED 1977-78	REVENUED 1978-79	REQUESTED 1979-80	RECOMMENDED 1978-79	RECOMMENDED 1979-80
LAND MANAGEMENT							
LAND STABILIZATION AND CONSERVATION							
GRANTS/SHARED REVENUES	.....	.....	.....	50,000	50,000	150,000	150,000
TOTAL OPERATING EXPENSES FOR SUBPROGRAM GENERAL FUND	.....	.....	.....	50,000	50,000	150,000	150,000
TOTAL OPERATING EXPENSES FOR PROGRAM GENERAL FUND	.....	.....	.....	50,000	50,000	150,000	150,000
TOTAL OPERATING EXPENSES FOR AGENCY GENERAL FUND	.....	.....	.....	50,000	50,000	150,000	150,000

COMMISSION OF GAME AND INLAND FISHERIES

ADMINISTRATIVE AND SUPPORT SERVICES  
GENERAL MANAGEMENT AND DIRECTION

PERSONAL SERVICE	173,195	181,908	176,440	199,415	203,420	195,415	203,420
SALARIES, CLASSIFIED POSITIONS ESTABLISHED AS OF MARCH 31, 1977	.....	.....	.....	6,720	7,030	6,720	7,030
PROJECTED FOR 1977-78	.....	.....	.....	5,000	5,000	2,135	2,235
WAGES	5,500	1,943	5,850	6,500	6,500	6,500	6,500
SPECIAL PAYMENTS	6,500	3,948	6,500	-1,995	-4,035	-2,575	-2,630
LESS: FOR TURNOVER AND VACANCIES	-1,035	.....	-1,060	215,640	219,915	212,195	216,555
TOTAL FOR PERSONAL SERVICE	184,160	187,799	187,730	157,900	168,500	142,685	152,380
CONTRACTUAL SERVICES	154,205	133,308	163,135	14,700	15,800	13,985	15,030
SUPPLIES AND MATERIALS	11,505	12,486	12,310	300	300	300	300
GRANTS/SHARED REVENUES	.....	.....	.....	6,700	6,150	6,700	2,650
EQUIPMENT	3,400	11,188	3,250	20,495	23,305	20,495	23,305
CURRENT CHARGES AND OBLIGATIONS	4,945	10,121	5,225	17,990	18,785	24,485	25,390
EMPLOYEE BENEFITS	18,910	19,374	19,440	-4,135	-4,135	-4,135	-4,135
RECOVERIES	-3,000	-2,935	-3,000	429,590	448,620	416,710	431,770
TOTAL OPERATING EXPENSES FOR SUBPROGRAM	374,125	371,541	388,090	.....	.....	.....	.....
SPECIAL FUNDS	374,125	371,541	388,090	.....	.....	.....	.....
(OTHER)	.....	.....	.....	429,590	448,620	.....	.....
NONGENERAL FUNDS	.....	.....	.....	.....	.....	416,710	431,770

IN COMPARING 1978-80 DATA WITH 1976-78 APPROPRIATIONS IT SHOULD BE NOTED THAT: FOR MOST AGENCIES SUPPORTED BY THE GENERAL FUND, EMPLOYEE BENEFIT COSTS ARE NOT INCLUDED IN THE 1976-78 SUMS; FOR ALL AGENCIES, AUTHORIZED SALARY SCALE ADJUSTMENTS ARE NOT INCLUDED IN THE 1976-78 APPROPRIATIONS. CORRESPONDING SUMS ARE INCLUDED IN THE 1978-80 RECOMMENDATIONS.

