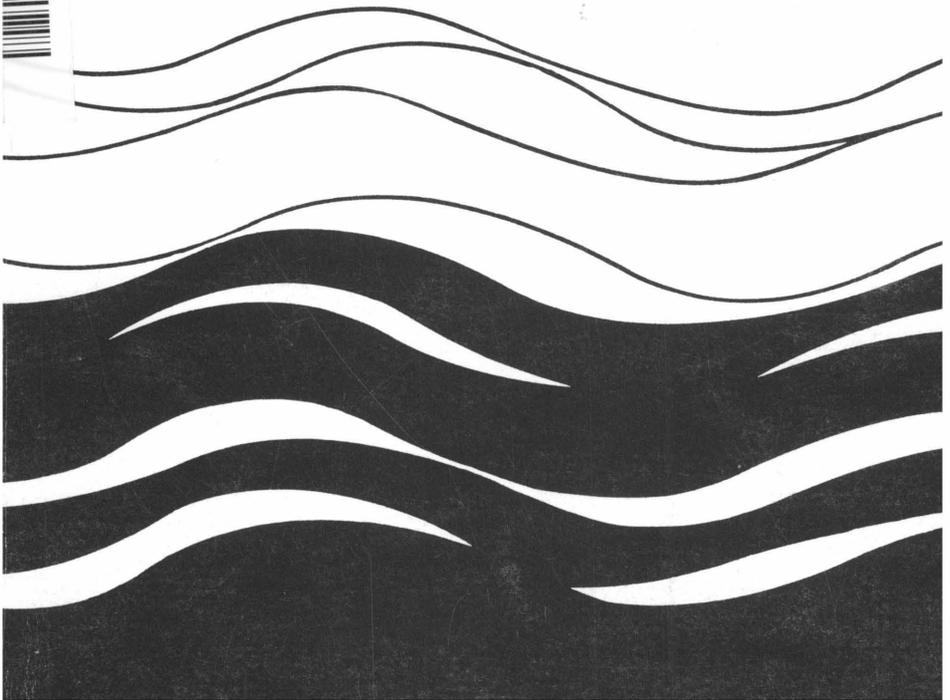


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# Control of Nonpoint Source Pollution in Virginia: An Assessment of the Local Role

William E. Cox and Lorraine M. Herson



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# **Control of Nonpoint Source Pollution in Virginia: An Assessment of the Local Role**

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**Virginia Water Resources Research Center  
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## ABSTRACT

Recognition of the importance of nonpoint source (NPS) pollution to water quality has required broadening of Virginia's water quality management program. Although the state has adopted a voluntary program of best management practices and has implemented a cost-sharing program to encourage NPS control in parts of the state, much of the authority to impose land use controls as a management strategy continues to rest with local governments. Because of recent development of concern for NPS management, effectiveness of the existing institutional framework has not been established; this study provides a preliminary assessment. It analyzes the relationship between the different levels of government in the area of land use control, presents the results of case studies of local program implementation, describes alternative institutional arrangements for NPS management as employed in other states, and presents recommendations for modifications to enhance the state's ability to address the problem. Recommended changes focus on strengthening local land use controls to achieve environmental protection goals and increasing state oversight capabilities to ensure adequate control of NPS pollution occurring across local political boundaries. Implementation of institutional changes must be coordinated with expanded federal involvement in stormwater management and NPS pollution control. Since recent changes in federal requirements provide for increased state control (subject to federal approval), the recommended changes to the state's NPS management program are generally consistent with federal institutional changes.

**Key Words:** Nonpoint Source Pollution, Erosion and Sediment Control, Land Use Control, State Oversight, Interjurisdictional Approaches, Interdisciplinary Review, Urban Stormwater Control



## GLOSSARY OF ABBREVIATIONS

AC	Administrative Commission
AWT	advanced waste treatment
BMP	best management practice
CWA	Clean Water Act
DCA	Department of Community Affairs
DER	Department of Environmental Resources
DNR	Department of Natural Resources
DRI	development of regional impact
DSWC	Division of Soil and Water Conservation
EPA	Environmental Protection Agency
ESCL	Erosion and Sediment Control Law
NCSCC	North Carolina Sedimentation Control Commission
NPS	nonpoint source
NURP	Nationwide Urban Runoff Program
NVPDC	Northern Virginia Planning District Commission
PDC	planning district commission
RMB	Runoff Management Board
RSD	regional service district
RWSA	Rivanna Water and Sewer Authority
SCS	Soil Conservation Service
SPCA	Sedimentation Pollution Control Act
VWCB	Virginia Water Control Board
SWCL	State Water Control Law
TRC	Technical Review Committee
VIMS	Virginia Institute of Marine Science
VMRC	Virginia Marine Resources Commission
VWA	Virginia Wetlands Act
VADA	Virginia Area Development Act
WQM	water quality management



## INTRODUCTION

A direct relationship between the quality of a body of water and land use within its drainage area has long been recognized, but understanding of this relationship is still evolving. Complex interactions within natural systems hinder the formation of general rules. Nevertheless, a consensus has developed that land use controls are basic to any effective water quality management strategy.

From an initial focus on point source waste discharges by industries and municipalities, attention has been extended to a variety of practices involving the generation of nonpoint source (NPS) pollutants. A major component of this broadened scope is consideration of land use decisions as part of the water quality management effort.

In Virginia, the relationship between land use and water quality has received considerable attention in certain areas of the state. One region is the drainage area of the Chesapeake Bay. Concern for the environmental health of the Bay has been accompanied by recognition of the impact of NPS pollution on its water quality. Reports resulting from the U.S. Environmental Protection Agency's Chesapeake Bay Program indicate the importance of NPS pollution control on tributary waters in Virginia. For example, NPSs are the primary contributors of nutrients to the Rappahannock and York Rivers. Water quality management recommendations for both include implementation of best management practices (BMPs) for NPS control. In the James River, point source discharges are the most significant contributors of contaminants, but concern is expressed for the impacts of stormwater runoff and drainage from agricultural lands. In the Potomac Basin, recommendations for management show the need for reduction in both urban and agricultural nonpoint sources.<sup>1</sup>

NPS pollution has also been implicated in more localized water quality problems in Virginia. A notable case is northern Virginia's Occoquan Reservoir, source of drinking water for a large portion of the population. In the late 1960s, the reservoir was found to be in the advanced stages of eutrophication and NPS pollution has been a major factor. Within the James River Basin, NPS pollution has caused concern for the water supply of the Charlottesville area. In the southeastern region of the state, NPS pollution of the Chowan River has become an interstate issue between Virginia and North Carolina.

Integration of NPS pollution control has required broadening the scope of Virginia's water quality management program. Management of point source waste discharges, the traditional focus of water quality programs, has the advantage of a relatively limited scope. The number of point source dischargers is smaller than the number of contributors to NPS pollution, and the smaller volume facilitates treatment or other remedial action. Management of NPS

pollution requires a broader range of control measures. Structural BMPs that reduce the pollutants in runoff provide a partial solution similar to the approach for controlling point source pollution, but NPS control is likely also to require nonstructural measures such as restrictions on land use and development activities. Such measures are more intrusive since they limit the flexibility customarily granted landowners. NPS controls, therefore, are more complex to design and administer, may encounter more public opposition, and their legal validity may be challenged.

Application of land use controls to manage NPS pollution increases the importance of cooperation among levels of government. While water quality management programs have been generally viewed as the responsibility of state and federal governments, land use control has been delegated to local governments. There are valid reasons for continued local responsibility since many impacts of land use decisions are primarily local in nature and vary with area conditions. However, local land use controls have not emphasized environmental protection and an expansion of such programs is needed.

The need to address NPS pollution through land use controls has resulted in a trend toward greater involvement of state government and — to some extent — the federal government. Direct state controls of land development activities have been adopted in some cases, however, and include guidelines for local programs, financial assistance, and oversight of local programs. Thus far, the states have varied in their approaches while they assess the feasibility of alternatives through experience.

Although the involvement of state government in land use decisions has increased, Virginia continues the tradition of substantial local autonomy and a broad view of the rights of landowners to develop property. The success of the Virginia approach remains to be determined.

This study is an interim assessment of the Virginia NPS control efforts. Recent operational history provides a basis for a preliminary evaluation of these programs and identification of areas where modifications may be required.

The program evaluation begins with an overview that adopts a broad perspective and considers the roles of different levels of government as defined by current legislation and administrative structure.

After description and analysis of current laws and programs for NPS pollution control, the implementation of land use controls is evaluated. Case studies focus on localities selected to represent a range of conditions (such as level of population and development activity) and to ensure representation of the geographic regions of the state. No attempt is made to define a "typical" locality.

The evaluation includes identification and analysis of institutional arrangements that offer alternatives to the Virginia approach. In one case, an alternative is provided by an existing Virginia program in an area other than NPS pollution control — wetlands protection — but most of the alternatives originate in the experiences of other states. Analysis of these approaches, the reasons for their adoption, and the degree of their success provides useful contrasts and suggests means of addressing deficiencies in the Virginia program.

The final section of the study presents conclusions on the effectiveness of the Virginia program and possible solutions are suggested. Some specific recommendations are made while, in some cases, the need for additional information is indicated.

## **I. Endnote**

1. U.S. Environmental Protection Agency. 1983. *Chesapeake Bay: A Framework for Action*. 153-166.



## INSTITUTIONAL OVERVIEW

Management of NPS pollution involves a complex institutional framework comprising separate but interacting components. The most obvious are direct governmental management programs established by legislation and administered by government agencies. A second component consists of privately enforced constraints that have their basis in law protecting individual rights from injury by land development or other actions by other parties. However, these constraints have been reduced to secondary importance with the development of extensive governmental controls and are not included in this study. The potential for constitutionally protected private property interests to constrain NPS control efforts of government is evaluated.

The institutional framework encompasses a variety of governmental activities, including water quality management programs originally focusing on point source pollution and measures for the control of land development and use. The following sections provide an overview of the primary activities of each of the three levels of government relating to NPS control. This overview is limited to measures of broad applicability to NPS pollution and is not intended to provide an assessment of more narrowly focused programs (e.g., septic tank controls and pesticide regulation).

### I. The Federal Role

The federal government exercises substantial control over water quality under its constitutional power to regulate interstate commerce. This power was first applied to water quality protection in situations involving point source waste discharges into interstate streams;<sup>1</sup> then to such discharges into navigable streams;<sup>2</sup> and finally to all point source discharges into surface waters.<sup>3</sup> The authority for the federal government to assert control over water quality is well established.<sup>4</sup> But federal measures to control pollution from natural runoff processes, while apparently within the federal power, have remained largely indirect except for measures of narrow scope. One significant statute with respect to an activity considered to be an NPS is the Surface Mining Control and Reclamation Act,<sup>5</sup> which controls runoff from mining operations. However, this and other narrowly focused measures do not address the general NPS problem.

The Clean Water Act<sup>6</sup> (CWA) is the most comprehensive federal measure for water quality protection. CWA focuses on point source discharges of pollutants, where a point source is defined as:

(A)ny discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure,

container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.<sup>7</sup>

For point source discharges, CWA establishes an elaborate system of limitations based on the capabilities of best available technology.<sup>8</sup> These limitations are enforced through a permit system — the National Pollutant Discharge Elimination System.<sup>9</sup>

Point source controls can arguably be applied to any activity where artificial drainage facilities are employed, except for return flows from irrigated agriculture, which are specifically excluded by CWA.<sup>10</sup> For example, the definition explicitly includes animal feedlots.<sup>11</sup> CWA also provides for direct regulatory control of runoff from plant sites involving toxic or hazardous pollutants.<sup>12</sup> A volumetrically more significant and more controversial runoff category being incorporated into the point source control program is urban stormwater. The initial effort to regulate stormwater discharges was the result of a court mandate for the U.S. Environmental Protection Agency (EPA) to regulate such discharges as individual point sources.<sup>13</sup> EPA regulations that require submission of applications for permits defines stormwater point source as "a conveyance or system of conveyances (including pipes, conduits, ditches, and channels) primarily used for collecting and conveying stormwater runoff."<sup>14</sup> Such point source had to be located in urban areas as defined by the Bureau of Census, constitute discharges emanating from industrial or commercial lands/facilities, or otherwise be designated by EPA.

The EPA urban stormwater proposals generated substantial controversy.<sup>15</sup> Questions arose concerning the administrative process of permitting and operational program elements such as the extent of water quality sampling to be required. An estimate of costs for the processing of applications exceeds \$8.5 billion if cities with populations of 50,000 or more are required to have permits and sampling data for every stormwater outfall. Total costs to install the pollution control equipment necessary to comply with the permit standards nationwide was estimated at around \$647 billion.<sup>16</sup>

Before questions concerning the final form of this regulatory program were resolved, amendments to CWA were adopted in early 1987 (by means of congressional override of a presidential veto) that established regulatory controls over urban stormwater discharges. These provisions<sup>17</sup> mandate a sequence of steps culminating in permitting of stormwater discharges from municipalities with a population of 250,000 or more by 1994 and from those with populations of 100,000 to 250,000 by 1996. Permits for stormwater discharges from municipalities with populations under 100,000 can be required on an individual basis upon a determination that "... stormwater discharge contributes to a violation of a water quality standard or is a significant contribution of pollutants

to waters of the United States.”<sup>18</sup> Regulations for control of other stormwater discharges are to be developed on the basis of results from studies prescribed in the legislation.

Detailed stormwater management requirements to be imposed during the permitting process will be developed by EPA. The 1987 legislative provisions establish these general conditions for permitting:

Permits for discharges from municipal storm sewers -

- (i) may be issued on a system or jurisdiction-wide basis;
- (ii) shall include a requirement to effectively prohibit non-stormwater discharges into the storm sewers;
- (iii) shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system design and engineering methods, and such other provisions as the administrator or the state determines appropriate for the control of such pollutants.<sup>18</sup>

Except for urban stormwater and other specific categories of runoff, CWA continues to treat NPS pollution only in an indirect manner. The initial federal approach to the general NPS pollution problem was contained in section 208<sup>19</sup> of CWA which left the actual control of NPS pollution to the states. EPA has expressed this view:

State, areawide, and local agencies are expected to take the lead in developing and implementing NPS management programs where needed to meet water quality goals and designated uses. It is only at this level that there is enough flexibility and the ability to make site-specific and source-specific decisions necessary for implementing effective NPS management programs. Solving NPS pollution problems requires commitment from all levels of government, but more intensified efforts at state, areawide, and local levels are essential for substantial progress.<sup>20</sup>

Recognition of a major state role does not, however, indicate a lack of federal influence. Under section 208, the governors of each state were required to identify areas with substantial water quality problems and to designate planning agencies responsible for the development of “effective areawide waste treatment management plans”<sup>21</sup> needed to address the NPS pollution problem. Areas not designated as having substantial water quality problems were the responsibility of the state water quality planning agency,<sup>22</sup> the Water Control Board in Virginia. Plans developed by these state agencies were required to be submitted to EPA for approval.

EPA issued regulations in 1979 that consolidated several of the requirements of

the CWA into a single integrated procedure called the Water Quality Management (WQM) Process.<sup>23</sup> Under these regulations, each state may assume responsibility for all areas within the state and submit a statewide waste treatment plan. These plans must describe "the regulatory and nonregulatory activities and best management practices which the agency has selected as the means to control NPS pollution." A basis for assessing the progress of pollution abatement efforts under a state plan is provided by a biennial report on quality of state waters required by section 305(b)<sup>24</sup> of CWA. This state report must include "... a description of the nature and extent of NPSs of pollutants, and recommendations as to the programs which must be undertaken to control each category of such sources ...."<sup>25</sup> These reports can be used to refine a state's NPS program on an ongoing basis.<sup>26</sup>

The WQM regulations do not require a regulatory approach for NPS control, but they state that "regulatory programs shall be identified where they are determined to be necessary by the State to attain or maintain an approved water use or where nonregulatory approaches are inappropriate in accomplishing that objective."<sup>27</sup> State WQM plans must be updated as needed.<sup>28</sup> EPA has reserved the option to require a regulatory approach in abating NPS pollution where nonregulatory programs are ineffective.

The 1987 CWA amendments increase the potential for federal influence while continuing to recognize a primary state role in NPS pollution management.<sup>29</sup> Provision is made for state identification of waters that cannot attain or maintain applicable water quality standards or other CWA requirements without additional action to control NPS pollution. This state assessment is also required to identify the categories of NPS pollution (or particular NPSs where appropriate) responsible for such pollution. This assessment is to be followed by development of a state management plan to reduce pollutant loadings from the NPS categories and individual NPSs identified. The plan also must identify the best management practices (BMPs) for achieving such pollutant reductions and the programs necessary for BMP implementation. These programs may include "... non-regulatory or regulatory programs for enforcement, technical assistance, education, training, technology transfer, and demonstration projects ...."<sup>30</sup> States are encouraged to conduct the prescribed assessment and prepare the necessary management plan by establishing a grant program to assist in the implementation of plans approved by EPA under guidelines specified in the legislation.<sup>31</sup>

Alternative procedures for development and implementation of a NPS management plan are provided for cases where a state does not develop and submit such a plan to EPA. Provision is made for EPA to identify waters in need of additional NPS pollution controls and the NPS categories or individual sources in need of control.<sup>32</sup> Under certain conditions, EPA is authorized to assist local public agencies or organizations in developing and implementing NPS

management plans if a state fails to submit a management program or fails to obtain EPA approval of its program. With approval of state government, EPA may provide technical and financial assistance to such local entities.<sup>33</sup>

As indicated by the 1987 amendments, the federal government employs financial assistance as a basic means of influencing NPS control efforts. In addition to the special grants for NPS control programs, grants to states are authorized for administering water quality programs<sup>34</sup> and for conducting water quality management planning.<sup>35</sup> An authorized purpose of planning grants is identification of the "... most cost-effective and locally acceptable facilities and non-point measures to meet and maintain water quality standards."<sup>36</sup> A further financial assistance program focuses on installation of agricultural BMPs. The Secretary of Agriculture is authorized to enter into contracts with parties in control of rural land for the installation and maintenance of BMPs for NPS pollution control. Subject to prescribed conditions, such agreements can include a commitment of federal cost-sharing for the BMPs involved. Such cost-sharing generally cannot exceed 50 percent of the total costs of such measures, but the Secretary can exceed this limit under prescribed conditions to obtain offsite water quality benefits.<sup>37</sup> The scope of this program has been restricted because of funding limitations.

Technical assistance is a further form of federal involvement in NPS pollution control. A primary example is the U.S. Soil Conservation Service (SCS) program encompassing land and water conservation measures. SCS assistance to soil and water conservation districts (and indirectly to counties and municipalities) is an essential part of certain NPS control programs discussed in this section.

