REPORT OF THE
VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

THE STATUS OF VIRGINIA'S WATER RESOURCES AND VIRGINIA'S WATER RESOURCES POLICIES

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 61

COMMONWEALTH OF VIRGINIA
RICHMOND
1998

A REPORT TO

THE HONORABLE GEORGE ALLEN, GOVERNOR
AND
THE GENERAL ASSEMBLY OF VIRGINIA

THE STATUS OF VIRGINIA'S WATER RESOURCES

AND

VIRGINIA'S WATER RESOURCES POLICIES

A Report on Virginia's Water Supply Planning Activities

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

1997

I. Introduction

This report is submitted to the Governor and the Virginia General Assembly in accordance with Chapter 3.2 of Title 62.1 of the Code of Virginia, *Conservation of Water Resources* and in accordance with Item 407.M. of the 1997 Appropriations Act:

> *The Board shall submit an annual report to the Governor and the General Assembly on or before [December 1, 1997] on matters relating to the state's water resources policy and the status of the state's water resources, including groundwater.*

This report summarizes the State Water Control Board's activities related to water resources supply planning and gives the current status of the Commonwealth's water supplies, both surface and ground water. It includes information on the history of water resources planning in Virginia, water resources planning activities undertaken in Virginia, implementation of the Surface Water Management Act and the Ground Water Management Act, and other activities undertaken and reports made related to water resources planning. This report deals solely with water supply planning and does not address activities of the Commonwealth related to water quality management.

II. History of Water Resources Planning in Virginia

In 1972, the authority to conduct comprehensive water resources planning was transferred from the Board of Conservation and Economic Development to the State Water Control Board. At the time of the transfer, water resources plan development was underway for the major river basins in the state. The planning function had been assigned to the Board of Economic Development under the 1966 legislation which required the development of comprehensive water resources plans to include economic base studies, hydrologic analyses, water supply requirements, development of engineering alternatives, and implementation plans.

In 1981, the General Assembly amended the 1966 water resources legislation to provide more specific guidance and to expand the scope of the planning activities. In addition to preparing basin plans and programs, the SWCB was directed to estimate current and future water withdrawals and use by agriculture, industry, domestic, and other significant categories of water users and to evaluate the ability of existing subsurface and surface water to meet current and future water uses. The Board was also required to establish advisory committees to assist in the formulation of plans and programs and may, by regulation, require water users withdrawing surface or ground water to report water withdrawal, if it exceeds 10,000 gallons per day.

The state's involvement in the management and control of water resources increased with the passage of the Ground Water Act of 1973 (GWA), the Surface Water Management Act in 1989, and the Ground Water Management Act of 1992. These Acts regulate ground

water withdrawal in areas that have been declared as needing enhanced water resource managment.

Today, the DEQ is actively engaged in water resources management through the issuance of ground water withdrawal permits, issuance of Virginia Water Protection Permits, and collaboration with localities to carry out the Surface Water Management Act.

III. Water Resources Planning

1. Water Supply Plans

In response to the 1981 water resources legislation, the State Water Control Board developed and, in 1988, published eleven River Basin Water Supply Plans and one Statewide Summary. The SWCB presented a summary of efforts to develop basin plans for the state's 11 planning areas (see Figure 1) to the State Water Commission in 1988. The plans were a valuable inventory of Virginia water resources and water needs, and served as part of a sound foundation on which to develop solutions to Virginia's growing water supply challenges.

The 1988 plans focused on the capability of the Commonwealth's 542 largest public water supply systems to meet the demands that will be exerted upon them through the year 2030. The 542 systems furnish 98 percent of public water supply delivered to residences, businesses, and industries. The plans identified sources of water supplies, and the current and projected water withdrawals. The Summary Plan identified the following outstanding issues that present possible impediments to the delivery of plentiful, safe, and affordable water for all uses in Virginia; many of these issues remain unresolved:

a. Providing water to water-short areas.

b. Financing water supply projects for small disadvantaged communities.

c. Protection of water resource development areas from encroachment by commercial, industrial and residential developments.

d. Provision of safe drinking water from small public water supply systems.

e. Regionalization of water supply functions.

f. Continued and improved water resources data gathering.

Virginia's supply of fresh water comes from rivers and streams and from ground and surface water stored in 75 reservoirs throughout the Commonwealth. In an average day, approximately 28 billion gallons of water are available from these sources, with 27 billion coming from rivers and streams (see Table 1).