COMMISSION OF GAME AND INLAND FISHERIES

	APPROPRIATED 1976-77	EXPENDED 1976-77	APPROPRIATED 1977-78	REQUESTED 1978-79	REQUESTED 1979-80	RECOMMENDED 1978-79	RECOMMENDED 1979-80
ADMINISTRATIVE AND SUPPORT SERVICES GENERAL MANAGEMENT AND COLLECTION	.....	.....	.....	429,590	448,620	416,710	431,475
CONTINUED:							
(DEDICATED SPECIAL REVENUE)	.....	.....	.....	.....	.....	.....	.....
ADMINISTRATIVE AND SUPPORT SERVICES COMPUTER SERVICES							
PERSONAL SERVICE	30,335	25,593	30,630	.....	.....	.....	.....
SALARIES, CLASSIFIED POSITIONS ESTABLISHED AS OF MARCH 31, 1977	.....	.....	.....	29,075	28,410	28,075	28,410
WAGES	500	2,132	500	3,330	3,450	3,330	3,450
SPECIAL PAYMENTS	.....	367	.....	.....	.....	.....	.....
TOTAL FOR PERSONAL SERVICE	30,835	28,052	31,130	31,405	31,860	31,405	31,860
CONTRACTUAL SERVICES	29,790	5,021	26,100	7,450	7,890	18,940	18,890
SUPPLIES AND MATERIALS	450	858	475	1,375	1,675	1,040	1,160
EQUIPMENT	20,000	202	.....	200	2,425	200	2,425
CURRENT CHARGES AND OBLIGATIONS	.....	.....	.....	425	395	425	395
EMPLOYEE BENEFITS	.....	210	.....	2,825	2,850	3,725	3,760
RECOVERIES	-30,500	-14,926	-21,870	-21,800	-23,700	-21,800	-23,700
TOTAL OPERATING EXPENSES FOR SUBPROGRAM	50,575	19,417	35,835	21,870	23,395	33,935	34,770
SPECIAL FUNDS	50,575	19,417	35,835	.....	.....	.....	.....
(OTHER)	50,575	19,417	35,835	.....	.....	.....	.....
NONGENERAL FUNDS	.....	.....	.....	21,870	23,395	33,935	34,770
(DEDICATED SPECIAL REVENUE)	.....	.....	.....	21,870	23,395	33,935	34,770
ADMINISTRATIVE AND SUPPORT SERVICES PHYSICAL PLANT SERVICES							
PERSONAL SERVICE	17,110	12,460	17,350	.....	.....	.....	.....
SALARIES, CLASSIFIED POSITIONS ESTABLISHED AS OF MARCH 31, 1977	.....	.....	.....	16,115	16,450	16,115	16,450
SPECIAL PAYMENTS	250	1,686	270	105	110	105	110
TOTAL FOR PERSONAL SERVICE	17,400	14,146	17,620	16,220	16,560	16,220	16,560

IN COMPARING 1978-80 DATA WITH 1976-78 APPROPRIATIONS IT SHOULD BE NOTED THAT: FOR MOST AGENCIES SUPPORTED BY THE GENERAL FUND, EMPLOYEE BENEFIT COSTS ARE NOT INCLUDED IN THE 1976-78 SUMS; FOR ALL AGENCIES, AUTHORIZED SALARY SCALE ADJUSTMENTS ARE NOT INCLUDED IN THE 1976-78 APPROPRIATIONS. CORRESPONDING SUMS ARE INCLUDED IN THE 1978-80 RECOMMENDATIONS.

COMMISSIONER GAME AND INLAND FISHERIES	APPROPRIATED 1976-77	EXPENDED 1976-77	APPROPRIATED 1977-78	REQUESTED 1978-79	REQUESTED 1979-80	RECOMMENDED 1978-79	RECOMMENDED 1979-80
<b>ADMINISTRATIVE AND SUPPORT SERVICES</b>							
<b>PHYSICAL PLANT SERVICES</b>							
CONTINUED:							
CONTRACTUAL SERVICES	31,710	54,574	33,060	46,190	50,885	40,085	41,525
SUPPLIES AND MATERIALS	26,295	10,616	28,405	28,600	31,905	28,545	31,860
GRANTS/SHARED REVENUES	.....	1,576	.....	.....	.....	.....	.....
EQUIPMENT	3,445	277	4,535	4,500	.....	4,500	.....
CURRENT CHARGES AND OBLIGATIONS	20,180	14,068	21,605	24,835	26,730	24,705	26,625
EMPLOYEE BENEFITS	1,995	1,653	2,000	1,625	1,645	2,135	2,180
TOTAL OPERATING EXPENSES FOR SUBPROGRAM	101,025	96,910	107,285	121,970	127,725	116,190	118,750
SPECIAL FUNDS (OTHER)	101,025	96,910	107,285	.....	.....	.....	.....
NONGENERAL FUNDS (DEDICATED SPECIAL REVENUE)	.....	.....	.....	121,970	127,725	116,190	118,750
TOTAL OPERATING EXPENSES FOR PROGRAM	525,725	487,868	531,210	573,430	599,740	566,835	584,995
SPECIAL FUNDS (OTHER)	525,725	487,868	531,210	.....	.....	.....	.....
NONGENERAL FUNDS (DEDICATED SPECIAL REVENUE)	.....	.....	.....	573,430	599,740	566,835	584,995
<b>LIFELIFE AND FRESHWATER FISHERIES MANAGEMENT</b>							
<b>MULTIPLE AND RESEARCH-FISH PROPAGATION AND FACILITY IMPROVEMENT</b>							
PERSONAL SERVICE	1,479,150	1,500,101	1,501,830	.....	.....	.....	.....
SALARIES, CLASSIFIED POSITIONS ESTABLISHED AS OF MARCH 31, 1977	.....	.....	.....	1,701,670	1,726,250	1,701,670	1,726,250
PROJECTED FOR 1977-78	.....	.....	.....	15,690	16,630	15,690	16,630
NEW FOR 1978-80	.....	.....	.....	58,130	60,890	58,130	60,890
WAGES	304,295	296,514	304,295	319,000	336,000	319,000	336,000
SPECIAL PAYMENTS	290,015	41,559	290,015	.....	.....	.....	.....
LESS: FOR TURNOVER AND VACANCIES	-14,800	.....	-15,400	-40,415	-40,965	-63,270	-54,715
TOTAL FOR PERSONAL SERVICE	2,058,660	1,838,174	2,081,040	2,054,275	2,098,805	2,041,420	2,085,615
CONTRACTUAL SERVICES	328,685	392,921	343,750	526,450	562,075	456,835	484,315