## **II. The State Role**

Although requirements and standards established in the federal pollution control program constrain state action to some extent, state governments retain primary authority in controls for NPS pollution.

The Constitution of Virginia establishes a basis for state activities to protect the environment:

(I)t shall be the policy of the Commonwealth to conserve, develop, and utilize its natural resources ... protect its atmosphere, lands, and waters from pollution, impairment, or destruction, for the benefit, enjoyment, and general welfare of the people of the Commonwealth.<sup>38</sup>

Even before the enactment of this provision, the state had attempted to control water pollution by enacting the State Water Control Law<sup>39</sup> in 1946. This legislation provides the state's most direct controls over water pollution. A

second measure, initiated more recently, is a state program to provide financial assistance for NPS pollution control. A third is state involvement in the administration of land use controls primarily implemented by local governments.

#### A. State Water Control Law

The State Water Control Law (SWCL) provides broad authority for the Virginia Water Control Board (VWCB) to conduct a water quality management program in accord with the following:

It is the policy of the Commonwealth of Virginia and the purpose of this law to: (1) protect existing high quality state waters and restore all other state waters to such a condition of quality that any such waters will permit all reasonable public uses and will support the propagation and growth of all aquatic life, including game fish, which might reasonably be expected to inhabit them, (2) safeguard the clean waters of the State from pollution, (3) prevent any increase in pollution, (4) reduce existing pollution.<sup>40</sup>

The broad scope is indicated by SWCL's definition of "state waters," which includes "all water, on the surface and under the ground, wholly or partially within or bordering the State or within its jurisdiction...."<sup>41</sup>

SWCL does not explicitly address NPS pollution control, but it authorizes VWCB "(t)o establish policies and programs for effective areawide or basinwide water quality control and management."<sup>42</sup> Effective water quality control in many geographic areas is likely to be impossible without NPS control. Thus, the authority conveyed by the act appears to provide a basis for control of NPS pollution. VWCB views this authority as adequate for developing such controls.<sup>43</sup>

Nevertheless, exercise of authority to impose direct controls on NPS pollution has been limited. Development of a management program in Virginia, as in much of the nation, has been closely associated with the Clean Water Act's planning activities focusing on NPS pollution. A lawsuit brought against EPA by the Natural Resources Defense Council established that the states were responsible for planning for those areas not initially designated as having substantial water quality problems.<sup>44</sup> The D.C. District Court also held that federal funding should be provided states to do the additional 208 planning.

VWCB's initial planning efforts included an assessment of local perceptions of the NPS problem, development of a series of BMP handbooks, a statewide public participation program, and a series of technical studies of NPS pollution. The BMP handbooks are the heart of Virginia's current State Nonpoint Source Pollution Control and Abatement program.<sup>45</sup> A handbook covers each of five categories of NPS pollution: agriculture, forestry, hydrologic modifications,

sources affecting groundwater, and urban areas.<sup>46</sup> The five books describe structural and nonstructural BMPs for mitigating the NPS pollution addressed. In addition, a management handbook sets forth the overall strategy for implementing the state program.

Additional activities have been undertaken by the VWCB as part of the statewide NPS pollution abatement program:

- A three-phase statewide assessment of potential NPS problem watersheds, with the U.S. Soil Conservation Service conducting the agricultural assessment. In the third phase, 26 watersheds were described as having high pollution potential and remedial actions were outlined and costs estimated;
- Two water supply lake and reservoir watershed protection studies;
- A forestry BMP education and implementation program;
- Potomac embayment studies;
- Brochures highlighting BMP's for specific agricultural commodities;
- Several BMP demonstration projects;
- Technical evaluation of selected agricultural BMP's;
- Economic evaluation of installing BMP's on an agricultural watershed;
- A study of the Chowan River Basin in Virginia;
- Public participation projects; and
- Coordination of areawide planning activities with state planning.<sup>47</sup>

A significant characteristic of Virginia's NPS management program is its voluntary status. VWCB has explained its decision to adopt this approach:

In the absence of a demonstrated cause and effect relationship between land use activities, NPS pollution, the S(V)WCB has elected to pursue a nonregulatory NPS control strategy for those sources not already controlled by regulatory programs.<sup>48</sup>

The approach based on educating and encouraging the citizens of Virginia to initiate measures to control NPS pollution<sup>49</sup> is likely to continue. At the same time, VWCB has issued a warning: "If substantial progress is not made under the voluntary approach, it is probable that a regulatory program will be initiated under the law."<sup>50</sup>

Although VWCB has overall responsibility for the state NPS program, specific aspects of the program have been delegated to other state agencies. The Division of Soil and Water Conservation (DSWC) has been designated lead agency for implementing the Virginia Agriculture Water Quality Management Plan. Management of stormwater from urban areas is divided between VWCB and DSWC. VWCB maintains responsibility for already developed urban areas

while DSWC is the lead agency for those urbanizing areas undergoing construction and development.<sup>51</sup> Responsibility for developing areas was granted to DSWC because that agency was already involved in the program to control construction site runoff (discussed later in this section).<sup>52</sup>

DSWC's responsibilities under a memorandum of understanding between VWCB and DSWC include "implementation of the Virginia Urban Water Quality Management Plan as it pertains to urban land-disturbing activities."<sup>53</sup> The memorandum states that "(DSWC) will promote the use of Urban Best Management Practices (BMPs) for erosion and sediment control and stormwater management through its administration of the Virginia Erosion and Sediment control Law and through the implementation of an education program."<sup>54</sup>

Within developed areas where the NPS program is administered by VWCB, local governments are "... encouraged to sign a Memorandum of Understanding with the VWCB to develop and implement a program to reduce nonpoint pollution from areas of existing development under its jurisdiction."<sup>55</sup> This agreement requires the local government to make an annual report to the agency indicating progress toward control of NPS pollution. Although this program only applies to "areas of existing development,"<sup>56</sup> VWCB nevertheless encourages localities to take advantage of the "greater flexibility involved in dealing with the problem when the time and opportunity are available to plan for and incorporate BMPs and other measures into new development."<sup>57</sup> VWCB recommends the use of a variety of techniques such as land use controls under zoning and subdivision ordinances, tax incentives, and planning for capital improvements.<sup>58</sup>

## B. Virginia's Financial Assistance Program for NPS Control

Virginia has employed cost-sharing as a means to encourage compliance with voluntary BMPs. After an initial effort during 1983 that focused on encouraging use of filter strips adjacent to waterways within selected areas of the state,<sup>59</sup> the 1984 session of the General Assembly appropriated \$750,000 for urban and \$2.5 million for agricultural NPS pollution control within the Chesapeake Bay's drainage area. DSWC is responsible for administration of these funds. Planned use of the funds designated for urban areas includes cost-sharing of technical specialist positions at the local government level and implementing demonstration projects to determine the effectiveness of innovative urban BMPs. Part of the funds for agricultural NPS control is scheduled for direct cost-sharing with individual landowners to implement BMPs. The state financial assistance program also encompasses the Chowan River Basin where water quality problems have become an interstate issue.

## C. Land Use Controls

Land use controls traditionally have been administered by Virginia's political

subdivisions, but state enabling legislation for such controls provides for state influence in their implementation in some cases. The extent of the state's authority in these programs is an issue in defining the institutional framework for stormwater management. Of special interest from the perspective of NPS control is the Erosion and Sediment Control Law (ESCL).<sup>60</sup> Also of interest are more general land use control measures, including provisions for local comprehensive planning, zoning, subdivision regulation, and land use regulation by soil and water conservation districts. Legal provisions for assessment of property taxes are also of interest since taxation can influence development decisions. These measures are briefly reviewed in the following sections in terms of the state role in their implementation, with more detailed consideration given when the local role in NPS management is described.

## 1. Erosion and Sediment Control Law

Enacted in response to problems with soil erosion and subsequent sediment deposition, ESCL focuses more explicitly on water quality protection than other land use controls. The regulatory program created by ESCL involves both state and local governments, with primary responsibility for administration exercised by local governments.

ESCL requires erosion and sediment control programs to be administered by either the counties and municipalities or the state's soil and water conservation districts, but state government exercises certain responsibilities through DSWC (DSWC performs administrative functions for the Virginia Soil and Water Conservation Board, previously the Soil and Water Conservation Commission).<sup>61</sup> The primary state responsibility is establishing guidelines for erosion and sediment control. The legislation requires DSWC to develop conservation standards that include criteria, techniques, and methods for control.<sup>62</sup>

Local control programs must be consistent with the standards in state guidelines. DSWC is responsible for developing local control programs wherever the appropriate soil and water conservation districts or local governmental units fail to act.<sup>63</sup>

However, the state does not administer such a program after development but turns it over to the appropriate political subdivision. The state also has limited powers under the act regarding administration of controls. DSWC is directly responsible for licensing land-disturbing activities in two situations: (1) state agency projects and (2) other projects involving lands under the jurisdiction of more than one program, provided the applicant elects to apply directly to DSWC rather than to the individual jurisdictions.<sup>64</sup>

Upon appeal, DSWC is authorized to review decisions where a local program is administered by a soil and water conservation district, but the review powers of

DSWC do not encompass decisions of counties and municipalities.<sup>65</sup> This review function has not become a significant state responsibility since most counties and municipalities have adopted control programs in lieu of district administration. DSWC is authorized to request the Attorney General to take legal action to enforce provisions of ESCL.<sup>66</sup>

Although DSWC's direct regulatory role is limited, the agency exercises other responsibilities in providing education, funding, and technical assistance. Within the drainage area of Chesapeake Bay, this role has expanded with funds appropriated by the 1984 session of the General Assembly. Two uses of these funds are cost-sharing for increasing local program personnel and development of demonstration projects for control of urban runoff.

## 2. The Local Comprehensive Plan

Virginia legislation requires each county, city, and town to adopt a comprehensive plan to guide development of the political subdivision.<sup>67</sup> The legislation contains no provision for state input into plan formulation or for state review of such plans. This activity, therefore, is not a mechanism for direct state influence in land use planning or decision making.

## 3. Zoning

Zoning is the mechanism through which constraints are imposed on such parameters of land use as type and density of development. Virginia's enabling legislation authorizes, but does not require, adoption of a zoning ordinance by its political subdivisions.<sup>68</sup> Legislation specifies factors to be considered in designing a zoning ordinance but does not provide for direct state input or review.

## 4. Subdivision Regulation

Virginia law requires that each political subdivision adopt an ordinance for the orderly subdivision and development of land.<sup>69</sup> The required contents of such ordinances are contained in the legislation but it does not provide for direct state input or review.

## 5. Land Use Regulation by Soil and Water Conservation Districts

Virginia's soil and water conservation districts law provides authority for the districts to adopt land use controls under certain conditions.<sup>70</sup> There is no provision for state input or review.

## 6. Tax Law

Taxation is another mechanism through which governments can influence land

use toward socially desirable ends. Virginia's tax laws provide authority for use-value taxation as a means to preserve open space and achieve other objectives.<sup>71</sup> Authority for implementation does not rest with state government since taxation of property is a function of local government.

## 7. State Mechanisms for Coordination Among Local Governments

Because natural hydrologic boundaries and political boundaries do not coincide, there is a need for coordination among management programs involving hydrologically related areas. Hydrologic processes cross political boundaries at all levels. They cross national boundaries, thereby creating the need for international coordination. They cross state boundaries more frequently, and interstate coordination is a significant water management issue. They cross local political boundaries even more frequently due to the relatively small size of localities, and interjurisdictional coordination at the local level is essential where local governments are responsible for environmental management.

One of the Virginia statutes delegating authority for control of NPS pollution, ESCL,<sup>72</sup> contains a special provision concerning land development activities falling within the jurisdiction of more than one local program. At the option of such a developer, approval may be sought from DSWC rather than from the individual political subdivisions involved.<sup>73</sup> However, a developer isn't required to obtain approval from the state. A further limitation is that this provision applies only where the land being developed falls within the jurisdiction of two localities and does not include the situation where the land is in one locality and the impact of runoff from the development site is in another.

State enabling legislation also recognizes the general need for voluntary coordination among local governments. Provisions for coordination, including joint approaches to the fulfillment of governmental responsibilities, convey broad authority:

Any power or powers, privileges or authority exercised or capable of exercise by any political subdivision of this State may be exercised and enjoyed jointly with any other political subdivision of this State and, with any political subdivision of another state.<sup>74</sup>

For powers to be exercised jointly, those involved must enter into agreements by action such as ordinance or resolution. These agreements must address several issues such as duration and purpose and the manner of financing any joint undertaking. If the agreement does not establish a separate legal entity to carry out the terms, provision must be made for an administrator or a joint board representing the parties to the agreement to be responsible for administering the undertaking.<sup>75</sup> A more formal and structured approach to interjurisdictional coordination is provided by the Virginia Area Development Act (VADA),<sup>76</sup> which

has been responsible for dividing the state into 22 planning districts. Within each, a Planning District Commission (PDC) can be organized by written agreement of two or more local jurisdictions that account for at least 45 percent of the district's population.<sup>77</sup> All 22 districts now have PDCs that are supported by contributions of the member jurisdictions and state grants.

PDCs function basically as planning organizations but have restricted authority to implement programs and services. A 1986 VADA amendment authorizes any PDC, within its discretion when requested by one or more member localities, to assist such localit(y)(ies) by carrying out plans and programs for improving physical, social, or economic conditions.<sup>78</sup> Prior to enactment of this amendment, the General Assembly had created special authority for the LENOWISCO and Cumberland Plateau PDCs to carry out programs in such areas as small stream maintenance and solid waste disposal, provided that consent of the affected locality is first obtained.<sup>79</sup>

VADA authorizes implementation of comprehensive governmental services within planning district boundaries through its provisions for establishing regional service districts (RSDs).<sup>80</sup> An RSD can provide a wide range of interjurisdictional services within its boundaries. To date, no RSDs have been established.

The Commission on Local Government provides a mechanism for mediating conflicts between local governments.<sup>81</sup> Thus far, the Commission has not been used to mediate pollution control conflicts but has focused on boundary disputes between localities (such as when a city attempts to annex lands from a county). Nevertheless, a broader potential for the Commission may exist:

I am of the opinion that the Commission represents a unique resource which the Commonwealth might use in a wide variety of local and interlocal concerns. I think the Commission's utility rests upon its technical capacity to deal with local and interlocal issues as well as its mediation services.<sup>82</sup>

#### D. Summary of State Role in Developing and Administering Land Use Controls

This review of the principal measures for controlling land use indicates a relatively minor role for state government. This role is most significant within the erosion and sediment control program established by ESCL. Even here, the state exercises no direct oversight of local decisions made during program administration (except, perhaps, to initiate judicial action for violations of ESCL — an option that has not been employed). In addition, the erosion and sediment control program addresses only one component of the NPS pollution problem since it focuses on control of runoff from construction sites and does not address agricultural runoff or general urban stormwater management. Authority for

management of these other potentially significant NPSs must be sought within other legislation. While legislation in the areas of zoning and subdivision regulation arguably provides such authority for local government, provision for state influence is less than under ESCL. State mechanisms for interjurisdictional coordination are substantial but can be invoked only within the discretion of the local governments involved.

In the absence of direct state authority in the administration of land use controls, the primary mechanisms for state influence are education, persuasion, and financial assistance. These activities have increased greatly in recent years through such means as distributing educational materials, presenting seminars, and implementing demonstration projects. Financial aid has involved a commitment of state resources but has not been extended statewide; emphasis is on regions of special concern such as the Chesapeake Bay drainage.

### **III. The Local Role**

Discussion of the local role in stormwater management requires knowledge of the general relationship between the State of Virginia and its political subdivisions. Virginia is a "Dillon's Rule" state. Under this rule (first enunciated by New York judge, John F. Dillon), local governments "... have only those powers that are expressly granted, those that are necessarily or fairly implied from expressly granted powers, and those that are essential and indispensable."<sup>83</sup>

Fairfax County enacted an ordinance in 1977 requiring a five-cent deposit on all nonalcoholic beverage containers. In 1980, applying Dillon's Rule, the Virginia Supreme Court reversed the decision of a lower court, stating that the County Board did not have legislative authority to enact such an ordinance. Clearly, the ability of Virginia's local governments to require private landowners to implement NPS controls must first be evaluated in view of the Dillon's Rule requirement for specific legislative authority.

The preceding discussion of the state role in control of NPS pollution has identified several delegations of authority to local government for land use control. This section will examine the individual measures in more detail to assess the extent of local authority to control land use activities for the purpose of protecting water quality. Since much of the enabling legislation was adopted prior to development of concern over NPS pollution, a question may arise as to whether water quality protection is a valid objective of implementation.

#### **A. Erosion and Sediment Control Law**

ESCL requires that either counties and municipalities or soil and water conservation districts adopt erosion and sediment control programs consistent with

state guidelines. Preference is shown for programs to be adopted by counties, cities, and towns (town and county programs can be combined), with district programs authorized only in the absence of local government programs.<sup>84</sup> Most localities have elected to adopt their own, with the result that district programs have not been widespread.

The purpose of local erosion and sediment control programs is control of "land-disturbing activity," a term defined to exclude agricultural, silvicultural, and horticultural activities; mining; areas disturbed for commercial development less than 10,000 square feet; and construction areas disturbed for single-family homes unless constructed as part of a subdivision development.<sup>85</sup> Any party engaging in a "land-disturbing activity" must submit, and receive approval for, an erosion and sediment control plan before the work can proceed. Localities may charge a processing fee (up to \$300) to defray costs.<sup>86</sup> Local governments may require security such as a "reasonable performance bond, cash escrow, letter of credit, any combination thereof, or such other legal arrangement acceptable to the agency, to ensure that measures could be taken by the county, city or town at the applicant's expense should he fail to initiate or maintain appropriate conservation action...."<sup>87</sup>

Violation of this law "shall be deemed a misdemeanor and upon conviction shall be subject to a fine not exceeding \$1,000 or 30 days imprisonment for each violation or both."<sup>88</sup> ESCL contains no provision for imposition of civil penalties. An additional enforcement option was added by a 1986 amendment to ESCL authorizing issuance of administrative stop-work orders. The order can be issued only where a permittee has failed to comply with a notice to comply. Such notice must identify measures for compliance with the erosion and sediment control plan and must specify a time limit for completion of such measures. However, the stop-work order may be issued regardless of whether the notice to comply has been issued if "... the alleged noncompliance is causing or is in imminent danger of causing harmful erosion of lands or sediment deposition in waters within the watersheds of the Commonwealth...."<sup>89</sup>

## B. The Comprehensive Plan

The comprehensive plan required of each county, city, and town<sup>90</sup> is intended to indicate general recommendations for the development of the area covered. The following states the considerations to be incorporated:

The comprehensive plan shall be made with the purpose of guiding and accomplishing a coordinated, adjusted and harmonious development of the territory which will, in accordance with present and probably future needs and resources, best promote the health, safety, morals, order, convenience, prosperity and general welfare of the inhabitants.<sup>91</sup>

Although the enabling legislation does not mention water quality protection, it does provide that the plan may include designation of areas for “conservation, recreation, public service, flood plain and drainage, and other areas”. Thus, water quality protection appears to be a valid but implicit objective.