Figure 1

WATER SUPPLY PLANNING AREAS

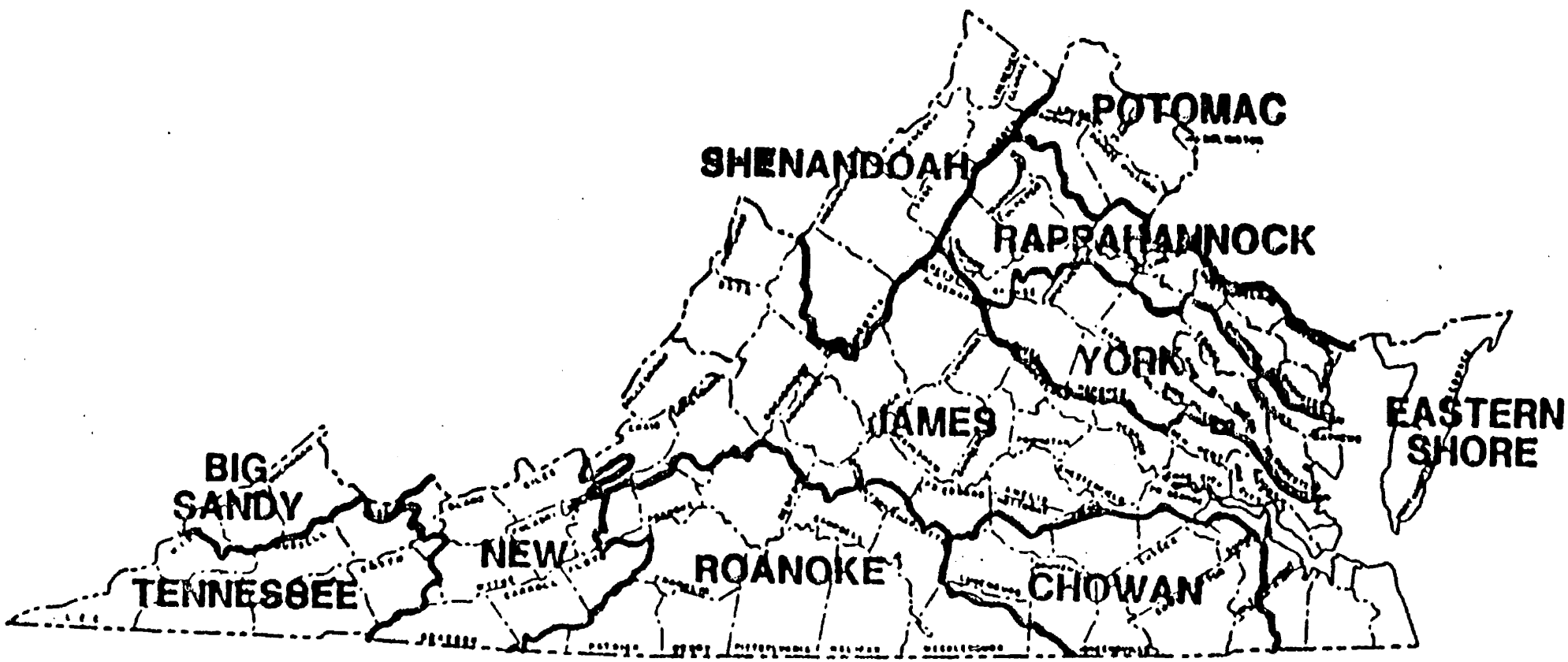


Table 1

WATER SUPPLY SOURCES AND AMOUNTS

SOURCE	MILLION GALLONS AVERAGE DAY	MILLION GALLONS EXTREME DROUGHT DAY*
RIVERS AND STREAMS	27,350	1,510
GROUND WATER	190	190
RESERVOIRS	520	520
TOTAL	28,060	2,220

*RECORDS DO NOT INDICATE THAT THIS HAS EVER OCCURRED, AND THE LIKELIHOOD THAT IT WILL IS EXTREMELY REMOTE.

A copy of the appropriate plan was sent to every county, city, town, planning district, and water authority addressed in each river basin plan. Many of these plan recipients have utilized the plan in their local planning efforts. Although the DEQ issues various permits and works with local planners on surface water management planning, no formal statewide water supply planning activity have been undertaken since the publication of the 1988 plans. The state has chosen to allow localities to retain the lead in planning for their water supplies.

2. Advisory Committee

In 1983, the SWCB organized an 80-member independent statewide advisory committee, the State Water Plan Advisory Committee (SWPAC) to provide outside review of the planning process and to consider water resources policy matters having statewide significance. In 1985, the committee made a series of recommendations to the SWCB and the State Water Commission regarding possible legislation to improve the management of the state's water resources. Some of these recommendations, (such as amendments to the Water Use Reporting and the Ground Water Act) were eventually enacted. At the SWPAC final meeting in October 1987, the group confirmed the need to specifically authorize the use of eminent domain for long-term water supply projects. The Committee also passed a resolution (see Attachment I) recommending continued water resources planning for the Commonwealth.

3. Water Withdrawal Reporting

Part of the 1981 legislation was the requirement that the SWCB collect data on current water withdrawals and use. In fulfillment of this mandate, the SWCB adopted a regulation to require water withdrawers who withdraw over 10,000 gallons per day to measure and annually report to the SWCB the monthly volume of water which they withdraw. This regulation became effective March 1982, and was amended in 1990 to remove the exemption of crop irrigators and saline surface water withdrawers.

Water withdrawal data currently reside in a database system maintained by the Department of Environmental Quality. The database system, referred to as the Virginia Water Use Data System (VWUDS), currently contains 14 years of water withdrawal data. The VWUDS database will serve as a valuable resource in future water supply planning efforts that may be undertaken by the SWCB. A summary of the water withdrawal data for the last five years is presented in Table 2.

Four statewide water withdrawal reports have been published to date. Special reports have also been prepared in response to data request from planning groups, local governments, consultants, and others. Information taken from the VWUDS system was heavily utilized by the staff in the Lake Gaston efforts and in the preparation of updates of the water supply plans for the Richmond and the Hampton Roads areas.