IN COMPARING 1978-80 DATA WITH 1976-78 APPROPRIATIONS IT SHOULD BE NOTED THAT: FOR MOST AGENCIES SUPPORTED BY THE GENERAL FUND, EMPLOYEE BENEFIT COSTS ARE NOT INCLUDED IN THE 1976-78 SUMS; FOR ALL AGENCIES, AUTHORIZED SALARY SCALE ADJUSTMENTS ARE NOT INCLUDED IN THE 1976-78 APPROPRIATIONS. CORRESPONDING SUMS ARE INCLUDED IN THE 1978-80 RECOMMENDATIONS.

COMMISSIO-DE-GAME-AND-INLAND-FISHERIES

	APPROPRIATEC 1976-77	EXPENDED 1976-77	APPROPRIATEC 1977-78	REQUESTED 1978-79	REQUESTED 1979-80	RECOMMENDEC 1978-79	RECOMMENDEC 1979-80
WILDLIFE AND FRESHWATER FISHERIES MANAGEMENT							
WILDLIFE-AND-FRESHWATER-FISH-PROPAGATION-AND-HABITAT-IMPROVEMENT							
CONTINUED:							
SUPPLIES AND MATERIALS	418,030	456,640	449,015	519,335	583,150	490,700	526,815
GRANTS/SHARED REVENUES	18,420	30,896	19,710	30,700	30,700	30,700	30,700
EQUIPMENT	357,860	283,345	309,800	334,910	367,375	334,910	367,375
CURRENT CHARGES AND OBLIGATIONS	53,560	78,276	59,230	79,385	85,080	79,385	85,080
EMPLOYEE BENEFITS	163,210	166,139	168,255	181,455	188,925	223,695	229,920
RECOVERIES	-32,300	-51,637	-34,325	-58,000	-63,800	-58,000	-63,800
TOTAL OPERATING EXPENSES FOR SUBPROGRAM	3,366,125	3,194,754	3,396,375	3,668,510	3,852,310	3,599,645	3,746,060
SPECIAL FUNDS	3,366,125	3,194,754	3,396,375	3,668,510	3,852,310	3,599,645	3,746,060
(FEDERAL)	760,425	714,677	835,625	835,625	835,625	835,625	835,625
(OTHER)	2,605,700	2,480,077	2,560,750	2,832,885	3,016,685	2,764,020	2,910,435
NONGENERAL FUNDS	.....	.....	.....	.....	.....	.....	.....
(DEDICATED SPECIAL REVENUE)	.....	.....	.....	.....	.....	.....	.....
(FEDERAL TRUST)	.....	.....	.....	.....	.....	.....	.....

