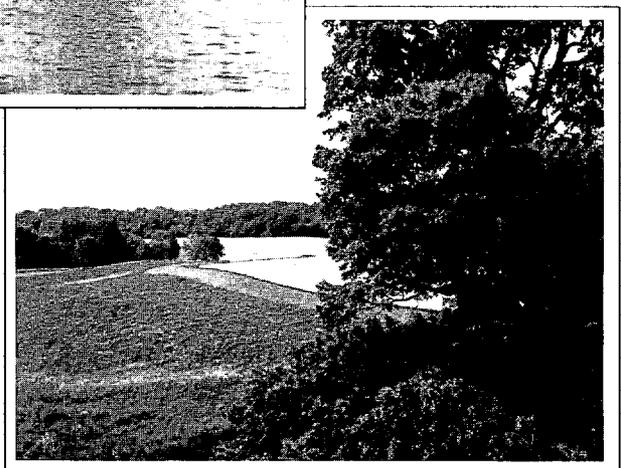
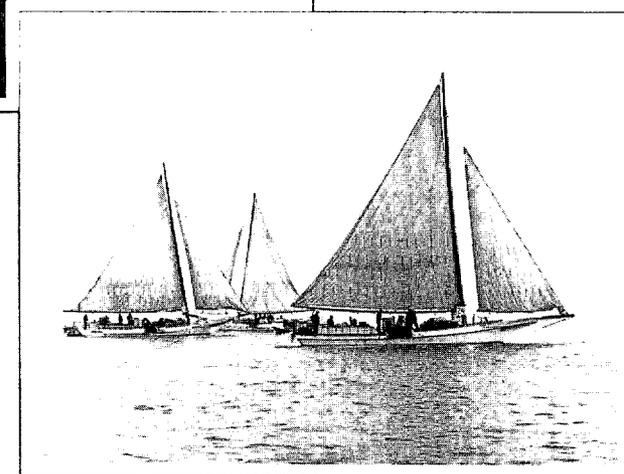


Chesapeake Bay Restoration: Innovations at the Local Level

A Compilation of
Local Government
Programs



CZIC COLLECTION



Prepared by

The Chesapeake Bay
Local Government Advisory Committee

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1991

Chesapeake Bay Program

Chesapeake Bay Restoration: Innovations at the Local Level

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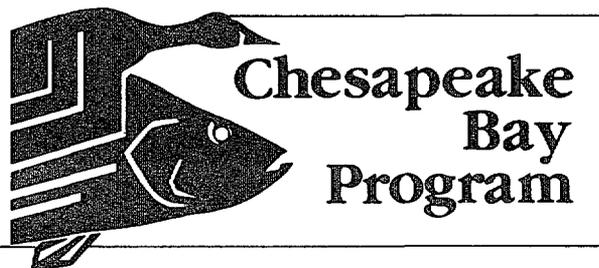
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Preface & Acknowledgements

Chesapeake Bay Restoration: Innovations at the Local Level is one product of the Chesapeake Bay Local Government Advisory Committee's (LGAC) ongoing efforts to provide technical assistance to local government's in the Chesapeake Bay watershed. The manual catalogs local programs in the watershed that positively impact (either directly or indirectly) the quality of the Chesapeake Bay, the surrounding watershed, and the quality of life for its living resources.

The LGAC developed this manual to provide cross-sharing of information among local governments. It is being circulated throughout the three-state and District of Columbia watershed to assist local governments in developing and adopting similar programs. Local governments are being encouraged to use this manual as a reference in developing similar programs without "reinventing the wheel."

There are over 1500 units of local government within the watershed, each of which was given the opportunity to provide information for inclusion in this publication. The LGAC received responses from over 300. The publication is by no means the definitive guide to **all** local programs in the watershed. In editing, we have attempted to provide some of the best, most innovative, unique, and functional programs currently underway in the watershed. Unfortunately, our space limitation did not afford us the opportunity to include all responses.

This publication gives the LGAC an opportunity to further its goal of encouraging the willing participation of local governments in Chesapeake Bay restoration efforts. Program summaries demonstrate that the local government community is well on its way to addressing environmentally-related issues, including the water quality, land use, and other technical and policy issues that are necessary for clean-up of local waterways and ultimately the Bay.

This compilation of local programs would not have been possible without the assistance of a number of individuals, organizations, and others -- most important are the public officials that responded to our survey and provided additional information through follow-up. In addition, we appreciate the assistance provided by each of the various local government associations in disseminating information and coordinating responses.

Special thanks also goes to the Metropolitan Washington Council of Governments for staff assistance and review, the Pennsylvania Department of Community Affairs for coordination assistance in Pennsylvania, and the EPA Chesapeake Bay Liaison Office.

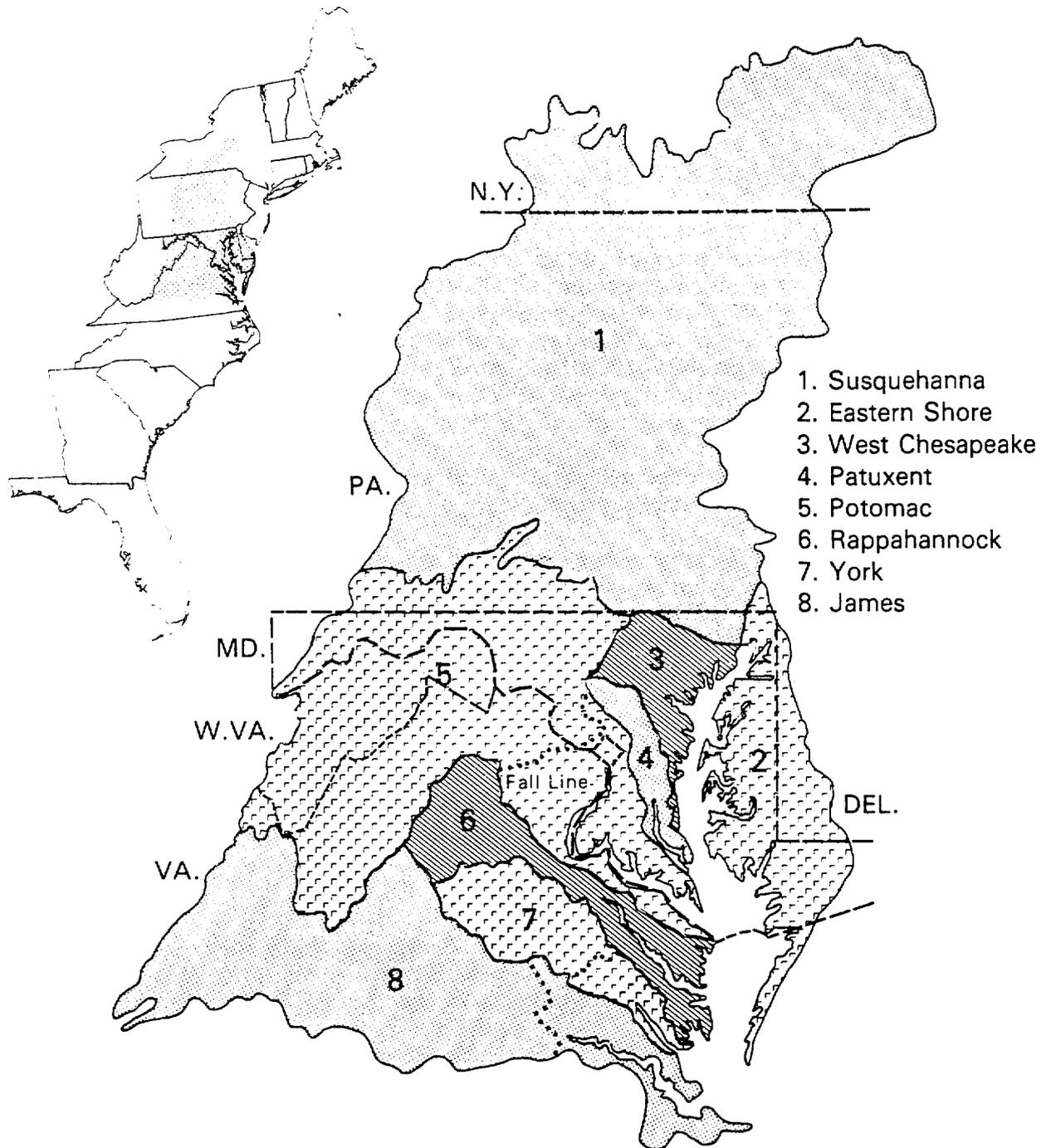
Local governments should use this manual and the contacts it provides to continue to carry out the important mission to restore and preserve the Chesapeake Bay.

The Members of The Chesapeake Bay LGAC

*Eric Jenkins, Director
Local Government Advisory Committee*

*Sarah Williamson, Staff
Local Government Advisory Committee*

The Chesapeake Bay Drainage Basin



SOURCE: Chesapeake Bay: A Framework for Action, US EPA, Region 3, Philadelphia, September, 1983

Defining the Local Role in Chesapeake Bay Restoration

“As well as being a national resource, the Chesapeake Bay is the largest estuary in the contiguous United States. The Bay itself is only part of an interconnected system which includes the mouths of many rivers draining parts of New York, Pennsylvania, West Virginia, Maryland, Delaware and Virginia. The Bay and all of its tidal tributaries comprise the Chesapeake Bay ecosystem. We are just now beginning to see the effects of human activities on the Bay’s ecological structure. To assure the Chesapeake’s continued productivity, we must develop comprehensive solutions to the often conflicting demands on the Bay’s resources. Growing commercial, industrial, recreational, and urban activities in the Bay area are putting substantial pressures on the Chesapeake’s regenerative powers.”

Chesapeake Bay: Introduction to an Ecosystem
US Environmental Protection Agency, Chesapeake Bay Program

Throughout the region, local governments play a particularly important role in the Bay’s environmental health. Making improvements "at home" have enhanced the quality of local rivers and streams. Providing traditional public services like water and sewer, and land use controls have moved local governments toward a positive impact on the Bay’s water quality as a whole.

Much of the potential success of the Chesapeake Bay's restoration hinges on the continued participation and individual and collective program successes of local governments in the region. Combined individual local efforts will add up to the collective success of Bay Agreement implementation.

The Chesapeake Bay Executive Council called for the creation of a *Local Government Advisory Committee* in 1987 to assist in developing a local-state-federal partnership, and to facilitate the participation of local governments in the Bay program. The local role in the Chesapeake Bay program is broad, with local governments given key implementation responsibilities in meeting many of the program’s goals to restore and protect the Bay.

Many of the federal and state Bay-related initiatives have carved out implementation responsibilities for local governments. Stormwater management, erosion control, recycling, and reducing the burden on critical lands, are each placing implementation responsibilities and costs on local governments. In addition, local governments are facing additional responsibilities for tidal and nontidal wetlands, nutrient management, toxics control, and water quality protection.

Collective local government success in carrying out these environmental programs varies. The more than 1500 units of local government in the watershed each have their own identity, composition, and mission. With many of the region’s local governments addressing resource and staff constraints, developing consensus, undertaking action, and achieving collective local success will continue to evolve.

The programs presented in this manual are indicative of the successful steps already taken by local governments toward restoration activities. The continued degree of involvement and initiative depends upon resource trade-offs, education of local officials, and a held perception that environmental initiatives adopted “at home” have an effect watershed-wide.

The Local Government Advisory Committee

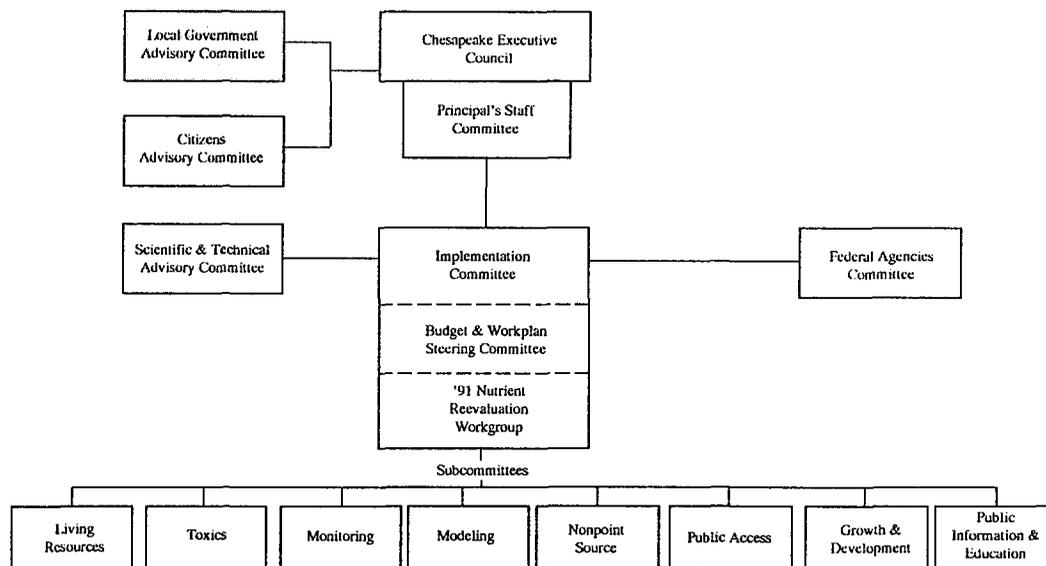
Upon signing the Chesapeake Bay Agreement in December 1987, the Executive Council signatories, consisting of the Governors of Pennsylvania, Maryland, and Virginia, along with the Mayor of Washington, D.C., the EPA Administrator, and the Chairman of the Chesapeake Bay Commission, determined that an integral part of achieving their goals would come through a reliance on local governments. They therefore established the following commitment to achieve these goals:

“By March, 1988 to establish a local government advisory committee to the Executive Council and charge that committee to develop a strategy for local government participation in the Bay program.”

The Chesapeake Bay Local Government Advisory Committee (LGAC), consisting of 20 local government officials, represents the diverse interest of nearly two thousand local governments from the 64,000 square mile watershed. Upon its creation, the committee was charged with communicating information about the ongoing and evolving Chesapeake Bay program to local governments. In turn, the committee was given the responsibility of communicating the opinions, concerns, and recommendations of local governments to the attention of the Executive Council. Since its creation in the spring of 1988, the LGAC has actively established the foundation for local government participation in the Bay program.

In working to meet the goals of the Executive Council, the LGAC balances proactive and reactive responsibilities and activities. The Committee provides comments on numerous commitment strategies and other documents, giving a local perspective on Bay issues, and fulfills a role in communicating with the Executive Council concerning issues that are of special interest to local governments. In turn, the Committee also provides a direct channel for the Executive Council to disseminate information to local governments.

The Chesapeake Bay Program



Local Government Advisory Committee Members

LGAC Chair:

Anna M. Long, City Councilmember
Havre De Grace, Maryland

Maryland:

Robert Jarboe, County Commissioner
St. Mary's County

Sidney Kramer, County Executive
Montgomery County

George P. Murphy, Mayor
Easton

J. Anita Stup, Commissioner President
Frederick County

Philip L. Tilghman, Council Member
Wicomico County

Virginia:

R. Keith Bull, County Administrator
Northhampton County

C. Flippo Hicks, Counsel
Virginia Association of Counties

Gerry Hyland, County Supervisor
Fairfax County

Nancy Parker, City Councilmember
City of Virginia Beach

Stephen K. Whiteway, County Administrator
Richmond County

Clay L. Wirt, Deputy Director
Virginia Municipal League

Pennsylvania:

Ronald Fitzkee, County Commissioner
York County

John Garner, Executive Director
Pennsylvania League of Cities

Robert Gerhard, Township Commissioner
Cheltenham Township

B. Kenneth Greider, Executive Director
Pennsylvania State Association of
Township Supervisors

Russell Pettyjohn, Council Member
Lititz Borough

District of Columbia:

Warren Graves, Assistant to the Director for
Metropolitan and Regional Affairs
D.C. Office of Intergovernmental Relations

Russ Thomas
Water and Sewer Utility Administration
D.C. Department of Public Works

Local Land Use Policy and Planning

A common thread running throughout local governments within the Chesapeake Bay watershed is a need to adequately plan for local development and land use patterns. Following on the heels of the *2020 Panel Report* that looked at population growth and development in the Chesapeake Bay watershed to the year 2020, state and local governments are taking an even harder look at long term planning measures. Focus on this issue will ensure that land use patterns will be compatible with environmental and other quality of life issues in the future.

The Report of the 2020 Panel, "*Population Growth and Development in the Chesapeake Bay Watershed to the Year 2020*," focussed attention on this important issue. In that report, the Panel put forth a series of goals that would enable the Chesapeake Bay region to meet the challenges brought on by expected growth and development. These goals, outlined by the Panel as visions, include:

Development must be concentrated in suitable areas.

Sensitive areas must be protected.

Growth should be directed to existing population centers in rural areas, with accompanying protection to resource areas.

Development of stewardship of the Bay and the land should be a universal ethic.

Conservation of resources, including a reduction in resource consumption should be practiced throughout the region.

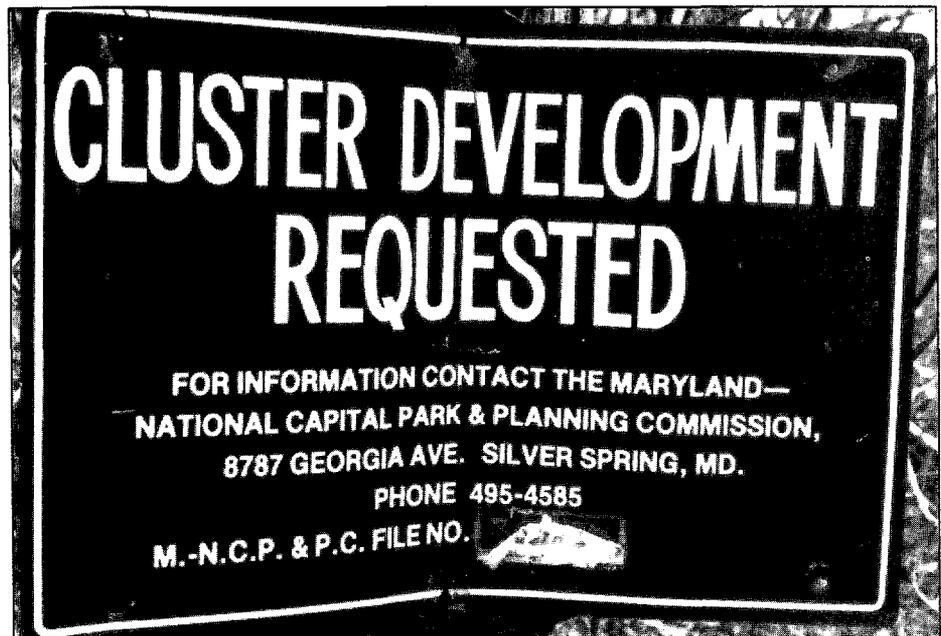
Funding mechanisms must be in place to achieve each of the visions.

Local governments and others have embraced these goals while recognizing that they are indeed *visionary*. There is also a realization that in order to meet the potential successes outlined by the Panel, an extraordinary effort by local governments will be needed. Collective local land use planning practices will in large part measure the success of restoration goals and make the visions reality.



Collectively, local governments are playing an important role in shaping the landscape surrounding the Chesapeake Bay, and therefore, the future of the Bay itself. Broad-scale comprehensive plans and definitive zoning provide structure to a network of land use philosophies, patterns, and regulations that cover the region.

There are a significant number of unique practices developed by local governments that address specific issues, needs or resources. These programs work in comprehensive fashion to create effective land use policies -- several of which are described in the following pages.



Mount Joy Borough, Pennsylvania Borough Manager

Mount Joy, Pennsylvania's cluster development provisions in its zoning ordinance make trade-offs between reductions in lot and yard size requirements for greater open space amenities.

The Borough of Mount Joy amended its zoning ordinance in 1989 to provide for and encourage cluster development. Provisions in the ordinance permit clustering as follows:

- Cluster development may occur as a unified development of a lot which is fifteen or more acres,
- The development must be served by public water and sewer,
- Cluster development applies to residential use only,
- The overall density of a cluster development cannot exceed six units per acre,
- Special consideration will be given to the use of slant curbing to facilitate stormwater management controls,
- Not less than 30 percent of the parcel to be developed shall be preserved as common open space. Wherever

possible, the common open space shall be interconnected with open space on abutting parcels,

- The common open space shall either be improved for active recreational use or, if the area contains natural features such as trees, wetlands or wildlife habitat, the common open space may be left unimproved,
- The common open space shall be owned and maintained in a manner to ensure its preservation, either by the borough, or through transfer to a non-profit conservation or preservation organization, or neighborhood association,
- Depending on the maintenance method, the borough may require the establishment of a reserve fund to provide for maintenance or capital improvements to the open space, with the costs assessed to the owners bordering the open space.

The program has been designed to address the borough's land use trend toward urbanization.