Table 2. VIRGINIA WATER WITHDRAWAL SUMMARY
(Million Gallons Per Day)

Type	Category	1991	1992	1993	1994	1995
GW	Agr	15.06	16.77	15.30	16.64	16.52
	Com	7.45	6.15	7.09	7.25	7.33
	Man	103.16	106.25	107.60	106.21	105.31
	Min	2.83	2.49	3.29	3.37	2.62
	PF	0.07	0.09	0.04	0.08	0.08
	PN	0.42	0.40	0.35	0.35	0.30
	PWS	73.44	70.68	73.06	79.17	72.83
	Irr	7.18	4.52	5.40	9.00	4.87
	Sub-Total	209.61	207.35	212.13	222.07	209.86
SW	Agr	4.93	5.37	2.68	2.68	2.46
	Com	11.41	10.58	13.27	10.89	10.86
	Man	469.75	434.71	418.07	477.01	470.99
	Min	34.21	30.91	34.70	36.48	35.61
	PF	2799.28	2759.57	3084.95	2667.01	2694.38
	PN	3617.76	3487.67	3522.21	3836.69	3831.53
	PWS	684.14	655.82	680.26	712.00	699.72
	Irr	24.03	15.14	18.10	26.75	16.31
	Sub-Total	7,645.51	7,399.77	7,774.24	7,769.51	7,761.86
	Grand Total	7,855.12	7,607.12	7,986.37	7,991.58	7,971.72

Legend

GW = Groundwater
SW = Surface Water
AGR = Agricultural, excluding irrigation
COM = Commercial
MAN = Manufacturing
MIN = Mining
PF = Power, fossil fuel
PN = Power, Nuclear
PWS = Public Water Supply
IRR = Irrigation

4. Planning and Technical Assistance

The Board provides planning and other technical assistance to any political subdivision of the Commonwealth and other impacted groups, upon request. Some of the more significant efforts that have been undertaken by the SWCB include the following:

- Reviewed and commented on various reports on the Lake Gaston Pipeline Project. Responded to requests for information on the project from the legislative committee studying the issue and from both proponents and opponents of the project.

- Provided water conservation and drought management information to local governments and general public, upon request.

- Participated in a National Study of Water Management During Drought conducted by the U.S. Army Corps of Engineers over a three-year period. Assisted the Corps in conducting a drought preparedness study for the James River Basin. The study resulted in a report entitled *James River Basin Drought Preparedness Study* which described how the James River Basin could better prepare for drought. The report also discussed the role of the State, the need for a comprehensive water policy in Virginia, and gave specific recommendations for modifications in the existing Virginia statutes on water policy. Copies of the report were submitted to the Governor and the State Water Commission in 1993.

- In 1985, initiated the formation of an interagency drought monitoring task force which has remained intact to date. The State Drought Monitoring Task Force, chaired by the Board staff, is made up of representatives from several state and federal agencies. Other member agencies include the Departments of Emergency Services, Agriculture and Consumer Services, Health, Forestry, the State Climatologist Office, the U. S. Geological Survey, and the National Weather Service. Coordination and cooperation among the member agencies have been outstanding. Involved personnel have maintained an aggressive and proactive attitude in dealing with and reporting on drought issues. Consequently, the Commonwealth is well prepared to handle drought related issues expeditiously. The Task Force monitors drought conditions, prepares drought status reports (when needed) and advises the Governor's Office when conditions reach a point where action on the Governor's part is needed to minimize adverse impact of the drought on Virginia's citizens.

5. Water Resources Policy

In 1987, the Board adopted a water resources policy which is a statement of broad water resource management principles. The policy provides guidance to the agency staff in preparing water resource management plans, advising on the adequacy and desirability of water resource projects, authorizing specific water resource projects, or commenting on projects which affect water resources. A copy of the Water Resources Policy is included as Attachment II to this report.

IV. Surface Water Management Act

In 1989, the General Assembly enacted the Surface Water Management Area (SWMA) legislation for the purpose of protecting instream uses from excessive surface water withdrawals. This legislation authorizes the SWCB to establish surface water management areas in places where the levels or supply of surface waters could be potentially adverse to public welfare, health and safety. The Board may initiate SWMA proceedings whenever in its judgment there is evidence that: (1) a stream has substantial instream values as indicated by evidence of fishery, recreation, habitat, cultural or aesthetic properties; and (2) historical records or current conditions indicate that a low flow condition could occur which would threaten important instream uses; and (3) current or potential offstream uses contribute to or are likely to exacerbate natural low flow conditions to the detriment of instream values.

Any existing or proposed withdrawal in a surface water management area, except those who are exempted, must have a surface water withdrawal permit issued by the SWCB. The SWMA regulation, which became effective in June 1992, could have considerable effect on future use of surface water for offstream purposes.

No Surface Water Management Area has been designated to date; however, three areas have been under consideration. The areas being considered are a portion of the James River in the Richmond area, the North River, and the Shenandoah River in Clark and Warren Counties. The Board has established advisory committees in each of the proposed areas to assist the staff in determining whether or not these areas meet the criteria for SWMA designation. Several advisory committee meetings have been held and the dialogue and information during these meetings have been very beneficial to all committee members.

The Surface Water Management Act allows the Board to recognize voluntary agreements among users in a designated area as long as the agreement is consistent with the goals of the SWMA. Such agreements would operate in lieu of permits or certificates issued by the Board. Therefore, any user in a designated area would have the option of either participating in a local voluntary agreement or applying for a permit.