The comprehensive plan generally is not used as a direct regulatory device, but it acts to constrain development. For example, it provides for restrictions on future location of public facilities. The pattern of providing public services such as transportation and sewage facilities exerts a major influence on land use. Local decisions concerning public facilities are subject to substantial influence by state and federal governments because of various programs of financial assistance. Decisions regarding public facilities have the potential to reinforce regulatory programs of land use controls if the two decision processes are coordinated.

### C. Zoning

Any Virginia county, city, or town is given the discretionary authority to adopt a zoning ordinance.<sup>92</sup> The specific considerations to be addressed include:

(S)uch ordinances shall be designed to give reasonable consideration to each of the following purposes, where applicable: (1) to provide for adequate light, air, convenience of access, and safety from fire, flood and other dangers; (2) to reduce or prevent congestion in the public streets; (3) to facilitate the creation of a convenient, attractive and harmonious community; (4) to facilitate the provision of adequate police and fire protection, disaster evacuation, civil defense, transportation, water, sewerage, flood protection, schools, parks, forests, playgrounds, recreational facilities, airports and other public requirements; (5) to protect against destruction of or encroachment upon historic areas; (6) to protect against one or more of the following: overcrowding of land, undue density of population in relation to the community facilities existing or available, obstruction of light and air, danger and congestion in travel and transportation, or loss of life, health, or property from fire, flood, panic or other dangers; (7) to encourage economic development activities that provide desirable employment and enlarge the tax base; and (8) to provide for the preservation of agricultural and forestal lands.<sup>93</sup>

Although this list of factors addresses flood protection, it does not specifically include water quality protection. The enabling legislation elsewhere provides for zoning to consider “... conservation of natural resources...”<sup>94</sup>

### D. Subdivision Regulation

Each county, city, and town is required to adopt an ordinance to control land

subdivision and development.<sup>95</sup> Enabling legislation sets forth several requirements for such ordinances, including adequate provisions for "...drainage and flood control and other public purposes ...."<sup>96</sup> Water quality protection is not specifically mentioned but appears to be implicit.

The enabling legislation addresses the issue of financing offsite drainage facilities. Where the locality has established a "... general sewer and drainage improvement program for an area..." the locality may establish provisions requiring a subdivider or developer of land to provide

his pro rata share of the cost of providing reasonable and necessary sewerage and drainage facilities, located outside the property limits of the land owned or controlled by him but necessitated or required, at least in part, by the construction or improvement of his subdivision or development....<sup>97</sup>

As used in this legislation, "subdivision" of land refers to division of a parcel of land into three or more parcels of less than five acres each for the purpose of transfer of ownership or building development (any division of land is included if a new street is involved).<sup>98</sup> "Development" is limited to development of land under single ownership or unified control for any business or industrial purpose or for construction of three or more residential dwelling units.<sup>99</sup>

#### E. Land Use Regulation by Soil and Water Conservation Districts

A provision in the Virginia soil conservation districts law authorizes regulation of land use by the state's soil and water conservation districts.<sup>100</sup> This authority includes enactment of ordinances imposing such controls as requirements for structural measures, specifications of cropping and cultivation methods, and provisions for retirement of highly erosive areas from cultivation. However, such ordinances must be approved by a two-thirds vote in a required referendum. This measure apparently has never been employed and therefore is not a factor in the current institutional structure for land use control.

#### F. Tax Law

Although the levying of taxes is primarily for the purpose of raising government revenues, taxes can also be used as incentives for desired actions by the parties being taxed. Energy credits and deductions for charitable contributions are two examples of using federal and state income tax codes to encourage desired actions by individuals.

The Virginia Constitution states that "(a)ll property, except as hereinafter provided, shall be taxed."<sup>101</sup> The Virginia Code delegates this power to the cities

and towns and counties of Virginia<sup>102</sup> and provides for special assessments for the purpose of preserving natural resources:

An expanding population and reduction in the quantity and quality of ... (open space) make the preservation of such real estate a matter of public interest. It is, therefore, in the public interest to encourage the preservation and proper use of such real estate in order to assure ... (the conservation of) natural resources in forms which will prevent erosion ... (and) to protect adequate and safe water supplies. (Therefore) it is the intent of this article to permit the assessment and taxation, of such real estate in a manner that will promote the preservation of it ultimately for the public benefit.<sup>103</sup>

#### IV. Endnotes

1. Act of June 30, 1948. Pub. L. No. 80-845, 62 stat. 1155.
2. Act of July 20, 1961. Pub. L. No. 87-88, 75 stat. 204.
3. Act of Oct. 18, 1972. Pub. L. No. 92-500, 86 Stat. 816.
4. *United States v. Ashland Oil and Transportation Co.* 6th Cir. 1974. 504 F.2d 1317.
5. Surface Mining Control and Reclamation Act. 1986. 30 *United States Code Annotated*. Supp. Pamph. sec. 1201 et seq.
6. Clean Water Act. 1986. 33 *United States Code Annotated*, sec. 1251 et seq.
7. *Id.* sec. 1362 (14).
8. *Id.* sec. 1311.
9. *Id.* sec. 1342.
10. *Id.* sec. 1362 (14).
11. *Id.*
12. *Id.* sec. 1314(e).
13. *NRDC v. Costle*. 1977. 568 F.2d 1369, D.C. Cir.
14. *Code of Federal Regulations*. 1985. Sec 122.2(b).
15. For information concerning the historical development of EPA's urban stormwater regulations, see 49 *Federal Register*, 38010, 1984; 49 *Federal Register*, 9362, 1985; and 50 *Federal Register*, 32548, 1985.
16. Water Pollution Control Federation, Nov. 1985. "Highlights." Vol. 22, no. 11, 4.
17. CWA. Supp. Pamph. No. 1, May 1987. *Supra* n. 6, sec. 1342 (p).

18. *Id.* sec. 1342 (p) (2) (E).
19. *Id.* sec. 1288.
20. U.S. Environmental Protection Agency Nonpoint Source Task Force. Oct. 25, 1984. "Final U.S. Environmental Protection Agency Nonpoint Source Strategy," 1
21. CWA *supra* n. 6 sec. 1288 (a) (2).
22. This requirement was clarified in *NRDC v. Train*. D.C. D.C. 1975. 396 F. Supp. 1386.
23. 40 *Code of Federal Regulations*. 1985. Sec. 130.6 (c) (4) (i).
24. CWA. 1978. *Supra* n. 6 sec. 1315 (b).
25. *Id.* sec. 1315 (b) (1) (E).
26. 40 *Code of Federal Regulations*. 1985. Sec. 130.8 (a)
27. *Id.* sec. 130.6 (c) (4) (ii).
28. *Id.* sec. 130.6 (e).
29. CWA. Supp. Pamp. No. 1, May 1987, *Supra* n. 6 sec. 1329.
30. *Id.* sec. 1329 (b) (2) (B)
31. *Id.* sec. 1329 (h).
32. *Id.* sec. 1256.
33. *Id.* sec. 1329 (e).
34. *Id.* 1986. Sec 1285 (g).
35. *Id.* sec. 1285 (j).
36. *Id.* sec. 1285 (j) (2) (A).
37. *Id.* sec. 1288(j).
38. *Constitution of Virginia*. Art. XI, sec. 1.
39. State Water Control Law. 1982 and Supp. 1986. *Virginia Code Annotated*. Sec. 62.1-44.15 et seq.
40. *Id.* 1982. Sec. 62.1-44.2.
41. *Id.* sec. 62.1-44.3 (4).
42. *Id.* Supp. 1986. Sec. 62.1-44.15 (13).
43. Virginia Water Control Board. 1981. "Best Management Practices Handbook - Management." Planning Publication 322, I-5.

44. *N.R.D.C. v. Train, Supra* n. 22.
45. Virginia Water Control Board. 1984. *Water Quality Management Planning in Virginia under Section 208, Public Law 92-500 1973-1983* Virginia Water Control Board Information Bulletin 555, iii-v.
46. A sixth handbook on surface mining was deleted for consideration after the U.S. Congress enacted the Surface Mining and Reclamation Act of 1977. This act initiated a regulatory (rather than voluntary) program over pollution stemming from surface mining operations. Virginia State Water Control Board, 1984. *Annual Report: Best Management Practices Program for Abatement of Nonpoint Source Pollution in Virginia*. June 1985. Virginia Water Control Board Information Bulletin 562, 2-3.
47. Virginia Water Control Board *supra* n. 45.
48. Virginia Water Control Board *supra* n. 43, 1-2.
49. Interview August 30, 1985, with M. Leon Musselwhite, Engineer, Office of Water Resources Planning, Virginia Water Control Board, Richmond.
50. Virginia Water Control Board *supra* n. 43, iii.
51. *Id.* IV-3.
52. *Id.*
53. *Id.* IV-14.
54. *Id.*
55. *Id.* IV-4.
56. *Id.* IV-3.
57. *Id.* IV-5.
58. *Id.*
59. See Virginia Water Control Board. 1984. "Water Quality Inventory (305(b) Report) -Virginia." Information Bulletin 558, Vol. 1, 50.
60. Erosion and Sediment Control Law. 1983 and Supp. 1986. *Virginia Code Annotated*. Secs. 21-89.1 *et seq.*
61. The Commission was renamed the Virginia Soil and Water Conservation Board as of Jan. 1, 1985, with the Division of Soil and Water Conservation of the Department of Conservation and Historic Resources to provide administrative and technical functions. *Virginia Code Annotated*. Supp. 1985. Secs. 21-6 and 21-7. All further references in this report are to DSWC.
62. ESCL. 1983. *Supra* n. 55, sec. 21-89.4.
63. *Id.* sec. 21-89.5 (d).

64. *Id.* sec. 21-89.6 (a, f).
65. *Id.* Supp. 1986. Sec. 21-89.10 (b).
66. *Id.* 1983. Sec. 21-89.11 (c).
67. *Virginia Code Annotated.* 1981 and Supp. 1986. Secs. 15.1-446.1 *et seq.*
68. *Id.* secs. 15-486 *et seq.*
69. *Id.* secs. 15-465 *et seq.*
70. Soil Conservation Districts Law. 1983. *Virginia Code Annotated.* secs. 21-1 *et seq.* 1983 and Supp. 1986 at sec. 21-66 *et seq.*
71. *Virginia Code Annotated.* 1984 and Supp. 1986. Secs. 58.1-3229 *et seq.*
72. ESCL. *Supra* n. 60.
73. *Id.* 1983. Sec. 21-89.6 (a).
74. *Virginia Code Annotated.* 1981. Sec. 15.1-21.
75. *Id.*
76. Virginia Area Development Act. 1981 and Supp. 1986. *Virginia Code Annotated.* Secs. 15.1-1400 *et seq.*
77. *Id.* Supp. 1986. Sec. 15.1-1403 (a).
78. *Id.* Supp. 1986. sec. 15.1-1405.
79. *Id.* sec 15.1-1405 (b).
80. VADA. 1981. *Supra* n. 71, sec. 15.1-1420.
81. *Virginia Code Annotated.* 1981 and Supp. 1986. Sec. 15.1-945.1 *et seq.*
82. Letter July 25, 1985, from M. H. Wilkinson, Executive Director of the Commission on Local Government, to Gordon M. Wells.
83. *Tabler v. Fairfax County.* Va. 1980. 269 S.E. 2d 358, 361.
84. ESCL. 1983. *Supra* n. 55, sec. 21-89.5 (c).
85. *Id.* sec. 21-89.6 (a).
86. *Id.* sec. 21-89.5 (e).
87. *Id.* sec. 21-89.7.
88. *Id.* sec. 21.89.11 (a).

89. *Id.* Supp. 1986. Sec. 21.89-8 (d).
90. *Virginia Code Annotated*.1981. Sec. 15.1-446.1.
91. *Id.*
92. *Id.* sec. 15.1-486.
93. *Id.* Supp. 1986. Sec. 15.1-489.
94. *Id.* sec. 15.1-490.
95. *Virginia Code Annotated*. 1981. Sec. 15.1-465.
96. *Id.* Supp. 1986. sec. 15.1-466 (d).
97. *Id.* sec. 15.1-466 (j).
98. *Id.* 1981. Sec. 15.1-430 (l).
99. *Id.* sec. 15.1-430 (m).
100. SCDL. 1983. *Supra* n. 70 secs 21-66 *et seq.*
101. *Virginia Code Annotated*. 1984 and Supp. 1986. Sec. 58.1-3000 *et seq.*
102. *Id.* sec 58.1-3229 *et seq.*



## **EVALUATION OF THE IMPLEMENTATION OF NPS POLLUTION CONTROLS BY VIRGINIA'S LOCAL GOVERNMENTS**

Since administration of land use control measures applicable to NPS pollution is primarily the responsibility of Virginia's localities, performance of local governments in implementing these controls is a major determinant of the effectiveness of the state's effort. This section attempts to evaluate local implementation of NPS controls by analyzing relevant factors and examining information collected from several case studies.

The focal point of this evaluation is the erosion and sediment control program created by ESCL. While other land use controls may be essential to the control of NPS pollution under certain conditions, application of these other measures has not been systematic among Virginia's localities. Because they are mandatory and are directly applicable to NPS pollution control, the erosion and sediment control programs provide a useful focal point for considering local NPS efforts. Analysis of these local programs attempts to identify the role other control measures play.

### **I. An Assessment Framework**

The effectiveness of government programs is difficult to assess because of limited data and divergent influences within the area of concern. These problems are especially significant in erosion and sediment control, and direct assessment of program impact on water quality is not feasible. Evaluation, therefore, must be based on indirect comparison of program elements to characteristics generally considered desirable.

The framework for evaluation of local programs studied provides for assessment in these areas:

1. Scope of program authority;
2. Program resources;
3. Administrative procedures;
4. Inspection and enforcement; and
5. Administrative perspective.

Each is described, including discussion of the rationale for including the factor and possible indicators useful in determining program adequacy. Following this description, the evaluation framework is applied to local erosion and sediment control programs under ESCL.

## A. Scope of Program Authority

The adequacy of program authority will be evaluated by consideration of:

1. Range of NPSs covered;
2. Impact of exemptions;
3. Clarity of legislative authority;
4. Perception of authority by program administrators;
5. Constitutional limitations on regulation of land use; and
6. Adequacy of technical standards.

An essential determinant of the effectiveness of any management program is the extent to which it encompasses the sources of the problem to be addressed. In a problem with sources as diverse as NPS pollution, complete coverage of all of them within a single management program is unlikely. The question is whether programs applicable to the components of the problem collectively provide adequate coverage and coordination for comprehensive management.

The scope of individual programs is limited by the exemptions that are a common feature of natural resource management programs. Small scale operations and special cases not likely to produce significant adverse effects on others or on the environment in general are often excluded to eliminate an unnecessary burden on the parties involved and to reduce the burdens of program administration. However, exemption of significant classes of parties as a result of political pressure during legislative enactment or faulty drafting of legislation can undermine program effectiveness.

Determination of the scope of individual management programs requires interpretation of enabling legislation defining specific authority conferred. In the application of land use controls to NPS pollution, a question may arise as to whether the control measures can be employed because such authority was created before concern for water quality protection arose, and may not explicitly state this objective. Resolution of this issue requires individual evaluation of relevant enabling legislation.

The perception of their authority by program administrators is an issue related to clarity of legislative provisions. Ambiguity in such provisions is apt to result in some administrators failing to exercise their power and is, therefore, important to program administration.

An overriding limitation of authority applicable to government programs for natural resources management is created by the constitutionally protected property interest of private land owners. Constitutional prohibitions against

governmental taking of property in some cases have been successfully asserted against programs attempting to regulate private land development. Not all regulation that restricts private rights is invalid, but constitutional restrictions are an important factor in the design and implementation of controls on the use of private property and must be considered in evaluating program authority.

A final factor in evaluating the effectiveness of program authority is the adequacy of technical standards used to impose specific requirements on performance of the regulated activity. If such standards are deficient, the program will ultimately prove ineffective regardless of its other attributes.

## B. Program Resources

Implementation of any management program depends on adequate resources and on the necessary support in functionally related areas. The resource issue will be discussed in terms of:

1. Direct government funding;
2. Permit processing fees;
3. Technical support; and
4. Planning support.

Resources necessary for performing direct program responsibilities consist of adequate operational funding and personnel with training in relevant program areas. In NPS pollution control, personnel requirements include a technical staff to review site plans, evaluate proposed measures for control of runoff, and perform necessary inspection. Site plan review requires training in recognizing environmental threats posed by development activity and evaluating the effectiveness of control measures. Inspection to ensure timely plan implementation and maintenance of runoff control measures is a critical element of program effectiveness. The administering body must have in-house staff to fulfill these functions or have access to such personnel from other organizations.

Although direct program costs usually require support from general government revenues, permit processing fees imposed on developers can be a significant source of funds. If the position is taken that program costs are necessitated to prevent adverse effects from development for private benefit, complete recovery of program costs from development interests is justified. However, consideration of the social benefits of development and other factors may result in adoption of an approach attempting only partial cost recovery.

An alternative or supplement to using local government resources is to provide outside technical assistance for such functions as site plan review. Technical assistance may originate from federal or state governments or from special

purpose government entities such as soil and water conservation districts. Key factors in evaluating provisions for technical assistance include adequate available personnel and the extent to which such assistance can readily be utilized and incorporated into program operation.

Program implementation also requires planning support as a basis for decision making regarding development proposals. Application of land use controls to protect environmental values requires data on existing natural resources and land use suitabilities. Complete information cannot be acquired as individual permit applications are received but must be obtained through a systematic, long-range program for collecting and analyzing data on such factors as soil types, slopes, and drainage characteristics. If presented in the form of land use suitability maps, such information can facilitate regulatory decision making in a range of environmental management programs. The absence of the necessary planning support can serve as a major weakness in their implementation.

### C. Administrative Procedures

Government programs should be implemented through systematic, efficient procedures that achieve program objectives at the least cost and without unnecessary burden on affected parties. Desirable characteristics include:

1. Timely application of controls to the activities encompassed;
2. Application of control measures through a clearly-understood, standardized sequence of decision steps;
3. Standardized application of variance procedures for accommodating site variation; and
4. Periodic program evaluation and improvement as necessary.