Contact: Daniel Zimmerman
Borough Manager
Mount Joy Borough
21 East Main Street
Mount Joy, PA 17552
(717) 653-2300

**Vienna, Virginia
Office of Planning and Zoning**

Vienna, Virginia's "Development Guide" is intended to provide developers and other interested parties with insight into the procedures associated with the local development process.

Efforts to simplify and explain a complicated development review process were undertaken by the Town of Vienna, Virginia through creation of a local *Development Guide*. The Guide incorporates charts describing step-by-step procedures for applications, and procedures for approval involving changes in zoning, conditional use permits, preliminary and final subdivision plats, and site plan review.

The Guide also provides information regarding appeals, variances and architectural review of development projects within Vienna. Information contained within the Guide includes a list of the various permits required for development, a schedule of fees, and a list of offices and officials responsible for their review and issuance.

The Guide is intended to assist developers, landowners and others with a sometimes complicated land use regulation process.

Contact: Director of Planning and Zoning
Town of Vienna
127 Center Street, South
Vienna, Virginia 22180
(703) 255-6341

**Adams County, Pennsylvania
Office of Planning & Development**

In order to maximize citizen involvement in updating the County-wide Comprehensive Plan, Adams County, Pennsylvania published a citizen's landuse and growth questionnaire in local newspapers.

Because the Comprehensive Plan will establish guidelines for county growth and landuse for the next 20 years, Adams County wanted to give residents an opportunity to help shape their region's future. To accomplish this,

a questionnaire (pages 4 and 5) that appeared in area newspapers asked residents to rate the adequacy of county services such as roadways, sewer and water systems, recreational opportunities, and housing for the elderly, handicapped and low income families. Residents were also asked to indicate the amount of growth they would like to see in the county, the issues and values they thought should be priorities in the plan, and what areas or landmarks should be preserved as county "treasures."

In addition to the survey, the county held seven regional meetings to seek public statements on issues of citizen concern. The consultant hired by the county to complete the plan update will incorporate citizen concerns during the planning process. A citizens advisory committee was also created with representatives from all areas and economic interests of the county to act as a sounding board for the planning staff during the 18-month development process.

The county set aside significant funds to complete the comprehensive plan. These funds have come from a variety of sources, including a \$12,500 grant from Pennsylvania Department of Community Affairs, \$20,000 from PennDot for the transportation component of the plan, and \$15,000 contributed by local businesses and municipal governments. In addition, all of the county's \$75,000 federal Community Development Block Grant funds were set aside for comprehensive plan expenses.

Contact: Richard Schmoyer
Adams County Courthouse
111-117 Baltimore St.
Gettysburg, PA 17325
(717) 334-6781 Ext. 263

**Carroll County, Maryland
Planning Bureau**

Carroll County's cluster development provisions work to maintain directed patterns of growth by encouraging protection of open space and valuable local environmental resources.

In an attempt to balance the protection of water resources and open space in reservoir watersheds with increasing development pressures, Carroll County amended their local zoning ordinance to encourage the

Continued page 6

COUNTY QUESTIONNAIRE

Please Read and Fill Out

Adams County is beginning a major update of its Countywide Comprehensive Plan. The Plan Update will establish policies that will affect how, where, when, and what kind of development will occur in the County over the next twenty years.

Often people complain that they have "no say" in determining governmental policy that affects their communities. In updating the Countywide Comprehensive Plan, Adams County Officials want to maximize citizen involvement in the planning process.

You can provide the County with valuable assistance. Please take a few minutes to fill out and return this survey. Your ideas will be most appreciated.

1. The 1970 Census showed that 56,937 people lived in Adams County. County Planners estimate that by 1990 the population of Adams County had risen to 80,070 people. Compared with the past twenty years, how much growth do you think would be desirable over the next twenty years.

County as a whole
(Check one space)

- Much less growth
- Somewhat less
- The same
- Somewhat more
- Much more growth

Your Township or Borough
(Check one space)

- Much less growth
- Somewhat less
- The same
- Somewhat more
- Much more growth

2. Please rate the adequacy of the following community facilities and services (circle ONE number for each category.)

	POOR		ADEQUATE		VERY GOOD
	1	2	3	4	5
Major Roadways	1	2	3	4	5
Secondary Roadways	1	2	3	4	5
Playgrounds	1	2	3	4	5
Hiking, Biking and Walking Trails	1	2	3	4	5
Public Sewer and Water Systems	1	2	3	4	5
Police Protection	1	2	3	4	5
Housing for elderly and handicapped	1	2	3	4	5
Housing for low income families	1	2	3	4	5

3. In planning for future roadway improvements, which one of the following goals should be given the most emphasis? (please check one):

- Eliminate and/or improve dangerous intersections, bad curves, and other roadway hazards.
- Upgrade existing roadways to accommodate additional traffic.
- Build new roadways around population centers.

4. Please identify the three most important roadway improvements which you believe should be made in Adams County:

- 1. _____
- 2. _____
- 3. _____

5. Would you like to see roadways in your area improved, if these improvements also encouraged new development near to where you live:

Yes No

6. Every Pennsylvania County has its "treasures" -- places that are unique for their beauty, agricultural production, or historic character -- places that should be preserved for future generations. Please identify up to three such places in Adams County. You may want to name a village, an agricultural area, a stream valley, or an area of countryside which is especially beautiful.

- 1. _____
- 2. _____
- 3. _____

7. Are you satisfied with local employment opportunities? (please check one space).

- Not satisfied
- Somewhat satisfied
- Generally satisfied
- Very satisfied

8. How do you feel about the following statement?

"COUNTY GOVERNMENT SHOULD SUPPORT EFFORTS TO ATTRACT JOBS TO THE AREA."

- Strongly Disagree
- Mildly Disagree
- Agree
- Strongly Agree

9. Which of the following values are most important to you? (check two spaces)

- Preserving the quiet life style enjoyed by county residents
- Preserving the landscape and environment
- Improving employment opportunities
- Ensuring an adequate future water supply
- Solving traffic problems
- Controlling future growth
- Minimizing public control over private property rights
- Preserving farmland

10. What do you think will be the greatest problem confronting Adams County in the 1990's?

11. What solutions do you propose for solving this problem?

12. Please name the Borough or Township where you live: _____

Name the Borough or Township where you work: _____

Were you born in Adams County? _____

Have you lived in Adams County for less than ten years? _____

How old are you? _____

Are you male or female? _____

Thank you for your help. Please return your questionnaire to:

Adams County Office of Planning and Development
111-117 Baltimore Street, Room 205
Gettysburg, PA 17325

use of cluster development.

Under this provision, developers are permitted to decrease their development lot size below the required 10 acre minimum, provided that they preserve the land derived from any lot reduction as open space or recreational areas for joint use by the residents of the subdivision. Specific requirements for the common areas are as follows:

- Open space areas must make up at least 15% of the gross acreage of any tract submitted for cluster permitting.
- 50% of the required open space may be steep slopes, streams, ponds, watercourse, or flood plain.
- A minimum of 10% of the open space must be suitable for recreational use and may not exceed a grade of 3%.

The ordinance was developed by the Planning Bureau with the help of a large interagency committee. The use of a committee in the planning stages provided a high level of staff awareness and coordination throughout the county departments.

Contact: Frank Schaefer
 Carroll County Planning Bureau
 225 N. Center Street
 Westminster, MD 21157
 (301) 857-2143

York County, Pennsylvania Planning Commission

A need to preserve open space, address growth and development pressures, and provide a method for farmland preservation lead the York County Planning Commission to advise the county's municipalities to include sliding scale land preservation regulations in their zoning ordinances.

A coordinated effort by the York County Planning Commission encouraged sixteen municipalities to independently incorporate agricultural land preservation regulations into their municipal zoning ordinances. The provisions recommend allowing dwelling units, but limiting the number based on a sliding scale -- depending on the size of the parcel under consideration. The scale is designed so that the larger the land tract, the more

POPULATION CHANGES 1990-2020

	1990	Increases by 2020	
Pennsylvania	3,570,700	283,800	+8%
Maryland	4,666,200	830,400	+18%
Virginia	4,726,000	1,503,800	+32%
Washington, D.C.	628,300	-600	-0%
TOTAL	13,591,200	2,617,400	+20%

homes may be built.

The sliding scale permits some limited dwelling unit construction but restricts the amount of land available for subdivision for speculative reasons while containing farmland costs. Sliding scale zoning, upheld in the mid-1980's by the Pennsylvania Supreme Court, provides a unique approach to protection of open space and a limit on development within the county and its municipalities.

Contact: Randy Beck
 York County Planning Commission
 One West Market Way
 4th Floor
 York, PA 17401
 (717) 771-9614

Queen Anne's County, Maryland Department of Planning and Zoning

In order to provide for the continued existence of open space areas and the protection of the region's ecologically sensitive lands, the county included resource protection provisions into its zoning ordinance.

Queen Anne's County's provisions for maintenance of open space include protection of shoreline areas through a forested shoreline buffer requirement, a shore erosion control bonus, as well as the designation of open space through the use of transferable development rights (TDRs).

Shoreline Buffer Requirement

The county ordinance establishes a standard shore buffer of 300 feet from the edge of tidal wetland or water,

50% of which must be forested. All unforested areas within the required buffer zone must be planted and maintained so as to establish the 50% forested coverage over the length and depth of the shoreline buffer. Areas of the buffer not maintained as woodland must be planted in natural groundcover. To ensure compliance with the requirements, a bond of surety to cover the estimated cost of implementing these standards must be posted by the developer prior to development.

Shoreline Erosion Control Bonus

In connection with any land application for subdivision approval, the owner of land within an erosion hazard area may apply for a residential density bonus. The application must include a detailed engineering report outlining the type of measures which will be used to control erosion and a summary of installation costs. In addition, an appraisal identifying the average sales value of all waterfront and inland units which will be created by the development within the coastal area is required. Computation of bonus units is determined as shown in the accompanying chart.

Transferable Development Rights

The ordinance provides county landowners with the opportunity to utilize TDRs to increase the development potential of one parcel of land while another parcel becomes open space. The ordinance stipulates that no development right may be used to increase the density of areas already designated as *Agricultural or Coastal Districts*. There are also limits on the density of development of the receiving parcel, based on the adjacent land uses. All transfers are subject to approval by the planning director.

The program is implemented through the Department of Planning and Zoning and there is no additional cost to the county.

Contact: Joe Stevens, Planner
Queen Anne's County
Planning & Zoning
208 North Commerce St.
Centreville, MD 21617
(301) 758-1255

COMPUTATION OF SHORELINE CONTROL BONUS UNITS

A. Method. Subject to the provisions of subsection B, the Planning Director shall determine the number of bonus units as follows:

1. Average retail value of coastal area or lots
2. Times .10
3. Equals per unit erosion control budget to be absorbed by project
4. Times total number of coastal units or lots
5. Equals total erosion control budget to be absorbed by the project
6. Actual erosion control cost
7. Minus erosion control budget (line 5)
8. Equals the base for bonus computation
9. Divided by the average coastal unit or lot value (line 1)
10. Equals bonus units to be added to base permitted density (rounded to next highest number)

B. Limitations. No bonus unit shall be allowed if such allowance would (a) abridge any other requirement of this ordinance or (b) reduce any other performance standards of the district, including those relating to open space, resource protection, bufferyards and shore buffer.

Queen Anne's County, Maryland

Local Land Use Policy and Planning

Benzinger Township Township Manger

Provisions in Benzinger Township's zoning ordinance regulating strip mining are designed to protect the community's groundwater system.

A concern about potential groundwater contamination lead Benzinger Township to adopt provisions in its zoning ordinance regulating construction around wells and private water supplies.

The township's zoning provisions were targeted primarily at major earth disturbance projects -- strip mining and quarrying. Any such activity cannot be conducted within approximately 1000 feet from any dwelling, aquifer, spring, groundwater or other source.

To date, these restrictions on mining and quarrying activities have not been contested.

Contact: Thomas Fleming, Manager
Benzinger Township
808 S. Michael Road
P.O. Box 224
St. Mary's, PA 15857
(814) 781-1274

Kent County Department of Planning and Zoning

Facing mounting growth pressures in the county's primarily rural areas, Kent County, Maryland established a "Zoning Workgroup" to develop goals for future land use planning and growth impacts.

Kent County, Maryland a predominately rural county with strong agricultural interests began to feel pressures of development in the late 1980's from Wilmington, Delaware. Faced with a lack of tools to address this influx the county assessed its comprehensive plan, zoning structure, and long-term projections and goals.

To assist the county with this process, formation of a Zoning Workgroup was initiated. Consisting of members representing business, watermen, agricultural, and conservation, the workgroup reviewed projections for county growth and measures to address the issues.

The workgroup developed three major goals:

- Preserve agriculture

- Maintain business climate, and
- Focus Growth

The workgroup also created a strategy to achieve those goals:

- Look at available alternatives for land use planning and an assessment of Transferable Development Rights as an option.
- Refocus attention on the County's Comprehensive Plan which had previously not been enforced.
- Revisit issue of maximum lot sizes.
- Create an incentive system to provide for continued "growth as usual" in designated areas.
- Direct growth to move development away from prime agricultural areas and into villages and established rural areas.

Much like the work of the Chesapeake Bay 2020 Panel, the workgroup's visionary efforts will assist the county in meeting future growth and development pressures.

Contact: Gail Webb Owings
Planning Director
Kent County
Courthouse
Chestertown, MD 21620
(301) 778-7475

Adams County, Pennsylvania Office of Planning and Development

Dramatic increases in development near a major transportation corridor within Adams County, Pennsylvania prompted the County Commissioners to direct the development of an Interchange Zoning Ordinance.

Adams County, Pennsylvania, located on the border of Pennsylvania and Maryland recently experienced an increase in development due in part to the completion of all four lanes of Route 15 (a major roadway linking northwestern Maryland with central Pennsylvania.)

In 1988 the County Commissioners instructed the

County's Office of Planning and Development to draft a zoning ordinance for the Route 15 interchanges located in Straban Township. Development of the ordinance included periodic review by a citizen's advisory committee, as well as township supervisors, and planning commissioners.

The ordinance was adopted in 1990, with the county now developing similar ordinances for the other two unzoned townships affected by the interchanges.

An increasing number of Pennsylvania counties are becoming aware of the option of zoning transportation interchanges and are incorporating appropriate measures into their planning processes.

The county's effort is funded totally through county revenues.

Contact: Richard Schmoyer
Director of Development
Adams County Courthouse
111-117 Baltimore Street
Gettysburg, PA 17325

Spring Grove Borough, Pennsylvania

To provide funds to address stormwater runoff due to increased construction, the borough implemented a stormwater facilities fee.

Spring Grove, Borough in York County, Pennsylvania faced the effects of mounting residential construction pressures, particularly with increases in impervious surface areas and resulting increases of stormwater runoff. Following construction of a local housing development and an adjacent stormwater retention pond, borough officials realized that a comprehensive stormwater financing system was needed, since they would ultimately be responsible for continued maintenance of the stormwater structures.

To address this, the borough required:

- That the developer place an assigned amount in escrow, and
- An amendment to the Borough Code creating a Stormwater Facilities Fee to generate future revenues for stormwater control. The fee system, as shown in the accompanying box, enables the borough to construct, maintain, and improve stormwater facilities.

The Borough of Spring Grove, Pennsylvania Stormwater Facilities Fee

SECTION 1: Chapter 65, Section 65-2 of the Borough Code of Ordinances is amended by inserting into the definition of "STRUCTURE" the words "parking lots, drive ways, patios, and display signs" immediately following "walks,".

SECTION 2: Chapter 65, section 65-12, of the Borough Code of Ordinances is amended by adding the following subsection:

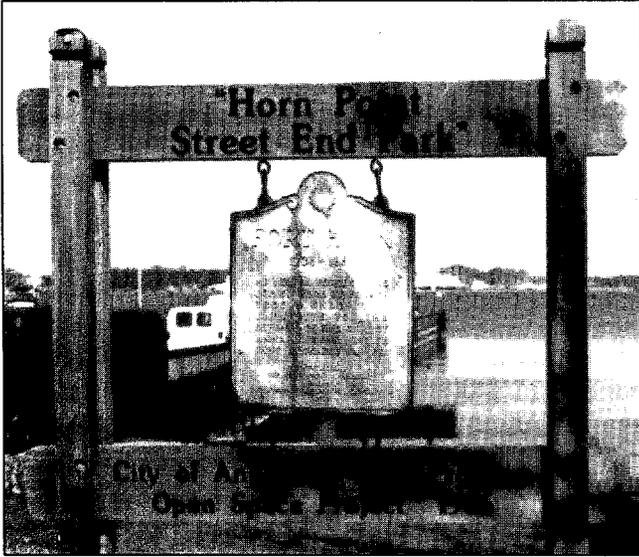
G. Stormwater facilities fee:

In addition to any other permit fees required by this Section, all new construction and additions to present structures that create impervious surface, including parking lots, drive ways, patios and walk ways, except curbs and sidewalks within the public right-of-way, shall be assessed a fee of fifteen cents (\$0.15) per square foot of this surface area. All fees collected pursuant to this subsection shall be deposited in an escrow account to be used for the construction, maintenance and improvement of stormwater facilities within the Borough.

The program is administered entirely by the municipality.

Contact: Joy Ann Flickinger
Borough of Spring Grove
P.O. Box 126
Spring Grove, PA 17362
717-225-5791

Open Space



Local programs to protect open space are vital elements in preserving the Chesapeake Bay. Open space is significant because:

- By dedicating land as open space, the potential impacts of increased development and associated burden to the Bay is averted.
- Land controlled as open space surrounding developed areas provides a buffer between associated impacts of development and local water ways. Particularly in urban and suburban areas, open space provides the necessary conditions to absorb runoff and sediment that would otherwise reach adjacent waterways.
- Open space provides recreation opportunities to residents, and enhances the value of adjoining property.
- Open space benefits include habitat for wildlife, trees and vegetation, and a decrease in the amount of impervious surfaces.

Local governments realize the significance of preserving open space and have implemented measures for its protection and enhancement. By developing land use planning measures, incentives for developers, and acquisition programs, they are developing the tools necessary to achieve open space goals. Several of these local efforts are included:

Fairfax County, Virginia Office of Comprehensive Planning

In order to preserve the natural resources, ecologically sensitive areas and visual amenities in the region, Fairfax County's Office of Comprehensive Planning adopted the Environmental Quality Corridor System as their open space policy.

Fairfax County's Environmental Quality Corridor System is structured to coincide with the patterns of the county's stream valleys.

Because the floodplains, wetlands, shoreline areas and steep valley slopes surrounding streams make up the majority of the ecologically sensitive lands in the region, they are set aside for protection in the planning policy as Environmental Quality Corridors (EQCs). These areas form a continuous network of open space within each watershed of the county.

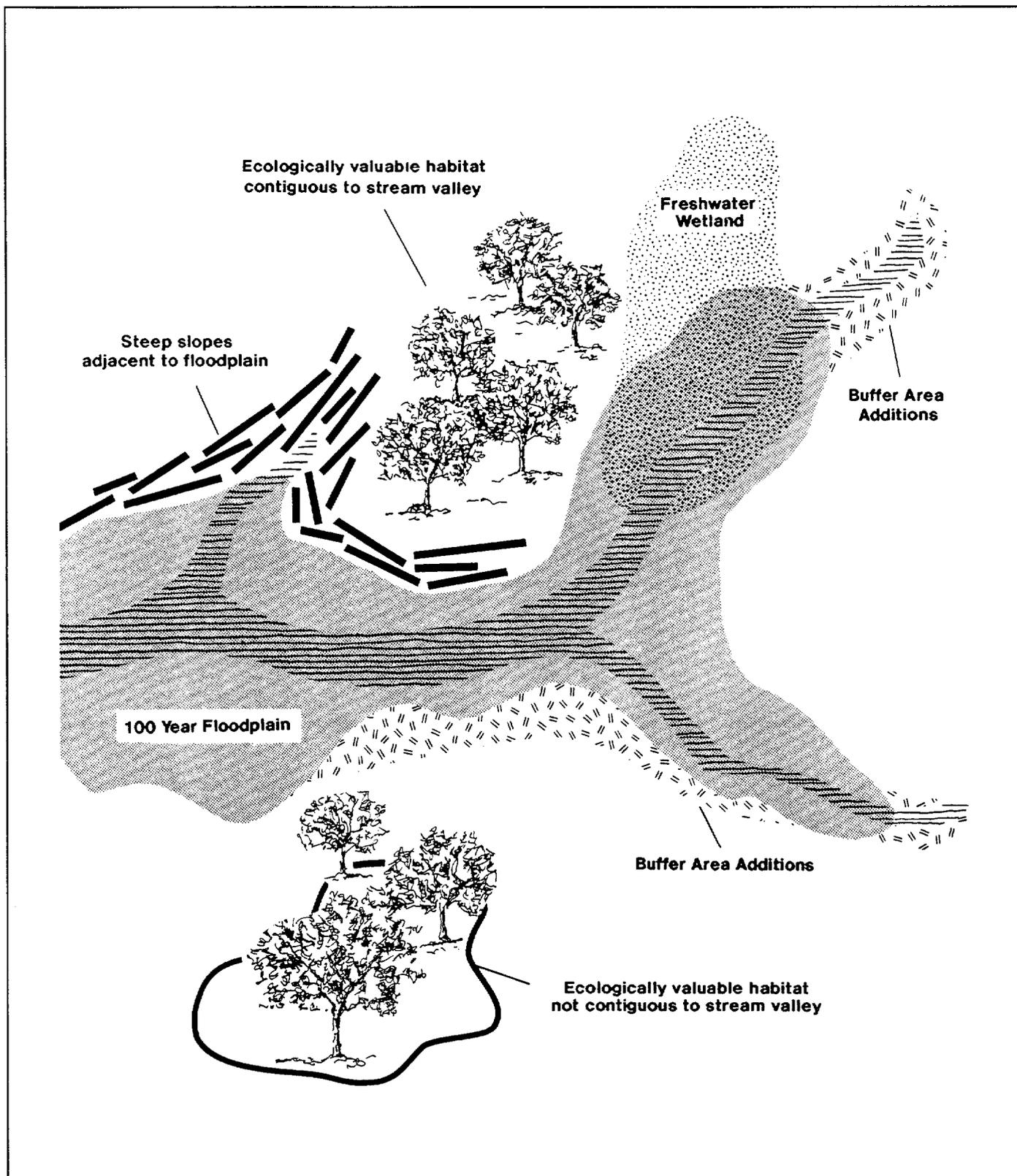
The EQC System is implemented by the County's Office of Comprehensive Planning through the development plan review and permitting process. Only development plans which effectively avoid or protect area EQCs are permitted. Other methods of securing EQCs include the following:

- Sensitive lands and park lands are directly purchased by the Park Authority.
- The Park Authority accepts the dedication of open space land within cluster developments.
- Floodplains are retained as open space through enforcement of the county floodplain ordinance.
- The county accepts open space easements from private homeowners.
- Agricultural and forestal districts are established through the *Agricultural and Forestal Districts Act*.