In the James River area proceedings, the committee is currently reviewing a proposed voluntary agreement among water withdrawers. The staff has also requested clarification from the Attorney General's Office on the issue of whether or not Board approval of

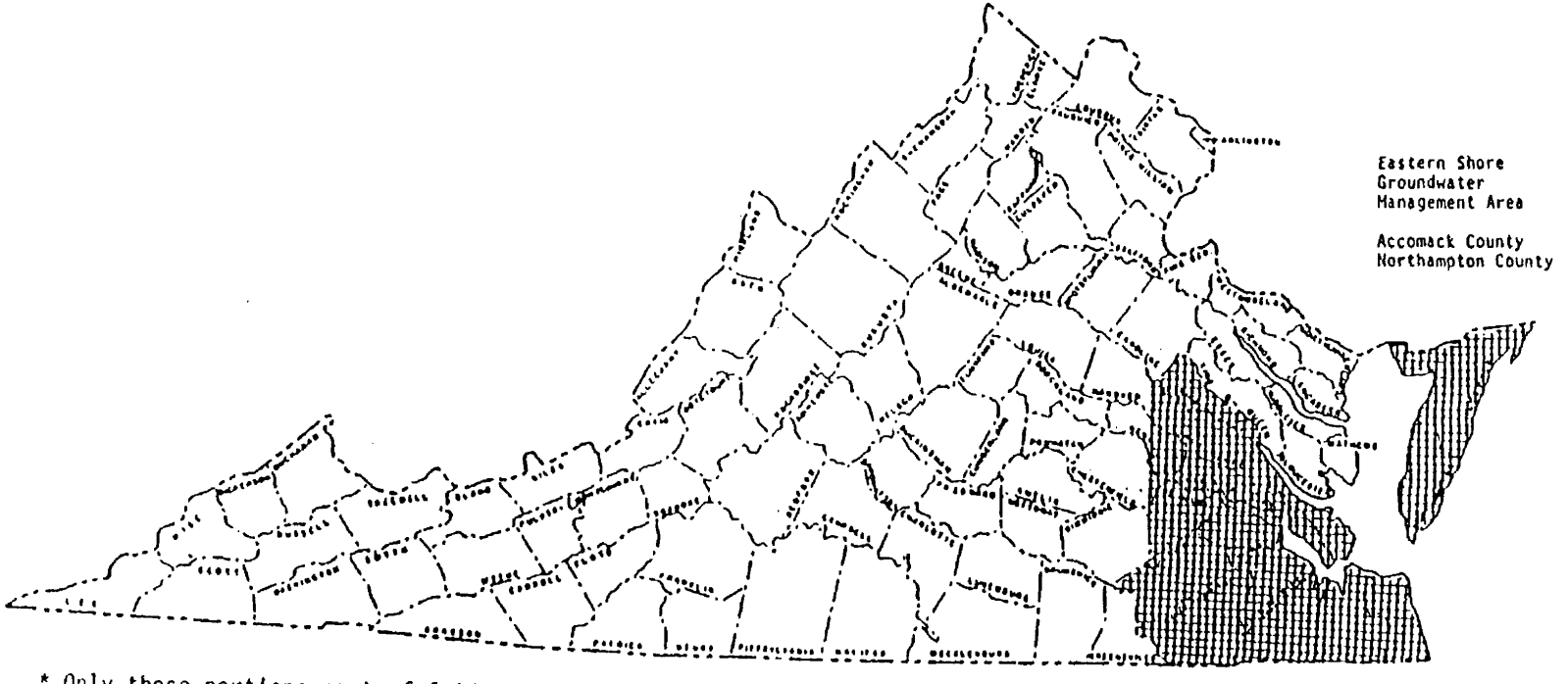
voluntary agreements could take the form of a case decision versus a regulation. In the North River area, a voluntary agreement has been reviewed and endorsed by the advisory committee; however, one significant withdrawer does not support SWMA designation. Because the voluntary agreement can not stand alone on its own without the area being designated a SWMA, this situation is currently at an impasse. The Board staff are waiting for recommendations from the Advisory Committee on how to proceed on this area. Deliberations on the Shenandoah River area has been put on hold while minimum instream flow studies are being conducted.

V. Ground Water Management Act

The SWCB was originally authorized by the Ground Water Act of 1973 to declare ground water management areas when there was reason to believe that ground water levels in the area in question were declining, there was substantial well interference in the area of question, that the aquifer in the area of question may be depleted, or that the ground water in the area of question may be polluted. To date the Board has declared two ground water management areas, the Eastern Virginia Ground Water Management Area, and the Eastern Shore Ground Water Management Area (see Figure 2).

In 1992 the General Assembly repealed the Ground Water Act of 1973 and replaced it with the Ground Water Management Act of 1992. The new act establishes ground water withdrawal rights based on need as opposed to the repealed legislation which established withdrawal rights based on maximum daily withdrawal during a specified time period. The Ground Water Management Act of 1992 establishes permits to withdraw ground water with fixed terms of ten years. It requires all users of more than 300,000 gallons per month, including agricultural users, to obtain ground water withdrawal permits. The new regulations governing the withdrawal of groundwater became final in September 1993 and the amendments governing agricultural withdrawals will become final in the spring of 1998. It is believed that this change will significantly reduce the total ground water withdrawal rights previously authorized in existing ground water management areas and provide a more accurate evaluation of water resources and demands.

After passage of the 1992 Ground Water Management Act, 218 applications were received from persons who held ground water withdrawal permits issued under the Ground Water Act of 1973 requesting their permits be reissued under the requirements of the new Act. Eighteen applications have been received from persons who were withdrawing ground water in existing ground water management areas prior to July 1, 1992 who did not have the appropriate permit issued under the Ground Water Act of 1973. Of these 236 applications, 80 permits have been issued to persons who were willing to accept permits based solely on their historic ground water withdrawal amounts. The majority of the remaining 156 applicants have indicated that they wish to apply for an expanded permit in excess of their historic withdrawal amounts. Thirty-five applications have been received for new or expanded ground water withdrawal permits; twenty-two permits have been issued to these applicants.