A primary function of the organizational framework for implementing environmental regulations is ensuring the application of controls to individual activities within the regulated class. Administrative procedures must provide a means to identify each activity subject to regulation early enough to ensure the effectiveness of regulation. A common means of achieving this is to establish satisfaction of the environmental control as a prerequisite to another generally applicable government control such as a building permit. Failure to establish such procedures will probably lead to only partial coverage of the class of regulated activities and a reduction in the effectiveness of controls.

Administrative procedures should provide a standardized sequence of steps clearly understood by both the administrative officials and the regulated class. Standardization facilitates systematic application of controls and reduces the subjective element in program administration and the possibility of oversights and omissions. Checklists containing a schedule of steps and time allowances

for compliance is a common method of achieving standardization. Greater uniformity in program administration should minimize hardship imposed on both the administrative officials and the regulated parties.

Although standardization is an important factor in program administration, flexibility must be maintained to accommodate special conditions arising from site variations. Implementing variance provisions within a framework of established guidelines ensures consistent disposition of variance requests. Lack of guidelines can lead to largely subjective decisions and inconsistencies.

Finally, administrative procedures should include periodic evaluation of program effectiveness in achieving goals. Such evaluation can provide a basis for program modifications to remove deficiencies and further develop its capabilities. Evaluations can be accomplished by an organization external to the administrative body as in the review of local programs by a state agency or can be undertaken internally.

#### D. Inspection and Enforcement

The dependence of program effectiveness on inspection and enforcement dictates that particular consideration be given these elements. Inspection and enforcement will be evaluated in terms of:

1. An adequate inspection staff;
2. Use of systematic inspection procedures;
3. Adequate remedies for violation; and
4. Adequate bonding provisions.

Having an adequate inspection staff is a component of the general resources issue discussed previously and is repeated here for emphasis. An effective program must have enough properly trained inspectors to ensure implementation of mandated runoff control measures. Because site conditions may change rapidly, the inspection staff must be able to verify both initial installation of control measures and proper maintenance during the full period of their intended operation. Inadequate inspection and enforcement capability is likely to negate program effectiveness.

The use of systematic procedures, important throughout program administration, is particularly significant to inspection and enforcement. Adequate frequency of inspection is facilitated by use of a standardized schedule, and thoroughness can be enhanced by use of a checklist. Documentation of inspection through consistent use of inspection logs is desirable. The steps employed to induce compliance with requirements should also be standardized to expedite correction of deficiencies.

The range of remedies available for addressing program violations is a key factor in the timeliness and effectiveness of enforcement. An administrative stop-work mechanism can be important in achieving timely correction of violations. In the absence of this mechanism, incentive for early correction may be lacking. The type of judicial actions available to program administrators is also important. Provision should be made for both injunctive relief and actions for imposition of monetary penalties. Flexibility is enhanced by authorization of both civil and criminal actions. The possibility of criminal action appears appropriate for major intentional violations of program provisions, but application of civil penalties for less serious violations has received increased acceptance in recent years. Classification of minor violations as civil offenses reduces the stigma associated with a criminal action and perhaps increases the willingness of the judiciary to impose penalties on violators. Perceptions of the judiciary regarding the significance of the NPS pollution problem and the propriety of available remedies is important in enforcement of controls.

Bonding requirements provide financial resources for implementing and maintaining control measures when developers are unwilling or unable to fulfill obligations imposed. Bond amounts should be tailored to ensure availability of funds to meet such responsibilities.

#### E. Administrative Perspective

The effectiveness of a natural resources management program is directly influenced by the perspective of the administrative unit. Relevant issues include:

1. Degree to which the physical boundaries of the problem and the political boundaries of the managerial entity coincide;
2. Provisions for interdisciplinary review of proposed development; and
3. Provisions for public participation.

Differences in management perspective are a fundamental reason natural resource management decisions made at different levels of government often disagree. For example, a local water management decision may diverge from one made at the state level. While the state decision might consider a comprehensive range of benefits and costs (except in actions with interstate impacts), the local decision is more likely to be based on an incomplete view of benefits and costs because local political boundaries and hydrologic boundaries frequently do not coincide.

The limited perspective of many local governments relative to hydrologic systems may create a significant obstacle to implementation of effective controls for NPS pollution. Incentive to implement controls may be especially weak in localities where the impacts of runoff occur outside local political boundaries. Since

benefits occurring elsewhere may be of little local value, a benefit-cost analysis of initiating controls will probably indicate controls to be unjustified. From the perspective of the adversely affected locality, the benefit-cost analysis may look more favorably upon control measures, but mechanisms for ensuring the implementation of controls within the upstream jurisdiction may be unavailable. Cooperative approaches exist and may be possible in some situations, but their adoption generally faces difficulty. Wherever NPS pollution problems cross political boundaries, jurisdictional fragmentation may be a major obstacle to effective management at the local government level.

Another issue related to program perspective is the extent of provisions for interdisciplinary review of proposed development. The broad range of social and economic consequences of land development is generally recognized, but provision for full consideration of such effects, together with environmental impacts, may be absent because managerial decision making tends to be fragmented along narrow functional or disciplinary lines. Perspective can be broadened by incorporating interdisciplinary review and input into permitting procedures and other appropriate program functions.

Program perspective can be broadened further through procedures that ensure public participation in decision making. Active involvement of an informed public provides broad identification of social, economic, and environmental consequences of development that can be of assistance in managerial decision-making processes.

## **II. Application of the Evaluation Framework to Erosion and Sediment Control Programs of Virginia's Localities**

For purposes of this study, the evaluation framework was applied to 18 local erosion and sediment control programs selected from across the state. The counties and municipalities include:

Town of Abingdon	City of Manassas
City of Chesapeake	City of Martinsville
Chesterfield County	Rappahannock County
Town of Culpeper	City of Richmond
City of Fredericksburg	Roanoke County
Gloucester County	Rockingham County
Henry County	Russell County
James City County	Stafford County
City of Lexington	Wise County

These programs were not selected randomly, but were chosen to represent a variety of geographic conditions and rates of land development activity.

The primary data gathering method utilized was the personal interview, supplemented with written questionnaires completed by the interviewees. The interviews were conducted according to a standard format to ensure comparability of results. The interview format employed is shown in Appendix A. Appendix B contains the written questionnaire and the cumulative results which are based on responses from 17 of the 18 localities included. The following discussion focuses on these results and, in an attempt to draw generalizations concerning program effectiveness, on such broader issues as the scope of authority conveyed by ESCL. The results for each of the case study localities are available from the authors upon request.

## A. Scope of Program Authority

Evaluation of the scope of the Virginia erosion and sediment control program must begin with recognition that it has selective focus and does not purport to be a mechanism for general NPS pollution control. The following sections evaluate the authority for NPS pollution control created by ESCL, examine the extent to which other measures supplement programs under ESCL, and investigate other factors affecting program authority in addition to the provisions of the enabling legislation itself.

### 1. Range of NPSs Covered

A major limitation of ESCL is its focus on construction-related land disturbances. No attempt is made by the legislation to impose constraints on established land uses that may be generating NPS pollution. Nor does it provide a basis for continuing attention to the quality of runoff after the land-disturbing phase of development is complete.

### 2. Impact of Exemptions

ESCL specifically excludes agriculture and silviculture from all regulatory action. In a majority of the localities studied, agriculture was seen as a highly or moderately significant contributor to erosion and sediment control problems.

Within the general class of land-disturbing activities regulated by ESCL, exemptions include construction of single family homes not part of subdivision development and all development of areas of less than 10,000 square feet. While exemption of such projects appears generally logical because of their small scale, problems can occur. For example, development of tracts of less than 10,000 square feet may pose problems where highly erodible or other environmentally sensitive lands are involved. The exemption for construction of single homes in some cases has been inappropriately used to cover subdivision

construction by developers who build houses on nonadjacent lots or who stagger construction periods to avoid ESCL jurisdiction.

### 3. Clarity of Legislative Authority

Although the case studies indicate the provisions of ESCL to be relatively free of ambiguities, one aspect given differing interpretations among programs concerns the timing of control implementation. ESCL provides that no grading, building, or other permits shall be issued for a regulated land-disturbing activity without submission of an approved erosion and sediment control plan (or proper certification of such approval); some program administrators allow initial development activities such as site clearing to proceed prior to plan approval. There are also different interpretations regarding time requirements for implementation of control measures included in approved erosion and sediment control plans.

Clarity of authority is more significant in applying land use controls to NPS pollution from activities not within the jurisdiction of ESCL. In these situations, NPS control requires local reliance on other enabling legislation such as that for zoning and subdivision regulation. This legislation collectively provides a wide range of authority for local governments to control development, but use of some of these measures to control NPS pollution is a new application that may give rise to questions of validity.

For example, the absence of legislative reference to water quality protection as an explicit objective of zoning was an issue in a legal challenge to a recent attempt by Fairfax County to apply zoning toward this end. This 1985 case<sup>1</sup> arose from a decision by the Board of Supervisors to modify zoning in the Fairfax County portion of the Occoquan watershed to allow one dwelling per five-acre lot instead of the previous one per acre. This downzoning action followed a study concluding that further degradation of the quality of the reservoir would be inevitable if development were to proceed according to the existing zoning.<sup>2</sup> This action occurred during a period when downzoning actions were taken by other political subdivisions within the Occoquan Basin. Defense of the case by Fairfax County was made more difficult by the fact that the rezoning, although covering about 41,000 acres, was a "piecemeal" action since it did not cover the entire county. A piecemeal rezoning, to be upheld under Virginia law, must be shown to be justified by a change of circumstance since the last general rezoning.

The county's downzoning action was upheld by the court. Citing several planning studies of development trends and alternative approaches to water quality protection, the court agreed that additional information indicated changed circumstances justifying the piecemeal action. The decision upheld land use controls as a valid means toward water quality protection and rejected

arguments that the rezoning was exclusionary and confiscatory. However, the decision excluded specified properties of three of the challengers because plan approval prior to the downzoning created "grandfathered" status exempting them from the five-acre minimum lot size requirement.

The usefulness of the decision is limited by the status of the court involved; no appeal to the Virginia Supreme Court was taken. Nevertheless, the decision is significant since it upholds the most widespread application of land use controls for NPS pollution control in Virginia to date. The case, therefore, has important implications for localities considering a broad-based NPS management strategy.

#### 4. Perceptions of Authority by Program Administrators

Perceptions vary among localities of the regulatory powers granted them by enabling legislation. In addition to differing interpretations, levels of support by local elected officials are significantly different. Political influence in administering programs is generally subtle and difficult to document, but the case studies indicated political influence. It took such forms as apparently arbitrary mandates to shorten plan review times to reduce burdens placed on developers; intercession on behalf of a particular development project; and creation of a general climate adverse to rigorous enforcement of program requirements.

#### 5. Constitutional Limitations on Regulation of Land Use

Constitutional safeguards have been an important constraint on governmental action regulating private property in the United States. The Fifth Amendment to the federal Constitution states "nor shall private property be taken for public use, without just compensation."<sup>3</sup> The Virginia Constitution states "(t)hat no person shall be deprived of his life, liberty, or property without due process of law; that the General Assembly shall not pass any law . . . whereby private property shall be taken or damaged for public uses, without just compensation."<sup>4</sup>

These and other constitutional provisions (such as requirements for equal treatment under the law) have undergone substantial judicial interpretation of their constraining effect upon governmental action, especially police power regulation of land use. Little precedent exists explicitly defining the limits of the police power for water quality management, but several principles concerning exercise of that power for land use control can be identified from decisions of the Virginia Supreme Court in conflicts between local governments and developers.

Of special interest with regard to the validity of NPS pollution control are principles concerning proper subject matter for use of the police power, the role of economic impact in determining validity of regulations, the need for uniform application of regulations to those similarly situated, and the assignment of the burden of proof when regulations are challenged.

## a. Proper Subject Matter

Regulations imposed under the police power generally must be related to the public health, safety, morals, or the general welfare. While this scope is broad, it is not without limit. Several cases illustrate that local ordinances can be held invalid because of a lack of proper subject matter. In *Board of Supervisors v. Rowe*,<sup>5</sup> an ordinance was challenged that prohibited certain types of businesses from a traffic corridor to ensure architectural compatibility. The Virginia court held such prohibition to be invalid because it found no relationship between the prohibition and the general welfare. Under current Virginia law, a locality may adopt an ordinance for the preservation of historic areas and impose architectural restrictions within such areas.<sup>6</sup>

Another case concerning the limits of police power is *Alexandria v. The Texas Co.*<sup>7</sup> The city had granted a zoning change needed for a filling station only after the defendant had agreed not to install floodlights on the premises. Apparently such lights were a common feature at filling stations, including several in the immediate vicinity. Some time later, the defendant installed floodlights and the city filed a complaint. The court decided the restriction was invalid since prohibition of the lighting was not related to the general welfare. In fact, the court found evidence suggesting it promoted public health and safety.

In other cases, the court has upheld regulations that appear to have only a slight relationship to the public safety or welfare. In *Peck v. Kennedy*<sup>8</sup> an ordinance preventing the stringing of pennants on a car lot was held valid because the court found public safety factors to justify the ordinance. Passing motorists could have been distracted by the flapping pennants, endangering pedestrians and other motorists. Thus, the ordinance was held to be a proper measure under the police power.

The court should have little difficulty in finding a relationship between regulations to control NPS pollution and the general welfare. Although the position of the Virginia Water Control Board regarding insufficient data to support a state regulatory approach to NPS control<sup>9</sup> may strengthen a judicial challenge of local regulatory measures, the adverse effects of NPS pollution, together with the flood potential from uncontrolled runoff, appear to be recognized to the extent that the Virginia Supreme Court would find control to be related to the general welfare.

## b. The Effect of Economic Impact on Validity of Regulation

Police power regulation is controversial because of the resulting economic impact on private interests. While limits exist on the extent of impact that can legitimately be imposed, the fact that there are economic effects does not necessarily invalidate regulation. This is illustrated by *Bowman v. State*

*Entomologist*<sup>10</sup> which challenged state action authorizing destruction of cedar trees to control a fungus that adversely affects apple orchards. The owners of orchards benefited while the cedar tree owners were subjected to loss. The Virginia court upheld the statute because protection of an important industry was viewed as related to the public welfare.

The Virginia statute at issue in *Bowman* was also upheld by the U.S. Supreme Court in *Miller v. Schone*.<sup>11</sup> The Court held that the state had not exceeded its constitutional powers by ordering the destruction of one class of property in order to save another; the legislature had determined that the class of property to be saved was of greater value to the public. The choice was necessarily the destruction of one type of property to protect another, and the Court found that the exercise of the police power was not unreasonable and raised no issues of due process regarding the lack of compensation to the owners of the cedar trees.

Although certain elements of a property right (e.g., the right to maintain cedar trees in *Bowman*) may be destroyed, regulation that denies the owner all use and enjoyment of property is void because the result is confiscatory and constitutes a taking. This principle is illustrated by the 1971 case of *Boggs v. Board of Supervisors*.<sup>12</sup> A county had zoned land residential, but this use was no longer compatible with the neighborhood's character. The residential classification was seen as precluding all practical uses of the land and leaving it unsalable. The zoning requirement was held to be unreasonable and invalid.

The *Boggs* case shows that extreme economic impact can be the reason for a decision that regulation exceeds the boundaries of the police power and constitutes a taking of property. Such a decision appears less likely where stormwater management requirements are imposed on a landowner than where limitations on type of land use are imposed. But imposition of requirements for stormwater control conceivably could be held invalid if the costs of necessary measures were excessive in relation to the value of the property, thereby effectively prohibiting development. There is no direct precedent regarding this situation.

### c. Need for Uniformity in Application of Regulations

A regulation not uniform in its application to those similarly situated is void on the basis that it amounts to a denial of equal protection of law. This issue was the primary factor in *Board of Supervisors v. Allman*.<sup>13</sup> The county had denied the landowner a zoning request for higher density development although it had granted a similar request to landowners nearby. This action was seen as discriminatory because the county was favoring one developer over another without adequate justification. Although the county claimed that necessary public services were not available, the facts disclosed that these services would be available by the time the development was ready for occupancy.

In *Board of Supervisors v. Carper*,<sup>14</sup> the supervisors had enacted a restrictive ordinance in the western half of a county, but allowed higher density development for a period of two years after the ordinance became effective. The court considered this time feature to be discriminatory since it arbitrarily deprived an owner of the right to a higher density development after the period elapsed. No police power justification for the discrimination was found.

Discrimination was also a factor in the previously cited *Texas Co.* case. The court stated that, under the equal protection clause of the fourteenth amendment, the city could not discriminate against the owner by denying the lighting request while granting it to another. An exception to the uniformity requirement exists when there is a valid police power reason underlying the discrimination.<sup>15</sup>

The requisite uniform application of requirements to those similarly situated appears to pose no major difficulty to the implementation of NPS pollution controls. Imposing different requirements on individual landowners seems justifiable if such differences are based on variation in site conditions. Consistency in regulatory criteria applied should be sufficient to satisfy the uniformity requirement.

#### d. Burden of Proof When Regulations are Challenged

The principles concerning this issue in zoning have been stated by the Virginia Supreme Court:

The general principles applicable to a judicial review of the validity of zoning ordinances are well settled. The legislative branch of a local government in the exercise of its police power has wide discretion in the enactment and amendment of zoning ordinances. Its action is presumed to be valid so long as it is not unreasonable and arbitrary. The burden of proof is on him who assails it to prove that it is clearly unreasonable, arbitrary or capricious, and that it bears no reasonable or substantial relation to the public health, safety, morals or general welfare. The court will not substitute its judgment for that of a legislative body, and if the reasonableness of a zoning ordinance is fairly debatable, it must be sustained (citation omitted). The exercise of the police power is subject to the constitutional guarantee that no property shall be taken without due process of law and where the police power conflicts with the Constitution, the latter is supreme, but courts will not restrain the exercise of such power except when the conflict is clear.<sup>16</sup>

While this statement appears to lend substantial support for local governments to exercise the police power, the Virginia court has moved toward a more restrictive view since the statement was made. According to a recent study<sup>17</sup> of the court's land use decisions, the earlier tendency to grant local

government considerable discretion in applying land use controls is less in evidence. This analysis finds that the state supreme court has increased its scrutiny and generally decreased the deference granted to local discretion. The study suggests that the review process has become so broad as to constitute judicial exercise of the zoning function and the effective repeal of the enabling legislation granting local authority.<sup>18</sup>

With regard to the substance of the court's recent decisions, the study finds a high degree of protection for the rights of private land developers. The court has frequently overturned local controls in conflict with plans of developers.<sup>19</sup> The position indicated by these decisions suggests that the court may take a restrictive view of land use controls for achieving environmental quality goals if they involve a substantial impact on development.