The program is funded by the county.

Contact: Noel Caplan
Comprehensive Planning
4050 Legato Rd., Suite 800
Fairfax, VA 22033
(703) 246-1380

Examples of Environmental Quality Corridor (EQC) Components



Fairfax County, Virginia

Howard County, Maryland Department of Recreation and Parks

In order to preserve valuable open space areas throughout the region, Howard County, Maryland developed a Land Preservation and Recreation Plan in participation with a state authorized open space initiative.

Howard County's Department of Recreation is responsible for preparation of an annual Land Preservation and Recreation Plan (LPRP), designed to preserve agriculture, forests, stream valleys, and other open space resources. In addition the Plan works to provide recreation areas appropriate to the needs of the county (30 acres per 1000 people). The Plan is used as a component of the comprehensive planning process.

To receive state funding for local parks and recreation acquisition, the LPRP is submitted to the Maryland DNR for review and approval. In FY '90, the county received \$1.14 million in state funds for open space. \$25,000 is used for annual preparation of the updated LPRP. The remaining funds are divided among the county's 24 local jurisdictions and used for direct land acquisitions.

Contact: Jeffrey A. Bourne
3300 North Ridge Rd.
Suite 170
Ellicott City, MD 21043
(301) 992-2480

City of Harrisburg, Pennsylvania Office of the Mayor

This program was developed to provide Harrisburg residents with attractive recreation areas while creating buffer zones to mitigate for soil erosion and urban runoff that contribute to poor water quality.

A need to establish a buffer between developed land of the City of Harrisburg and the Susquehanna River prompted the city to set aside its entire 5 miles of shoreline along the Susquehanna River as a greenway. The greenway designation prohibits anything other than recreational development. The city-owned island in the middle of the river has also been designated in this way, and now is the site of a recreational complex.

During development of the recreation facilities, con-

servation practices such as tree planting and other soil stabilization techniques were utilized to reduce the potential of water pollution. The program was financed using city funds.

Contact: Mayor Stephen Reed
Suite 202
King City Govt. Center
10 North Second St.
Harrisburg, PA 17101-1678

City of Wilkes-Barre Office of City Planning

In an effort to create open space along a major tributary to the Chesapeake Bay, the City of Wilkes-Barre coordinated a volunteer effort to reclaim shoreline and provide additional parkland and recreation opportunities.

To increase public access opportunities to local citizens, the City of Wilkes-Barre coordinated a major revitalization program along the banks of the Susquehanna River with a network of volunteers.

A city-owned, river-side zoo in disrepair was the site of the streamside restoration project. Citizen interest sparked city officials to coordinate community volunteers given responsibility for administering the clean-up program.

The program placed emphasis on cleaning stream banks, removing debris, and planting aquatic grass and river-side stabilization plants. In addition, a boat launch was built to provide direct access to the recreation opportunities on the river.

By proceeding with the project, the city gained increased access to a valuable resource, while at the same time decreasing the amount of trash and pollutants that were directly entering the river.

Costs to the city were minimal due to the use of volunteer efforts.

Contact: Jack Varally
Director, City Planning
City of Wilkes-Barre
40 East Market Street
Wilkes-Barre, PA 18711
(717) 826-8258

Resource Inventory and Mapping



ments have developed innovative inventorying and mapping systems to aid in their planning processes -- several of which follow:

City of Virginia Beach, Virginia Office of Environmental Management

The City of Virginia Beach contracted with the State Department of Conservation and Recreation's Natural Heritage Program for a three-year research project to identify significant natural areas and their component sensitive animal and plant habitats.

The City of Virginia Beach is in the midst of a three-phase natural areas inventory to assess the status of sensitive areas and existing resources within the city. The assessment will enable planners and local officials to utilize the information in development of planning practices that provide for resource protection.

The three-phase inventory includes:

- Stage One:* October 1989 - September 1990: Data collection consisting of aerial reconnaissance, rare species field inventory, and data processing.
- Stage Two:* Detailed field inventory of rare species.
- Stage Three:* Data analysis and final report describing the natural communities of the city and prioritizing resources.

The city will produce a series of maps containing information on species occurrence and a computer listing of species with ranks of endangerment.

Budget estimates for the project total \$83,716:

Phase I Data Collection: \$13,867

Phase II Field Inventory: \$54,624

Phase III Final Report: \$15,225

Inventory results will be compiled and incorporated into decisions made by city elected officials, planners,

Local land protection, zoning, and planning programs must be based on assessments of what exists before decisions can be made on what is to be achieved. Resource inventory and mapping programs at the local level are designed to provide this baseline for local planners and resource managers to employ in making assessments and subsequent policy decisions.

Local governments are using a variety of systems and standards for these assessments. By inventorying existing natural resources within jurisdictions, they are able to catalog waterbodies, soils, wetlands, wildlife, flora and fauna, vegetative coverage, land use, population, and other natural properties. In many cases, local governments call upon local staff to conduct inventories, although other mechanisms have been utilized including the services of conservation district, citizens, or various conservancies and private organizations.

Local mapping systems, ranging from high-tech computer imaging and geographic information systems, to hand-colored maps and overlays are used to define critical and sensitive land characteristics within jurisdictions. These inventory and mapping systems provide local governments with readily available guides when making decisions about placement of new development, transportation arteries, and other land use proposals.

Throughout the region, a number of local govern-

Resource Inventory and Mapping

and others on land use policies and future growth patterns.

Contact: Mary Morris, Coordinator
Environmental Programs
City of Virginia Beach
Municipal Center
Virginia Beach, Virginia 23456
(804) 427-4801

Martic Township, Pennsylvania

To identify environmentally sensitive areas, Martic Township created an Environmental Assessment Committee to develop the groundwork for a comprehensive evaluation of the township's natural resources.

Martic Township, Pennsylvania, a predominately rural locality of 21,000 acres, conducted an environmental assessment to have sound environmental data available for both a revision of the township's comprehensive plan and the sewage facilities plan.

An *Environmental Assessment Committee*, consisting of nine individuals appointed by the Township Supervisors, was created to establish the parameters necessary for this environmental inventory.

As their first step, the Committee surveyed local citizens to gather a general consensus on their philosophies of growth control, carrying capacity, and related environmental issues. The initial survey looked at the issues based on the township's 1972 zoning practices, and 1971 comprehensive plan.

Following this survey, the township contracted with Land and Community Associates (Charlottesville, Virginia) to conduct a two-year environmental assessment. The assessment, completed in March of 1989, is being incorporated into current discussions and redrafting of the comprehensive plan, and other infrastructure planning requirements.

The township financed the project with \$50,000 from local funds.

Contact: Linda Gurtler, Supervisor
Martic Township
408 River Road
Pequea, Pennsylvania 17565
(717) 284-3407

York County, Virginia Department of Community Development

A regional assessment of growth and development issues lead York County, Virginia to develop a resource inventory as a component of regional land use policies and regulations.

Representatives of James City County, York County and the City of Williamsburg, as participants within a "Regional Issues Committee," periodically meet to discuss and formulate positions on regional growth issues.

As part of this Regional Issues Committees' effort, the group consisting of three members from each locality, initiated a *Natural Resources Inventory* and *Historical Inventory* utilizing the services of the Virginia Natural Heritage Program.

The inventory is designed to designate those sites supporting unique or exemplary natural features or other significant features. By assessing the current status of natural areas, the localities will be able to build the findings into their planning processes and avoid sensitive areas.

Each locality contributes resources to conduct the inventory. York County allocated \$2,400 as its share of the joint project in 1990. The joint project will be completed in 1991.

Contact: J. Mark Carter, Director, or
Stuart Bass, Planner
York County Dept. of
Community Development
P.O. Box 532
Yorktown, Virginia 23690
(804) 898-0080

Berks County, Pennsylvania County Planning Commission

The Berks County Planning Commission is conducting a County Natural Areas Inventory to identify and record sensitive areas.

By locating and cataloging sensitive areas within the county, Berks County officials hopes to be able to protect them along with their unique, endangered, and threatened species.

The inventory is being conducted in response to

mounting developmental pressures, and a growing concern over the loss of environmentally important areas. Upon completion of the plan, the County Planning Commission will utilize data generated from the inventory to guide development away from those areas identified as "sensitive."

The county contracted with the Nature Conservancy to conduct the inventory for \$40,000. The program is being financed through a \$20,000 grant from the Department of Community Affairs and a Development Block Grant in the same amount.

Contact: Steven Boyer, Planner
Berks County Planning Commission
Exide Building, Suite 203
645 Penn Street
Reading, PA 19601-3509
(215) 378-8703

Pequea Township Environmental Advisory Council

Pequea Township's Environmental Advisory Council initiated this program to conduct a first-time cataloging of the Township's natural features for use in the development of a comprehensive plan.

The Pequea Township Environmental Advisory Council, consisting of citizen representatives appointed by the Township's Board of Supervisors, conducted an assessment of the township's natural conditions to assist in local land use decision making.

In conducting the assessment, surveys were sent to residents who identified areas that they thought should receive special consideration or protection. Survey results were then used as a basis for follow-up. The services of an engineer were utilized to provide correlations between survey results and the land use plans of the township.

The program was financed through comprehensive plan funds from the township and state.

Contact: Alan S. Peterson, M.D.
Pequea EAC
243 Shultz Rd.
Lancaster, PA 17603
(717) 464-2322

Arlington County, Virginia Department of Public Works

This Arlington County, Virginia program develops and maintains county-wide resource inventory maps for use by various county agencies, private developers and the general public.

The county is in the process of developing an extensive computerized Geographic Information System (GIS) through digitization of current and ongoing mapping information.

The county provides Real Property Identification Maps for primary use by the Department of Management and Finance, Real Estate Assessment Division, other agencies, real estate companies, and the general



public. Mapping is done at a 1" = 100' scale.

In addition, the county maps at a 1" = 50' scale for its topographic and planimetric maps, each covering 43.43 acres, and includes a registered overlay system depicting property base and real estate code information. The planimetric maps and property base overlays are being used as a base for digitization of the Geographic Information System.

The program was developed in house by county staff and implemented continuously as maps and related overlays were completed. The Public Works Department has found that there is a significant demand for the use of the completed maps and that continuous maintenance and updating is crucial to the program. Funds for the program are provided by the county and user fees.

Contact: John Sutton
Arlington County
Dept. of Public Works
Suite 813
2100 Clarendon Blvd.
Arlington, VA 22201
(703) 358-3635

Howard County, Maryland Department of Public Works, and Department of Planning and Zoning

With the aid of computerization and use of Geographic Information System (GIS), Both the Howard County Department of Public Works and Department of Planning and Zoning are working to further refine their mapping systems for the protection of critical resources.

Howard County is in the process of installing a Geographic Information System (GIS) to provide the Department of Public Works with capabilities for computer aided design (CAD) and graphics for engineering models, as well as development of design manual details.

The county's data is hand-drafted on 1984 base sheets and includes environmental characteristics, water and sewer service areas, lines and facilities. The first task for the Department is to re-fly topography and revise base data maps digitally. Expected mapping completion is set for 1992 with other data to be digitized subsequently.

The hardware and photogrammetries are financed within the county capital budget's Topographic Mapping Update Program.

The County's Department of Planning and Zoning already utilizes GIS - digitized data base at 1" = 600' scale. To date, entries include zoning, tax, land use, and address data, as well as roads, historic properties and environmentally sensitive areas. Each can be retrieved independently or in layers.

Immediate applications will be subsequent to an approved General Plan, for work on comprehensive rezoning, development monitoring system, and maintaining adequate public facilities.

Contact: David Holden, Planner
Howard County
3430 Courthouse Drive
Ellicott City, Maryland 21043
(301) 992-2354

Howard County, Maryland Department of Planning and Zoning Department of Public Works

The County has initiated two different groundwater projects which together provide for the identification and protection of some of the region's most vulnerable groundwater resources.

The Department of Planning and Zoning hired a consultant to conduct a study of the relative groundwater pollution potential in the western part of the county. The study was done using EPA's 7 "DRASTIC" factors which include:

- Depth to groundwater,
- Recharge potential,
- Aquifer geology,
- Soils,
- Topography, and
- Impact and Conductivity of possible pollutants.

The DRASTIC study is based on the county's hydro-geologic setting and provides a broadbrush planning tool that can be used to screen various land use proposals for further investigation, however, it is not a substitute for site specific data. The cost of the consultant study was \$25,000 which was funded as a County Capital Project.

The second project was initiated through the Department of Public Works but is a joint undertaking with the U.S.G.S Maryland Geologic Service to complete a comprehensive Water Resources Study of the county.

The study will be used for planning purposes and includes estimates of streamflow, groundwater yields, and various groundwater properties as well as characterizations of ground and surface water quality. The county contributed \$139,700 to the project's total cost of \$639,700.

Contact: Uri P. Avin, Director,
David Holden, Planner
Department of Planning & Zoning
3430 Court House Drive
Ellicott City, MD 21043
(301) 992-2350

Richmond County, Virginia County Administration Office

The Richmond County Information System (RIS) was developed as part of the comprehensive plan project to provide a basis for responsible planning and development of the county's shoreline areas.

Some of the counties within the Richmond County area began to experience an increase in development due to proximity to the Washington metropolitan area. Richmond is the only county in the Tidewater region that has no zoning ordinance, and the current comprehensive plan is nearly ten years old.

The County Board of Supervisors and the County Administrator proposed revisions to land use ordinances that would require assembling and interpreting enormous volumes of information concerning present resources, natural features, and development patterns. A system was needed to store, manipulate, update and display information to assist the planners with decision making.

The county, along with the Chesapeake Bay Foundation (CBF), began investigating the feasibility of developing a Resource Information System (RIS) for storing and manipulating map and tabular information. The RIS approach provides methods of routinely generating and displaying high quality graphics for a wide range of conditions. Within the RIS environment, the databases can be maintained and updated for site plan reviews and planning efforts.

In 1986, the county received a Coastal Resource Management (CRMP) grant from the Virginia Council

on the Environment to provide funds for a comprehensive growth management plan. The grant included funds for a contract with the Information Support Systems Laboratory (ISSL), Department of Agricultural Engineering, Virginia Tech, to expand the VirGIS database and to develop a dBase interface for database management and/or manipulation. VirGIS is a continuing project commissioned by the Division of Soil and Water Conservation to identify and rank the nonpoint source pollution potential of agricultural land. In 1987, the county received a second CRMP grant for the acquisition of hardware needed to operate the RIS in the Richmond County Offices.

In early 1987, CBF received funding from the Virginia Environmental Endowment to develop a shoreline component to the comprehensive plan, update the subdivision ordinances and develop preliminary zoning guidelines. An integral part of this comprehensive planning and zoning effort was the compilation and mapping of resource information in the county. This information formed the basis for additional themes that were incorporated into the Richmond County RIS.

The RIS was included in the \$96,000 comprehensive plan budget which was financed through county funds, a \$39,000 Federal Coastal Zone Management Grant and a \$45,000 Virginia Environmental Endowment Grant received and contributed by the Chesapeake Bay Foundation.

Contact: William Duncanson
Richmond County
P.O. Box 1000
Warsaw, VA
22572
(804) 333-3415



Greenspace



Tree Planting and Preservation, Green Corridors, and Landscaping

The Chesapeake Bay watershed was once the beneficiary of extensive forest cover. Recently, however, there has been a significant decline. A component of the Chesapeake Bay restoration program provides for the retention of forested buffers along the Bay and its tributaries to protect the waters from excessive sediments and nutrients. Tree-related programs throughout the watershed are used to help protect the Bay both directly and indirectly from these impacts.

Riparian forests, those directly along water bodies, contribute to the Bay's water quality directly by intercepting phosphorus and nitrogen. The Maryland Department of Natural Resources estimates that a riparian forest can absorb as much as 89 percent of the nitrogen and 80 percent of the phosphorus runoff associated with adjacent land use practices. Trees and forested buffers also provide recreational and living resource amenities within the watershed. Wildlife habitat and travel corridors are also enhanced with increased tree cover.

Each of the states and the District recognize the value of trees and have acted accordingly to address the issue through legislation and regulation. In particular, passage of the Maryland Critical Areas Law and Virginia Preservation Criteria establish requirements for maintenance of vegetative buffers and reforestation.

Local governments have also taken steps to preserve

trees to take advantage of their functions and environmental characteristics. Faced with development practices within "suburbia" that clear-cut land before construction and generate increased sedimentation, local governments are moving to curb these practices. Even in those areas already urbanized, local government tree and landscaping programs exist to provide a mechanism for preventing water quality degradation.

Local programs have been developed to establish:

- Tree buffers along local streams and roadways to help reduce sediment and toxic load runoff through absorption that otherwise would reach local water bodies.
- Landscaping ordinances requiring a percentage of tree cover to reduce sediment runoff in new development sites, and restrict clearing practices.

- Designation of valuable and significant tree species.

- Provisions which require the placement of a bond by developers to provide for tree preservation and restoration during and after development.

- Requirements for tree coverage to ensure adequate protection for residential areas to help reduce an energy dependency for summer cooling and winter heating.

Green Corridors

Local governments utilize trees and other vegetated buffers along streams and waterways as an efficient management tool to keep pollutants from reaching local waterbodies. These buffers are designated and created through land development restrictions.

Maintenance of a natural or artificial vegetative buffers from between 25 to 100 feet wide can absorb excess nutrients, sediments and other pollutants before reaching water. This practice is used at the local level around reservoirs, well head sites, and along small creeks, tributaries and major rivers.

Establishing vegetated corridors around and through development also provides habitat access for wildlife. These "greenbelts" and "greenways" are vegetated strips that permit wildlife to continue to travel between interconnected corridors created in developing regions.

In addition, these networks provide extensive recreational opportunities and access for citizens.

Several examples of local programs that provide for tree planting and preservation, landscaping requirements and other green space programs are included:

James City County, Virginia Planning Department

Through rezoning, James City County has worked to create a coordinated greenbelt network throughout the region.

James City County adopted its greenbelt policy as a component of its Comprehensive Plan. The policy is designed to ensure that lands along roads throughout the region retain their natural qualities, and that the areas surrounding roadways could be classified as "Scenic Byways" by the state.

The county policy calls for a 150' greenbelt beyond the standard right-of-way. Although there is no ordinance mandating this practice, the policy has been successful in obtaining the greenbelts in almost all areas that have been targeted for rezoning requests by developers. The Planning Department has had more moderate success in preserving greenbelts in areas that require no application for rezoning as developers are not required to obtain permitting for properly zoned plots.

The program requires no additional funding as greenbelts are dedicated.