WILDLIFE AND FRESHWATER FISHERIES MANAGEMENT

	APPROPRIATEC 1976-77	EXPENDED 1976-77	APPROPRIATEC 1977-78	REQUESTED 1978-79	REQUESTED 1979-80	RECOMMENDEC 1978-79	RECOMMENDEC 1979-80
WILDLIFE-AND-FRESHWATER-FISHERIES-INFORMATION-AND-EDUCATION							
PERSONAL SERVICE							
SALARIES, CLASSIFIED POSITIONS	110,735	120,175	113,825	134,945	138,110	134,945	138,110
ESTABLISHED AS OF MARCH 31, 1977	.....	.....	.....	.....	.....	.....	.....
NEW FOR 1978-80	.....	.....	.....	.....	.....	.....	.....
WAGES	1,540	3,120	1,540	1,500	500	1,500	500
SPECIAL PAYMENTS	240	52	240	300	300	300	300
LESS: FOR TURNOVER AND VACANCIES	-1,105	.....	-1,140	-1,350	-1,380	-1,350	-1,500
TOTAL FOR PERSONAL SERVICE	111,410	123,347	114,465	135,395	149,530	135,395	149,410
CONTRACTUAL SERVICES	311,680	327,143	329,740	384,645	413,570	341,585	367,570
SUPPLIES AND MATERIALS	37,070	33,852	40,340	48,900	52,335	45,285	48,660
GRANTS/SHARED REVENUES	.....	2,790	.....	3,200	3,500	3,200	3,500
EQUIPMENT	25,000	31,248	26,000	26,900	31,195	26,900	31,195
CURRENT CHARGES AND OBLIGATIONS	3,420	3,935	3,585	3,670	4,040	3,670	4,040
EMPLOYEE BENEFITS	11,010	11,447	11,395	12,310	13,230	16,515	17,900
RECOVERIES	-24,000	-24,413	-24,500	-20,000	-20,000	-20,000	-20,000

IN COMPARING 1978-80 DATA WITH 1976-78 APPROPRIATIONS IT SHOULD BE NOTED THAT: FOR MOST AGENCIES SUPPORTED BY THE GENERAL FUND, EMPLOYEE BENEFIT COSTS ARE NOT INCLUDED IN THE 1976-78 SUMS; FOR ALL AGENCIES, AUTHORIZED SALARY SCALE ADJUSTMENTS ARE NOT INCLUDED IN THE 1976-78 APPROPRIATIONS. CORRESPONDING SUMS ARE INCLUDED IN THE 1978-80 RECOMMENDATIONS.

COMMISSION OF GAME AND INLAND FISHERIES	APPROPRIATED 1976-77	EXPENDED 1976-77	APPROPRIATED 1977-78	REQUESTED 1978-79	REQUESTED 1979-80	RECOMMENDED 1978-79	RECOMMENDED 1979-80
WILDLIFE AND FRESHWATER FISHERIES MANAGEMENT							
WILDLIFE AND FRESHWATER FISHERIES - INFORMATION AND EDUCATION							
CONTINUED:							
TOTAL OPERATING EXPENSES FOR SUBPROGRAM	475,790	509,349	501,025	595,020	647,400	552,650	602,275
SPECIAL FUNDS	475,790	509,349	501,025	.....	.....	.....	.....
(OTHER)	475,750	509,349	501,025	.....	.....	.....	.....
NONGENERAL FUNDS	.....	.....	.....	595,020	647,400	552,650	602,275
(DEDICATED SPECIAL REVENUE)	.....	.....	.....	595,020	647,400	552,650	602,275
WILDLIFE AND FRESHWATER FISHERIES MANAGEMENT							
WILDLIFE AND FRESHWATER FISHERIES - REGULATION AND LAW ENFORCEMENT							
PERSONAL SERVICE	1,661,905	1,651,076	1,680,170	.....	.....	.....	.....
SALARIES, CLASSIFIED POSITIONS	.....	.....	.....	1,841,825	1,858,655	1,941,825	1,858,655
ESTABLISHED AS OF MARCH 31, 1977	.....	.....	.....	6,720	7,030	6,720	7,030
PROJECTED FOR 1977-78	.....	.....	.....	60,000	65,000	60,000	65,000
WAGES	53,265	44,499	53,265	.....	.....	.....	.....
LESS: FOR TURNOVER AND VACANCIES	-16,500	.....	-16,500	-36,800	-36,825	-55,455	-55,975
TOTAL FOR PERSONAL SERVICE	1,698,670	1,695,575	1,716,835	1,871,745	1,893,860	1,853,090	1,874,715
CONTRACTUAL SERVICES	223,255	297,344	227,080	314,420	328,950	297,300	312,390
SUPPLIES AND MATERIALS	226,660	242,715	242,205	289,175	292,075	280,330	290,020
GRANTS/SPARE REVENUES	5,960	11,260	10,650	30,000	33,000	18,950	20,375
EQUIPMENT	292,050	281,597	323,450	405,775	289,975	405,775	289,975
CURRENT CHARGES AND OBLIGATIONS	31,055	51,917	34,430	48,135	51,995	48,135	51,995
EMPLOYEE BENEFITS	167,905	173,694	171,620	179,935	186,285	220,510	222,435
RECOVERIES	-202,000	-188,053	-221,000	-230,280	-237,585	-221,540	-228,445
TOTAL OPERATING EXPENSES FOR SUBPROGRAM	2,447,635	2,566,051	2,505,270	2,908,905	2,838,555	2,902,550	2,823,450
SPECIAL FUNDS	2,447,635	2,566,051	2,505,270	.....	.....	.....	.....
(FEDERAL)	.....	.....	.....	.....	.....	.....	.....
(OTHER)	50,000	.....	50,000	.....	.....	.....	.....
NONGENERAL FUNDS	2,397,635	2,566,051	2,455,270	.....	.....	.....	.....
(DEDICATED SPECIAL REVENUE)	.....	.....	.....	2,908,905	2,838,555	2,902,550	2,823,450
TOTAL OPERATING EXPENSES FOR PROGRAM	6,289,550	6,270,154	6,402,070	7,172,435	7,338,265	7,054,845	7,173,765