## 6. Adequacy of Technical Standards

Each local erosion and sediment control program in Virginia is required to adopt standards for those control practices at least as stringent as state-prepared guidelines. State guidelines provide criteria containing general requirements and detailed standards and specifications for conservation practices that can be incorporated into individual erosion and sediment control plans. Several local programs included in the case studies have adopted standards more stringent than required by state guidelines.

Provision of minimum standards by the state effectively eliminates variability as a potential source of local program inadequacy. Within this approach, effectiveness is dependent almost solely on implementation rather than on the technical standards upon which the program is based.

### B. Program Resources

Inadequate resources have been characteristic of many of Virginia's local erosion and sediment control programs. Surveys published in 1976<sup>20</sup> and 1985<sup>21</sup> indicate that many localities lack the capability to enforce local erosion and sediment control ordinances. Forty-three percent of the localities responding in the 1985 survey stated that insufficient enforcement of local ordinances was due to a lack of personnel. In addition, both surveys found that few local program administrators and inspectors were properly trained in erosion and sediment control.<sup>23</sup> The 1985 survey reported that 80 percent of the state's soil and water conservation districts responding were of the opinion that the localities within the districts did not have the technical expertise to properly administer erosion and sediment control programs.<sup>24</sup>

Local resource limitations have been recognized by state government through

adoption of a financial assistance program (discussed previously as part of the state role) for localities within the watersheds of the Chesapeake Bay and the Chowan River. Though the seriousness of the NPS pollution problem in these areas has been widely recognized, resource deficiencies appear no less likely to occur in other regions of the state. Further assessment is needed of the resource issue as a factor in continuing NPS pollution management efforts in Virginia. Although detailed evaluation of resource needs and the adequacy of local expenditures is beyond the scope of this study, the case studies provide insight into this issue.

A major problem for many erosion and sediment control administrators is the addition of new responsibilities under ESCL to existing government programs without a corresponding increase in staff and other resources. In rural areas particularly, responsibilities under ESCL often have been added to the normal duties of local building and zoning inspectors without creating additional staff positions. Many of the programs appear to be significantly understaffed. As a consequence of additional burdens imposed, some program administrators expressed hostility toward the program, an attitude unlikely to produce effective implementation. As indicated in the results summarized in Appendix B, increased state financial assistance and additional personnel for inspection and enforcement would probably improve program effectiveness.

Although a permit application fee is authorized (ESCL provides for fees commensurate with services rendered, not to exceed \$300.00), not all localities fully employ this measure to ease financial burdens of implementation. A fee between \$10 and \$50 for the first acre to be disturbed plus \$5 to \$10 for every additional acre appears common. By contrast, building permit programs in these same jurisdictions usually are financed by imposing fees commensurate with the costs of administration.

Reliance on technical assistance to counter local resource limitations is a significant factor in some local erosion and sediment control programs. Outside assistance is commonly used in the technical review of plans submitted for ESCL permitting. The primary source is the state's network of soil and water conservation districts as assisted by state government and the U.S. Soil Conservation Service. The state provides several categories of funding, including operational funds and funds for part-time and full-time personnel. State aid to the districts within the Chesapeake Bay watershed has increased greatly from special appropriations for that region as part of state efforts to protect Bay water quality. However, funding on a statewide basis traditionally has been limited, and some categories of funding require matching funds from the district. As a consequence, many district operations are of limited scope. This fact gives added importance to the technical support offered by SCS personnel. On a statewide basis, this assistance is provided by a staff of 200-250 people.<sup>25</sup> Although the help available to local governments from the districts (as assisted by state and

federal governments) may be less than optimum due to various constraints, the primary issue in some cases appears to be under-utilization of that help. When asked about the failure to use this assistance, one program administrator offered the explanation of "local politics."

Planning support is available for administration of local land use control programs. A basic resource is the state soil survey underway as a cooperative project of state and federal governments. Soil surveys have been published for 41 counties, with another 14 county surveys complete and awaiting publication.<sup>26</sup> These surveys provide information such as soil types and slopes of direct relevance to implementing erosion and sediment controls. Comprehensive plans, developed by localities under state law, are another source of support.

Utilization of planning support varies. In urban and urbanizing areas, planning resources are used in program administration. In rural areas, however, plan review is often undertaken by one individual on the basis of personal knowledge of local conditions without appreciable reliance on other resources. This may produce good results in some cases but is apt to be unsatisfactory in others.

### C. Administrative Procedures

Formalization of administrative procedures varies among localities, increasing toward the urban end of the scale where there are larger erosion and sediment control programs. This variation reflects, at least in part, differences in development rates and corresponding program workloads.

Procedures for assuring timely application of controls to land development activities vary greatly. In rural areas, program administrators are less confident of their authority to encourage early compliance with the law. Few of the rural communities use checklists to educate developers about requirements of the law. In localities where plan review is conducted by the soil and water conservation district and SCS, there is some confusion concerning responsibility for enforcing submission of plans. The methods of identifying developers who fail to submit a plan frequently are haphazard and do not involve cross-compliance procedures. Grading is often allowed to occur prior to site plan approval.

In the more urbanized areas, use of checklists is common to ensure understanding among developers of the legal requirements. Grading can be delayed through use of a conditioned grading permit until an erosion and sediment control plan is submitted. Cross-compliance measures are frequently used.

The procedures followed to initiate controls usually indicates the overall approach to administrative processes. Localities with well-defined procedures will probably have standardized decision steps while those without lack standardization. Despite a checklist in the DSWC Handbook, few rural communities use

this procedure. Enforcement procedures frequently appear haphazard and not uniform. In comparison, most of the urban localities have standardization.

Lack of standardization is apparent in the areas of variances and dispute resolution. Provisions for granting variances are often vague and depend on the discretion of the official involved. Most common is development of a compromise between the program official and the builder. Procedures for resolving disputes sometimes take the form of open-ended negotiations not subject to time limits or other specific guidelines. One innovative way of expediting dispute resolution involves taping all comments regarding a submitted plan and mailing the cassette to the plan's preparer. To reduce potential problems, one locality returns incomplete plans without attempting to correct inadequacies.

Procedures for evaluating and developing local erosion and sediment control programs must be considered from both the state and local perspectives. ESCL is unusual within Virginia's enabling legislation for local land use controls in the extent of state involvement in implementation. In zoning and subdivision regulation, continuing state input to program operation exists only in the form of guidelines contained in the legislation itself. By contrast, local programs under ESCL are subject to state approval and periodic review by DSWC. Two factors limit the impact of state review, however. First, no provision is made for state override of individual program decisions made at the local level (except for programs operated by soil and water conservation districts) nor for assumption by state government of responsibility for an inadequate local program. Second, the ability of DSWC staff to review local programs has been limited, especially since new agency responsibilities were created under the state's Chesapeake Bay Program. Procedures for evaluating program performance toward specific objectives and development are essentially nonexistent at the local level although individual attempts have been made to introduce improvements. In rural communities, objectives often seem vague. General perceptions of ineffectiveness were sometimes expressed without accompanying suggestions for improvement. In one rural locality where no erosion and sediment control plans had been submitted, the program administrator described his approach to the program as "letting sleeping dogs lie." Attitudes toward program improvement appear more positive in more urbanized localities.

#### D. Inspection and Enforcement

Inspection and enforcement are especially sensitive to two factors: adequate staffing and the extent to which systematic procedures are employed. Inadequate staffing is reflected in insufficient inspection. Several program administrators acknowledge inspection weaknesses as a major program deficiency.

Use of systematic, documented inspection procedures varies substantially among local programs. Documentation of inspections is rarely used in rural

localities except where violations are found. Procedures for remedying violations are often informal and undocumented. The urbanized communities more commonly document inspections and use standard written notices to correct noncompliance. Larger programs typically use an inspection log.

The range of available remedies was seen as limiting effective enforcement by program administrators. The subsequent authorization of an administrative stop-work order satisfies a need expressed by a majority of those interviewed. In some cases, program administrators had used stop-work orders prior to the change in ESCL based on the view that such action was authorized under the building code.

Evidence suggests that lack of judicial support for the erosion and sediment control program hinders effective enforcement. Administrators are generally dissatisfied with penalties imposed on violators. Typical fines levied in one county have ranged from \$25 to \$50. Such penalties have little deterrent value, even for the small contractor. As a result of this and other problems, program administrators often indicate disappointment with enforcement of program requirements.

The role of bonding in implementing erosion and sediment control plans varies among localities. ESCL authorizes but does not require bonding of developers. Rural areas usually do not require bonds as a condition of plan approval. Reliance on the reputation of local contractors is frequently mentioned as a reason. Just one rural community surveyed requires bonding, covering only 50 percent of the total estimated costs to implement the erosion and sediment control plan. The same community stated that although no bonds had been forfeited, letters of credit had been called upon at least twice.

The larger localities see a greater need for bonding. One varies the percentage based on the size of the project, but the rest require bonding of 100-115 percent of the estimated plan costs. Developers in about half of these communities had forfeited bonds because of inadequate implementation of erosion and sediment control plans, but most said that threats of forfeiture had been made. The majority of officials feel the threat of losing financial standing is a significant concern to developers. One official spoke of a "blacklist" that circulates among developers and bondsmen identifying parties with poor reputations.

The established urban communities vary in their bonding requirements. While four of the six surveyed require bonding, only one frequently uses bonding as an incentive to complete plans. In the smaller cites in which development occurs at a lower rate, the reputation of contractors is seen as a form of insurance against default on implementation of erosion and sediment control plans.

## E. Administrative Perspective

An important determinant of the effectiveness of the state's NPS pollution control program is the scope of information considered and the perspective adopted by individual administrators during implementation of ESCL and other locally administered land use controls. Adoption of a limited perspective is a potentially significant weakness. In the following sections, three aspects of the perspective issue are considered: the extent to which interjurisdictional approaches have been voluntarily adopted; the extent to which interdisciplinary review is employed; and the extent of the use of public participation within management programs.

### 1. Interjurisdictional Approaches to NPS Pollution Problems

The views of program administrators toward erosion and sediment control issues broader than the local jurisdiction are of particular interest. One indication of the exercise of perspectives extending beyond that of a single locality is the existence of cooperative interjurisdictional NPS control programs. Three such cases provide insight into the factors leading to interjurisdictional approaches and potential methods of program operation.

#### a. The Occoquan Basin

One cooperative NPS control program has developed within the Occoquan Basin in northern Virginia. In the late 1960s, the 9.8 billion gallon Occoquan Reservoir, water supply to more than 640,000 residents of suburbs adjacent to Washington D.C., was found to be in the advanced stages of eutrophication. After a one-year study, the Virginia Water Control Board responded in 1971 by initiating its "Occoquan Policy," requiring the local jurisdictions to replace the 11 secondary sewage treatment plants in the Basin with a single regional advanced wastewater treatment (AWT) plant. This plant would remove 99.5 percent of biochemical oxygen demand (BOD), 99.5 percent of phosphorus, and 97 percent of nitrogen.<sup>27</sup>

Construction of the plant for control of sewage discharges alone, however, would not have resolved the water quality management issue. During the exceptionally wet summer of 1975, 90 percent of the phosphorus and 85 percent of the nitrogen entering the reservoir came from NPSs. Water quality in the reservoir improved during a severe drought in 1976-77 when very little input came from NPSs.<sup>28</sup>

As part of the planning authorized by CWA in 1972, the Metropolitan Washington Council of Governments empowered the Northern Virginia Planning District

Commission (NVPDC) to coordinate development of an areawide water quality control plan for the Occoquan Basin. In August of 1976, NVPDC began its appraisals utilizing field data from studies conducted by the Occoquan Watershed Monitoring Laboratory and the Civil Engineering Department of Virginia Tech to develop and calibrate the Occoquan Basin Computer Model.<sup>29</sup> These studies (which covered a six-year period before the AWT plant came on line and several years after it became operational) brought the conclusion that:

future urban development in the absence of nonpoint pollution controls can be expected to increase, rather than decrease, the rate of Occoquan Reservoir eutrophication to levels which warrant concern, even after point source discharges of plant nutrients have been eliminated.<sup>30</sup>

Based on the NVPDC findings, a 208 areawide plan for the Occoquan Basin was established with two main goals: (1) implementation of the most cost-effective NPS mitigation techniques during the early stages of urbanization and (2) management of agricultural NPS loadings. NVPDC's development of the plan was supervised by an advisory committee called the "Occoquan Study Group," comprising senior staff representatives from the six jurisdictions in the Occoquan Basin as well as the City of Alexandria, a major user of Occoquan water.<sup>31</sup>

When the program was established in November 1978, administration was made the responsibility of the multijurisdictional Occoquan Policy Board, comprising the same representatives who made up the Occoquan Study Group. In February 1982, the Occoquan Basin Nonpoint Pollution Management Program was formally signed stating that:

"In order to achieve this purpose, (management of nonpoint pollution loadings), the participating political subdivisions located within the Occoquan Basin will develop and maintain local nonpoint pollution management programs by voluntary application of "best management practices" (BMPs) and the submission of necessary documentation on all drainage modification projects, BMPs, and new development as agreed by participants ...." All determinations by and recommendations of the Policy Board described herein are advisory only, and are not binding on any political subdivision or agency participating in the program.<sup>32</sup>

The Policy Board receives technical support from the Occoquan Basin Technical Advisory Committee and NVPDC. Staffed by representatives from the participating political subdivisions, water/sewer authorities, sanitary authorities, soil and water conservation districts, and various technical advisors from throughout the state, the Committee is responsible for overseeing technical investigations and making recommendations to the Board. NVPDC provides staff support to the Board and Committee, with 50 percent of the program budget contributed by the

participating jurisdictions and the other 50 percent by the Basin's two major water supply/distribution agencies. The Executive Director of NVPDC serves as chief administrative agent of the Board.<sup>33</sup>

The northern Virginia example illustrates several facets of interjurisdictional coordination. First, a direct threat to the region's water supply provided incentive for action. Second, the interjurisdictional effort received encouragement and support from government entities with broader perspectives than those of any of the individual localities. VWCB's regulatory and funding roles in sewage disposal encouraged regional solutions. The 208 planning activity under federal water quality legislation provided information and emphasized a regional approach. Finally, NVPDC facilitated interjurisdictional discussion and furnished objective information and technical support. These conditions created a more fertile climate for interjurisdictional coordination than typically exists.

#### b. The South Rivanna Reservoir Watershed

Albemarle County and the City of Charlottesville constitute another area in Virginia where jurisdictions have collaborated to address an NPS pollution problem. The motivation for the interjurisdictional action was a threat to the area's water supply, the South Rivanna Reservoir on the South Fork of the Rivanna River.

A refusal by VWCB to allocate funds to either jurisdiction until a joint agency was formed to administer the reservoir basin initiated the joint approach. The County and City hired a consultant to study the issue. Based on the report, a joint resolution was adopted forming the Rivanna Water and Sewer Authority (RWSA) in 1972 "for the purpose of acquiring, financing, constructing, and maintaining facilities for developing a supply of potable water for the County and the City and for abatement of pollution ... in the upper Rivanna River Basin."<sup>34</sup>

Shortly after RWSA began operations in July 1973, it appointed a four-person advisory committee to study the reservoir's pollution problems. In spite of the efforts of the County and City to work together, however, funding for the study became a major source of contention. The cooperative approach might have ended except for increased development pressure in the South Rivanna watershed and rising public concern over water quality. The two-year study was finally initiated by RWSA, to be funded by increased water rates.

Of significance in the evolution of the watershed management program was the 1975 election of an Albemarle Board of Supervisors more sympathetic to reservoir protection. In January 1976 the new board enacted an ordinance prohibiting any construction within 25 square miles of land surrounding the reservoir water treatment plant. In April 1976, the County and City jointly

purchased 80 acres of land on the Ivy Creek subwatershed of the reservoir, creating a public park with emphasis on passive recreation.

A year later, the study of the reservoir's pollution problem was completed, with these findings:

1. The reservoir was eutrophic, with phosphorus the limiting nutrient.
2. The current rate of sedimentation was causing the reservoir to lose 8 million gallons of storage capacity per year.
3. The enactment of a runoff control ordinance was recommended.
4. A frozen foods processing plant discharging into the Rivanna River should decrease discharges by 95 to 98 percent<sup>35</sup>

Because the reservoir was surrounded by County land, action on the findings of the RWSA study was essentially the responsibility of Albemarle County. The Board of Supervisors undertook several actions: a County runoff control ordinance was enacted; the County's comprehensive plan was revised, placing stronger emphasis on protection of the South Rivanna Reservoir;<sup>36</sup> the processing plant contracted with the Albemarle Service Authority to discharge all its wastewater into an interceptor sewer.

In March 1978, the Board appointed a Watershed Management Plan Committee to review land use activities in the basin, determine the resulting impacts on water quality in the reservoir, and recommend a land management program. The plan, completed in August 1979, recommended creating the position of Watershed Management Official. Financed equally by the County and City, this official coordinates, integrates, and reviews watershed management activities in the basin.<sup>37</sup>

Other actions by Albemarle County include the conservation zoning of all county, city, state, and federal property in the Rivanna watershed. The Ivy Creek Natural Area has been expanded through the purchase of an additional 81.5 acres of land in August 1980, creating a greater degree of watershed protection. This purchase was funded by a 50 percent grant from the Virginia Commission of Outdoor Recreation, a 31.54 percent gift from the original owner, and a 9.23 percent contribution each from the County and City.<sup>38</sup>

The history of protection efforts on the South Rivanna watershed offers insight into interjurisdictional approaches. First — as was the case with the Occoquan Reservoir — a state agency, VWCBC, prompted the joint effort by threatening to withhold funds. Second, the importance of the local political climate is emphasized by the impact of the 1975 elections in Albemarle County. Even though SWCBC required a joint approach, its success depended on widespread support based on a perception of self-interest in the protection of a public water supply and on recognition of the benefits to each of the participating parties.

### c. The Four Mile Run Watershed

A third example of regional coordination is the Four Mile Run watershed,<sup>39</sup> which occupies portions of four political subdivisions in northern Virginia: the cities of Alexandria and Falls Church and the counties of Arlington and Fairfax. Because of intense urban development, most of the basin's natural drainage system had been replaced by storm-sewer systems by the 1960s. The change in hydrologic characteristics resulted in increased flooding and associated property damage in the lower portions of the watershed. A U.S. Army Corps of Engineers flood control project was sought as a solution to the flooding problem. A \$50 million project was approved in 1974, but funding was conditional on development and implementation of a basinwide stormwater management program.

The localities involved sought the assistance of NVPDC. A nine-member technical advisory committee consisting of representatives of the four jurisdictions was formed by NVPDC to guide program development. This group decided to develop a mathematical watershed model that could be used to quantify flooding impacts of future land use decisions, thereby providing a basis for management decisions. The alternative of formulating a land use plan for the ultimate development of the watershed was rejected because of concerns over loss of local autonomy and problems associated with development of such a long-range plan.