* Only those portions east of I-95 are included in the Eastern Virginia Groundwater Management Area.

Eastern Virginia
Groundwater Management Area

Isle of Wight County	City of Chesapeake
Prince George County	City of Franklin
Southampton County	City of Hopewell
Surry County	City of Norfolk
Sussex County	City of Portsmouth
Charles City	City of Suffolk
James City County	City of Va. Beach
King William County	City of Hampton
New Kent County	City of Newport News
York County	City of Poquoson
Chesterfield County*	City of Williamsburg
Henrico County*	
Hanover County*	

Figure 2

Ground Water Management Areas in Virginia

VI. Other Water Resources Related Activities

1. Ground Water Protection Steering Committee

Recognizing the need for a coherent coordinated approach to ground water protection, the SWCB initiated the development of a statewide ground water protection strategy. The Virginia Ground Water Protection Steering Committee, formed in 1986 and made up of representatives from ten state agencies, has over the past several years implemented a number of strategy recommendations which are important in providing protection to ground water quality. Accomplishments by agencies on the Steering Committee include the initiation of new programs, adoption of regulations, and research and demonstration projects.

Each year since 1988 the Steering Committee has published an Annual Report entitled *Ground Water Protection in Virginia*. These annual reports serve to educate the people of Virginia about the importance of ground water, and to inform those relying on ground water of state programs and activities that can assist them in ensuring continued quality and availability.

In addition to the annual reports the Steering Committee has prepared three plans addressing the state of ground water protection in Virginia. The first document was the *1987 Groundwater Protection Strategy for Virginia*. This was followed by the *1990 Supplement*, which assessed the State's progress in implementing actions called for in the Strategy. The most recent document is the *1995 Supplement* which examined the State's progress from 1990 to 1995 in carrying out activities suggested in the Strategy and which charted the Steering Committee's course for the next five years.

The Steering Committee has also identified an agenda for 1996 to 2000. A high priority for the next four years is the continued cooperation and coordination of the Steering Committee member agencies and increasing education and outreach about ground water to the public. The Steering Committee will also:

1. Continue to publish its annual report and other reports informing Virginia citizens, officials, and businesses about ground water and State programs;

2. Continue to promote voluntary wellhead protection efforts, and testing of private water wells;

3. Reassert the following five priority areas of concern: underground storage tanks, landfill, waste lagoons, septic tanks, and pesticides and fertilizers.

4. Give a high priority to exploring opportunities for improving research and information collection and dissemination;

5. Continue to seek ways of maximizing the use of limited resources through

coordination of activities among state agencies, among localities, between State and localities, and between public and private entities;

6. Seek ways of improving existing programs, and ways to tie planning for ground water protection to planning for economic development.

2. Water Protection Permitting Program

The enactment of the Virginia Water Protection Permit (VWPP) legislation in 1989 and subsequent adoption of its implementing regulation enabled the Commonwealth to protect the beneficial uses of State waters with a permit system. The preservation of instream flows for purposes of the protection of navigation, maintenance of waste assimilation capacity, the protection of fish and wildlife resources and habitat, recreation, cultural, and aesthetic values is a beneficial use of Virginia's waters.

The VWPP regulates certain water withdrawals and other activities formerly subject to requirements of Section 401 Certification Program of the Clean Water Act. In changing from a certification program to a permit program, the Commonwealth acquired the ability to enforce its own conditions. Previously, conditions of a 401 Certificate became conditions of the applicable Federal permit or license. The VWPP regulation provides that each permit may include conditions that limit the volume, rate, and times at which water may be withdrawn. The permit may also require water conservation and reductions in water use.

Both the VWPP and the SWMA programs address the minimum instream flow issue which was identified as one of the outstanding issues in the 1988 Water Supply Plans.

3. Hydrologic Data Gathering

Understanding hydrologic characteristics of streams during periods of low flow is essential for the responsible management of the Commonwealth's water resources. Analysis of streamflow availability and variability is basic to water supply planning, water quality management, permitting programs and minimum instream flow evaluations. The agency operates 80 continuous record stream gaging stations to collect flow data. The agency also monitors ground water levels in over 200 ground water wells. Additionally, the U.S. Geological Survey (USGS) operates 90 gaging stations in Virginia. The SWCB and the USGS also collect hydrologic and water quality data at over 100 sites not included in the systematic data collection program. The flow data is published in an annual water resources data report cooperatively prepared by the Department of Environmental Quality and the USGS.

The SWCB has initiated a long term project with the U.S. Geological Survey to improve ground water flow modeling abilities in the Virginia Coastal Plain. Three major areas needing improvement are saltwater intrusion, ground water interactions with surface water near the fall zone, and a refinement of the existing geohydrologic framework and flow

model in the Middle Peninsula and Northern Neck areas. This effort is necessary to more accurately predict the impacts of ground water withdrawals within existing ground water management areas as well as to evaluate the need to establish additional ground water management areas in the coastal plains.

4. Related Water Resources Reports

In 1993, the SWCB presented a report to the State Water Commission on the progression of water resource planning in the Commonwealth over the past 25 years, current planning and management activities, and water resource management strategies that have been adopted by other states.

SWCB staff worked closely with Legislative Services staff on development of alternatives for a state water plan, management of water transfers, and options for financing of water resource development projects. The result of this study was presented to the Water Commission in 1993. The Commission deferred action on the proposal to allow the Commission members and other interested parties time to review and consider the proposals.