IN COMPARING 1978-80 DATA WITH 1976-78 APPROPRIATIONS IT SHOULD BE NOTED THAT FOR MOST AGENCIES SUPPORTED BY THE GENERAL FUND, EMPLOYEE BENEFIT COSTS ARE NOT INCLUDED IN THE 1976-78 SUMS; FOR ALL AGENCIES, AUTHORIZED SALARY SCALE ADJUSTMENTS ARE NOT INCLUDED IN THE 1976-78 APPROPRIATIONS. CORRESPONDING SUMS ARE INCLUDED IN THE 1978-80 RECOMMENDATIONS.

COMMISSION OF GAME AND INLAND FISHERIES

	APPROPRIATED 1976-77	EXPENDED 1976-77	APPROPRIATED 1977-78	REQUESTED 1978-79	REQUESTED 1979-80	RECOMMENDED 1978-79	RECOMMENDED 1979-80
<b>WILDLIFE AND FRESHWATER FISHERIES MANAGEMENT</b>							
<b>WILDLIFE AND FRESHWATER FISHERIES REGULATION AND LAW ENFORCEMENT</b>							
CONTINUED:							
SPECIAL FUNDS	6,289,550	6,270,154	6,402,670	.....	.....	.....	.....
(FEDERAL)	810,425	714,677	885,425	.....	.....	.....	.....
(OTHER)	5,479,125	5,555,477	5,517,245	.....	.....	.....	.....
NONGENERAL FUNDS	.....	.....	.....	.....	.....	.....	.....
(DEDICATED SPECIAL REVENUE)	.....	.....	.....	7,172,435	7,330,265	7,054,845	7,171,785
(FEDERAL TRUST)	.....	.....	.....	6,232,435	6,363,265	6,114,845	6,196,785
	.....	.....	.....	940,000	975,000	940,000	975,000

--ADMINISTRATION OF HORIZONTAL ACT--

PERSONAL SERVICE	37,605	45,162	38,265	.....	.....	.....	.....
SALARIES, CLASSIFIED POSITIONS	16,085	14,002	16,085	.....	.....	.....	.....
WAGES	.....	2,286	.....	.....	.....	.....	.....
SPECIAL PAYMENTS	53,690	61,450	54,350	.....	.....	.....	.....
TOTAL FOR PERSONAL SERVICE	.....	.....	.....	.....	.....	.....	.....
CONTRACTUAL SERVICES	394,265	353,763	416,410	.....	.....	.....	.....
SUPPLIES AND MATERIALS	14,120	10,014	14,610	.....	.....	.....	.....
EQUIPMENT	1,000	2,503	11,500	.....	.....	.....	.....
CURRENT CHARGES AND OBLIGATIONS	830	2,065	920	.....	.....	.....	.....
EMPLOYEE BENEFITS	5,110	5,514	5,265	.....	.....	.....	.....
RECOVERIES	.....	-959	.....	.....	.....	.....	.....
TOTAL OPERATING EXPENSES FOR PROGRAM	465,015	434,350	503,055	.....	.....	.....	.....
SPECIAL FUNDS	.....	.....	.....	.....	.....	.....	.....
(OTHER)	469,015	434,350	503,055	.....	.....	.....	.....