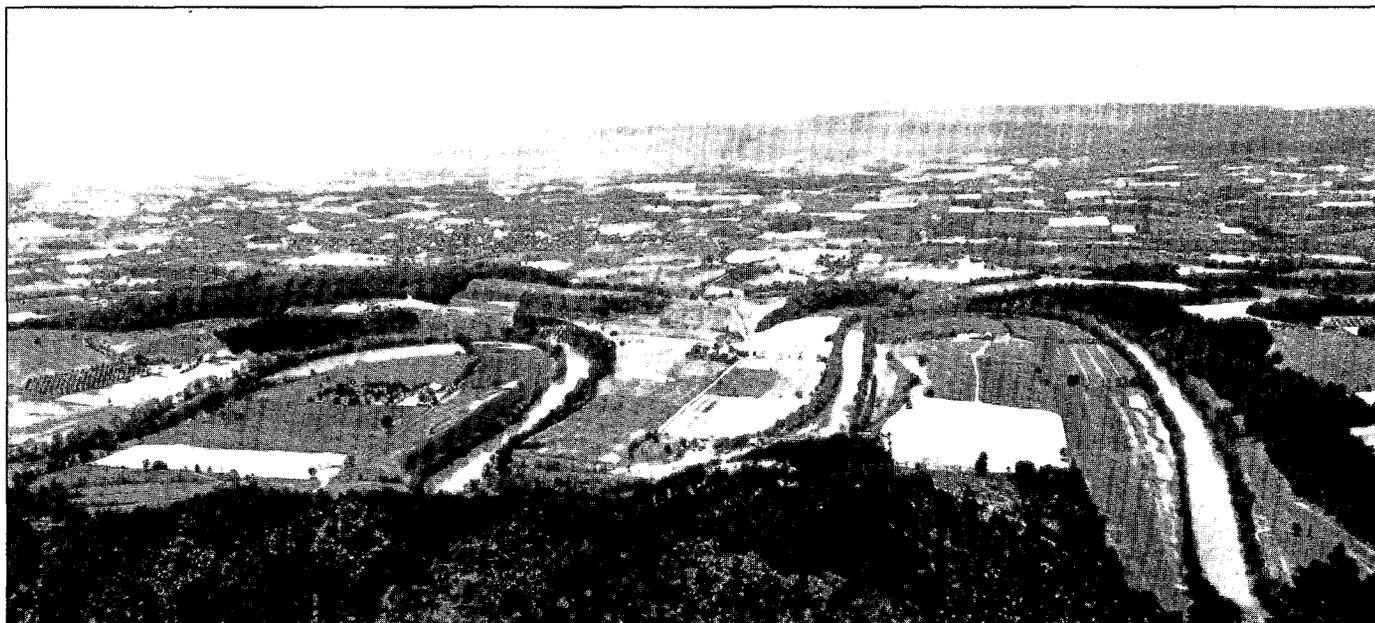
Contact: Allan Murphy
Planning Division
James City County
P.O. Box JC
Williamsburg, VA 23187
(804) 253-6685

Pequea Township, Pennsylvania

By creating and incorporating perimeter greenways and open space into the development project plan requirements, Pequea Township, effectively amended its zoning ordinance to include a landscaping requirement for developers.

Pequea Township's landscaping regulations require a perimeter greenbelt area along the extent of the front, side, and rear property lines of all lots, except where crossed by sidewalks or driveways. No less than 50% of this open area must be planted with trees and shrubs. The width of the required greenbelt is determined by the type of landuse it will border as follows:

- Agricultural Zoning:** No greenbelt required unless the on-site use is non-agricultural in which case the greenbelt must be 30' wide.
- Residential Zoning:** A 25' greenbelt is required on front property line. Side and rear greenbelts must be 75' wide if development contains three or more lots.



Commercial Zoning: The front property line must have a 25' greenbelt while the side and rear greenbelts must measure 50' if the parcel abuts parcels with non-commercial zoning.

In addition to greenbelts along property lines, the township requires open space areas between township roadways and development frontage. This area must be planted with a minimum of one "canopy street tree" for every 40' of public right-of-way. Trees chosen from a list of appropriate species provided by the Township are to be placed 10' behind the right-of-way and must be at least 6' in height when planted. Between the street frontage and the street trees, a grassed linear open space must be maintained for use as a continuous walking area.

Local township funds were used to draft the ordinance. All other costs are born by the developer.

Contact: Alan Peterson, MD
Pequea Township EAC
243 Shultz Rd.
Lancaster, PA 17603
(717) 464-2322

City of Chesapeake, Virginia Planning Department -- Arborist

The City of Chesapeake, Virginia's tree coverage program protects the environmental and aesthetic integrity of the city by preserving trees on private property through establishment of a tree canopy coverage ordinance.

Chesapeake's ordinance requires that a percentage of tree cover exist with baseline determinations calculated on expected coverage ten years after development. The program was implemented as a result of concern expressed by citizens in relation to rapid growth pressures and loss of the city's rural character.

The City's Planning Department also acted to protect many of Chesapeake's native tree species which were threatened with destruction due to increasing growth and development. In order to prevent the loss of the oldest of these species, the city initiated the "Champion Tree Program." The program identifies and protects the largest trees from encroaching local development pressures.

An ordinance calls for the identification and protection of "specimen trees" during the planning process of development. To identify specimen trees, the public nominates the largest tree of each species. The city arborist then applies a formula considering tree height, spread, and trunk circumference in order to establish a point rating for size. Those trees within a designated point rating are protected as specimen trees.

The program is carried out by the Planning Department Arborist and is modeled after the American Forestry Association's "Big Tree Program."

Contact: John King, Arborist
City of Chesapeake
300 Cedar Road
Chesapeake, VA 23320
(804) 547-6176

Allegany County, Maryland Health Department

Allegany County, Maryland's "Adopt-A-Dump" program aims to clean-up illegal dump sites through the coordination of volunteer organizations.

Two major phases are contained within the program; clean-up, and replanting and monitoring.

Dumpsite Cleanup:

The County Health Department initiates clean-up projects by surveying and mapping illegal and unwanted dumps in the area.

If a site is found to be free of toxic materials, volunteers are asked to collect and remove the trash and debris at the site and transport it to the local landfill.

To discourage further dumping at sites along roadways, the Department submits a request to the local, county, or state highway administration to construct guard rails to protect the site.

Dumpsite Replanting & Monitoring:

Following dumpsite cleanup and the construction of guard rails to prevent further violations, volunteers replant the site with trees chosen on a site-specific basis to match the surrounding species.

The planting process is supervised by the Health Department or the Department of Natural Resources which also donates all trees for the program.

The newly planted trees are monitored, cultivated and watered by the volunteer network until they are well established.

With the help of volunteers, including local Boy Scout and Girl Scout Troops, civic associations and others, the county has succeeded in restoring over 75 dump sites while planting 500-1000 trees a year.

Contact: Darrell Spence
 P.O. Box 1745
 Willowbrook Road
 Cumberland, MD 21502
 (301) 777-5655

**Carroll County, MD
 Carroll County Planning Commission**

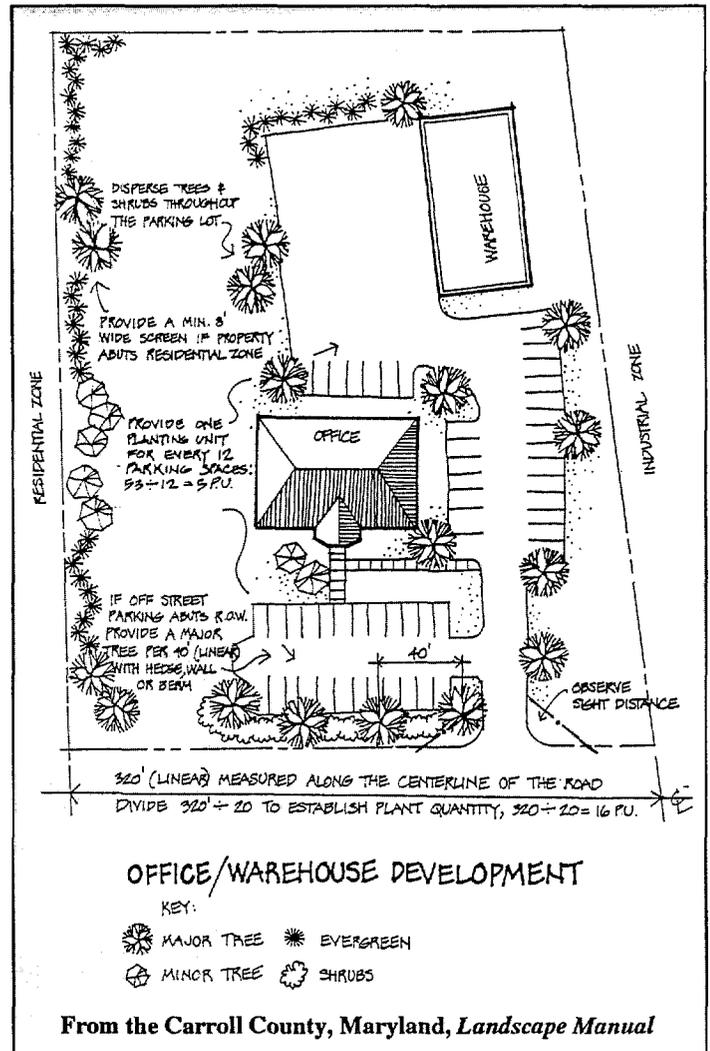
To insure local environmental quality and aesthetics, Carroll County provides criteria for appropriate landscaping of new development activities through a review and permitting process.

Carroll County's landscape review ordinance requires that a landscape plan be submitted by potential developers along with their Preliminary Development Plan. The Planning Commission provides developers with a landscape manual that establishes parameters for acceptable plan standards. Standards include:

The use of grading practices which are compatible with the existing drainage patterns and formations of the land;

Minimum tree planting requirements for various types of development.

The manual is specific in its design and establishes uniform guidance for developers. For instance, in a residential development, the manual calls for a minimum of one planting unit (i.e. one large or two smaller tree species) per one dwelling unit as well as screen planting of shrubs along any major street bordering the project. Commercial developments must plant similar



shrub screens, but planting units are required according to the number of parking spaces (1 planting unit per 25 parking spaces).

If compliance with the regulations is unsatisfactory the county may undertake any additional landscaping needed, however, the developer is required to finance those activities.

The Planning Commission employs a reviewer, although all additional funding is furnished by the developer who is financially responsible for the individual landscape plan.

Contact: Neal Ridgely, Reviewer
 Carroll County
 225 N Center
 Westminster, MD 21157
 (301) 857-2143

The Borough of Carlisle, Pennsylvania Carlisle Parks and Recreation Department

To reduce run-off in a predominately urban area, while at the same time enhancing the community's aesthetic value, Carlisle Borough implemented a tree planting program along local roadways.

The tree planting/cost-share program increases the borough's ability to plant and maintain an effective tree corridor along borough thoroughfares. To publicize the program and encourage participation, all residents are provided with a memorandum explaining the program's guidelines which include the following actions:

- Apply to the Parks and Recreation Department for planting permit;
- Select a tree or trees from a borough list of acceptable trees (specific tree species are recommended for certain locations based on their growth potential and shape);
- Have a nursery plant the tree to ensure proper planting and care;
- Submit a copy of nursery bill to the Parks and Recreation Department to receive 50% of the tree and planting costs (maximum reimbursement is set at \$75).

Funding in the amount of \$2,700 per year is provided through the Borough's Parks and Recreation Department budget. Currently, the program is responsible for planting 30 trees per year throughout the borough.

Contact: Daniel Dinunzio, Director
Carlisle Parks and
Recreation Department
Community Center
415 Franklin Street
Carlisle, PA 17013
(717) 243-3318

Kent County, Maryland Planning Department & Kent County Forestry Board

Kent County's comprehensive rezoning plan includes maintenance programs for trees and other vegetative cover.

As a part of the county's comprehensive rezoning program, environmental standards were added as requirements for activities in each zoning district. These include:

- Requirements for naturally vegetated buffers for all blueline streams
- 15 to 20 percent forestry cover for all new developments, and
- Creation and maintenance of wildlife corridors and habitat protection standards

Many of the requirements are added to ensure open space and greenways for recreation and wildlife, as well as buffers for water quality improvements.

In working to promote the benefit and value of trees in improving the county's environmental quality, the county planning office also works to promote the Tree City, USA program. The County Forestry Board decided that Kent County could become one of the few counties in the nation with all incorporated communities qualifying as Tree City, USA participants.

Contact: Gail Webb Owings, Planning Director
Kent County
Court House
Chestertown, Maryland 21620
(301) 778-7475

City of Virginia Beach, Virginia Departments of General Services and Landscaping Services

An urban area like Virginia Beach, Virginia constantly faces a battle with runoff from an abundance of impervious surfaces. Although the surface space is unlikely to decrease, the runoff may be mitigated by planting vegetated buffers on the borders.

One of the predominant problems in dealing with

urban nonpoint source issues is the runoff from a multitude of paved parking lots. Stormwater runoff that carries nutrients, sediment, toxics and other materials is a major problem facing local water quality planners.

The City of Virginia Beach, Virginia enacted a site plan ordinance in 1986 that requires mandatory planting of trees and natural vegetation as buffers to parking lots.

This landscaping plan provides both environmental aesthetics within commercial development areas, and a buffer to assist in keeping toxics, sediment and other runoff residuals from entering the stormwater management systems and local water bodies.

Contact: Roger Huff, City Arborist
Glebe Road and Courthouse Drive
Virginia Beach, Virginia
(804) 427-4461

City of York, Pennsylvania Recreation and Parks

York, Pennsylvania's urban forestry program maintains an effective system of tree care and planting in all city parks and along city streets.

Urban trees are particularly important to local water quality since their root systems act as buffers against various runoff and erosion problems inherent within cities. Maintenance of vegetated buffers keep toxics and sediment out of local stormwater systems.

York employs a full-time urban forestry specialist who works with the public, local utilities, and other city departments to ensure that the proper variety of trees are planted and replanted in the right locations, and that proper maintenance is in place.

Currently the program addresses:

- Tree maintenance along alleys and streets
- Development of a comprehensive trimming program
- Replacement of aging trees within city parks

Program funding is generated through local real estate taxes. In addition, the Office of Housing Rehabilitation receives limited federal assistance through the Community Development Block Grant Program to provide trees for homeowners.

Contact: Steve Mack, Director
York Recreation and Parks Bureau
P.O. Box 509
York, Pennsylvania 17405
(717) 854-1587

York County Conservation District, PA, and Northern Virginia Soil and Water Conservation District

Tree distribution and planting programs, like those developed and administered by local Conservation Districts are intended to provide an economical source of tree seedlings and ground cover plants for the region's residents.

Generally, Conservation District tree seedlings and plants are sold with no stipulations or restrictions for use. The goal of these programs is to provide for establishment of tree cover throughout the Bay watershed, with particular attention given to sensitive areas. Planting programs, coupled with tree-related educational information, discussions, and seminars have proven to be effective methods for meeting the needs and requests of landowners, while providing positive exposure for each agency. Recent examples include:

- The York County, Pennsylvania Conservation District provides over 600 residents with trees each spring while distributing over 30,000 seedlings.
- The Northern Virginia Soil and Water Conservation District recently gave away 32,000 seedlings.

The programs are often self-supporting through tree sales and equipment rental fees. Revenues raised through seedling sales are often used to provide assistance for local Conservation District education efforts.

Contact: Mark Kimmel, Manager
York County Conservation District
118 Pleasant Acres Road
York, PA 17402
(717) 771-9430

NVSWCD
11216 Waples Mill Road
Fairfax, Virginia 22030
(703) 591-6660

Land Preservation

Land Trusts and Easements

Realizing the limitations of zoning and public acquisition in protecting open space and natural areas, many local governments are discovering the potential of public and private land conservation mechanisms for protecting these resources. Local involvement with land trusts and conservation easements play an important role in this land preservation effort.

Conservation easements restrict future commercial, industrial, and extensive residential development activities on the land. The landowner essentially donates the development rights to his or her land in return for permanent enforcement of the conservation use of the land, as well as tax benefits. Government owned land is often subject to competing and changing public demands. A land trust can provide permanent protection to government acquisitions by accepting conservation easement donations on this land.

In addition, land trusts may be organized as private (or publicly sponsored) nonprofit organizations in order to hold land or conservation easements for many purposes including habitat and water quality protection, scenic enjoyment, agricultural preservation, recreation or other open space or historic purposes. These organizations generally protect land by bargain purchase or donation of land or conservation easements.

Other options for local governments help preserve lands identified in local recreation or open space plans without downzoning or direct acquisition by government. A local government sponsored private, independent land trust is an ideal combination of private citizen involvement and government support. This combination takes advantage of citizen networking and grass roots appeal for encouraging voluntary preservation techniques on farmland and other targeted lands. Local governments can also incorporate a land trust separate from government which can hold land or conservation



Save....

easements in its own name.

Private, citizen-sponsored, local land trusts can also play an important role in implementing local government preservation plans. One county in Maryland recently provided a \$350,000 grant as seed money to establish a private land trust.

Lands listed as high priority acquisitions in local recreation plans do not always wait for the slow public acquisition process. In cases where priority lands enter the development market on short notice, local land trusts can act immediately to **pre-acquire** the property until government can fit the purchase into its budget. The local trust negotiates the purchase with the seller (preferably a bargain sale which saves money and generates tax breaks), obtains bank financing with the local government as guarantor, and purchases the property with intended buy-out within a negotiated time frame.

Government-owned property which could be sold as surplus by a changing administration is ideal for a conservation easement granted to a local land trust. The easement will maintain the property in perpetual open space regardless of future political will. This technique has been commonly used and well accepted in the past.

Several examples of local mechanisms designed to preserve land and enhance the protection of the natural environment and water quality are included:



under the easement agreement. The Conservancy's first target area has been the land surrounding College Creek, one of the last undeveloped creeks in the city. Although no easements have yet been donated, progress is expected in the near future.

Contact:

R. Stefan Klosowski
Urban Design Planner
City of Annapolis
Planning & Zoning Dpt.
160 Duke of Gloucester
Annapolis, MD 21401
(301) 263-7961

or Pave the Bay?

City of Annapolis, MD Conservancy Board and Department of Planning and Zoning

In order to protect undeveloped lands around the city, Annapolis called for the creation of a Conservancy Board to solicit and encourage the donation of land trusts and conservation easements for the purpose of habitat and water quality protection, scenic enjoyment, agricultural preservation, and recreation.

The Annapolis Conservancy Board, created by city ordinance, consists of seven city residents who are appointed by the Mayor and serve a five year term without compensation.

The Board, established in 1988, works in cooperation with the state through the Maryland Environmental Trust (MET). Although MET was the model for Annapolis' initiative, the local program differs in that it allows for the protection of smaller parcels of land than the 25-50 acres that the state recommends.

Landowners who donate their land for classification as a land trust or conservation easement are not only taking positive steps towards preserving open space, but are also eligible for both state and local tax advantages

Fairfax County, Virginia Office of Planning and Zoning

This program is based on Fairfax County's Local Agricultural and Forestal Districts Ordinance, added to the County Code to promote the conservation of open lands for aesthetic and environmental protection.

Fairfax County's Local Agricultural and Forestal Districts may be established and renewed for eight year periods on properties no less than 25 acres.

Landowners who establish their land as a designated "District" are eligible for present use value taxation which is significantly lower than the traditional potential use value. In order to receive the special tax consideration, applicants are required to establish:

- Commitment to agricultural or forestal activities
- Conformity to the county's comprehensive plan
- Compatibility of surrounding uses, and
- Utilization of sound soil management and pollution control practices in farming and forestry operations.

Significant staff resources are required to review ap-

Land Preservation

plications, however, no additional county funds are needed to operate the program.

Contact: Lisa Dell, Staff Coordinator
Fairfax County
Office of Planning & Zoning
4050 Legato Rd., Suite 800
Fairfax, VA 22033
(703) 246-1290

Harford County, Maryland Department of Planning

Efforts to provide perpetual protection of a sensitive area near the confluence of the Susquehanna River and the Chesapeake Bay lead Harford County officials to develop a public/private partnership for a land trust.

The Deer Creek Watershed, a state designated scenic river that empties into the lower Susquehanna, was experiencing threats to the surrounding ecology, culture, and historical significance due to encroaching development. An outgrowth of citizen concern prompted Harford County officials to seek alternatives for protecting the valuable resource.

The county developed a coalition with the local watershed association and the National Lands Trust to ensure that the land be maintained in trust, unavailable for speculative development. The resulting land protection program offers land owners a 50 percent reduction in real property tax as an incentive to keep land undeveloped. Land owners who sell property for potential development are taxed at the full 100 percent rate.

The county program also coordinates with the Maryland Environmental Trust to offer land owners a total tax credit for 15 years if land development rights are donated to the Trust.

Contact: Andy Meyer
Office of Planning and Zoning
Harford County
220 South Main Street
Bel Air, MD 21014
(301)838-6000

Kent County, Maryland Department of Planning

The adoption of the Kent County Right-to-Farm Law limits the circumstances under which agricultural operations can be lawfully deemed a nuisance.

With the increased extension of non-agricultural development into agricultural areas, farms are often the subject of nuisance suits and discouraged from making farm improvements due to complaints of non-agricultural neighbors. Many farms are forced to cease operations with the lands often converted to other uses.