The institutional framework chosen was joint exercise of powers by the individual localities to avoid creating a regional management entity and associated loss in local autonomy. A memorandum of agreement was adopted that set forth the responsibilities of the four jurisdictions involved. These include financial participation in a basinwide impact assessment program to evaluate future drainage modifications and an obligation to implement structural or nonstructural corrective measures whenever the assessment indicates that a development proposal will generate unacceptable streamflows. The watershed model plays a key role in assessment.

The implementing institution created consists of a policy board known as the Runoff Management Board (RMB) and a Technical Review Committee (TRC), with technical and administrative support by NVPDC. RMB, composed of the chief administrative officers of the watershed's four jurisdictions and the executive director of NVPDC (who serves as non-voting chairman), oversees the operation of the program. TRC conducts technical investigations to determine downstream impacts of proposed projects involving drainage modifications.

The Four Mile Run Watershed Stormwater Management Program is an example of successful cooperation between localities to achieve stormwater management. Under the program, development has proceeded without an increase in flooding. During normal program operations and special studies, use of the

model has indicated that independent local programs, if based on uniform stormwater detention ordinances within the basin, would involve less than optimum use of resources. Uniform ordinances would waste resources because of variation in the flooding impacts produced when differing lands within the watershed are developed.

As in the two previous cases, however, the regional approach might never have developed without the special conditions that existed. Three factors appear to have been especially significant: the widely recognized severity of the problem, the potential of outside funding as an incentive for regional cooperation, and the availability of NVPDC to provide coordination and technical assistance.

#### d. Attitudes of ESCL Program Administrators toward Increased State Involvement

As a means of assessing local perspective in administering NPS controls, the questionnaire used in the case studies inquired about the acceptability of increased state involvement in ESCL administration. Most of the respondents were negative toward the state having authority for administrative review of local erosion and sedimentation permit decisions; slightly more than one-third indicated acceptance of such review if the authority were limited to consideration of effects of greater than local concern.

#### 2. Interdisciplinary Review and Public Participation in Program Administration

The perspective issue also involves decision making within management programs such as local erosion and sediment control under ESCL. One relevant aspect is the extent to which procedures for interdisciplinary review are included. The importance of broadening program perspectives through review has been accepted at the federal and state levels of government, with somewhat less concern shown at the local level.

The case studies indicate limited use of interdisciplinary review. Program decisions in rural localities are often the responsibility of one person or a small staff, with limited input from outside. Programs in more urbanized localities utilize a broader range of input, but practice varies. In some cases, reviews are confined to narrow aspects of the proposed development (e.g., fire safety).

The limited use of interdisciplinary review in local programs is accompanied by limited public participation. This situation reflects the view among program administrators that most citizens are not aware of the erosion and sedimentation problem.

### III. Endnotes

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Commission to make an assessment of the adequacy of staff resources at the state and local levels in implementing local erosion and sediment control programs. This report constituted the Commission's response to the legislative directive.

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## **ALTERNATIVE APPROACHES TO NONPOINT POLLUTION CONTROL**

NPS pollution control is a combination of many elements, most of which can take several forms, and the current Virginia strategy represents but one of many approaches. As the program continues to evolve, changes will probably become necessary to remedy deficiencies and achieve greater effectiveness. Information regarding available alternatives and their relative merits is to be found through experience within other natural resource management programs. The primary source of relevant experience is the NPS pollution control efforts that have been employed in other states. The substantial autonomy exercised by the states has resulted in diversity.

As in the studies of NPS pollution control implementation by Virginia's localities, programs from other states were not selected randomly; rather, particular elements were chosen to provide contrast to the Virginia efforts. The review is not comprehensive, although many states were studied in an attempt to identify a variety of alternatives. Consideration has been given to states in all regions of the nation, with greater emphasis placed on the mid-Atlantic and southeastern states because of their similarity to Virginia in terms of climatic conditions and general institutional framework for natural resource management. There is less detail developed regarding NPS controls in other states than in the analysis of the Virginia program. In addition, attention to other states' programs focuses on select elements and is not intended to provide a comprehensive overview.

Existing Virginia programs functioning in areas other than NPS pollution control also offer institutional models. One that appears especially relevant is the marine wetlands protection program.

### **I. Virginia's Marine Wetlands Management Program**

The wetlands management program established by the Virginia Wetlands Act<sup>1</sup> (VWA) does not focus primarily on pollution control, but the approach taken for implementation provides a useful contrast to that employed in the NPS control effort. It is designed to achieve environmental protection objectives through land use controls administered jointly by state and local governments. The wetlands program, and the similar coastal sand dune protection program, are unique in Virginia because of the extent of state authority and level of involvement.

VWA declares a public policy of wetlands preservation and provides that development proceed in a manner consistent with such preservation. The mechanism to implement this policy is a requirement that a permit be obtained prior to use or development of wetlands covered by the act. They include coastal lands (containing specified vegetation) that are contiguous to mean low water, with the upper boundary defined as an elevation equal to 1.5 times the mean

tide range at the location. The permit requirement does not apply to such activities as specified noncommercial activities, road and ditch maintenance operations, and governmental activities.

VWA authorizes counties, cities, and towns to adopt a wetlands zoning ordinance contained in the act. Within the terms of this ordinance, the locality creates a wetlands board consisting of five or seven residents to evaluate and decide permit applications. Decisions by the boards are subject to guidelines developed by the Virginia Marine Resources Commission (VMRC) based on studies by the Virginia Institute of Marine Science (VIMS) that classify wetlands and identify environmental consequences of alteration. The enabling legislation states that the local board should grant a requested permit if it finds

the anticipated public and private benefit of the proposed activity exceeds the anticipated public and private detriment and that the proposed activity would not violate the purposes and intent of (state wetlands legislation)....<sup>2</sup>

Two administrative provisions of VWA distinguish this program from most land use controls in effect in Virginia. First, VMRC administers the permit program within localities that elect not to adopt the local wetlands zoning ordinance. In these cases, permit applications are filed directly with VMRC. Of the 46 localities in the Tidewater region, 30 have elected to create local programs rather than defer authority to VMRC.<sup>3</sup>

The second unique feature of VWA is its provision for VMRC review of permit decisions of local wetlands boards. Such review can be initiated upon appeal of a local decision by an applicant or the local government where the wetlands are located, upon request of the Commissioner of Marine Resources, or upon petition of 25 or more freeholders of the locality within which the proposed project is to be located. VMRC may affirm, modify, or reverse the decision of the local board, with an appeal to the courts available.

The authority for VMRC to oversee local wetlands decisions is viewed by VMRC staff as a major program strength. The apparent significance of this state authority lies not in the number of local decisions overturned but in the incentive it gives localities to make appropriate initial decisions. In the first 12 years of the Wetlands Act, only 132 permits were denied of 3,454 applications processed by local boards. This low number of denials may be due to the fact that potential problems are worked out with applicants beforehand in order to avoid requests for appeal to VMRC. Of the 132 local board denials, 43 (33 percent) appeals of local decisions were made to VMRC, of which 22 (51 percent) were overturned. Of these 43 VMRC decisions, 12 (28 percent) were appealed to circuit courts, with six (50 percent) VMRC decisions overturned.<sup>4</sup>

Oversight of the wetlands program, which covers 5,000 miles of coastline and

215,000 acres of wetlands, is part of VMRC's broader program of habitat management. Other components include management of state-owned submerged lands and protection of coastal sand dunes under the State Coastal Primary Sand Dune Protection Act.<sup>5</sup> These responsibilities are carried out by a five-person staff. This staffing level is viewed as inadequate and a request for two additional staff positions is under evaluation.<sup>6</sup>

VMRC activities are supported by VIMS which provides one-day training courses for local inspectors and often accompanies both local and VMRC inspectors on official trips to construction sites in wetlands areas.

Virginia's wetlands protection program offers major contrasts with the program for control of NPS pollution. Although authorizing local administration, provision is made for state oversight of decisions and for direct state administration of controls in the absence of local administration. A further difference is the scientific support provided by VIMS. Scientific data concerning the value of different wetlands types and the consequences of alteration provide a sound basis for wetlands management. A comparable arrangement does not exist in NPS management.

The wetlands and NPS pollution control programs differ because of disparate perceptions of the urgency of the problems and the differing scope of the activities encompassed. Marine wetlands are seen as a highly valuable resource whose destruction produces wide-ranging impacts on marine productivity. In addition, the fact that marine wetlands are a concentrated resource compared to other lands in the state enhances the feasibility of more intensive management programs. But the wetlands program provides an alternative institutional structure if the current approach to control of NPS pollution is inadequate.

## **II. North Carolina's Sediment Control Program**

The North Carolina sediment control program authorized by the Sedimentation Pollution Control Act (SPCA)<sup>7</sup> bears some resemblance to the Virginia program under ESCL but exhibits significant differences in implementation provisions. SPCA regulates major land-disturbing activities — exclusive of agricultural and forestry operations — for the purpose of controlling erosion and sedimentation. SPCA is administered by the North Carolina Sedimentation Control Commission (NCSCC) within the North Carolina Department of Natural Resources and Community Development. NCSCC has broad powers and duties to develop and administer a comprehensive erosion and sedimentation control program. This authority is more extensive than that granted to DSWC under Virginia's ESCL.

SPCA provides for local administration of erosion and sedimentation controls but offers alternative state administration in the absence of effective local programs. The Act authorizes (but does not require) local governments (or two or

more jointly) to develop local control programs to be submitted to NCSCC for possible approval. To provide guidance for such local programs, NCSCC is responsible for development of a model ordinance containing minimum standards that must be incorporated as a condition of approval. Approximately 35 local programs have received approval, including those in most of the state's larger cities and more populous counties.

NCSCC also reviews local programs after approval to ensure continuing adequacy of performance. NCSCC is authorized to assume administration of an erosion and sedimentation program in any locality that fails to remedy program deficiencies within 30 days after receiving notification. Although the power to rescind local program approval has been used sparingly, provisions for state oversight have been described as critical to program effectiveness.<sup>8</sup>

### **III. North Carolina's Land Management Programs for Protecting Public Water Supplies**

North Carolina participates with its local governments in a cooperative watershed protection program encompassing special controls on both point source waste discharges and NPS pollution. A basic part of the institutional framework for this program is a water supply classification system.<sup>9</sup>

Revised in 1986, the classification system establishes three water supply classes based on existing waste discharges. Class WS-I watersheds must have no point source discharges, while WS-III watersheds have stream segments with no categorical restrictions on point source discharges. WS-II watersheds are an intermediate class with certain restrictions.

The potential of the watershed classification system to effect NPS pollution control arises from the requirement that those in the WS-I and WS-II classes must have state-approved land use management programs for NPS protection. State government provides technical guidance to assist in development of watershed protection programs. However, no mandatory procedure currently exists for state action to place a given watershed in the WS-I or WS-II class and thereby require adoption of a plan for NPS control.

The 1986 revision of the water supply classification system is part of an effort by state government to assist and encourage development of watershed protection measures, particularly in the Falls and Jordan lakes where nutrient and toxic contamination have been of special concern. This effort included development of local program guidelines by the North Carolina Department of Natural Resources and Community Development and adoption of protective ordinances by a variety of local governments.<sup>10</sup>

Possible movement toward greater state control regarding watershed protection is suggested by introduction in the 1987 session of the state legislature of a bill to create a study commission.<sup>11</sup> The proposed legislation recognizes that "watersheds of impoundment reservoirs and rivers cross the boundaries of many local governments thereby creating great difficulty in securing a minimum level of quality control...." Accordingly, the study commission is directed to consider whether state-imposed minimum standards are needed for effective watershed protection.

#### **IV. Maryland's Sediment Control Program**

The evolution of the Maryland sediment control program illustrates the obstacles confronting effective implementation and provides an example of possible responses to overcome these obstacles.

Statewide erosion and sediment control legislation was first enacted in 1970.<sup>12</sup> The initial program was similar to Virginia's. The Maryland legislation required that initiation of major land-disturbing activities (exclusive of agriculture) be preceded by approval of an erosion and sediment control plan by the local soil conservation district. Enforcement of the approved plan was made the responsibility of local government. State government was to give assistance in implementing the law, but provisions were not made for funding of local programs nor for direct state administration of controls except in limited cases such as construction projects on state or federal property. Land-disturbing activities in violation of the law were classified as criminal misdemeanors.

Experience during the early years after passage indicated several weaknesses that have been addressed through amendments. In 1978, for example, a provision was added that required the person in charge of a regulated land-clearing operation to have attended a state training program. Such programs had previously been available on a voluntary basis. Extensive changes in program administration and enforcement were adopted in 1984. Enforcement actions were expanded to include civil actions against violators for damages in an amount equal to twice the cost of installing or maintaining the controls.

The most fundamental change made in 1984 was the shifting of primary responsibility for program enforcement from the local level to state government. However, local enforcement continues under prescribed conditions. A local government may request delegation of enforcement authority, which must be granted if it is found capable of enforcing compliance with the state legislation. Delegations of enforcement authority are effective for a maximum period of two years but can be renewed. Delegations can be suspended after opportunity for a hearing when a local program fails to meet state standards of effectiveness, with

state government responsible for program enforcement in the affected jurisdiction during any such suspension. To make this expansion in state responsibilities feasible, 20 additional inspectors were added to the existing staff of 14 state inspectors.<sup>13</sup> This action indicates the basic relationship between functional agency responsibilities and personnel requirements.

## **V. Maryland's Stormwater Management Program**

To complement its erosion and sediment control program, Maryland passed a stormwater management law<sup>14</sup> in 1982 to address the long-term consequences of development on runoff. The goal is to retain pre-development runoff levels as nearly as possible, emphasizing both quantitative and qualitative characteristics.

This legislation attempts to achieve its objective by requiring incorporation of stormwater management facilities into new land development for residential, commercial, industrial, or institutional use (agricultural land use is not included). Each county and municipality was required to implement a stormwater management program by July 1, 1984. After that date, no grading or building permits may be issued without an approved stormwater management plan.

State involvement in the administration of the stormwater management program is not as direct as in the case of the erosion and sediment control program but is substantial. In addition to approving state agency projects, responsibilities of the Department of Natural Resources include periodic review of local programs. If the review indicates a local program to be unacceptable, the Department is authorized to issue an order for corrective action to be taken within a reasonable time. Unlike the erosion and sediment control law, stormwater management legislation does not provide for direct state administration in lieu of local government administration.

To facilitate initiation of local programs, Maryland established a grant program of \$1.7 million in 1984 to assist implementation. A second stormwater management grant program provides funding for demonstration projects in previously developed areas to investigate the cost and effectiveness of controlling stormwater problems in those areas.<sup>15</sup>

## **VI. Florida's Stormwater Management Program**

Florida has taken a regulatory approach under water quality legislation for controlling urban stormwater. This program incorporates performance standards to ensure acceptable stormwater discharge quality. To avoid delays associated with individual permit applications, the Department of Environmental Regulation has established a general permit covering stormwater dischargers who adopt specified management practices. Based on evidence that most pollutant loading

occurs during the “first flush” (runoff from the early part of each storm), general permitting requirements apply only to the first one-half inch (1.27 cm) of rainfall where stormwater facilities serve an area of 100 acres (40 ha) or less and to the first inch (2.54 cm) of rainfall where larger drainage areas are involved. Compliance with the general permit historically has required that the appropriate quantity of runoff (one-half or 1 inch of rainfall) be retained without discharge (through use of infiltration, e.g.) or detained and passed through an approved filter. Regulatory revisions have extended the general permit to cover other treatment methods. Processes not covered by the general permit that provide adequate treatment can be used but are subject to special permitting procedures.

Administration of stormwater discharge regulations initially was the responsibility of the Florida Department of Environment Regulation; however, administration has been delegated to two (South Florida and Southwest Florida) of the state’s five water management districts. Delegation of the state’s water quality management functions to the districts traditionally focusing on water quantity management has been undertaken to facilitate coordination between quantity and quality management.<sup>16</sup>

## **VII. California’s Timber Harvesting Controls**

The institutional framework for timber harvesting in California contains two components especially relevant to the control of NPS pollution from forestry operations: the Professional Foresters Law<sup>17</sup> and the Forest Practice Act.<sup>18</sup>

The Professional Foresters Law is an occupational licensing act applicable to professional foresters and timber operators. From the perspective of pollution control, restriction of entry into forestry practice creates an opportunity for educating practitioners regarding potential water quality impacts of forestry operations and potential control measures.

The Forest Practice Act requires the California Board of Forestry to adopt rules that include measures to protect the state’s waters. These rules are applied to timber operators by means of a permitting process applicable to all commercial timber harvesting. This mandatory permit is issued only after public notice and an interdisciplinary review of a required timber harvesting plan. This review provides opportunity for incorporation of measures necessary to mitigate adverse effects of the proposed harvesting operation. Approximately 1400 timber harvesting permits have been processed per year recently.

This regulatory activity has had an economic impact on the timber industry in California. The California Board of Forestry has estimated that the program increased logging costs by as much as \$13 per thousand board feet at a time when stumpage prices were in the \$100-\$150 per thousand board feet range.<sup>19</sup>

## VIII. Vermont's Direct State Controls Over Land Use

In 1970, the Vermont legislature created a system of regional and state control over land use by adopting "Act 250."<sup>20</sup> Jurisdiction of the permitting program includes construction of improvements for commercial or industrial purposes on more than ten acres of land and subdivision of land into ten or more lots of less than ten acres each. Such permits do not replace local land use controls but are required in addition to them.

Administration of the permitting program is the responsibility of district commissions and a state board. The act divides the state into districts and establishes a three-member commission in each to which applications are made for approval of regulated activities. The State Environmental Board hears appeals from decisions of district commissions. The state board may reconsider all issues involved in any case appealed.

Act 250 lists ten criteria to be satisfied before a district commission or the state board can issue a requested permit. Approval requires a finding that the proposed activity:

1. Will not result in undue water or air pollution.
2. Does have sufficient water available for the reasonably foreseeable needs of the subdivision or development.
3. Will not cause an unreasonable burden on an existing water supply, if one is to be utilized.
4. Will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result.
5. Will not cause unreasonable congestion or unsafe conditions with respect to use of the highways, waterways, railways, airports and airways, and other means of transportation existing or proposed.
6. Will not cause an unreasonable burden on the ability of the municipality to provide educational services.
7. Will not place an unreasonable burden on the ability of the local governments to provide municipal or governmental services.
8. Will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites or rare and irreplaceable natural areas.
9. Is in conformance with a duly adopted capability and development plan, and land use plan when adopted.
10. Is in conformance with any duly adopted local or regional plan under chapter 117 or Title 24.<sup>21</sup>

A requested permit cannot be denied solely on the basis of requirements five, six, and seven, but conditions can be attached to address these issues.