BOATING SAFETY AND REGULATION  
BOAT REGISTRATION

PERSONAL SERVICE	.....	.....	.....	.....	.....	.....	.....
SALARIES, CLASSIFIED POSITIONS	.....	.....	.....	.....	.....	.....	.....
ESTABLISHED AS OF MARCH 31, 1977	.....	.....	.....	51,170	53,105	51,170	53,105
NEW FOR 1978-80	.....	.....	.....	7,030	7,345	7,030	7,345

IN COMPARING 1978-80 DATA WITH 1976-78 APPROPRIATIONS IT SHOULD BE NOTED THAT: FOR MOST AGENCIES SUPPORTED BY THE GENERAL FUND, EMPLOYEE BENEFIT COSTS ARE NOT INCLUDED IN THE 1976-78 SUMS; FOR ALL AGENCIES, AUTHORIZED SALARY SCALE ADJUSTMENTS ARE NOT INCLUDED IN THE 1976-78 APPROPRIATIONS. CORRESPONDING SUMS ARE INCLUDED IN THE 1978-80 RECOMMENDATIONS.

MISSISSIPPI GAME AND INLAND FISHERIES

	APPROPRIATED 1976-77	EXPENDED 1976-77	APPROPRIATED 1977-78	REQUESTED 1978-79	REJUSTIFIED 1979-80	RECOMMENDED 1979-79	RECOMMENDED 1979-80
<b>BOATING SAFETY AND REGULATION</b>							
<b>BOAT REGISTRATION</b>							
CONTINUED:							
WAGES	.....	.....	.....	14,000	14,000	14,000	14,000
SPECIAL PAYMENTS	.....	.....	.....	2,845	3,000	2,845	3,000
TOTAL FOR PERSONAL SERVICE	.....	.....	.....	75,045	77,450	75,045	77,450
CONTRACTUAL SERVICES	.....	.....	.....	92,780	102,310	84,580	92,730
SUPPLIES AND MATERIALS	.....	.....	.....	2,340	3,210	2,340	2,710
EQUIPMENT	.....	.....	.....	5,775	3,325	5,775	3,325
CURRENT CHARGES AND OBLIGATIONS	.....	.....	.....	920	1,000	920	1,000
EMPLOYEE BENEFITS	.....	.....	.....	4,760	4,900	8,210	8,410
TOTAL OPERATING EXPENSES FOR SUBPROGRAM	.....	.....	.....	181,620	192,195	176,870	185,425
NONGENERAL FUNDS	.....	.....	.....	181,620	192,195	176,870	185,425
(DEDICATED SPECIAL REVENUE)	.....	.....	.....	181,620	192,195	176,870	185,425
<b>BOATING SAFETY AND REGULATION</b>							
<b>BOATING SAFETY, INDEMNIFICATION AND EDUCATION</b>							
CONTRACTUAL SERVICES	.....	.....	.....	17,500	18,500	15,335	15,635
SUPPLIES AND MATERIALS	.....	.....	.....	1,000	1,000	300	300
EQUIPMENT	.....	.....	.....	1,000	1,000	1,000	1,000
TOTAL OPERATING EXPENSES FOR SUBPROGRAM	.....	.....	.....	19,500	20,500	16,635	16,935
NONGENERAL FUNDS	.....	.....	.....	19,500	20,500	16,635	16,935
(DEDICATED SPECIAL REVENUE)	.....	.....	.....	19,500	20,500	16,635	16,935
<b>BOATING SAFETY AND REGULATION</b>							
<b>BOATING SAFETY, REGULATION AND LAW ENFORCEMENT</b>							
PERSONAL SERVICE	.....	.....	.....	.....	.....	.....	.....
SALARIES, CLASSIFIED POSITIONS	.....	.....	.....	105,905	106,870	105,905	106,870
ESTABLISHED AS OF MARCH 31, 1977	.....	.....	.....	26,500	27,295	26,500	27,295
WAGES	.....	.....	.....	132,405	134,165	132,405	134,165
TOTAL FOR PERSONAL SERVICE	.....	.....	.....	.....	.....	.....	.....