Also in 1993, the Board presented a report to the Water Commission on water supply and demand for the Richmond and Hampton Roads areas. The report was in response to a specific request by the State Water Commission for updated information on these two areas of the state, both of which have significant water supply concerns.

Conclusion

Adequate and safe water supplies are essential to the public welfare and continued economic development. Historically, localities have retained control over utilization of resources within their borders, including water resources. This often requires cooperation between multiple localities to deal with the very complicated water resources issues which span more than one jurisdiction. Local governments often look to the State for assistance in conflict resolution in cases where environmental and legal impacts of water supply development go beyond political boundaries.

In recent years, great improvements have been made in the quality and amount of data which is now available regarding water resources and usage. The Commonwealth, its local governments, and its citizens are now better able to understand and plan for the impacts of their water usage. As Virginia continues to develop its ground water and surface water management programs, its ability to ensure quality of life for its citizens and continued economic growth can only be enhanced.

ATTACHMENTS

I. State Water Plan Advisory Committee Resolution

II. Water Resources Policy

ATTACHMENT I

STATE WATER PLAN ADVISORY COMMITTEE
RESOLUTION NO. 2

WHEREAS, the State Water Control Board (SWCB) has published the draft "Virginia Water Supply Plan" and eleven river basin water plans; and

WHEREAS, these documents are the result of the effort of approximately 850 citizens serving on basin advisory committees and the State Water Plan Advisory Committee (SWPAC), local governments, the Department of Health, and the staff of the SWCB;

NOW BE IT THEREFORE RESOLVED, that the SWPAC commends the SWCB staff for their hard work, talent and dedication in producing the eleven river basin water plans and the draft "Virginia Water Supply Plan"; and

BE IT FURTHER RESOLVED, that SWPAC finds these documents to be a valuable inventory of Virginia's water needs and surface water resources, which will be part of a sound foundation on which to develop solutions to Virginia's growing water supply problems; and

BE IT FURTHER RESOLVED, that SWPAC recommends that the existence and content of the plans be summarized and published in a brief brochure, to receive wide distribution to all interested parties in order that the plans may be put to good use; and

BE IT FURTHER RESOLVED, that SWPAC urges that the water planning effort of SWCB continue to address the following legislative directives which are not satisfied in the current document:

(a) estimate "minimum instream flows necessary during drought conditions to maintain water quality and avoid permanent damage to aquatic life in streams, bays, and estuaries";

(b) preparation of "plans and programs for the management of water resources to encourage, promote, and secure the maximum beneficial use thereof";

(c) preparation of a more detailed assessment of the ground-water resource; and,

BE IT FURTHER RESOLVED, that the SWCB emphasize that water resource planning is a dynamic effort and continue to provide leadership through the provision of adequate staff and funding to support water resource planning for the Commonwealth of Virginia.

Adopted at the annual meeting of SWPAC October 21, 1987 at Richmond, Virginia.

COMMONWEALTH OF VIRGINIA
STATE WATER CONTROL BOARD

WATER RESOURCES POLICY - VR 680-11-03

[Adopted: May 7, 1974 - Effective: June 23, 1974. Amended: March 23-24, 1987 - Effective: June 10, 1987]

Summary: The Water Resources Policy is a statement of broad water resource management principles. It provides guidance to the agency staff in preparing water resource management plans, advising on the adequacy and desirability of water resource projects, authorizing specific water resource projects or in commenting on projects which affect water resources.

§1. The State Water Control Board finds that the Virginia water resource policy must be based upon the following broad precepts of natural and man-made law and must recognize natural conditions and the distribution and growth of Virginia's population and industry:

1. Virginia's hydrographic conditions are diverse, ranging from "mountain streams" to open ocean.
2. Natural salinity varies from near zero to that of the open ocean.
3. Natural rainfall in Virginia is such that total fresh water production far exceeds any foreseeable needs; however, accidents of times and geography may produce short-term or geographic surpluses (flood) or deficits (drought).
4. Flood plains are the natural relief mechanism for surface streams.
5. Virginia has extensive ground water resources but these resources are not uniformly distributed, and are subject to depletion and pollution through use and to saline intrusion in coastal areas.
6. Quality of surface flows is, to a degree, dependent upon quantities of flow, natural pollution sources and, in part, activities of man.
7. Water is a reusable multi-purpose resource.
8. Development and use of water resources should be based on sound planning.
9. Water resources use is affected by and affects land resource management and population and economic growth.
10. Use of ground water and use of surface waters are interdependent functions.

11. Wastewater, in many cases, can be safely and economically reclaimed for a variety of beneficial uses, including agricultural and industrial uses.
12. Municipal and industrial demands for water are relatively "constant" whereas the quantities of unmanaged supplies, particularly surface waters, are variable.
13. For the maximum social and economic benefits to all the citizens of the Commonwealth , Virginia must act to protect its water resources and the ecosystems dependent upon them from unnecessary pollution, degradation or destruction. The needs of Virginia's citizens for water resources should be met in such a manner as to preserve these water related environments to the greatest possible degree.
14. State constitutional provisions, statutes and common law constrain water resources use.
15. Federal constitutional provisions and federal statutes constrain and influence water resource use at State level.
16. Potential sites for reservoirs for flood control and water supply are limited and the need for their preservation must be recognized by the Commonwealth so that their use for these purposes, if it is consistent with ecological and scenic considerations, will not be precluded by uncontrolled development on these sites causing them to become too expensive for use as reservoirs.