In order to limit this land conversion and curtail the suburbanization of county farms and open space, the County Right-to Farm policy to conserve, protect and encourage the development and improvement of its agricultural land was added to Kent County's agricultural zoning ordinance.

Irresponsible farming practices that lead to the pollution of county resources, however, are specifically exempted from protection under this ordinance.

The program was developed in conjunction with a new zoning ordinance which greatly reduced the non-agricultural uses of agriculturally zoned land and is completely county financed.

Contact: Gail Owings
Department of Planning
Kent County Court House
Chestertown, MD 21620
(301) 778-4600

York County, Virginia Commissioner of the Revenue

A goal to reduce the rate of conversion of open lands in the county, prompted the amendment of the York County Code to offer landowners the opportunity to receive reduced tax rates for lands committed to agricultural, forestal or open space purposes.

The York County Code provides landowners with options to reduce their tax burden when they comply with various land preservation provisions.

Landowners in York County Virginia may apply to the Commissioner of Revenue for classification, assess-

ment and special taxation on property for a fee of \$25.

Lands that are approved are classified as agricultural, forestal, or open space for a one year period after which yearly applications for classification extension are accepted free of charge.

If the land use changes during the time of approved classification, the tax incentive is removed and the land owner is charged a role-back tax.

The program requires no outside funding and is financed through the Commissioner of Revenue's operating budget with supplemental funding from application fees.

Contact: Joseph Rigo
 Commissioner of Revenue
 York County
 P.O. Box 90
 Yorktown, VA 23690
 (804) 898-0030

Anne Arundel County, Maryland
 Department of Planning and Zoning, and
 Department of Parks and Recreation

In an attempt to protect environmentally sensitive areas in a region experiencing heavy development pressures, two land trust organizations were formed cooperatively between citizens and county government.

The two local land trusts in Anne Arundel County assist in county efforts to protect environmentally sensitive resource areas. The Severn River Land Trust, Inc. (SRLT) works to protect the Severn River through the purchase of conservation easements within the watershed. They also accept the donation of property or funds to further their purpose. The Anne Arundel Conservation Trust, Inc. (AACT) works in a similar manner to the SRLT, but operates on a county-wide basis rather than within a single watershed.

The program was developed as a result of strong local government and citizen interest in protecting the region's increasingly scarce land resources. The county provided \$350,000 in seed money to be shared between the two groups for capital expenditures, such as the purchase of easements. The county also contributed staff assistance to both organizations which are primarily made up of interested citizen volunteers.

SEVERN RIVER LAND TRUST, INC.



**HOW YOU CAN
 MAKE A DIFFERENCE
 IN THE FUTURE
 OF THE
 SEVERN RIVER**

During their first year of operation, AACT purchased one small easement, and SRLT purchased two parcels which make up approximately 14 acres; other easements are pending.

Funding for the program is provided through county support, contributions, grants and fundraisers.

The County's Department of Parks and Recreation (DPR) is also actively involved in lands protection. Through aggressive land acquisition, the DPR program provides for land preservation, habitat protection and public access to the Bay and its tributaries.

Using county funds, approximately 1600 acres of waterfront land with about 20 miles of shoreline have been acquired for public parks. In addition, the DPR is working with the Department of Natural Resources to develop an extensive trail system throughout the county.

Land Preservation

Contact: Joanie Thomasson
Department of Parks and Recreation
P.O. Box 1831
Annapolis, MD 21404

Barbara Oakey
Office of Planning & Zoning
Anne Arundel County
MS 6303
P.O. Box 2700
Annapolis, MD 21404
(301) 222-7441

Howard County, Maryland Department of Planning and Zoning

Howard County's Agricultural Preservation program was developed in the late 1970's for the purpose of purchasing development rights on farmland.

Through their Agricultural Preservation Program, Howard County is able to purchase the development rights on those farms meeting specific criteria:

- Farmland must be a minimum of 50 acres
- Must be Class I soils
- Must not be located in a planned urban area

The county program, which acquires development rights in perpetuity, set a rough target of 20,000 acres as the minimum critical mass of protected holdings. Skyrocketing land prices and a cap on purchase price (50% of assessed value) led to a drop of enrollment in the mid and late 1980's. In 1989 the program was revised to offer no cap and a 30-year payment plan to leverage available funds and ease capital gains tax for sellers. New applications quickly followed (5976 acres as of April 1990), of which 1070 acres have been enrolled by purchase as of April 1990.

One-fourth (1/4th) of one percent of local transfer tax is the basis of original funding for the program. This money can now be used to fund an innovative long-term purchasing agreement featuring 30-year negotiable zero-coupon securities with sellers paid interest over a 30-year period tax-free, and principal as balloon payment (taxable) at the end of 30 years.

Contact: John Musselman
Howard County
3430 Court House Drive .
Ellicott City, Maryland 21043

Carroll County, Maryland Planning Department

Due to low landowner response rates to the state Agricultural Land Preservation Program, a Carroll County, Maryland ordinance provides for additional bonuses to landowners who form agricultural districts or sell conservation easements on their land.

Any landowner within Carroll County who applies to form an agricultural preservation district is provided with a free county appraisal of the value of the development rights of the land. Landowners who are extending the five year term of an existing district, may also receive a free appraisal. The landowner then may submit the appraisal to the state Agricultural Preservation Foundation with an offer to sell development rights on the appraised land.

The county increases the incentive to form agricultural preservation districts by offering to pay 5% of the value of the appraised development rights to the landowner. Landowners extending the term of the district may also receive payment. The county pays the 5% bonus when an easement is sold to the Foundation as well, however, easements sold before the enactment of the ordinance are not eligible for payment.

The program is financed by the county share of the State Agricultural Transfer Tax.

Contact: Bill Powel
Carroll County
225 N. Center Street
Westminster, MD 21157
(301) 857-2131

Water Quality



Water Quality

The restoration of the Chesapeake Bay relies on an integrated approach to protecting the water quality of the Bay and surrounding watersheds. The local role in water quality management is as critical as it is diverse. Local officials are working to protect not only their own water quality needs, but those which contribute to the state of the Bay as well.

Growing populations and shifting land use patterns within the Bay region impact the water quality, and accentuate the priority of these issues. In addition, discussions about acid deposition, global warming, potential droughts, and other environmental impacts are placing emphasis on protecting present water quantity and quality while preparing for the future.

The issues of quality and quantity are inseparable. Historically, the federal government has played the major role in water quality efforts, while establishing the tone for regulatory efforts. In recent years, state and local governments have assumed a larger portion of these responsibilities. At each level, greater emphasis has been placed on the availability and quality of water, its adequate delivery, treatment, and necessary reuse.

Local governments in the watershed are assuming increasing responsibilities for water quality. A number of examples of these local programs are included in the following pages. The committee focused on the following program areas when designing this section:

Watershed Protection and Monitoring: Provides a look at some of the programs developed at the local level to address various surface and groundwater impacts, and associated monitoring. The interconnected programs have helped to develop an extensive protection program throughout the watershed of the Bay basin.

Wetlands: Addresses local government program development with wetlands protection measures, particularly mapping efforts, designed to achieve "no net loss" goals.

Nutrient Management: Examines the regulatory efforts initiated at the local level to control excessive amounts of nutrients (phosphorus and nitrogen) that are entering local waterways and the Chesapeake Bay.

Toxics: Addresses a portion of the local toxics protection program receiving increasing attention -- Disposal of household hazardous waste.

Boating Pollution Discharge: Examines several local programs developed to provide adequate disposal options for boaters' generated sewage. Local pump-out facilities and disposal practices are essential for providing relief to the Bay as it reaches its tolerance level for pollution.

The integrated approach combining each of these programs ties in with commitments by the states and federal government to restore and preserve the water quality of the Chesapeake Bay and surrounding watersheds.

Watershed Protection, Restoration and Monitoring

Watershed protection at the local level provides a direct link to water quality restoration efforts in the Chesapeake Bay. Local governments continue to develop programs that protect various water sources -- the same water sources that provide freshwater flows to the Bay.

This local watershed protection network is expanding. Surface waters and other aquifers are gaining increasing protection as local officials continue to realize the importance of maintaining essential water quality and quantity.

Groundwater protection measures are becoming increasingly common at the local level. Designation of protection areas around critical groundwater recharge areas are part of this regulatory network.

Coupled with groundwater protection are ongoing efforts to designate well-head protection zones and criteria. Prohibitions on development, and restrictions on certain agricultural practices and other activities around local freshwater wells are creating buffer networks around groundwater sources.

River and reservoir protection measures are also critical elements of the local watershed management plan. Creation of overlay zones, or restrictions on activities within certain boundaries surrounding water sources provide key elements of the interconnected watershed management approach.

To ensure the success of regulatory watershed protection, local governments are also developing related monitoring efforts. Reliance on local staff or networks of volunteer monitors provide the necessary data for assessment of the impacts of local protection programs.

Obviously the levels of watershed protection vary between local governments based on resources, need, and level of expertise. Watershed management at the local level may include mapping and geographic computer imagery of surface and groundwater sources -- coupled with extensive restrictions on activities. It may also be nothing more than the posting of "no trespassing" signs along the banks of local reservoirs. A number of these

programs that comprise the interconnected local Chesapeake Bay watershed protection program are included on the following pages:

East Hempfield Township, Pennsylvania

A need to protect a groundwater recharge area provided the incentive for East Hempfield Township to develop a lands protection and acquisition program, while at the same time providing expanded open space and recreational opportunities.

The Board of Supervisors of East Hempfield Township purchased a 210 acre golf course tract after a developer scrapped a 300-home development plan for the site. The \$7.25 million purchase turned out to be in the best interest of the township since the course serves as a groundwater recharge area for wells that contain the township's main source of water. The Supervisors determined that developing the area with 300 homes, along with the necessary infrastructure support would have substantially degraded and depleted existing water quantity and quality.



An additional benefit to the township is the substantial addition of open space and recreational opportunities. The site contains a 126 acre golf course and 94 acres of multi-use open space.

Township officials expect that revenues will cover the principal and interest payments on the associated bond with \$1.2 million in revenues expected in 1990.

Contact: George Marcinko, Manager
East Hempfield Township
P.O. Box 128
1700 Nissley Road
Landisville, PA 17538
(717) 898-3100

City of Newport News, Virginia Department of Public Utilities

Newport News, Virginia developed a City Reservoir Protection Ordinance, regulating new development in areas of the city that drain to drinking water supply reservoirs.

In order to protect existing water quality, the City of Newport News adopted a Reservoir Protection Ordinance. The ordinance requires 100% Best Management Practices and creation and maintenance of buffers of 200 ft. around reservoirs and perennial and intermittent streams.

To further supplement the policy, a Reservoir Protection Property Acquisition Policy was passed along with the ordinance. This policy allows for the purchase of property from landowners whose holdings are severely impacted by the ordinance. If no other solution can be found through changes in plan designs, and over 20% of the owners property is impacted by the buffer requirements, the Department will consider purchasing the buffer area only. When more than 40% of the land is impacted, purchasing the entire lot is considered.

At least 30 acres of crucial buffer land have been purchased in this way using funds from the City's Water Works Enterprise Fund.

Contact: Dave Morris
City of Newport News
2600 Washington Ave.
Newport News, VA 23607
(804) 247-8470

Howard County, Maryland Department of Planning and Zoning

Howard County participates in a regional watershed identification and protection project to preserve the Patuxent River as an important tributary to the upper Chesapeake Bay.

In order to provide for the identification and protection of vulnerable lands in the Patuxent River and Chesapeake Bay watersheds, the Department of Planning and Zoning developed a county-wide mapping program.

Assisted by the Howard County Soil Conservation

District, the Department of Planning and Zoning (DPZ) listed and mapped all of the county's hydric soils and soils with hydric inclusions at a scale of 1"= 600'. In addition, the DPZ mapped erodible soils on steep slopes, open space and other protected land resources, active farms and woodland tracts.

The maps are used by county planners during the development plan review process as a basis for setting any new zoning and subdivision regulations.

Contact: David Holden, Planner
3430 Court House Drive
Ellicott City, MD 21043
(301) 992-2354

Lackawanna County, Pennsylvania Regional Planning Commission

Lackawanna County, Pennsylvania entered into a public/private partnership with the Lackawanna River Corridor Association, a local citizen organization, to cleanup and restore the Lackawanna River corridor.

Lackawanna County, along with the Pennsylvania Department of Community Affairs and the National Park Service joined forces to support the Lackawanna River Corridor Association's initiative to restore the banks of the Lackawanna River. (The Lackawanna River empties into the Susquehanna River near Scranton and Wilkes-Barre.)

The River Corridor Association began its efforts by conducting an indepth study of 39.5 miles of the river corridor. The resulting Master Plan sets up goals for improving water quality, fish and wildlife habitat, aesthetics, and recreational opportunities, and introduces a comprehensive plan of action to reach these goals.

Actions include:

- Initiating *Project River Clean* which would target illegal dump sites, abandoned mining wastelands, secondary sewage treatment plants and inadequate storm water maintenance practices for clean-up and upgrading;
- Developing a comprehensive public awareness campaign to include media documentaries, public displays, environmental education facilities, volunteer cleanup projects, and river oriented athletic activities;

Watershed Protection, Restoration, and Monitoring

□ Utilizing mining wastelands and reclaimed riverside areas to build a river park and greenways system which would create a network of riverside trails linking the river corridor and its municipal communities for recreational and aesthetic purposes;

□ Promoting intergovernmental cooperation and river-wide community planning and development that works to preserve a greenbelt along the length of the river in the interest of water quality improvements and community beautification.

Lackawanna County has been a principal supporter and sponsor of the River Corridor Association's efforts. Not only did the County Regional Planning Commission contribute considerable staff time and financing to the development of the Master Plan, but it will also be a full participant in carrying out the recommendations it contains. In addition, the county has pledged \$15,000 to the Association's \$300,000 private fundraising campaign to begin implementing the restoration of the Lackawanna River.

Contact: Harry Lindsay
Lackawanna County
Regional Planning Commission
200 Adams Avenue
Scranton, PA 18503
(717) 963-6826

Borough of Pine Grove, Pennsylvania, and Schuylkill County Conservation District

The Schuylkill County Conservation District in cooperation with the Borough of Pine Grove recently "adopted" a one mile section of a local stream to alleviate stream bank erosion and nutrient pollution.

Protecting the Little Swatara Creek in the Borough of Pine Grove in Schuylkill County, Pennsylvania was an important goal of both the borough and the conservation district when the district adopted a portion of the creek to make substantial water quality improvements.

As a subset of the state's Adopt-a-Stream program, the conservation district undertook a multiple year program for stream restoration.

□ *Year One:* Volunteers installed over a mile and a half of electric fencing to keep cattle from further damaging the stream banks and allow the vegetation to regenerate.

□ *Year Two:* 400 tons of stone rip-rap were installed. Stone stream deflectors designed to create a mud sill along the stream banks were established in the form of 210 railroad ties. Two cattle crossings were also installed to control animal access.

□ *Year Three:* 300 Willow Tree seedlings were planted to stabilize the stream banks.

The borough-owned land is open to the public for recreational opportunities. The site will be used as a demonstration project for other groups interested in developing similar adopt-a-stream programs.

Funding assistance in the amount of \$15,000 was provided in grant funds from the State Conservation Commission and the Federal Agricultural Stabilization and Conservation Service.

Contact: Craig R. Morgan, District Manager
Schuylkill County
Conservation District
Fairlane Village Mall
Route 61-N
Pottsville, PA 17901
(717) 429-1744

Fairfax County, Virginia Department of Environmental Management

Fairfax County's Water Supply Protection Overlay District program was initiated through a zoning ordinance amendment aimed at protecting the water quality in a major drinking water reservoir using non-point source pollution controls.

In the Occoquan watershed, new development above a density of one dwelling per five acres must provide stormwater best management practices that are sufficient to reduce phosphorous runoff from subject properties by 50% from uncontrolled post-development conditions.

In addition, the notification of use, storage, treatment, and disposal of hazardous materials for new development in the overlay district is required.



Significant staff resources were needed for the development of these controls and the review of site plans. The monitoring and maintenance of BMPs has increased the cost to the county who funds the program through the Department of Environmental Management budget.

Contact: John Friedman
Special Projects Branch
Department of Environmental
Management
Fairfax County
4050 Legato Rd.
Fairfax, Va 22033
(703) 246-1700

Baltimore County Department of Environmental Protection and Resource Management

The Baltimore County, Maryland Shoreline Enhancement program aids public and private landowners in efforts to reduce erosion and barriers to navigation.

Facing mounting development-related problems including severe erosion and sediment run-off into Baltimore County's rivers and streams lead the county to develop a shoreline enhancement program for landowners. To assist in protecting its 1,000 miles of rivers and streams, and 175 miles of Chesapeake Bay shoreline, the county set four major goals as part of the program:

- Restoration of eroding shoreline
- Reduce transport of sediment
- Improve habitat
- Provide recreation opportunities

A county consultant aided in development of the Plan, developing an "Erosion Potential Index" to determine existing conditions, problems and remedies. The Index used Hurricane winds, ordinary winds, and boat wakes to classify the impacts of the river and stream currents on surrounding shoreline.

Quantification of the results of the Index enabled the county to target 63 shoreline sites requiring vegetation and 29 sites needing structural retrofits to buffer erosion impacts. From those, the county chose 8 shoreline site demonstration projects, requiring \$500,000 in funding from the county, state and EPA.

Future plans focus on the Department implementing a matching grant program to provide funding for landowners willing to provide shoreline enhancements that adhere to the county guidelines.

Contact: Candy Szbad
Dpt. of Environmental Protection and
Resource Management
Baltimore County
Courts Building
Towson, Maryland 21204
(301) 887-3733

Watershed Protection, Restoration, and Monitoring

Union County, Pennsylvania Planning Department

Union County, Pennsylvania entered into a cooperative agreement with three of its municipalities to develop a comprehensive watershed protection and management plan for Bull Run.

The Bull Run watershed is one of the most densely populated and fastest growing areas in Union County. In an attempt to protect the water quality of this important tributary to the Susquehanna River, Union County, Lewisburg Borough, East Buffalo Township, and Buffalo Township began an extensive study of the watershed resources. The study includes:

- Development of a database cataloging existing landuses;
- Investigation of watershed hydrology and soil conditions;
- Assessment and mapping of existing stormwater management facilities;
- Recommendations to improve stormwater management capabilities; and
- Development of model stormwater management and watershed protection ordinances for use by the three municipalities.

The findings of the study will be compiled into a comprehensive management plan by the county and submitted to the municipalities for approval.

The program is financed through a 75% state contribution which amounts to approximately \$66,000, and a 25% contribution by Union County of \$22,000. The municipalities' contribution consists of in-kind services such as planning staff and facilities. Over the next 10 years, Union County plans to develop similar management and protection programs in each of the county's watersheds.

Contact: Fred Wilder, Planner
Union County
610 Fairground Rd.
Lewisburg, PA 17837
(717) 523-6320

James City County, Virginia Division of Code Compliance

In efforts to protect the watershed and water supply reservoir on Ware Creek, James City County established an overlay district program as part of its zoning ordinance.

James City County amended its zoning ordinance to include an overlay district to protect the watershed of the new reservoir. Within the overlay district, all development projects are required to construct stormwater ponds or infiltration trenches which successfully retain at least the first inch of runoff from any impervious surface for infiltration and also reduce suspended solids by 75%.

All costs incurred for construction and ongoing maintenance of control measures are born by the developer. Administration, plan review and enforcement for the program is provided by the Division of Code Compliance under their normal operating costs.

Contact: Darryl Cook
Division of Code Compliance
James City County
P.O. Box JC
Williamsburg, Virginia
(804) 253-6673

Yoe Borough, Pennsylvania Borough Council

The need to address a severe streamside erosion problem lead the Yoe Borough Council to contract for the design and development of gabion walls as a streamside protection measure.

In order to protect against a sever streamside erosion problem, the Borough of Yoe contracted for the design and construction of streamside improvements. Gabion walls were constructed on both sides of Mill Creek, a tributary to the Codorus Creek and Susquehanna River. The creek flows through the residential area of the borough, and was eroding citizens' yards, and adjacent commercial space, while contributing a large sediment load to the watershed.

A grant from the York County Planning Commission enabled the borough to conduct a three-stage program over a period of six years to install the erosion protection measures. One quarter of a mile on both sides of the

stream were included in the project at a cost between \$23,600 and \$30,000. Contractor costs included additional erosion control measures, as well as corridor re-seeding.

Contact: Ronald Crull, Council President
Yoe Borough
150 North Maple Street
Yoe, PA 17313-1110
(717) 244-5904

Prince William County, Virginia Public Works Department

Prince William County's Watershed Management Program is being developed to control the hydrologic impacts of development and encourage protection of natural resources.

Prince William County began to study its regional watersheds to address potential stormwater management, flood control, water quality, and erosion/sedimentation impacts.