IN COMPARING 1978-80 DATA WITH 1976-78 APPROPRIATIONS IT SHOULD BE NOTED THAT: FOR MOST AGENCIES SUPPORTED BY THE GENERAL FUND, EMPLOYEE BENEFIT COSTS ARE NOT INCLUDED IN THE 1976-78 SUMS; FOR ALL AGENCIES, AUTHORIZED SALARY SCALE ADJUSTMENTS ARE NOT INCLUDED IN THE 1976-78 APPROPRIATIONS. CORRESPONDING SUMS ARE INCLUDED IN THE 1978-80 RECOMMENDATIONS.

COMMISSION OF GAME AND INLAND FISHERIES

	APPROPRIATED 1976-77	EXPENDED 1976-77	APPROPRIATED 1977-78	REQUESTED 1978-79	REQUESTED 1979-80	RECOMMENDED 1978-79	RECOMMENDED 1979-80
BOATING SAFETY AND REGULATION BOATING SAFETY REGULATION AND LAW ENFORCEMENT							
CONTINUED:							
CONTRACTUAL SERVICES	.....	.....	.....	18,735	19,700	18,735	19,700
SUPPLIES AND MATERIALS	.....	.....	.....	15,060	17,320	15,060	17,320
EQUIPMENT	.....	.....	.....	51,000	52,700	51,000	52,700
CURRENT CHARGES AND OBLIGATIONS	.....	.....	.....	2,735	2,910	2,735	2,910
EMPLOYEE BENEFITS	.....	.....	.....	10,345	10,710	1,605	1,650
TOTAL OPERATING EXPENSES FOR SUBPROGRAM	.....	.....	.....	230,280	237,505	221,540	228,445
NONGENERAL FUNDS	.....	.....	.....	230,280	237,505	221,540	228,445
(DEDICATED SPECIAL REVENUE)	.....	.....	.....	.....	.....	.....	.....
TOTAL OPERATING EXPENSES FOR PROGRAM	.....	.....	.....	431,400	450,200	415,045	431,000
NONGENERAL FUNDS	.....	.....	.....	431,400	450,200	415,045	431,000
(DEDICATED SPECIAL REVENUE)	.....	.....	.....	.....	.....	.....	.....
TOTAL OPERATING EXPENSES FOR AGENCY	7,284,290	7,192,372	7,436,935	8,177,265	8,388,205	8,036,725	8,187,780
SPECIAL FUNDS	7,284,290	7,192,372	7,436,935	.....	.....	.....	.....
(FEDERAL)	810,425	714,677	885,425	.....	.....	.....	.....
(OTHER)	6,473,865	6,477,695	6,551,510	.....	.....	.....	.....
NONGENERAL FUNDS	.....	.....	.....	8,177,265	8,388,205	8,036,725	8,187,780
(DEDICATED SPECIAL REVENUE)	.....	.....	.....	7,237,265	7,413,205	7,096,725	7,212,780
(FEDERAL TRUST)	.....	.....	.....	940,000	975,000	940,000	975,000

MARINE RESOURCES COMMISSION

	APPROPRIATED 1976-77	EXPENDED 1976-77	APPROPRIATED 1977-78	REQUESTED 1978-79	REQUESTED 1979-80	RECOMMENDED 1978-79	RECOMMENDED 1979-80
ADMINISTRATIVE AND SUPPORT SERVICES GENERAL MANAGEMENT AND DIRECTION							
PERSONAL SERVICE	25,300	26,500	25,300	27,775	27,775	27,775	27,775
COMMISSIONER	99,250	97,262	101,305	.....	.....	.....	.....
SALARIES, CLASSIFIED POSITIONS	.....	.....	.....	140,195	143,450	140,195	143,450
ESTABLISHED AS OF MARCH 31, 1977	1,750	863	1,750	.....	.....	.....	.....
SPECIAL PAYMENTS	.....	.....	.....	2,700	2,700	2,700	2,700
SPECIFIED PER DIEM SERVICES	.....	.....	.....	.....	.....	.....	.....
LESS: FOR TURNOVER AND VACANCIES	.....	.....	.....	-1,420	-1,435	-1,420	-1,435