Act 250 originally required development of an interim capability plan, a capability and development plan, and a land use plan to be submitted to and approved by the state legislature. The first two plans, consisting essentially of policy statements, have been given approval, but a proposed land use plan was defeated because of opposition to state control over use of private property. The legislative provision calling for adoption of such a plan has been repealed.

In addition to failure to adopt the intended land use plan, other problems in the Vermont land use control program have been identified. Developers have reportedly escaped regulation under the law by creating subdivisions of 10.1 acre lots. Limited funding for administration of the act has also been seen as an obstacle to effectiveness.<sup>22</sup> Nevertheless, the act has been described as having measurably improved the quality of Vermont's environment without greatly reducing the amount of development.<sup>23</sup>

### **IX. Florida's Program for State Review of Developments of Regional Impacts**

The Florida Environmental Land and Water Management Act of 1972<sup>24</sup> establishes a procedure for state review of local decisions regarding certain development activities. This power of review applies to developments of regional impact (DRIs), defined to include "any development which, because of its character, magnitude, or location, would have a substantial effect upon the health, safety, or welfare of citizens of more than one county."<sup>25</sup> The review function is the responsibility of the Administration Commission (AC), comprising the Governor and the state cabinet, and the Department of Community Affairs (DCA), which exercises state planning authority.

Guidelines for determining whether a particular development is a DRI are established by the AC, with the DCA providing recommendations. These guidelines specify the types of activities included and threshold values for parameters such as acreage involved. A procedure is provided by which DCA makes determinations of whether proposed developments are within DRI guidelines. A negative determination exempts a proposed project from the DRI process. A proposed development is also exempt from the process if located in an area without zoning and subdivision regulations, provided that such controls are not adopted within 90 days after notice of the proposed development is given.

For projects not exempt, the DRI review involves participation by three governmental levels. Local governments first decide whether proposals should be approved, disapproved, or approved subject to conditions; regional planning agencies provide non-binding recommendations. Local decisions are subject to appeal to the Florida Land and Water Adjudicatory Commission, which consists of the Governor and the State Cabinet. Appeals may be brought by the owner or

developer of the property involved, the regional planning agency, and DCA. In deciding an appeal, the Adjudicatory Commission is instructed to consider such factors as regional impacts of the proposal on the environment, economy, public facilities, energy demand, and the ability of people to find adequate housing near their places of employment. Alternatives to the standard DRI process are authorized under special circumstances.

## **X. Pennsylvania's Erosion and Sediment Control Program**

A 1970 revision of Pennsylvania's water quality legislation, the Clean Streams Law,<sup>26</sup> authorizes regulatory control of erosion and sedimentation.<sup>27</sup> The new provisions authorize the Department of Environmental Resources (DER) to order landowners to correct conditions causing pollution or danger of pollution or to arrange for corrective action. Related expenses are to be recovered in the form of a civil penalty. DER also may address potential sources of pollution not already requiring a permit under the law. In such cases, DER is authorized to adopt regulations requiring a permit for such activities or to establish conditions for conduct of the activity. The law declares any activity contrary to such regulations to be a nuisance.

Regulations pursuant to the new authority<sup>28</sup> were adopted in 1972. They were designed to control accelerated erosion, defined as the removal of the surface of the land at a rate greater than that occurring through natural processes alone. The regulations apply to all classes of earthmoving activities without exemption, including agriculture. Every party engaged in earthmoving operations must set forth effective control measures in an erosion and sedimentation control plan to be available at all times at the site. In addition, a permit requirement was established that, unlike the requirement for the erosion and sedimentation control plan, was subject to several exemptions. Exemptions include agricultural plowing and tilling and other specified activities such as those disturbing less than 25 acres (DER may reduce the acreage limitation for permit coverage within its discretion).

DER delegates responsibility for administration and enforcement to counties and other units of local government where acceptable programs are developed. County conservation districts have played an important role in program administration. At present, districts can participate at any of six levels, beginning with an educational role at level one and extending to a complete delegation of program responsibilities, including enforcement, at level six. To improve district capabilities in program administration, the state legislature increased state financial assistance to the districts from \$250,000 to \$750,000 for fiscal years 1983-84 and 1984-85. Funding is proportional to responsibility exercised by the district. Other county agencies (such as health departments) also have been given responsibilities for inspection. All local governments have one responsibility for

program administration: DER regulations require notification of DER or its designee of any application for a building permit involving an earthmoving activity affecting five or more acres of land. The requested building permit cannot be issued until an erosion and sedimentation control permit is acquired.

Pennsylvania's erosion and sedimentation control program was evaluated<sup>29</sup> during the 1981-1984 period, including field investigations of compliance with requirements and internal review of operation. Results of the field investigation were reported separately for non-agricultural and agricultural sites.

The sample of sites evaluated in the non-agricultural category included 305 earthmoving sites, about half of which were construction-related activities. Approximately 10 percent of the sample had not developed the required erosion and sedimentation control plan, with compliance in another five percent of the cases not subject to determination. With regard to the quality of plans developed, 8.2 percent were rated as poor, 25.2 percent as fair, 48.8 percent as good, and 17.9 percent as excellent when evaluations by team members were combined. Substantial differences in ratings of plan adequacy were noted among team members. The field investigations revealed that plan implementation was a major program weakness. It was rated poor at 21.3 percent of the sampled sites, with an additional 27.1 percent of the sites rated fair and in need of improvement. Maintenance of control measures was also identified as a problem area. More than 25 percent of the sites were rated as having poor maintenance, and an additional 34 percent were rated as fair and in need of improvement. Team evaluations of overall effectiveness of erosion and sediment control at the 305 sites produced these ratings: excellent - 12.2 percent; good - 33.1 percent; fair - 26.9 percent; and poor - 27.7 percent.

The investigation of 277 agricultural operations found less compliance with requirements than at non-agricultural sites. Approximately 38 percent of the farmers had never developed the erosion and sedimentation control plans required for plowing and tilling operations by July 1, 1977. The enforcement actions available generally have not been taken against farmers.<sup>30</sup> Most of the plans prepared were parts of overall conservation plans, with very few prepared strictly as erosion and sediment control for plowed or tilled acreage. Less than 40 percent of the farms that had plans were implementing as much as 75 percent of the specified control measures. More than 23 percent of all the farms in the sample had no controls. Forty-seven percent of the farmers implementing controls were receiving at least some government cost-sharing assistance.

The internal review identified several program weaknesses and produced recommendations for improvements. The conclusion was that the program had been and continued to be understaffed and underfunded at both the state and district levels. To increase the existing state program staff of two soils engineers

(exclusive of the mining program), a minimum of 10 additional technical staff positions was recommended. The review found that the extensive scope of the erosion and sedimentation control program had led to overlap and noted little coordination with other regulatory efforts within DER and other agencies; accordingly, a recommendation called for development of standard policies and procedures for coordination and conflict resolution. Additional training for state and local program personnel and contractors was recommended to increase awareness and management capabilities.

In response to the previous lack of emphasis on agricultural activities in program administration, the study report suggested greater attention to those operations; establishing state cost-sharing assistance for agriculture; and greater willingness by state and district officials to pursue enforcement actions. Expanded and more effective enforcement in the total program was seen as a needed change from relying on voluntary compliance with requirements.

## **XI. Iowa's Erosion Control Program**

Provisions added to its soil conservation legislation in 1971<sup>31</sup> make Iowa's soil conservation districts responsible for adopting and enforcing regulations to limit soil losses from erosion. Soil loss limits are to be applied within classes of land based on soil characteristics and other factors affecting the propensity toward erosion. A state technical committee developed guidelines setting annual maximum permissible losses for different soil types based on estimated replenishment rates. These rates ranged from two to five tons per acre and were adopted by all the districts as enforceable limits.

Enforcement of these limits is based on a complaint system. Individual landowners, government agencies, or others having an interest in property being damaged by sediment may file a complaint with the local soil conservation district, where boundaries usually coincide with those of a county. Each complaint is investigated to determine if there is damage and if erosion is occurring at an excessive rate. Rates of erosion are computed by the universal soil loss equation and a formula for wind erosion. If excessive erosion is found, the district issues an administrative order requiring corrective action within prescribed time limits. For construction sites, the order may specify that necessary work commence not more than five days after personal service of the notice or after sending by certified mail. Work must be completed within 30 days of service or mailing. The time limits in non-construction cases are six months for commencement and one year for completion. The order does not specify control measures, leaving the choice to the landowner. If the work is not done in response to the administrative order, the district may seek a court order.

Enforcement is limited when the source of excessive erosion is agricultural or

horticultural lands. Imposition of a requirement for permanent soil and water conservation practices on such lands is conditional on cost-sharing assistance equal to 75 percent of total costs. A 1979 amendment stipulates a maximum required annual investment of \$10 per acre for erosion control.

The constitutional validity of the program was challenged in the Iowa Supreme Court in 1979.<sup>32</sup> The case stemmed from a regulatory action that would cost two landowners a total of \$13,500 for needed control measures. This cost was viewed by the landowners as an unreasonable burden and a taking of property. The Iowa Supreme Court disagreed, holding the regulatory program to be a necessary and reasonable exercise of the state's police power although it produced financial hardship on individuals.

During the 1972-1980 period, approximately 550 erosion complaints were filed with Iowa's soil conservation districts. All but 63 of the complaints were resolved voluntarily. Of the 14 complaints filed in non-agricultural areas, eight required administrative orders before resolution.

Although the Iowa law has been successfully implemented, the need for strengthening has been indicated. Conditioning abatement action on a complaint filed by an injured property owner has limited the effectiveness of the existing program.<sup>33</sup>

## **XII. Wisconsin's NPS Pollution Abatement Program**

The state legislature in 1978 created the Wisconsin Nonpoint Source Water Pollution Abatement Program<sup>34</sup> to be administered by the agency responsible for water quality management, the Department of Natural Resources (DNR). The program focuses on NPS pollution within priority watershed areas. It involves coordinated application of existing state programs and implements new measures such as cost-sharing assistance.

A key aspect of the program is its concentration on entire hydrologic units. Priority watersheds are identified through systematic ranking procedures. After a priority watershed is selected, an eight- to nine-year planning and implementation process is initiated. This process involves identification of water quality objectives within the area based on potential water uses, an inventory and assessment of all categories of rural and urban NPSs, and development of detailed implementation strategies.

Strategies encompass educational activities, design of runoff control measures, and financial assistance. State financial support includes administrative and planning funds for DNR activities, cost-sharing funds for landowners and local governments for installation of management practices, and local government

assistance for implementation activities. Individual management practices generally receive cost-sharing funds of 50 to 70 percent for installation, with higher amounts available in special cases. Participation is on a voluntary basis.

The Wisconsin program has been described as a systematic approach to solution of the NPS problem that preserves flexibility for accommodating differences among geographic areas and changing conditions. During the 1978-1985 period, the state appropriated \$23 million to implement the program, with more than 80 percent of the funds used to assist landowners in the installation of control measures. Twenty-six priority watersheds were designated during that period and progressed to various stages of program development.<sup>35</sup>

### XIII. Endnotes

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27. *Id.* secs. 691.401 and 691.402.
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## CONCLUSIONS AND RECOMMENDATIONS

This overview of Virginia's NPS pollution control program has shown it to be a relatively decentralized one, with local government continuing to exercise many of the direct responsibilities for administration of controls. At the state level, VWCB's NPS program is based on voluntary implementation of BMPs. VWCB has delegated lead-agency responsibility for the voluntary NPS program to DSWC for agricultural practices and NPS pollution from urbanizing areas. DSWC administers the Chesapeake Bay Program cost-sharing funds to assist localities in administering controls and landowners in implementing agricultural NPS controls.

Major responsibility for control of land use and development lies with local governments, primarily under enabling legislation for zoning, subdivision regulation, and erosion and sediment control. State government has no direct role in local implementation of zoning and subdivision regulations. The state role in local erosion and sediment control programs is somewhat greater but still limited. DSWC develops, maintains, and generally oversees guidelines for local programs, but actual operation is relatively immune from direct state involvement. State enabling legislation does not provide for state review of local permitting decisions by counties and municipalities, and has no authority to assume administrative responsibility should local programs prove inadequate. The traditional shortage of personnel and other resources within DSWC has prevented full exercise of the limited state role in such areas as local program review and provision of technical assistance.

Within this institutional framework, local governments have exercised a large measure of autonomy in addressing NPS pollution. As a result, substantial variation exists among local efforts in the scope of NPS pollution control and in many aspects of program operation. At one extreme, some have relied upon existing authority to promote comprehensive environmental protection. Development of such programs must rely on interactions and complementary control measures beyond a restrictive interpretation of individual statutory enactments.

At the other end of the spectrum, some localities take the minimum action necessary to comply. Where a power is discretionary, as in the case of zoning, it is unlikely to be exercised. When a program is mandatory, such as that prescribed by ESCL, it may consist largely of administrative formalities with little effective enforcement of related requirements. The typical locality is likely to occupy a position between the two extremes, taking neither the aggressive nor the avoidance-of-responsibility approach.

From the perspective of environmental protection, the flexibility of the current institutional framework offers one significant advantage: controls can be

developed and applied consistent with the level of need. In a rural area with limited development and a restricted range of NPSs, minimum controls that avoid unnecessary burdens on property owners are possible. On the other hand, more extensive controls are possible where development is intense. In spite of the advantages of its inherent flexibility, however, existing institutions exhibit a major weakness: they provide no assurance of an adequate level of protection during any particular period. The decentralized state approach and the extent of local autonomy results in a system with little central guidance and direction.

The existing system is unable to address interjurisdictional NPS problems. The emphasis on local autonomy is incompatible with regional management of NPS pollution with impacts across local political boundaries. Interjurisdictional approaches have been limited to situations where a state or federal entity exerted influence through mechanisms such as imposing conditions on funding of locally-needed facilities. While this approach can be effective under appropriate conditions, its applicability depends on fortuitous circumstances.

A significant constraint affecting exercise of NPS controls by local government (and state government as well) is the relatively weak support by Virginia's judiciary. According to a recent analysis, the Virginia Supreme Court has limited the authority of local governments to impose land use controls by a series of restrictive decisions. Lower courts in some localities have been reluctant to find alleged ESCL violators guilty or have imposed trivial penalties.

The apparent weaknesses in Virginia's institutional framework for NPS pollution control vary in their susceptibility to correction. In some cases, more information is necessary before action can be suggested. For example, a more systematic mechanism for applying a regional perspective in NPS management programs depends on the extent of interjurisdictional NPS problems. No comprehensive survey of such problems has been conducted. In other cases, the direction of Virginia's program will be influenced by events beyond the control of state government. An example is the EPA effort to extend the NPDES permitting program to urban stormwater discharges. Within this situation of external constraints and incomplete information, the following sections identify particular program issues in need of further consideration and suggest possible institutional modifications.

## **I. Issues Involving the ESCL Program**

ESCL is a basic component of the state's NPS control program, and the effectiveness of its implementation is of major concern. In view of problems encountered during the program's history, three primary issues need consideration: (1) should state oversight of ESCL administration be increased; (2) should

ESCL provisions for enforcement and remedies be broadened; and (3) should exemptions from the law's jurisdiction be reduced?

#### A. Should State Oversight of ESCL Implementation Be Increased?

An expanded state oversight function performed by DSWC arises as an obvious response to deficiencies in local ESCL administration. Virginia is somewhat unusual among neighboring states having mandatory erosion and sediment control programs in the degree of local autonomy. Section four of this report provides examples of mechanisms for state-level oversight to ensure that localities are effectively implementing local programs, including direct state administration where necessary. Discussion of the Virginia Wetlands Act provides a model for state oversight of local program administration.

State oversight can take several forms, beginning with review of local program performance and perhaps extending to assumption of program responsibilities where local inadequacies cannot be remedied within reasonable time. Without the alternative of state administration, leverage for achieving improvements in local programs is limited. State financial and/or technical assistance provides another means for influence in local program administration. Another potential oversight function is state review of permitting decisions made by local administrators operating with state approval. Such review would ensure that adverse water quality impacts outside the permitting jurisdiction would be considered. Such impacts may be overlooked at the local level, and state review could provide this perspective without creating regional management entities.

The assessment of local programs demonstrates the need for increasing state oversight and financial assistance. The existing approach is irrational since it purports to mandate operation of local programs consistent with minimum state criteria but does not establish workable procedures that ensure such operation. At a minimum, DSWC should have authority to evaluate local programs systematically and to order remedy of documented program inadequacies. More radical changes such as procedures for state assumption of administrative responsibilities should be held off pending assessment of the proposed change.

A mechanism for ordering remedial actions should be accompanied by a financial assistance program to mitigate local hardship. The state's Chesapeake Bay Program provides experience for determining the levels of financial assistance and appropriate administrative procedures. Although a uniform distribution of financial aid may be suggested by considerations of equity and administrative simplicity, the need to obtain the greatest benefit from limited resources dictates an alternative approach. Distribution should be determined by a priority system based on extent of the NPS problem and local financial need.

The issue of state oversight must include consideration of state program staffing. Assignment of oversight responsibilities to DSWC without providing additional staff would be essentially meaningless. Thorough analysis of personnel needs should be part of the process of creating expanded state oversight. The experience of Maryland, where creation of state oversight involved an expansion in staff (discussed previously), should be useful in this regard.

## B. Should ESCL Provisions for Enforcement and Remedies Be Broadened?

Amendments to ESCL in 1986 broadened measures to address violation of an erosion and sediment control permit by granting authority for administrative stop-work orders. This measure should provide program administrators with increased leverage to obtain timely remedial actions.

While this expansion will aid enforcement of program requirements, two modifications to ESCL deserve consideration: (1) addition of a civil penalty for violations, including provision of a minimum penalty, and expanding the range of parties subject to such penalties; and (2) establishment of a mandatory bonding requirement in ESCL permitting.

Expanding the penalties for violation of ESCL would enhance enforcement. While the stop-work order creates additional leverage for obtaining compliance, an effective incentive for prevention of violations is needed. The sure knowledge that violations will result in substantial penalties provides such incentive, but the probability of a significant penalty being assessed is low at present.

One problem is that the limitation of remedies to criminal actions may deter conviction of violators. Retention of criminal action for willful or other serious violations of ESCL is desirable, but a civil action may be more appropriate for the majority of violations.

Another problem is the tendency of some courts to impose only small penalties on violators. To deter violations, penalties should be substantial enough to make avoidance worthwhile, suggesting that ESCL should establish a minimum for such penalties. A penalty equal to twice the amount necessary for corrective action should be considered.