§2. The board has established its Water Resources Policy in order to fulfill its statutory responsibilities under §62.1-44.36 of the Code of Virginia, as follows:
1. Assure, insofar as possible, that domestic, municipal, industrial, agricultural and other water quality and quantity needs are met at all times consistent with the responsibility of the Commonwealth to protect the natural values of Virginia's water resources, and to assure equitable allocation in times of shortage consistent with the requirements of Virginia law.
2. Protect wetlands in recognition of the dependence of these natural systems upon suitable water quality and in recognition of the contribution of these natural systems to natural values.
3. Recognize the importance of water transportation to the economy and recreation, and to assure the optimum use of the waterways of Virginia.
4. Recognize and foster the unique and diverse role of water in recreation.
5. To the maximum extent practicable, minimize hazards from floods to human life and to economic and natural values.
6. Assure that ground water withdrawals do not, on the average, exceed recharge, and protect any existing common law or statutory rights to use of ground waters.

7. Provide policy guidance on the allocation of ground water in considering the issuance of ground water permits within Groundwater Management Areas under §62.1-44.100 of the Groundwater Act of 1973 as amended.
8. Exercise the responsibility of the Commonwealth within the framework of the existing common law riparian rights of land owners.
9. Evaluate the effect of projects and structures on:
   a. Flexibility in future water resource use and project operation;
   b. Cost effectiveness within the realistic alternatives available and within the constraints of public health and public safety;
   c. Man-made historic and the natural environments;
   d. The recommendations of other agencies with an interest in the projects and structures;
   e. Local, regional and statewide land use plans and growth policies.
10. Minimize the bureaucratic process in order to facilitate cost effective implementation of water resources policy.
11. Assure that the management demands of a water resource project do not exceed the capability of that unit of government responsible for its operation and maintenance.
12. Take advantage of all federal water resource programs to the extent that these programs can provide timely assistance.
13. Promote technological innovations and be responsive to the institution of such advancements.
14. Encourage maximum public participation in the formulation and implementation of specific plans and projects.
15. Recognize the importance of the preservation of critical reservoir sites for future water needs.

§3. Governed by these precepts and in order to fulfill its statutory responsibilities in the development of the Water Resources Policy, the Board will observe the following specific policies in preparing Water Resource Management Plans, advising on the adequacy and desirability of water resource projects, and authorizing specific water resource projects or in commenting on projects which affect water resources.

A. Natural water sources (ground water and surface water)
   1. Community, natural resource and transportation development should proceed in such a way that the adverse effect on runoff (rates, quality and quantity) and ground water recharge are minimized and, that remedial structures (such as spreading basins and flow retarding structures) are

incorporated as permanent features of developments and that adequate financial and legal provisions are made for the maintenance of such structures.
2. Total withdrawals from coastal zone aquifers should be limited to such a quantity as to prevent the intrusion of salinity beyond the limit determined acceptable for the beneficial uses of the aquifer.
3. Total withdrawals from a specific aquifer shall not exceed estimated recharge except for short (one or two year) periods of time: the divergence should not be so great as to affect unreasonably legal rights to withdrawal or to affect the capability of the aquifer to be recharged fully in the future.
4. Conjunctive use of ground water and surface water is encouraged.

B. Beneficial use and public benefit
1. The natural values and natural processes occurring in water resources in an undisturbed state constitute a substantial social and economic benefit to the citizens of the Commonwealth, and protection of these processes should be considered in any resource management plan.
2. The public shall have full access to future facilities paid for by general public funds to the extent that such access is compatible with project purposes and to the extent that the primary purpose of the facility is not defeated.
3. Once a project site has been approved by the board it will be a policy of the board to encourage preservation of the site by other state agencies.
4. Flow releases from reservoirs for the purpose of maintaining minimum flows necessary for prevention of eutrophic conditions and for protection of fish, wildlife and aesthetic values will be considered as beneficial uses.
5. Generation of electricity by hydropower, both in conventional and pumped storage developments, is considered a beneficial use of water resources provided that the system is so operated that neither maximum nor minimum flow releases are unreasonable and so that the rate of flow does not change so rapidly as to be hazardous.
6. Water resource projects and sewerage systems shall be so designed, operated and maintained that hazards to health, public safety and environmental values are minimized.
7. The consideration of water resources projects by the Board shall include coordination with other public agencies in order to ensure that all relevant public policy and formal standards will have an appropriate bearing on the final decision.

C. Environmental protection

1. The long term protection of the environment shall be the guiding criterion in decisions relating to water and related land resources.

2. Channel management projects should be designed, constructed and operated in such a way as to minimize, and preferably to avoid, both short term and long term adverse environmental effects; the capability of water resources to absorb change shall be a designed constraint for such projects (e.g. erosion during construction).

3. Agricultural and urban channelization projects in natural water courses should be limited in size to that essential for the protection of property and should be developed and constructed in such a way that fish and wildlife and aesthetic values are protected, that erosion and flood hazards are not increased, and that ground water is not adversely affected.

4. Water resource projects and sewerage system plans shall be accompanied by an adequate environmental evaluation.

D. Pollution and wasteful use

1. Industrial processes should be designed to minimize system demand through reuse and process change and to minimize discharge of wastes. As a goal the board favors the design of industrial processes with minimum withdrawal.

2. Flow releases from reservoir systems to dilute wastes are not to be considered as a substitute for adequate treatment of waste from industry, agriculture or municipalities.