IN COMPARING 1978-80 DATA WITH 1976-78 APPROPRIATIONS IT SHOULD BE NOTED THAT: FOR MOST AGENCIES SUPPORTED BY THE GENERAL FUND, EMPLOYEE BENEFIT COSTS ARE NOT INCLUDED IN THE 1976-78 SUMS; FOR ALL AGENCIES, AUTHORIZED SALARY SCALE ADJUSTMENTS ARE NOT INCLUDED IN THE 1976-78 APPROPRIATIONS. CORRESPONDING SUMS ARE INCLUDED IN THE 1978-80 RECOMMENDATIONS.

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## APPENDIX D

## 1978 BOATING ACCIDENT FACTS

2290

## VIRGINIA

<u>ACCIDENTS</u>	<u>NUMBER</u>
FATAL ACCIDENTS	23
INJURY ACCIDENTS	35
PROPERTY DAMAGE ACCIDENTS	102
TOTAL ACCIDENTS	160

	<u>NUMBER OF PERSONS</u>
KILLED	26
INJURED	46

CAUSE OF ACCIDENT

<u>CAUSE</u>	<u>FATAL</u>	<u>INJURY</u>	<u>PROPERTY DAMAGE</u>
WEATHER CONDITIONS	3	0	7
EXCESSIVE SPEED	5	4	12
NO PROPER OUTLOOK	0	5	30
OVERLOADING	2	0	0
IMPROPER LOADING	0	0	1
HAZARDOUS WATERS	4	9	14
FAULT OF OTHER PERSON	3	9	24
FAULT OF BOAT OR MOTOR	3	4	13
OTHER	3	4	1
NOT STATED	0	0	0

2294

## 1978 AIRPLANE ACCIDENT FACTS

2295

## VIRGINIA

<u>ACCIDENTS</u>	<u>NUMBER</u>
FATAL ACCIDENTS	12
SERIOUS INJURY ACCIDENTS	6
MINOR INJURY ACCIDENTS	13
PROPERTY DAMAGE ACCIDENTS	44
TOTAL ACCIDENTS	75

	<u>NUMBER OF PERSONS</u>
KILLED	26
SERIOUSLY INJURED	8
WITH MINOR INJURIES	21

CAUSE OF ACCIDENT

<u>CAUSE</u>	<u>FATAL</u>	<u>INJURY</u>	<u>PROPERTY DAMAGE</u>
EQUIPMENT FAILURE	1	10	15
WEATHER CONDITIONS	1	2	2
PILOT ERROR	0	4	16
EQUIPMENT PLUS PILOT ERROR	1	2	9
WEATHER CONDITIONS PLUS PILOT ERROR	4	0	0
EQUIPMENT PLUS WEATHER CONDITIONS	0	0	2
ALL THREE FACTORS	1	0	0
NOT STATED	4	1	0



## APPENDIX F

## 1978 RAILROAD ACCIDENT FACTS

## VIRGINIA

229

TOTAL NUMBER OF RAIL ACCIDENTS	202
NUMBER OF FATAL ACCIDENTS	3
NUMBER OF INJURY ACCIDENTS	7
NUMBER OF PROPERTY DAMAGE ACCIDENTS	192
NUMBER INVOLVING TRANSPORT OF HAZARDOUS MATERIALS	18
TOTAL NUMBER OF GRADE CROSSING ACCIDENTS	4
NUMBER OF FATAL ACCIDENTS	1
NUMBER OF INJURY ACCIDENTS	1
NUMBER OF PROPERTY DAMAGE ACCIDENTS	2
NUMBER INVOLVING TRANSPORT OF HAZARDOUS MATERIALS	0

CAUSE OF ACCIDENT

<u>CAUSE</u>	<u>FATAL</u>	<u>INJURY</u>	<u>PROPERTY DAMAGE</u>
TRACK/ROADBED/STRUCTURES DEFECTS	0	2	75
MECHANICAL/ELECTRICAL FAILURES	0	1	39
PHYSICAL CONDITION	0	0	0
SPEED	1	0	9
OTHER	0	2	43
MISCELLANEOUS CAUSES	3	3	28

2298