At present, only one area is being examined, however, the aim of the program is to look at each of the watersheds in the county. The findings within each watershed will establish program standards and combine several state and federal water resource regulations into one comprehensive watershed management program.

The study is being financed by developer and county funds. Additional funding will be needed to begin study of other watersheds. Legislation will be required to establish stormwater utilities and other forms of hydrologic controls.

Contact: Fernando Pasquel
Prince William County
4361 Ridgewood Center Drive
Prince William, VA 22192-5308
(703) 335-7070

Anne Arundel County, MD Office of Planning & Zoning

The county created the Citizen's Water Quality Monitoring program to get citizens actively involved in environmental matters, educate them about the complexities of water quality management, and gather the

extensive data needed to improve watershed protection and local water quality.

The Anne Arundel County citizen monitoring program ties into an extensive network of volunteer monitors who periodically test the water quality of the Chesapeake Bay and its tributaries. Estuarine tributaries to the Chesapeake Bay are monitored by volunteers at approximately 130 stations. They measure parameters such as pH, dissolved oxygen, turbidity, depth and water



temperature while also recording air temperature, current weather conditions and rainfall. Each volunteer is provided with an extensive manual to be used for guidance in their monitoring.

The county program has been very successful in its attempts to provide necessary data while educating citizens. The volunteer monitors provide an additional educational resource as they share their knowledge and expertise with their community and workplace. The data collected by the volunteers has been valuable in creating a baseline, as well as a way to analyze long-term water quality trends. The program is completely county financed.

Contact: Patricia Haddon
Office of Planning & Zoning
P.O. Box 2700
Annapolis, MD 21404
(301) 280-1270

Watershed Protection, Restoration, and Monitoring

Fairfax County, Virginia Health Department-Environmental Services

The Fairfax County Adopt-a-Stream program encourages school, scouting and neighborhood groups to "adopt" and maintain local stream segments.

Groups participating in Fairfax County's Adopt-A-Stream program decide the best management techniques for protecting local streams. Stream conservation activities may include litter removal, monitoring of activities that may impact the stream, or intensive public awareness campaigns.

The program was initiated in response to requests for better public environmental awareness. It has been successful in accomplishing this goal and has also provided the Environmental Services staff with extra eyes in the field for reporting possible pollution sources. The program is supported through county funds.

Contact: Dennis A. Hill
10777 Main Street
Suite 102B
Fairfax, Va 22030
(703) 246-2201

Charles County, Maryland Department of Planning & Growth Management

In response to citizen and government concerns over the potential loss of valuable natural resources and aesthetics along county waterways, Charles County, Maryland developed a Stream Valley Management and Protection Program that focuses on controlling land use practices and sediment loading to local streams.

The Charles County Stream Valley Management and Protection Program is based on a four point action strategy which includes the following components:

Identification of a Resource Protection District that includes the stream valley floodplains, wetlands, and 75

feet of additional buffer;

Development of a management plan that targets both development and agricultural activities for BMP's (this may soon include hiring a county extension agent to work specifically with the agricultural community);



Implementation of 7 parameter water quality monitoring in the county's watersheds before the expected increase in development pressures; and

Establishment of a county-wide land trust to secure land within the designated Resource Protection District and in other sensitive areas through easements.

The program establishes a substantial protection area and provides a comprehensive management tool to guide development in an environmentally sound manner. The protection requirements will be applied within the subdivision approval process. The county also hopes to supplement its land trust efforts through the Maryland Environmental Trust.

Contact: Kevin Kirby, Environmental Planner
Charles County Dept. of Planning &
Growth Management
Post Office Box B
La Plata, MD 20646
(301) 645-0590

Baltimore Regional Council of Governments, Maryland

In an attempt to protect a major reservoir system, the Baltimore Regional Council of Governments has entered into a cooperative watershed action program.

The Baltimore Water Supply System provides water to over 1.5 million people in the metropolitan area. Three reservoirs, located in Baltimore and Carroll Counties are used to provide water to Baltimore City, significant portions of Baltimore, Anne Arundel and Howard Counties as well as a small area of Carroll County. In order to protect these reservoirs the local governments, along with the Baltimore Regional Council, the Soil Conservation Districts, and the State of Maryland have adopted an Action Strategy for the Reservoir Watersheds.

A watershed protection agreement, adopted in 1984 and reaffirmed in 1990, pledges the local governments

and the state to reduce phosphorous inputs to the reservoirs and to prevent increases in phosphorous and sediment loadings. Specific phosphorous reduction goals are set for each of the three reservoirs and a committee of local, regional and state water quality experts monitors activities in the watershed. Despite population and employment increases in the watershed, minor phosphorous reductions have been achieved. Specific accomplishments include:

- Upgrading the quality of effluent from two waste water treatment plants,
- Preparation of 1,200 soil conservation plans and installation of 1,500 agricultural improvement practices,
- Installation of sewers and improved sewage pump maintenance in key areas,



- Elimination of industrial phosphorous discharges,
- Denial of requests for increased development in the watershed,
- Establishment of vegetated stream buffer policies, and
- Improved stormwater management facilities.

The efforts will continue and be strengthened where necessary to meet the nutrient reduction goals.

Contact: Phil Clayton,
Director
Development Division
Baltimore Regional
COG
2225 North Charles St.
Baltimore, MD 21218
(301) 554-5617

Wetlands



For local governments, wetlands and related land use issues have moved to the front of those environmental initiatives demanding the attention of local decision makers.

At the core of these issues is the recent trend toward "no net loss" of wetlands and its effect on local planning and land use decisions. President Bush's no net loss pledge in the 1988 presidential campaign is an attempt to halt the national loss of nearly

460,000 wetland acres per year. The no net loss plan implies that new wetlands must be created, or degraded wetlands restored to compensate for wetland loss.

With this pledge has come a wave of increasing scrutiny by state and federal agencies of wetlands initiatives and regulatory and enforcement programs. The current regulatory framework is to say the least -- diverse. Local plans impacting wetlands in cases of development, including roads, general construction, and infrastructure, have lead the region's local agencies scrambling to find streamlined answers to a complex regulatory issue.

Current federal wetlands regulations are administered by both the Army Corps of Engineers and the Environmental Protection Agency under Section 404 of the Clean Water Act of 1972. The section deals with Permits for Dredged or Fill Material and requires that permits be obtained from the Corps for the discharge of dredged and fill materials into the waters of the United States. Although the word "wetland" does not appear in the Act, the courts have significantly broadened the definition of United State waters to include them.

In addition, the states have assumed wetlands regulatory roles as well, primarily under Section 410 of the Clean Water Act granting power to the states to provide

oversight on Corps of Engineer's permit decisions which may potentially violate state clean water laws. The states have also enacted wetlands legislation of their own, establishing permit systems that provide for the mitigation of net loss of wetlands, and move toward a net resource gain. Regulations under Pennsylvania's Dam Safety and Encroachment Act, Maryland's Nontidal Wetlands Act, and the Virginia Chesapeake Bay Preservation Act in particular, significantly add to the regulatory framework designed to protect the region's wetlands.

Much of wetlands regulatory work has coincided with the Chesapeake Bay Executive Council's goal to "Provide for the restoration and protection of the living resources, their habitats and ecological relationships" made in the 1987 Bay Agreement. To achieve that goal the Council agreed to "develop a Bay-wide policy for the protection of tidal and nontidal wetlands" by December 1988. The Council's approved *Wetlands Policy*, followed by a *Wetlands Policy Implementation Plan*, is leading to a regional effort to identify major strengths, weaknesses, and gaps in existing programs, and provide recommended actions.

Area local governments provide a direct link to land use regulation, and therefore to wetlands impacts. Their understanding of wetlands regulations and interaction with other wetlands protection measures is an essential element of meeting the no-net loss goal.

A number of the region's local agencies have adopted programs at the local level that directly impact wetlands preservation and regulatory understanding. These programs include:

James City County, Virginia Department of Development Management

The county program provides for acquisition of wetlands and buffer areas within the Powhatan Creek watershed that are threatened by development.

The County's Conservation Area Program was created as part of the County's Environmental Protection Fund, designed to protect non-tidal wetlands and other significant areas that are not protected by federal, state or local ordinances.

In 1986, the county hired a summer intern to conduct a watershed study and identify specific issues that the county should address and geographic areas of concern that the county should consider for acquisition (acquisi-

tion could occur either through purchase or donation through landowner conservation easements). These included numerous archaeological sites, habitats for two rare and endangered plant species, and two great blue heron rookeries.

County funds in the amount of \$100,000 were set aside to finance the land acquisitions. However, with outstanding citizen participation, the county has been able to save its allocation since many area landowners have been willing to donate the space through conservation easements.

Contact: James C. Dawson,
Environmental Engineer
James City County
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(804) 258-6671

Anne Arundel County, Maryland Office of Planning & Zoning

The Emergent Grasses Program was developed to re-establish emergent aquatic vegetation in local Bay estuaries by providing wetlands plants for shoreline stabilization, beautification, habitat enhancement and water quality.

In Anne Arundel County, citizens may obtain up to \$2000 worth of plants or other materials through the County's Environmental Grant Program. In return for "matching funds" in the form of community volunteer time or planting tools, the county provides project planning, design, and evaluation. County personnel also supervise the planting projects and instruct volunteers in planting techniques.

To date, over 10,000 square feet (1/4 acre) of grasses have been planted through this program. Grants are available for both community and private projects. The program costs the county \$13,000 per year in staff time in addition to the cost of the planting projects.

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A.A. Co. Planning and Zoning
P.O. Box 2700
Annapolis, MD 21401
(301) 222-7441

West Lampeter Township, Pennsylvania

West Lampeter Township developed its Wetlands and Natural Habitat Studies program to ensure that environmentally sensitive areas were identified for protection during development projects.

To obtain a development or rezoning permit for residential land use projects over 20 lots, West Lampeter Township requires that landowners contract to have a *Wetlands and Natural Habitats Study* conducted on their property. Developers most often use consultants from Millersville University who are recommended by the township.

The developer also supplies financing for the township to conduct a similar study of the property. When both studies are completed, they are merged and prepared for use in the planning process. If sensitive areas are identified in the studies, the township can require the developer to avoid them in his development plans in order to obtain permit approval.

The Wetlands and Natural Habitat Studies program has provided the township with a strong and valuable tool for protecting its natural resources. All financing for the program is provided by the developer.

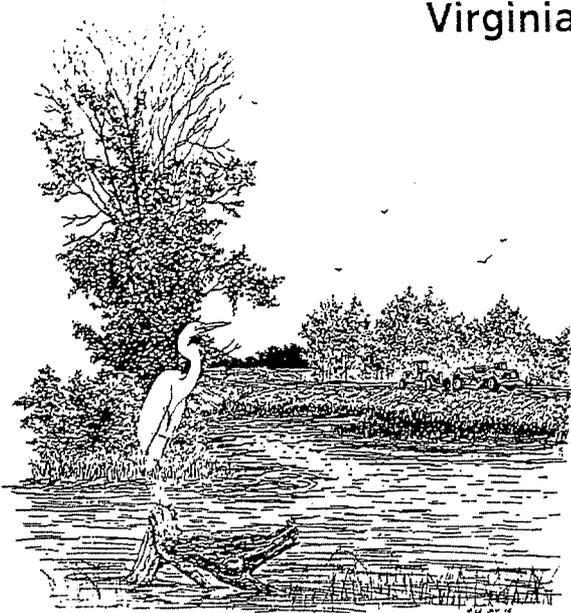
Contact: Lois Hart
West Lampeter Township
852 Village Rd.
P.O. Box 237
Lampeter, Pennsylvania
(717) 464-3731

Southeastern Virginia Planning District Commission

In order to provide the citizens of Southeastern Virginia with timely information on wetlands regulation, the Southeastern Planning District Commission developed two publications discussing wetlands regulations and their implications within the region.

In recent years, wetlands protection has become a top priority in federal, state and local regulations. Because much of Southeastern Virginia's lands are wetlands, the Southeastern Virginia Planning District Commission published two documents to assist the public in under-

Economic Implications of Wetlands Regulations in Southeastern Virginia



Prepared by the Southeastern Virginia Planning District Commission - April 1990.

standing wetlands regulations and their affect on the community.

The first of these publications, *"The Value of Wetlands,"* explains various wetlands values and functions, as well as regulatory and permitting initiatives. It serves as a comprehensive introduction to the wetlands issues for citizens within the region by describing wetland values and the hazards associated with unwise development. It also explains the regulatory system and permit process and identifies a number of technical assistance sources for citizens and developers. Production of this report was financed through Commission funds and a grant from the VA Council on the Environment.

The second document, *"Economic Implications of Wetlands Regulations in Southeastern Virginia,"* provides citizens and local governments with insight into the costs and benefits of protecting the region's abundant wetlands.

The Commission's study provides:

- Background on the values of wetland resources;
- Information on existing legislation to preserve and protect wetlands;
- An assessment of the economics of wetlands; and

An investigation of the long-run impacts of wetlands regulations, including:

- ✓ Impact on land prices,
- ✓ Transfer of wealth,
- ✓ Regional cost of living,
- ✓ Home prices and affordability,
- ✓ Local government revenues,
- ✓ Impact on regional construction industry,
- ✓ Opportunity cost of development.

The report was funded through the Southeastern Virginia Planning District Commission's budget under the FY '89-'90 Work Program.

Contact: John Carlock, Chief Physical Planner
SVPDC
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Chesapeake, VA 23320
(804) 420-8300

Bradford County Conservation District, PA

The Bradford County Conservation District provides landowners with wetland delineation services and assists in the permit application process for anyone who suspects their property may contain, and whose activities would impact wetlands.

A need to avoid disturbance of sensitive wetland areas, while guiding confused landowners through the federal and state permitting process, lead the Conservation District to provide remote sensing services. On-site identification of wetlands using soil survey maps, NWI (National Wetlands Inventory) maps, and the Federal Delineation Manual are also utilized.

Due to confusion concerning regulations and permitting, this program has been heavily utilized by landowners and farmers. It has been an extremely valuable tool for those interested in any type of development. The program is funded by the state and county governments and is implemented by existing district staff.

Contact: Michael Lovegreen
Bradford County
Conservation District
R.R. #5, Box 5030-C
Towanda, PA 18848
(717) 265-5539

Nutrient Management



The signatories to the 1987 Chesapeake Bay Agreement committed to the development and adoption of "a basin-wide strategy to equitably achieve by the year 2000 at least a 40 percent reduction of nitrogen and phosphorus entering the mainstem of the Chesapeake Bay" by July 1988. In addition, they committed to a reevaluation of this 40 percent reduction target by December 1991.

This July 1988 *Baywide Nutrient Reduction Strategy* assesses one of the most critical elements effecting the quality and future health of the Bay -- excess nutrients. The Strategy states that "water quality investigations and living resource assessments conducted by EPA and the states since before 1970 have demonstrated that the Chesapeake Bay ecosystem is deteriorating, and that high levels of nutrient inputs are a major cause of these trends. Excessive amounts of nutrients, primarily phosphorus and nitrogen, continue to enter the Chesapeake Bay system from a variety of sources: municipal and industrial point source discharges, nonpoint source runoff from agricultural and urban areas, and atmospheric deposition.

Scientific research, monitoring, and modelling now relate these excessive levels of nutrients to many of the Bay's water quality and living resource problems. Excess nutrients promote excessive levels of algae, which in turn cause problems of aesthetics, low dissolved oxygen concentrations, reductions in the amount of light reaching submerged aquatic plants, and shifts to algal species that do not support desirable aquatic life."

There are more than 150 rivers and streams flowing into the Bay, draining a 64,000 square mile watershed. Agricultural and other land management practices di-

rectly impacting these local sub-watersheds are eventually impacting the quality of the Bay. Local governments are becoming increasingly aware of these relationships and are taking steps to address unwanted nutrient inputs into local rivers and streams.

Of particular importance to local agencies are nutrients entering local waterways from nonpoint sources. EPA estimates state that nonpoint sources contribute approximately 67 percent of the 146.3 million pounds of nitrogen and 39 percent of the 13.8 million pounds of phosphorus reaching the Bay (estimates are based on average

year loadings).

Through local ordinances and environmental management programs local governments are working to manage nutrients. Several of these programs are included in the following pages.

Juniata County, Pennsylvania Planning Commission

Juniata County, Pennsylvania established an Animal Waste Storage and Nutrient Management Ordinance to provide a method for managing the effects of intensive agricultural practices and by-products that impact local waterways within the county and ultimately the Chesapeake Bay.

The county's Animal Waste Storage and Nutrient Management Ordinance was developed to:

- Minimize public health hazards by protecting groundwater supplies;
- Provide guidance for proper manure management and utilization of recommended construction practices for manure storage facilities;
- Assure that prime agricultural land will remain productive through environmentally sound agricultural practices;
- Inform farm operators who do not follow the practices set forth in the ordinance that they may be in violation

Nutrient Management

of state and federal pollution control laws.

The ordinance requires all farmers wishing to install or construct an animal waste storage facility after July 1990 to submit design plans for the facility to the county's Nutrient Management Technician for approval. Approval is dependent on the facilities compliance with state manure management regulations.

In addition, farmers must submit a Nutrient Management Plan which includes:

- The number of poultry or livestock to be raised,
- Amount of manure to be applied as fertilizer,
- The acreage over which it will be spread, and
- The crops that will be grown in this area.

With this information, the technician calculates the effective amount of nutrients removable by the crops. If the farmer's plan is found to contain nutrient excesses, the farmer must demonstrate a method of disposing of the excess wastes in a manner which does not pollute local water resources. Enforcement of the requirements is carried out by the technician. Fines for violations range from \$100-\$1000.

Farms in existence before the effective date of the ordinance are subject to the requirements of the ordinance only if they are found by DER to be significantly polluting water resources. The program requires no additional funding beyond the salary of the Nutrient

Management Technician. County funds are supplemented with a \$5 permit fee paid by applicants.

Contact: Sid Freyeremuth
 Juniata Planning Commission
 Courthouse Annex
 P.O. Box 68
 Mifflintown, PA 17059
 (717) 436-8991, Ext. 241

Warwick Township, Pennsylvania Township Administration

The Warwick Township Nutrient Management ordinance aims to reduce nitrate pollution of local groundwater supplies through the regulation of all farms expanding their operations.

A recently adopted ordinance in Warwick Township, Pennsylvania was designed to address the link between nutrient pollution and the Chesapeake Bay.

Poultry and livestock operations wishing to expand must submit:

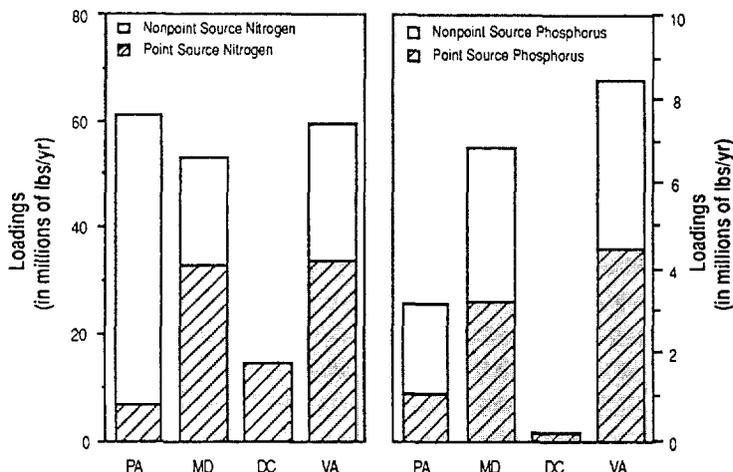
- A manure management plan which demonstrates that there is sufficient land to spread the additional manure resulting from increased livestock operations.
- A scaled map showing existing structures or field where manure will be stored or applied.

- A written Soil Conservation Farm Plan prepared for the land on which manure is to be stored or applied.

If the plan is found to sufficiently control potential nutrient runoff and pollution, a permit is issued for a fee of \$20. The penalty for violation of the Warwick manure ordinance is a fine not exceeding \$600. A 30-day jail sentence may be imposed if the fine is not paid.

The ordinance, implemented in December of 1988 resulted in the regulation of six farm expansions within the township. It has

Nutrients Flowing into the Bay



Source: *The State of the Chesapeake Bay: Third Biennial Monitoring Report - 1989*



also been instrumental in providing the township with a tool to control serious pollution problems from existing farming operations. The program is financed completely with township funds and permitting fees.

Although farms that were expanded before the new ordinance are exempted, established farms can be forced to comply with the management requirements of the ordinance if DER finds the operation to be a serious source of nutrient pollution.

Contact: Robert Smith, Manager
Warwick Township
315 Clay Rd.
P.O. Box 308
Lititz, PA 17543
(717) 626-8900

Kent County, MD Planning & Health Departments, Extension Service and Soil Conservation Service

Efforts to control extensive farming practices and manage manure by-products lead Kent County, Maryland to insert a manure management requirement into the existing county planning regulations.