A third problem is that ESCL's penalty provision focuses on the landowner and not on the party responsible for installation and maintenance of control measures, the contractor. Imposition of penalties on contractors for failure to comply with requirements therefore has potential to increase effectiveness.

Bonding as a condition of ESCL permitting would increase assurance that planned control measures were implemented should the responsible party fail

to do so for financial or other reasons. The case studies indicate that discretionary authority to impose a bonding requirement is not frequently utilized.

### C. Should ESCL Exemptions Be Reduced?

ESCL exempts several small-scale land-disturbing activities and two major land use activities: agricultural and forestry operations. Although the exemption of small-scale activities has sometimes provided the mechanism for avoidance of the law's provisions (e.g., the construction of subdivisions under the single family dwelling exemption by proceeding on non-adjacent lots), the case studies indicate the principal concern regarding exemptions to be the lack of controls over agriculture. In recognition of agriculture as an NPS in the drainage areas of the Chesapeake Bay and the Chowan River, a state cost-sharing program for BMP implementation has been established. However, agricultural activities in the rest of the state are subject only to the voluntary BMP program established by VVWCB under water quality legislation.

The feasibility of regulatory programs for control of runoff from agricultural lands has been at least tentatively demonstrated by programs in such states as Pennsylvania and Iowa (discussed in the preceding section). However, the Iowa program is complemented by a significant cost-sharing program, and the Pennsylvania program has not seen intensive enforcement, making difficult the assessment of long-range feasibility and effectiveness.

Identification of the appropriate approach for addressing Virginia's agricultural NPS pollution is hindered by limitations of data on the impacts of agricultural runoff on water quality. Contributions of agriculture to water quality degradation in the Chesapeake Bay have been determined through intensive data collection and research activities not available for the rest of the state. If agriculture is shown to be a major source of contamination in other waters, a program similar to the Bay region's may become necessary. An important need, therefore, is a more detailed assessment of the agricultural NPS problem for the rest of the state. The need for regulation within the Chesapeake Bay watershed or elsewhere will depend on the success of cost-sharing, an evaluation that will become possible only after more experience under the Chesapeake Bay program. Continuation of cost-sharing in combination with any regulatory approach adopted may be desirable to mitigate financial hardship.

## II. Issues Concerning Urban Stormwater Management

Virginia's program for managing urban stormwater is a fragmented approach involving several types of controls administered by several entities. With no separate program, the state relies on VVWCB's water quality program, ESCL, and other land use controls administered by local governments.

As part of the state's water quality efforts, VVWCB administers a voluntary NPS program in stable urban areas that have no appreciable development activity. Little information is available to gauge the success of that program. One indicator, however, is the number of localities agreeing to implement programs. To encourage NPS abatement, the executive director of VVWCB has asked each local government to support by resolution the voluntary implementation of BMPs throughout their jurisdictions.<sup>1</sup>

In a 1984 report,<sup>2</sup> VVWCB indicated that, since 1980, 44 of Virginia's 224 local governments had responded — 20 counties, 8 cities, and 16 towns (the number of responses has remained essentially stable subsequent to the 1984 report<sup>3</sup>). Of these, 21 localities had agreed to "direct" their chief executive officers to employ BMPs "whenever practical." An additional 17 had adopted resolutions "authorizing" the chief executive officers to ensure BMP use when practical; four had adopted resolutions "encouraging local citizens to use BMPs;" and two had simply endorsed the state plan by resolution. The fact that more than 80 percent of Virginia's local governments did not respond during the four-year period indicates an initial lack of support for the voluntary program.

DSWC has primary responsibility for urban NPS control in areas undergoing substantial development. This responsibility is exercised through the ESCL program and an educational program.

Although ESCL focuses on control of runoff during construction operations, state criteria for local programs require stormwater management provisions to prevent downstream channel erosion. Existing requirements do not ensure sufficient consideration of the water quality impacts of stormwater, and ESCL does not appear to provide authority for development of an adequate program.

Because the state program for managing urban area stormwater is voluntary and the ESCL program is limited in scope, other locally administered land use controls (such as zoning and subdivision regulation) are important sources of authority for control of urban NPS pollution. However, state government does not participate in these additional controls and cannot direct their application. At the local level, these controls traditionally have not been used for water quality protection. In fact, some state enabling legislation does not identify water quality protection as a specific objective and may be open to legal challenge if applied for this purpose. This omission is a legislative deficiency that should be remedied by appropriate provisions recognizing water quality protection as an objective. This would ensure the availability of a full range of structural and nonstructural measures to local officials with major responsibilities for NPS control.

## A. Should a Regulatory Program Be Established for Urban Stormwater Management?

The need for permanent urban runoff controls is illustrated by findings of EPA's Nationwide Urban Runoff Program (NURP). NURP found instances of high levels of heavy metals in urban runoff. Water quality standards were exceeded for lead (94 percent of all samples), copper (82 percent), zinc (77 percent), and cadmium (48 percent). Nationwide, loadings of biochemical oxygen demand runoff were estimated as comparable to loadings from publicly owned treatment works (POTWs) using secondary treatment, and total suspended solids loadings were estimated to be a factor of 10 higher than loadings from POTWs. Fecal coliform levels also indicated significant impacts from urban storm runoff.<sup>4</sup>

Influencing the future direction of urban stormwater controls is EPA's action to apply the NPDES permit program. This program may dictate the state approach in the future. Federal influence can also be asserted through EPA's continuing review of the state's voluntary NPS control program. Should the voluntary approach be found ineffective, a regulatory program could be required. Further experience will be necessary before effectiveness can be evaluated.

Installation of BMPs within urban areas after development is completed poses difficulties. Much of the flexibility to accommodate needed facilities has been lost by that time, and space for structures is limited. As a result, implementing an effective management plan is apt to be more costly than it would be during the development process. A program for requiring retrofitting of urban areas with BMPs for runoff control should include comparisons of the associated benefits and costs. Cost-sharing arrangements may be necessary to avoid or lessen economic impacts on established land uses.

The mandatory incorporation of BMPs for permanent stormwater management is more feasible during the development process. A major contribution of a regulatory program for urban stormwater control would be to ensure that new development does not lead to additional flooding and water quality degradation.

### 1. What Form Should Mandatory Stormwater Controls Take?

Mandatory stormwater controls could be imposed through amendment of existing statutes such as ESCL, enabling legislation for local controls over land subdivision and development, and state water quality legislation. Or separate stormwater legislation could be adopted. Controls could probably be imposed by WVCB regulations adopted under existing state water quality legislation.

Because of the advantages of integrating urban stormwater controls into existing land use controls, the preferred option appears to be an amendment of ESCL to add provisions for mandatory controls within local programs. Alternatively, provision could be added to enabling legislation for local subdivision regulation or by adopting separate legislation, but administration of such controls may result in coordination problems relative to local erosion and sediment control programs. The new legislative provisions should include statutory language explicitly recognizing water quality protection as an objective of ESCL and requiring DSWC (in consultation with VVWCB and others) to develop state criteria for local programs. ESCL's title should be modified to reflect its expanded scope.

This proposed expansion of ESCL increases the importance of adequate state oversight of local program implementation. The fact that urban runoff can contribute significantly to pollution of waters beyond the local jurisdiction makes an appropriately broad management perspective necessary. Because of the variety of pollutants that can be contained in runoff — many in dissolved form and susceptible to long-range transport — the need for state oversight under the expanded program may be greater here than in the case of the current ESCL program. A state review function limited to consideration of greater-than-local impacts, with local responsibilities otherwise continued, could ensure proper attention to this environmental problem without major disruption of existing institutional arrangements for land use control.

At the state level, stormwater management should be the coordinated responsibility of VVWCB and DSWC. Recent proposals to transfer the state's floodplain management program from VVWCB to DSWC indicates a trend toward consolidation of state responsibility in land use decision making within DSWC. Such consolidation would be consistent with the greater state involvement in land use decisions as proposed in this recommendation. The new oversight function should be exercised by DSWC, in coordination with VVWCB to ensure consistency with broader aspects of the state's water quality management program.

### **III. General Issues Concerning Virginia's NPS Control Program**

Several broader aspects of the state's NPS control program relate to overall operation including the funding of activities, enhancing awareness and understanding of the NPS pollution problem, and program coordination and direction.

#### **A. Funding of NPS Control Activities**

To achieve the benefits of clean water, large expenditures of public and private funds have been made and will continue to be necessary. In Virginia, recent appropriations for the Chesapeake Bay Program are the most notable expen-

ditures for NPS pollution control, but other significant costs are incurred by both local and state government entities responsible for program implementation as well as by individual landowners.

Funding is a primary factor in local program effectiveness. Limited resources in many localities jeopardize effective implementation. While willingness and ability to fund local programs may be difficult to distinguish in some cases, funding should not be overlooked as a potential problem. Experience with local governmental assistance within the Chesapeake Bay Program will provide insight into the funding needed and its possible impact on program effectiveness; this experience will be useful in assessing the need for and costs of a statewide assistance program.

Another funding issue is cost-sharing to assist landowners in the implementation of control measures. Again, the Chesapeake Bay Program will provide a basis for determining the amount of funding needed and the efficacy of a cost-sharing program.

Adequate funding for state program operations is another issue. A trained staff large enough to perform the duties assigned and workload imposed is necessary. Particularly detrimental to effective performance is the addition of new responsibilities without a corresponding increase in staff. Such actions are understandable in view of budget restrictions but are adverse to achievement of the desired objectives. Evaluation of additional staff requirements should accompany development of proposals for accomplishing the recommended changes and necessary expansions initiated when new responsibilities are created.

Funding of an expanded NPS pollution control program may require development of new sources of revenue because of competing claims on traditional sources. Recovery of program costs through permit processing fees should be expanded. Consideration should be given to levies on products and activities that contribute to NPS pollution. To the extent possible under existing law, expenditures for point source and NPS pollution control should be continually reviewed and the appropriate balance maintained to produce maximum returns in the form of water quality benefits.

## B. Enhancing Awareness of the NPS Pollution Problem

The case studies conducted as part of this research indicate that widespread lack of awareness of the problem hinders NPS pollution control. It is most detrimental in persons associated with program implementation, such as locally elected officials and the judiciary. Their lack of support obstructs aggressive enforcement of program requirements. Although the impact is less direct, lack of awareness among the public is also a hindrance. Program goals are achieved only in part

through enforcement of regulations; achievement depends to a large extent on voluntary decisions based on commonly held beliefs defining socially acceptable behavior. The climate most conducive to successful NPS pollution control is one where a consensus exists that such pollution must be prevented.

The need for increased awareness should be addressed at several levels. Broad dissemination of a generalized message of the importance of controls should be accompanied by more intensive communication directed toward parties closely involved in their implementation. Mandatory training for all program personnel and contractors and others responsible for implementation of control measures should be included.

### C. Program Coordination and Direction

Virginia's NPS pollution control program comprises a variety of interacting components. Because of the diversity of NPSs encompassed, consolidation to a single, centralized control program is unlikely to be feasible or desirable. Coordination, therefore, is essential.

At present, coordination of program elements is impeded by the large degree of local autonomy exercised by local governments in the implementation of land use controls. Expanded state oversight would provide a basis for improvement. At the state level, coordination between DSWC and VWCB is essential because of the close relationship between the responsibilities of the two agencies. Some centralization of NPS control activities within DSWC appears desirable but DSWC's activities must be coordinated with other VWCB activities such as point source pollution control and water quality planning.

In order to maximize water quality protection, the NPS control program must operate with central guidance, including the assignment of program priorities. Such priorities depend on an assessment of water quality problems and the potential for controls to reduce or eliminate them. To date, the highest priority has been assigned, at least implicitly, to Chesapeake Bay (including some of its tributary waters) and the Chowan River. The potential water quality benefits of NPS control vary for the rest of the state's waters, and program emphasis should be placed in areas where the potential is greatest. This approach requires substantial planning activity and central guidance at the state level. Proper exercise of other responsibilities cannot ensure overall effectiveness without attention to this aspect of the NPS management program.

## IV. Endnotes

1. Virginia Water Control Board. 1984. "Water Quality Management Planning in Virginia under Section 208, Public Law 92-500 — 1973-1983." Information Bulletin 555, 16-18.

2. *Id.* 18.
3. Musselwhite, Leon, Virginia Water Control Board. March 26, 1987. Personal communication to William E. Cox.
4. 49 *Federal Register*. 1984. 38013.



## **APPENDICES**



# APPENDIX A

## INTERVIEW FORMAT

### I. Local Information

#### A. Land Use Patterns

1. Land area within jurisdiction
2. Percent cropland
3. Percent forestland
4. Percent residential
5. Percent urban

#### B. Growth Indicators

1. Population - present levels and past trends
2. Building permits - present levels and past trends
3. Subdivision permits - present levels and past trends
4. Industrial and commercial development

#### C. Program Development

1. ESCL program staff - present level and trends
2. Number of engineers employed - present level and trends
3. Number of inspectors employed - present level and trends
4. Number of ESCL permit applications received - present level and trends
5. Funding received for program - present level and trends
6. Comparison of local controls to state controls — does program go beyond minimum state requirements
7. Availability of technical reference materials.
  - Soil/geological maps
  - Flood plain/drainage maps
  - Slope/topographic maps
  - Special studies

### II. Program Mechanics

#### A. Plan Review

1. Procedure checklist for developers?
2. Educational material available upon request? Type?
3. List of agencies who review plans?
4. Utilization of comments and suggestions?
5. Are site inspections carried out prior to approval?
6. Are pre-construction conferences held?
7. What percentage of erosion and sediment control plan implementation costs are required for performance bonding?
8. How many bonds have been forfeited?
9. What application fee is required? Adequate?

#### B. Site Inspection

1. Do engineers assist in inspection?
2. How is inspection schedule determined?

3. What percentage of work load is related to citizen complaints?
4. Are citizen complaints documented?
5. Describe the inspection documentation process.
6. Estimate person-hours required for inspection/week

### C. Plan Enforcement

1. What percentage of non-compliance cases is due to refusal to file an application?
2. What methods are used to identify these violators?
3. Describe the procedures used to correct non-compliance (include time requirements).
4. At what point in the procedure do the majority of the violators comply?
5. How many cases have involved litigation? Success rate?
6. What is the average length of time required to prosecute a violator?
7. Are the remedies adequate?
8. Are civil penalties needed?
9. Are administrative stop-work orders needed?
10. Does the local prosecutor provide strong support for the program?
11. What are the most common violations of plans during construction?
12. Would direct regulation of contractors be beneficial?

## III. Program Constraints

### A. Enabling Legislation

1. Are any requirements of the program unreasonable or difficult to enforce?
2. Does the present legislation provide enough regulatory authority to support the program?
3. What is the impact of exemptions?

### B. Local Governing Bodies

1. Are local boards responsive to the needs of the program administrators?
2. Identify any conflicts of interest which have hampered the success of the program.
3. As board members change, are attitude changes toward the program noticeable?

### C. Local Judicial Bodies

1. To what extent are judicial attitudes toward the ESCL program a constraint?
2. Could time delays be minimized?

## IV. Relationships with Other Programs

### A. To what extent is the ESCL program coordinated with zoning and subdivision regulation?

1. Are permit applications conditioned to meet the requirements of the ESCL program?
2. Is coordination mandatory or voluntary?

### B. What is the role of SCS in the ESCL program?

### C. Are long-range stormwater management requirements imposed on developers?

1. Does authority exist to require runoff controls in project design?
2. Does a stormwater management ordinance exist?
3. What is the source of legislative authority?

## **V. Other Contacts**

A. What organizations are involved in and knowledgeable about the ESCL program? (names, addresses, phone numbers)

1. Homebuilder groups?
2. Environmental groups?
3. Real estate developers?

## **VI. Recommendations**

A. What are the major flaws in program?

B. What positive changes have been effected by the program?



## APPENDIX B

### WRITTEN QUESTIONNAIRE AND ITS CUMULATIVE RESULTS

#### I. Local Erosion and Sediment Control Programs Survey of Opinion

The following questions are largely subjective. Some request opinions on sensitive issues. Please be candid: results will be reported only after all responses to each question have been combined.

1. Rate the significance of each of the following activities as contributors to current erosion and sediment problems in your area:

	High	Moderate	Low
Minor land-disturbing activities exempted from control		9	8
Regulated activities whose owners fail to implement control measures properly	4	7	6
Stormwater from previously developed areas	3	8	6
State projects		7	10
Federal projects		2	15
Agriculture	3	9	5

2. Rate the extent of the erosion and sedimentation problem in your area with respect to each of the following potential impacts:

	High	Moderate	Low
Damage to local private property	1	8	9
Damage to local public utilities		6	11
Local water quality degradation	1	9	7
Degradation of water quality in other areas		8	9

3. Rate the current effectiveness of your erosion and sediment control program in controlling each of the following problems potentially resulting from erosion and sediment processes in your area:

	High	Moderate	Low
Damage to local private property	4	9	4
Damage to local public facilities	6	4	7
Local water quality degradation	2	10	5
Degradation of water quality in other areas	2	10	6

4. Rate the level of awareness of the following groups in your area with respect to the erosion and sedimentation problem:

	High	Moderate	Low
Members of local governing body	9	7	1
Commonwealth's attorney	2	7	6
Members of judiciary		7	8
Developers/contractors	4	11	2
Environmental groups	11	4	
Citizens in general	2	5	10

5. Rate the potential of each of the following as a means to improve the effectiveness of local erosion and sedimentation control programs.

	High	Moderate	Low
Increased state technical assistance	1	10	6
Increased state financial assistance	7	6	4
Increased manpower for site plan review	3	5	9
Increased manpower for inspection and enforcement	10	5	2
Expanded public education	5	10	2
Expanded education of contractors/developers	9	7	1
Expanded range of legal remedies (civil penalties, stop-work orders)	8	6	3
Increased awareness and support from local elected officials	4	11	2
Increased level of authorized penalties	5	7	5
Increased judicial support	5	9	3
Increased legal accountability for contractors	5	9	3

6. How would you classify the majority of the current members of city council/town council/board of supervisors?

	Number of Responses
a. Strongly oriented toward development with little concern for environmental protection	3
b. Concerned about development and environmental quality, with development a somewhat higher priority	5
c. Equally concerned about development and environmental quality	5
d. Concerned about development and environmental quality, with environmental quality a somewhat higher priority	3
e. Strongly oriented to environmental protection even if development must be substantially constrained	1
7. Should the state have authority for administrative review of local erosion and sedimentation permit decisions?	
a. Yes	0
b. Yes, but only if the authority is limited to consideration of effects of greater than local concern	6
c. No	10

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## NOTES

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- It studies the state's water and related land-use problems, including their ecological, political, economic, institutional, legal, and social implications.
- It sponsors, coordinates, and administers research investigations of these problems.
- It collects and disseminates information about water resources and water resources research.
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