3. No water storage reservoir project will be endorsed or approved unless accompanied by adequate plans and programs for safeguarding reservoir storage from loss through sedimentation from upstream erosion and shoreline erosion which may include the use of upstream sedimentation basins and the control of pollutants from all sources. Any such plan and project shall have adequate legal and financial support.

4. Plumbing and building codes should prevent needless waste of water, without interfering with maintenance of health values. Metering of municipal water deliveries to users is encouraged.

5. The discharge of pollutants into ground water aquifers shall be contrary to board policy except that brine derived from naturally saline aquifers may be returned to these aquifers and chemicals and water may be used in connection with the exploration for

and development of water, brines, oil and natural gas to the extent that such uses do not result in pollution of ground water.

6. Spoils produced from original dredging and channel maintenance projects should not be disposed of in any manner that would in itself adversely modify circulation in estuaries or wetlands. Installation and maintenance of drainage ditches, including disposition of any spoils produced thereby, or use of drain tile is permissible in managing wet or soggy agricultural lands.

7. Fail-safe type mechanisms should be provided for all facilities designed to store substances which might be hazardous to stream environment or to ground water.

8. Fail-safe devices shall be incorporated in the construction of wastewater treatment facilities to prevent discharges which would create a potential hazard to downstream uses.

All sewer systems shall be so designed and operated that bypassing occurs only under emergency conditions and that nearby residents and official agencies are informed and alerted whenever such bypassing of raw sewage occurs.

E. Water supply and storage

1. Municipal areas should have adequate off-stream raw water storage. The amount of storage should be governed by such factors as community size and demand, hydrographic characteristics of the supply area(s) (including well fields) and susceptibility to accidental contamination.

2. Water systems should be interconnected whenever practicable in order that they may mutually support or aid each other in emergency situations, and assure the best possible uses of available surface and ground water resources. In order to ensure reliability and safety the use or development of multiple or alternate sources should be considered.

3. The use of reclaimed water should be considered in water resources planning for urban areas provided such uses are compatible with the public's health and safety. Acceptable uses which should be considered are:

a. Cooling waters
b. Agricultural
c. Irrigation
d. Industrial
e. Recreational

The direct reuse of sewage effluents as a raw domestic water source is not recommended.

4. The use of reservoirs for all compatible uses including recreation, municipal and industrial water supply and fish/wildlife management, and the use of reservoir shoreline for all purposes shall be subject to community/project controls which will protect the reservoir against pollution from runoff or discharges from point sources, and to zoning controls which will preserve agreed-upon aesthetic values.

5. Subsurface storage and ground water recharge should be encouraged subject to the provisions that such practices do not cause pollution of underground water resources.

6. Municipal sewage treatment plants shall, whenever possible, be located to permit the beneficial reuse of effluents for the purposes set forth in subparagraph 3 above.

7. Criteria for guidance in the withdrawal and use of ground water should be considered as follows:

a. The relationships between ground water and surface water in the area.

b. Information relating to the planned use of the ground water, considering use for domestic drinking water as of greatest importance.

c. The economic effects involved in both the withdrawal and nonwithdrawal of ground water on the area and the Commonwealth.

d. The urgency of the need for ground water in a given area.

8. The board encourages provision of the highest degree of protection for the capacity and quality of reservoirs and storage through programs designed to assure reliable waste treatment systems, effective erosion and runoff controls, and effective control of quality of runoff in newly developed areas.

F. Flood plains and flood control

1. Development of permanent, private or public structures should be discouraged on the flood plains unless there are overriding economic or social justifications for such development and compatible facilities are designed to withstand inundation and provide for safety of people and property.

2. Communities and individuals should make optimum use of flood plain insurance and the level(s) of participation will be considered by the board in recommending protection measures.

Existing or authorized development of the flood plain should be protected at a minimum from a flood with a recurrence interval of 100 years.

3. Flood control measures approved or recommended for any community shall incorporate a cost-effective mix of reservoirs, dry dams, protective levees,

structure flood proofing, flood plain zoning and other measures necessary for preservation of environmental values including historic sites.
4. Any proposals for new construction of water or sewerage systems in defined flood plains, with the exception of limited park and recreational facilities or agricultural uses, should be discouraged.
5. In the flood plain, construction of facilities designed to store substances which might be hazardous to the stream environment is discouraged.
6. In approving sewerage projects, the board will consider the extent to which the proposed project will result in increased erosion, changes in the rate and amount of surface runoff, changes in the development-induced quality of runoff, and increased exposure to flood damage.

G. Financial consideration

1. Project costs (both nonrecurring and recurring), should be apportioned equitably among the identifiable project beneficiaries.
2. No community or area of Virginia, in the development or management of a water resource project, shall unduly place any hardship on another community or area without just compensation. The board in acting on a water resource project will consider the extent to which such inequities may be present and the steps, financial and otherwise, necessary to alleviate both short and long range consequences of such inequities. Compensation of individuals disrupted by water resource projects necessarily includes, to the extent reasonably possible, subjective as well as objective valuation factors.
3. Beneficiaries of water resource structures and projects shall be encouraged to adopt user charges based upon the total recurring and nonrecurring costs of the structures or projects.

H. Wetlands

1. It is the policy of the State Water Control Board to preserve the wetland ecosystems, both tidal and nontidal, and to protect them from destruction.

§4. The board may, from time to time and after public hearing, adopt, modify, amend or rescind any policy contained herein. Such action may be taken on the board's own motion or by virtue of a citizen action if presented in a manner acceptable to the board. Nothing in this Water Resource Policy statement in any way negates previous specific policy statements of the board.

The board will review this policy triennially.