Motivated by siting proposals made by several large animal farming operations within Kent County, a local Agricultural Committee and county officials called for a manure management requirement to be included in the existing county planning ordinance. The resulting ordi-

nance amendment, adopted in 1987, requires all new animal operations to develop an animal waste management plan. The plans must include the farmers intended method and area of manure spreading and storage.

All plans must be approved by the Environmental Health Officer, the University of Maryland Extension Service and the Soil Conservation District. The requirement is enforced by the Planning Office. The University of Maryland Extension Service provides technical assistance, however, all enforcement and administration is county financed.

Contact: Gail Webb Owings
Kent County
Court House
Chestertown, MD 21620
(301) 778-4600

Lebanon County, Pennsylvania Planning Department

With the help of a public-private partnership, Lebanon County farmers are developing an ecologically sound method for field disposal of manure.

Lebanon County, Pennsylvania is developing a commercial scale composting facility, located north of the City of Lebanon at an existing landfill site, to provide an alternative for treating animal manure from county farm operations. The facility, designed to deal primarily with hog manure, will consume 50 tons of manure per day along with 50 tons of Lebanon's solid waste stream (used as a carbon source and bulking agent).

The initial idea and support for manure composting came from the Lebanon County Conservation District that studied, among other things, the marketability of the compost. The Lebanon County Commissioners, and the Greater Lebanon Refuse Authority have also taken an active role in the program.

Once completed, the total project cost will be \$2.7 million, of which most would be provided through private funds from Composting, Inc. The Pennsylvania Department of Environmental Resources assistance would represent approximately \$150,000 of the project's cost.

Contact: Russel St. Clair
Lebanon County Planning Dept.
400 South 8th Street
Lebanon, PA 17042

Household Hazardous Waste Disposal



In an attempt to prevent the pollution and toxic degradation of local waterways, local governments throughout the Bay watershed have begun to look much closer to home for the source of hazardous pollutants. In the past, industrial, or point sources, have been targeted as the hazardous waste "bad guys." Large scale industry polluters are easily recognizable and the affects of their toxic emissions more immediately visible. However, as local officials have come to realize, industry discharge is not the only way that hazardous wastes can enter water resources. Toxics are reaching local water supplies through non-point sources as well.

Although quantities of hazardous substances in an individual home may seem negligible, the improper disposal of these products by the combined citizenry of a locality can deliver a significant amount of hazardous materials to both surface and ground waters. Multiplied by all the communities and waterways in the watershed, a seemingly small amount of toxics released into local water sources becomes a substantial dose for the Bay to absorb. In fact, the combined toxic contributions from households may be of greater detriment to the Bay and its tributaries than some point source polluters.

Defining Household Hazardous Wastes

Hazardous substances are an integral part of modern life. They can be found throughout most homes in the form of cleaning products, paints and automobile main-

tenance aids. EPA has recognized that some household products pose a potential threat to the environment and community if they are treated as an acceptable component of normal municipal waste. These substances are not included in EPA's regulation of other hazardous wastes, however, in order to pinpoint household substances that warrant particular concern, EPA has laid out characteristics which identify a product as a household hazardous waste (HHW). These characteristics include: ignitability, corrosivity, reactivity, and toxicity. Although EPA has no specific program which addresses HHW, they have encouraged and endorsed state and local HHW programs.

HHWs can be found on the same shelves as non-hazardous items, however, when treated in the same manner by consumers, they have the potential to adversely effect both human health and

the environment. Many of these impacts are avoided by consulting the product label for use and storage information. However, the labels often fail to address the issue of disposal.

Due to ignorance or lack of a better option, many citizens dispose of their HHW by dumping it in the trash, down the drain, or in their yard. What they may not realize is that these methods of disposal directly contribute to dangerous toxic pollution. According to a pamphlet put out by Concern Inc., an information clearinghouse for environmental issues, HHW thrown into the trash can cause a number of different problems. "During the compaction process, in the truck, or at the landfill most containers will break, and their liquid contents will eventually leach into the groundwater." Furthermore, HHW that is sent to municipal incinerators will generate both toxic gases and toxic ash which contribute to degraded air quality.

Trash collectors and landfill operators are also at risk from fires, explosions, and leakage of toxic materials. When HHW is poured down the drain it goes to either a septic tank or a public sewer system. In a septic tank, the toxics can destroy organisms which are essential to the breaking down of wastes. The toxics then pass into the soil and groundwater unchanged. Treatment plants that receive HHWs through public sewers may not be equipped to deal with them and the toxics will be discharged to surface waters and drinking water supplies.

Overview of Local Household Hazardous Waste Collection Programs

Nationwide, as well as in the watershed, local governments have led the way in providing a solution to the problem of HHW disposal. They have recognized that in order to protect their resources and their citizens they must provide methods for citizen education and action.

1. Education:

Education is the first step in reducing the amount of HHW being released into waterways. Smaller municipalities who lack the funds to initiate a more costly program have found that educating their residents about HHW is effective in generating positive action. Informed residents are less likely to purchase products that they know are hazardous, and when they do choose to use them, they act more responsibly when disposing of them. In many cases, enough community concern is generated through public education that the local government sees a need for a broader program.

2. Collection Program Development:

Although each locality will encounter unique considerations in developing a program, there are a number of essential steps and issues which must be carefully examined by all local governments planning to go beyond a one-day pilot collection. The following information was condensed from the "Summary of the Second National Conference on Household Hazardous Waste Management" which was put together by The Center for Environmental Management at Tufts University.

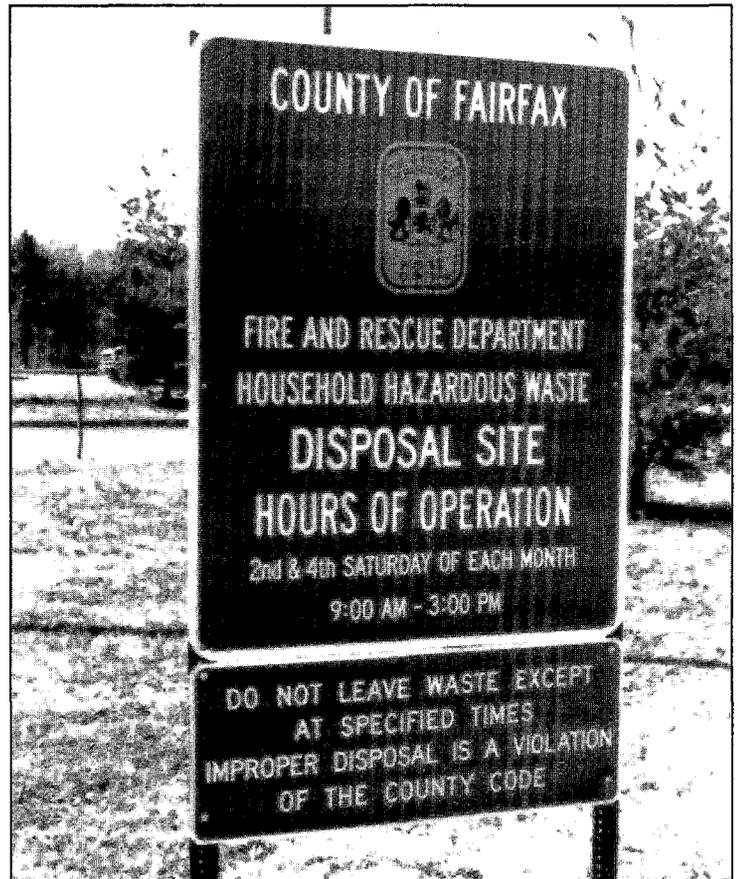
3. HHW Issues & Recommendations:

Finding a Sponsor

The possibilities for HHW program sponsors are endless; no one entity is the best. Local agencies that have sponsored events in the past have included: County/Local Health Departments, Fire Departments, Public Works/Sanitation Departments, Regional Planning Agencies, Solid Waste/Wastewater Managers and Town Planners. There are also organizations in the private sector who may be willing to cooperate with local governments in sponsoring a program.

Selecting a Site

Proper site selection is crucial for a safe and successful program. A good site should be accessible and in a well known location with low volume traffic. If any col-



lection or storage is occurring after day light, there should be security and lighting facilities. The site must also have impervious ground (cement or black top is best), phone facilities, and a shelter.

Selecting a Contractor

When making this decision, it is important to shop around. Contractors may differ considerably in their fees, experience and services offered. Once a compatible company is found, the sponsor agency should be sure that all responsibilities are identified and specifically delegated to either the company or the agency. Confusion during the program implementation can be both costly and dangerous.

Looking at Costs

Cost of the program will be heavily dependent on the contractor fees. Other factors impacting costs include: distance to hazardous waste disposal facilities; the amount and type of waste collected; type of program initiated (day events or on-going) and the amount spent on public education and publicity.

Small municipalities may be able to cut costs by

Household Hazardous Waste Disposal

jointly sponsoring a regional program or holding separate collections of a single waste type so that one company can be contracted to collect the wastes from each site. Using this plan, the costs of hauling from each site are decreased since the contractor makes only one trip to the disposal facility. Remember that pricing is not the bottom line; safety and efficiency are crucial. Although the costs of a program may be high, the cost of cutting corners or not addressing HHW disposal at all may be even greater.

Publicity

Publicity and education can make or break a program. Before any actual collection is done, citizens need to be made aware of what HHW is and why they should participate in the program. The community can be educated through speakers at local organization meetings, pamphlets delivered door-to-door, and inclusion of a HHW unit in school curriculums. In addition, newspapers, magazines, newsletters, radio, television and flyers can be used for general information or publicizing a specific collection program. Private organizations may be willing to sponsor this aspect of the program.

Liability

Collection program sponsors can be liable in two ways. The first is liability for a transportation accident and the spilling of containerized waste. In this case both the sponsor and the contractor may be held liable. Liability may also occur if the HHW is taken to a hazardous waste management facility which was later classified as an EPA Superfund site. Anyone setting up a program should take an in-depth look at potential liabilities before implementation.

Proper disposal of HHW is an issue with the potential to effect the health and environmental resources of every community in the Bay watershed. Although the costs and efforts of disposal are high, controlling the impacts of improper disposal may be even higher.

Local governments throughout the watershed are already implementing household hazardous waste collection and disposal programs. Several examples are included:

Anne Arundel County, Maryland Bureau of Solid Waste

In order to provide a way for residents to properly dispose of their household hazardous waste, Anne Arundel County sponsors Household Hazardous Waste Drop-Off Days each year for their citizens

In Anne Arundel County, Maryland residents are notified of the household hazardous waste drop-off events through newspapers, radio, television and flyers. On the designated day, citizens are encouraged to bring their wastes to sites selected by the County's Public Works Department. The sites are chosen on the basis of convenience and safety.

Anne Arundel County contracts with a reputable hazardous waste hauling company, responsible for staffing the site on collection days, and classification, packing and disposal of all waste received. The program was initiated due to citizen concern for the environment and has been successful in keeping a percentage of hazardous materials out of the municipal landfill.

Over 1000 households participated in the county's most recent event. The collection and disposal of the 113,030 lbs. of hazardous materials received cost the county \$167,000, financed through budgetary appropriations under the Solid Waste Enterprise Fund.

Contact: Amy Burdick
Anne Arundel County
Bureau of Solid Waste
389 Burns Crossing Rd.
Severn, MD 21144
(301) 222-6103

Fairfax County, Virginia Fire and Rescue Department

The Fairfax County, Virginia program aims to reduce the disposal of toxics in the county landfill by providing on-going collection of household hazardous waste at designated sites.

The Household Hazardous Waste Disposal program in Fairfax County, Virginia utilizes trained county Fire Department employees to staff the collection site using county-purchased equipment and supplies.

Residents may bring their household hazardous waste

to two convenient locations on four Saturdays a month. At the collection site, the waste is identified, packaged and stored in a safe facility until it is picked up by a contracted hazardous waste hauler.

The program is financed through general county revenues with a projected FY 1991 budget of \$633,000.

Contact: David Duncan
Fairfax County Fire and
Rescue Department
4031 University Dr.
Fairfax, Va 22030
(703) 246-4386

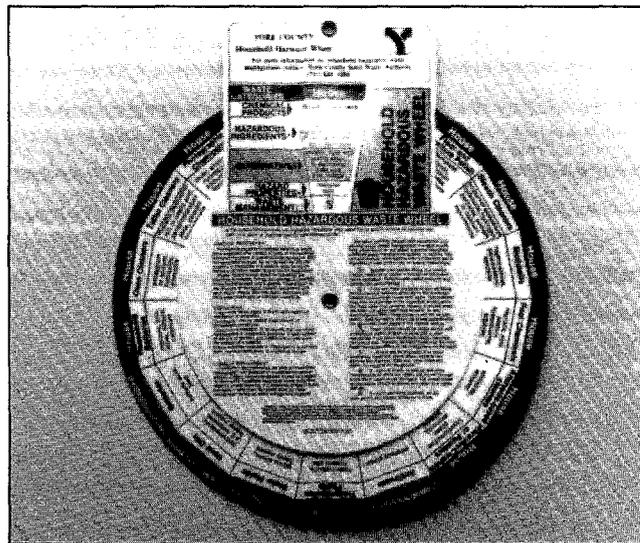
New Salem Borough, Pennsylvania

This program aims to keep toxics out of the local waste stream and waterways by educating borough residents of the presence of hazardous toxic wastes in the home and informing them of safe disposal methods for these substances.

New Salem Borough developed a "grass-roots" education program to inform residents of the important issue of household hazardous waste and its proper disposal. The educational initiative included local Council members delivering a "Household Hazardous Waste Wheel" (pictured) door-to-door to each home within the borough.

The wheels, provided by the York County Solid Waste Authority detail information including:

- Determination of which products are considered household hazardous waste;
- Hazardous ingredients contained in various products;
- Alternatives to using the toxic product; and
- Instructions for disposing of the household hazardous waste



Total cost for purchase of the wheels was approximately \$325, financed through general borough funds.

Contact: Walter LeMunyon
c/o New Salem Borough
P.O. Box 243
New Salem, PA 17371
(717) 751-3580

Arlington County, Virginia Public Works - Water Pollution Control Division

To meet the needs of citizens for adequate methods of waste disposal, Arlington County, Virginia provides ongoing collection of household hazardous waste at its Water Pollution Control Plant.

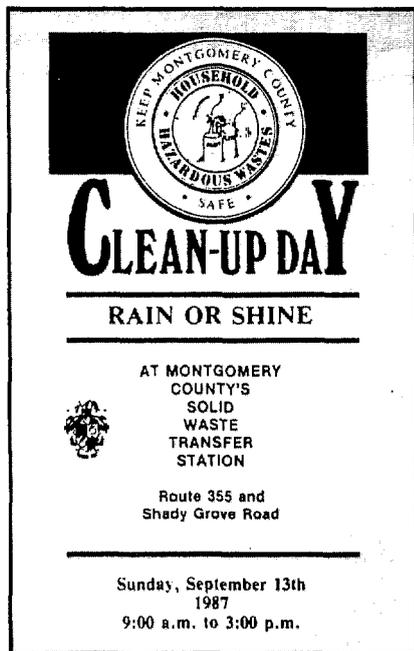
Residents of Arlington County are provided with an opportunity to make an appointment with the pollution control plant chemist during business hours on weekdays and on the first Saturday of each month to drop off household hazardous waste. The wastes are then clas-

sified by the plant chemist, properly stored, and periodically shipped to a licensed hazardous waste disposal facility.

The program is designed to reduce the amount of toxic materials entering the county's solid waste stream. This reduces both risks to collection personnel and to handlers during the incinerating process at the county's waste-to-energy facility.

Current program funding, including efforts to increase the publicity for the program among residents, is through the County's Utilities Fund at a level of \$35,000.

Contact: Tanya Spano, Process Engineer
Arlington County
Water Pollution Control Division
3401 South Glebe Road
Arlington, VA 22207
(703) 358-6820



Source: Montgomery County, Maryland.
Department of Environmental Protection

York County, Pennsylvania Solid Waste & Refuse Authority

York County has provided its citizens with an annual household hazardous waste collection event since 1985. Due to on-going education and publicity efforts, awareness and participation has increased each year.

The most recent event, held in October 1989 was attended by 775 citizens. The collection was held over a three day period in three different locations and was staffed by GSX, a contracted hazardous waste handling company. Although GSX was responsible for the handling and packaging of all wastes received, the local fire departments were also on hand to direct traffic in and out of each facility.

The 1989 collection days cost the county approximately \$126,000, \$125,000 of which was paid to GSX for their services. The remaining \$1,000 was spent for publicity of the event. The program is funded through the York County Solid Waste Authority budget.

Contact: Mrs. Mary Jane Rodkey
York County Solid Waste &
Refuse Authority
2801-D N. George St.
York, PA 17402
(717) 845-1066

Household Hazardous Waste Collection Days are also sponsored by **Prince William County, Virginia; the City of Alexandria, Virginia; Montgomery County, Maryland; Loudon County, Virginia; and Lancaster County, Pennsylvania** among others. Each of these local entities holds several collection days annually to provide for the safe disposal of potential hazardous waste. Wastes are collected at a specified site, separated, then transported to a federally or state licensed hazardous waste disposal facility. The focus of each program is to reduce hazardous materials from entering the municipal waste stream, and minimizing the dangers to collection employees.

Contacts:

Lynn Fass, Senior Sanitarian
Prince William County
9301 Lee Avenue
Manassas, Virginia 22110
(703) 335-7341

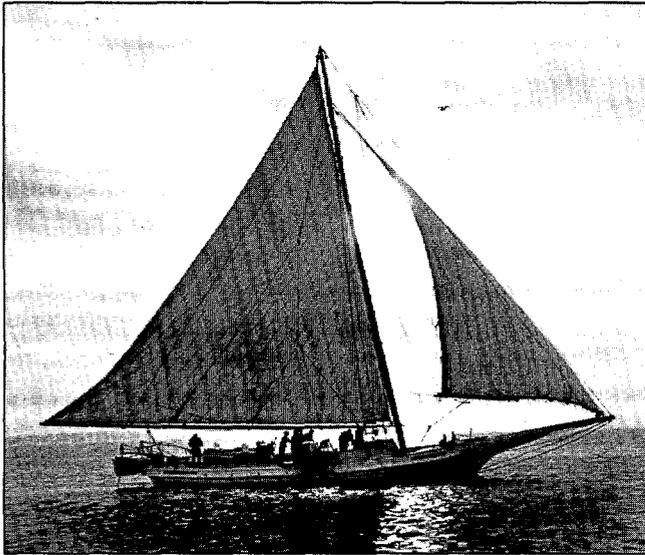
Sam Navatta, Deputy Director
Alexandria Department of Transportation and
Environmental Services
301 King Street
Alexandria, Virginia 22314
(703) 838-4488

Rob Montgomery
Chief, Environmental Health
Loudon County Health Dept
209 Gibson Street, N.W.
Leesburg, Virginia 22075
(703) 777-0234

Montgomery County Dept. of Env'tl. Protection
Office of the Director
101 Monroe Street
Room 627
Rockville, MD 20850-2589

Rachel Rosenzweig
Lancaster County Solid Waste Mgmt. Auth.
1299 Harrisburg Pike
Lancaster, Pennsylvania
(717) 397-9968

Boating Pollutant Discharge



A small city of several hundred thousand people is floating daily on Chesapeake Bay waters during prime boating days. Concern has been expressed that this "fleet" is having a negative impact on the Bay's aquatic resources, particularly on plant life and shellfish.

The Alliance for the Chesapeake Bay's May-June 1989 *Citizen Report* relies on estimates of two and one half gallons of waste produced per person per day, multiplied by several hundred thousand boats, to draw the conclusion that significant quantities of waste are dumped directly into the Bay, rivaling that of a large sewage treatment plant. Boater discharges could be responsible for releasing over a million gallons of sewage per day into the Bay.

Local governments throughout the Bay region are expressing concern about several facets of this issue.

□ There is concern about the discharge of untreated sewage from recreational and commercial boats directly into the Chesapeake Bay, particularly around marinas near local beaches and public access points. This sewage presents a health danger, including the presence of fecal coliform and viruses, to the living resources within the Bay, as well as to the human population in the Bay watershed.

□ Secondly, concern has been expressed about the discharge of *treated* sewage from recreational and commercial boats directly into the Bay, particularly with the effects of chlorine and other treating chemicals on the Bay's ecosystem.

□ Finally, local officials have called attention to the fact that in those cases where disposal and "pumping out" of boater sewage is done properly, they may face resulting dramatic increases in loads to municipal systems.

The issue is obviously not an easy one to address. Boaters, feel they have an access right to the Bay and would argue that overboard discharge of sewage should not present a problem to the Bay's several trillion gallons of water with strong dilution abilities. Others point out that the threshold of acceptable pollutants to the Bay may have already been crossed.

The 1987 Bay agreement called for the elimination of pollution discharge from recreational boats into the Bay. Local involvement through requirements of adequate pump-out and treatment capabilities near marinas may be a large part of the effort designed to address the issue. Local, state and federal discussion about marina development requirements and access, increased state and federal enforcement, and designation of "No Discharge Zones" are being debated as part of the effort to restore the water quality of the Bay and curb the negative impacts of boating.

Several local governments have developed programs that address the issue of boating pollution through ordinances and other environmental programs. The following provide summaries of several of these:

Town of Cape Charles, Virginia Town Manager

In an attempt to reduce the amount of pollution reaching the Bay from boaters in the area, the Town of Cape Charles, Virginia provided for the installation of a boater sewage septage system at the town marina.

As the host of the annual Governor's Cup fishing tournament, Cape Charles has a high number of boats that use its waterways and marina's. High boating traffic can often mean degradation of local water quality from boater sewage discharge. Due to state and local concern over this issue, the state recommended that Cape Charles install an accessible boater sewage septage system. The facility is public and provides boaters with an opportunity to pump out sewage storage tanks rather than releasing these sewage pollutants into the Bay.

The \$1,500 pump-out facility was built with municipal funds and a \$500 grant from the Virginia Council on the Environment. Operation of the facility is supple-

Boating Pollutant Discharge

mented by a \$10 user fee. All wastes received at the facility are treated at the local waste water treatment plant.

Contact: Richard Barton
Cape Charles Virginia
P.O. Box 391
Cape Charles, VA 23310
(804) 331-3259

Kent County, Maryland Planning Commission

In order to curb pollution from boater sewage discharge, Kent County, Maryland initiated a program which requires all new or expanding marinas to install boating pump-out facilities.

Initiated in 1983, Kent County's requirement for pump-out facilities is enforced as a condition of on-site plan approval by the Planning Commission.

Although the original ordinance was successful in increasing pump-out facilities, it was only mildly successful in encouraging pump-out use. To address this, the ordinance was updated in 1989 to include a requirement of adequate signage to alert boaters of pump-out service.

The program has been completely county financed.

Contact: Gail Webb Owings
Kent County
Court House
Chestertown, MD 21620
(301) 778-4600

Prince William County, Virginia Health Department

In order to minimize discharges of human wastes from boats moored in the tidal waters of the region,

Prince William County, Virginia implements and supplements state pump-out facility requirements and ensures that there is access to at least one pump-out facility in each creek containing marinas.

Prince William County supplements the state boating pump-out requirements through its local Health Department. Specifically, during the review of marina development and rezoning applications, the Health Department may use the "proffer" system and require the inclusion of boating pump-out facilities in return for approval of the development application. They may also request a ban on "live-aboards" in the marina, as their presence has the potential to contribute more discharge than day-boaters.

All costs of the program are born by the developer.

Contact: Douglas Miller
Prince William County
9301 Lee Avenue
Manassas, VA 22110
(703) 335-6314

Worcester County, Maryland Sanitary Commission

Efforts to control increasing pollution by boaters lead the Worcester County Sanitary Commission to develop requirements for pump-outs at county marinas.

Increased access and use of local waterways in the Worcester County area prompted the County Sanitary Commission's Department of Environmental Resources to interact with the county's planning process to require installation of pump-outs at new marinas.

During the permitting process, developers are required to provide specifications for pump-out facility installation when a marina is included as part of their site plan. County review by the Sanitary Commission is made to ensure that the developer complies with adequate construction and design principles.

Contact: Richard L. Wells
Chief Sanitarian
Worcester County
Room 116, Court House
Snow Hill, Maryland 21863
(301) 632-1200



Public Information and Education



The 1987 Chesapeake Bay Agreement declared that "the understanding and support of the general public and interest groups are essential to sustaining the long-term commitment to the restoration and protection of the Bay." There are over 15 million people living in the Chesapeake Bay watershed whose activities have the potential for profound impacts on the Bay ecosystem. It is crucial then, that residents of the watershed understand the Bay system, the problems facing it, and how individual actions are directly linked to its future.

Although reaching the vast number of people within the watershed seems an enormous task, local governments are in a unique position to bring Bay awareness to the people by promoting regional natural resource issues and concerns. Activities that may have an adverse impact on the Bay have more immediate impacts on local resources. In recognition of this, many jurisdictions have developed education programs to promote both local and watershed-wide environmental awareness and responsibility among their constituencies.

Localities have chosen a number of different tech-

niques to reach their citizenry including; outdoor education, academic and professional programs, and visual and printed information distributed through displays, television, radio, newspapers and pamphlets.

Locally-sponsored outdoor education programs provide residents with a unique opportunity for direct contact with the local environment at area facilities. Education programs provide a chance for citizens to interact directly with the environment through activities successfully geared to all age groups within the community. The potential of these "hands-on" programs has proven to be limitless. They are easily adapted to the specific natural resource attributes of individual jurisdictions and provide a method of presenting the unique beauty, value, and associated problems of the region's natural areas.

Locally related academic and professional programs bring natural resource information to the community through the schools or workplace. Academic, or classroom activities are often cooperative efforts between municipal governments and the local school system. Area schools provide an excellent opportunity to promote environmental awareness in school age children. In this manner, local governments have been very successful in undertaking a number of diverse academic programs geared toward various levels within the school systems. Local jurisdictions also try to target teachers for training programs to enhance their ability to increase the awareness of their students.

Municipalities and local conservation districts have found that it pays to educate professionals as well. Citizens whose occupations have direct impacts on the environment are often unaware of how closely their work is linked to the region's environmental quality. Teaching professionals environmental responsibility in the workplace works to decrease the negative impacts of many regional land-intensive activities including farming, logging and development.

Perhaps the most important aspect of regional awareness is the local role in bringing information and education into the everyday lives of the general citizenry. Providing local residents with the opportunity to participate in public meetings, forums, workgroups and advisory committees not only contributes to public education, but also allows the public to feel that they have a chance to contribute to the natural resource decisions in their community. Local governments who encourage activism and respond to concerned citizen groups often find that their constituents are more aware of and eager to prevent local natural resource problems.

Although educational impacts are hard to gauge, municipalities may be able to reach the widest audience through visual and print media. Public displays, slide shows and video presentations can be used at a variety of public gatherings and interest group meetings. In addition, community newsletters, bill stuffers, newspapers and television programs can potentially reach a high percentage of the municipal population. Local governments have found that these methods of public education are extremely successful in generating widespread citizen concern and positive action.

Through locally generated concern for the quality of their jurisdiction's natural resources, citizens ultimately play a large role in securing the future of the Bay. Local initiatives are crucial to the Bay Agreement's efforts to increase awareness of the Bay system.

As demonstrated by the following examples, local governments throughout the watershed have found imaginative and diverse ways to bring issues of environmental quality and the Chesapeake Bay to the attention of their constituents.

Southeastern Virginia Planning District Commission Department of Physical Planning

To assist citizens within the region with public access opportunities to the Bay and its tributaries, the Southeastern Virginia PDC undertook a study to analyze Water Access Needs for incorporation into a regional Waterways Guide.

The *Water Access Needs Analysis* was initiated to identify water access opportunities and deficiencies throughout Southeastern Virginia for all types of water dependent recreational activities. It was also intended to generate recommendations for local governments on how they could take advantages of the opportunities and rectify the deficiencies.

Efforts to develop a regional *Waterways Guide* incorporated results of a study of local waterways and associated access. The study was designed to:

- Identify access opportunities and deficiencies throughout Southeastern Virginia for all types of water-dependent recreational activities, and
- Recommend ways in which local governments can take advantage of the opportunities and rectify any

deficiencies.

To meet these objectives, the Planning District prepared a report which contains:

- A comprehensive inventory of the region's major waterways and water access points
- A regional water access needs assessment
- Proposed siting and design criteria for water access facilities, and
- Recommended strategies for use by local governments to improve water access.

A number of recommendations in this study are being implemented by local governments. The completed study will facilitate the region's implementation of Chesapeake Bay access strategies.

This program was honored by the Virginia chapter of the American Planning Association with the 1990 Distinguished Planning Award and a number of the recommendations contained in the study are now being implemented by local governments. Financing for the program was provided through a \$30,000 grant from the Virginia Coastal Resources Management Program with a \$7,500 match from the Planning District Commission.

Contact: William Wickham, Physical Planner
Southeastern VA PDC
723 Woodlake Drive
Chesapeake, Virginia 23320
(804) 420-8300

Kent County, Maryland Department of Health, Department of Planning, Forestry Board & Board of Education

This interdepartmental public education program, focusing on community interaction with the environment, was designed to reach students, teachers and citizens of the county.

The Kent County program introduces elementary school children to environmental issues through direct interaction with the environment. During the fourth grade, students participate in a number of different outdoor education field trips to Eastern Neck Island that

include water sampling, soil tests, and review of habitat protection standards.

Investigation of a stream environment on a trip to Turner's Creek and introductions to agricultural conservation measures at an area farm are also included in the environmental curriculum package.

This program also includes teacher training sessions on environmental classroom curricula through the Forestry Board. The sessions are based on Project Learning Tree which is a program of widely used environmental education activities and lectures.

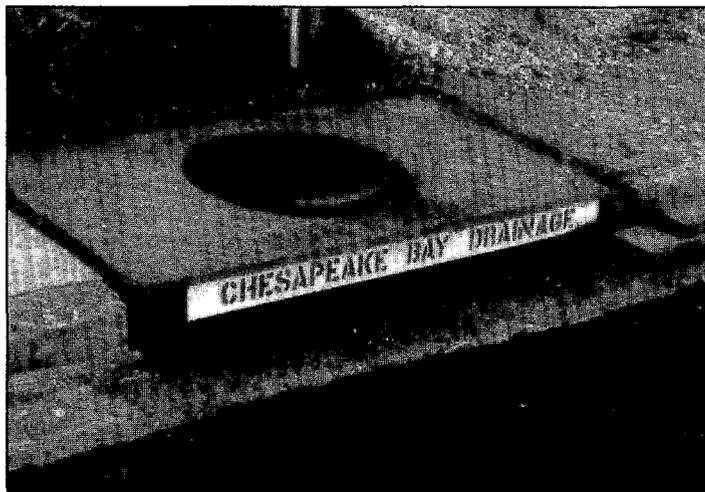
The Planning Office has also begun a series of articles in the local newspaper and real estate newsletter concerning the use of buffers and other planning issues. The articles which are run approximately every two months were in response to property owners pleas of ignorance of Critical Areas regulations. The program is financed through Critical Areas Grants, county funds, state grants, and private citizen donations.

Contact: Elinor Gawel
Kent County Courthouse
Chestertown, MD 21650
(301) 778-7423

Prince Georges County, Maryland Department of Public Works

The county initiated a Storm Drain Sticker Program aimed at educating the public and controlling non-point source pollution generated by private citizens.

The County's storm drain marking program places reflective plastic stickers on all storm drain inlets in the county. The drains are marked with a message reading "Do Not Litter, Chesapeake Bay Drainage." The installation and maintenance of the stickers is performed by Public Works in the course of their regular drain maintenance



including local government, business and development,

duties. The project will be completed at a rate of approximately 2,000 drains per year. Stickers are expected to last for five to six years.

This program has been widely praised for its educational effectiveness and its role as a deterrent to the direct dumping of pollutants into storm drains. Funding for the program in the amount of approximately \$20,000 per year comes from the County's Department of Environmental Resources.

Anne Arundel County, Maryland implemented a similar program, also aimed at educating citizens and controlling nonpoint source pollution flowing directly into stormdrains, or indirectly through run-off from properties. Anne Arundel's program is 100 percent county financed for materials and staff, however these costs are minimal. All labor is provided by citizens.

Contact: Dale Hamel
Prince George's County
8400 D'Arcy Rd.
Forestville, MD 20747
(301) 499-8507

Patricia Haddon
Anne Arundel County
Office of Planning
P.O. Box 2700
Annapolis, MD 21404

York County, Pennsylvania York County Planning Commission

In order to explore many of the issues driving growth and development within the county, the York County Planning Commission participated in planning and conducting the first "York County Forum."

Focusing on the topic, "Balancing Our Future: York County in the 1990's", the program was aimed at quality of life issues within the county.

The two-day forum looked at a broad cross-section of interests

and the public. Forum issues included re-thinking traditional development, building land conservancies, examining the legal context of change, directing growth, preserving the agricultural economy and historic resources, and addressing perspectives from the public and private sectors on development. The forum used the expertise of both local and out-of-state speakers to offer insights into each issue. Program planners and participants felt that there was significant value in looking at the viewpoints from neighboring jurisdictions since they often face similar circumstances and offer unique perspectives.

Financing for the Forum came from donations from local businesses and organizations and a minimal registration fee.

Contact: Reed J. Dunn, Jr., Director
York County Planning Commission
118 Pleasant Acres Road
York, PA 17402

Allegany County, MD Health Department

This educational program developed in Allegany County, Maryland is designed to evaluate and encourage students' knowledge on the Chesapeake Bay and subjects of environmental importance.

Beginning in May 1990, the County Health Department held an annual "Envirothon" in which three teams from each of the eight local schools competed in a round-robin event. The teams rotate between stations and answer questions on a specific topic (i.e. recycling, forestry, soil conservation, etc...) at each location. The first, second and third place team are awarded with a trip to the Baltimore National Aquarium.

The event is funded through a \$400 donation from the local Lions Club while the prize trips are financed through a \$400 contribution from the local Rotary Club. Transportation is provided by the board of education.

Contact: Darrell Spence
Allegany County
Department of Environmental Health
P.O. Box 1745
Willowbrook Rd.
Cumberland, MD 21402
(301) 777-5655

City of Virginia Beach, VA Public Information Office/Municipal Cable

The City of Virginia Beach utilizes the city-managed cable channel to generate public interest and increase educational opportunities for local environmental education programs.

In order to increase public awareness of local environmental issues, the City of Virginia Beach developed a short video program for broadcast on the Municipal Cable Channel. The taped program discusses:

- Problems facing the city due to rapid growth and development,
- Options being used to address these problems,
- Successes and inadequacies of current solutions, and
- Future options being considered by the city.

An additional program developed for Virginia Beach cable viewers focuses on the impact of the oil cargo business on the Virginia Beach area. "Planet Earth and Private Enterprise: Can They Co-Exist?" discussed the preparedness of and response to potential oil and/or chemical spills in the Bay and Virginia Beach region.

Contact: Linda M. Roe
MCN 29-Vo-tech
2925 North Landing Road
Virginia Beach, VA 23456
(804) 427-8047

Anne Arundel County, MD Department of Recreation and Parks

Anne Arundel County, Maryland undertakes a variety of intensive public education programs designed to teach children about life in the Bay and surrounding areas through hands-on interaction with aquatic life.

The Downs Park Education Program teaches children between the ages of 11 and 15 through participation in the Junior Naturalist Program. The program teaches participants about wildlife, trees and flowers, insects, pond study and ecology of the Bay through direct interaction with the subject matter.

For children 12 and under, there is "Fishing with the Ranger" which includes a short talk on fish and fishing techniques followed by prizes for fish caught. An additional 12 and under program, "Mummichogs!," involves seining for minnows and other Bay life with discussion of the species captured.

Both programs are very popular because they allow the children to learn and have fun at the same time. The educational programs are partially financed by a \$5 enrollment fee for all Junior Naturalist participants. All other expenses for equipment and ranger salary are absorbed under the park operations budget.

County Educational programs for children of all ages includes the Jug Bay Wetlands Sanctuary focusing on the conservation and protection of the unique wetlands at Jug Bay on the Patuxent River. This is accomplished by emphasizing environmental education and research of plants and animals of both the wetlands and the surroundings upland forest.

The program is being implemented with the help of a Scientific Advisory Committee. The public is admitted for programs on marsh ecology while the research program is carried out by staff naturalists and extensive volunteer participation for data collection.

Primary funding is included in the Recreation and Parks budget, however, additional assistance comes from the Maryland Department of Natural Resources and a 500 member support group, the Friends of Jug Bay. Donations of equipment, educational aids and professional talent play a significant role in maintaining the success of the Jug Bay Programs.

Contact: Ranger
Downs Park
8311 John Downs Loop
Pasadena, MD 21122
(301) 437-7658

Contact: Christopher Swarth
Jug Bay Program
1361 Wrightson Road
Lothian, MD 20711
(301) 741-9330

Pequea Township, Pennsylvania

In efforts to provide the Township Supervisors with independent expertise on environmental issues, an Environmental Advisory Council was created.

Pequea Township's Environmental Advisory Council was voluntarily developed under the guidelines established by the State Conservation Commission. The Council is made up of concerned and knowledgeable citizens who are appointed by the township supervisors to investigate, educate, and offer advice on environmental issues.

Pequa Township's program has been in place since 1989. To date, the Advisory Council's activities have focussed on providing information and technical assistance on issues of local concerns including:

- Sinkholes
- Water quality
- Nitrates
- Indoor air pollution
- Pesticide poisoning first aid
- Water and energy conservation, and
- Radon.

Many of these information /education initiatives have been accomplished through preparation of bulletins developed for the supervisors and local citizens. A number of these have also been printed in the newspaper.

The Advisory Council has also played a large role in the development of the township's landscape ordinance and is responsible for reviewing site plans under its regulation. Because the Council members are not paid, the costs of the program include only secretarial time and bulletin production costs, both of which are financed by the township.

The Advisory Council has been successful in providing a needed resource for elected township officials as they consider policies impacting the environment.

Contact: Alan Peterson, M.D.
243 Shultz Rd.
Lancaster, PA 17603
(717) 464-2322

York County, Virginia Public Information Office

Working to keep citizens abreast of ongoing county land use activities and regulations, York County, Virginia is informing area residents through publication of a periodic newsletter.

This program provides information to citizens on a variety of county activities and regulations affecting land use, and development issues throughout the county. Through a Citizens Newsletter, a publication which began circulation in the summer of 1989, citizens, developers and others keep touch with the status of various environmental initiatives.

A recent issue presented information on the elements of the Virginia Chesapeake Bay Preservation Act and the impact the Act's regulations would have on citizens in the upcoming years. The newsletter is locally funded and administered.

Contact: John Carl
York County
P.O. Box 532
Yorktown, VA 23690
(804) 898-0204

Bradford and Blair County Conservation Districts, Pennsylvania

Area Conservation Districts have prepared exhibits and displays to emphasize the need for local government participation in the goals of the Bay Program.

The Bradford County Conservation District developed an enclosed trailer (7' X 16') to house a display that travels to fairs, schools and various shows. The display includes a comprehensive map of the Bay watershed as well as examples of environmental problems and solutions.

The program established a highly visible and transportable method for reaching the community. Funding was provided through local funds, donations and a \$500 Chesapeake Bay mini-grant from the Bay Education Office.

The Blair County Conservation District exhibit was designed to educate farmers on the detrimental impacts of soil erosion and excess nutrient runoff on the water quality of the Bay.

This exhibit features a table display that demonstrates the hazards of poor farming practices and promotes the use of Best Management Practices (BMPs). The display is taken to area farm shows, fairs, and meetings in order to reach as much of the general farming public as possible. Funding comes from the district budget as well as the State Conservation Commission.

Contact: Michael Lovegreen
Bradford County
Conservation District
R.R. #5, Box 5030-C
Towanda, PA 18848
(717) 265-5539

Amanda Ritchey
Blair County Conservation District
1407 Blair Street
Hollidaysburg, PA 16648
(814) 696-0877

Centre County Conservation District, Pennsylvania

Providing hands-on technical training is one of the goals of the Centre County Conservation District in its efforts to educate a variety of constituents on proper environmental mitigation techniques, sediment control, and general environmental education.

The District's education/workshop programs provide environmental education opportunities to various groups. Annual workshops on erosion control are conducted for loggers, developers and other earthmovers.

Teacher training workshops are also held in cooperation with the Pennsylvania Bureau of State Parks on an annual basis. Teachers receive workbooks which contain classroom curriculums on Bay conservation and ecology for various age groups.

Canoe trips on local waterways are organized for high school students through cooperation with state and private organizations in order to demonstrate non-point source pollution problems common to the county.

Funding for the program comes from allocations in the Chesapeake Bay Program and through Conservation District tree seedling sales.

Contact: Ted Onufrak
Centre County Conservation District
R.D. #5, Box 390
Bellefonte, PA 16823
(814) 355-6817

**Southeastern Virginia
Planning District Commission
Physical Planning Department**

Through a Groundwater Protection Handbook, this Planning District Commission provides educational opportunities to local government officials and assists them in protecting groundwater resources.

The Southeastern Virginia Planning District Commission Groundwater Protection Handbook addresses:

- Local hydrogeology and groundwater use;
- Existing and potential groundwater contamination problems;
- The role of government,
- Local groundwater protection techniques; and
- Recommended local regulations.

The program was funded through the Virginia Coastal Resources Management Program and the Commission.

Contact: William Wickham
723 Woodlake Dr.
Chesapeake, VA 23320
(804) 420-8300

**Harford County, Maryland
Department of Planning and Zoning**

The Harford County programs combines the resources of the County and the community college to educate individuals about local environmental regulations.

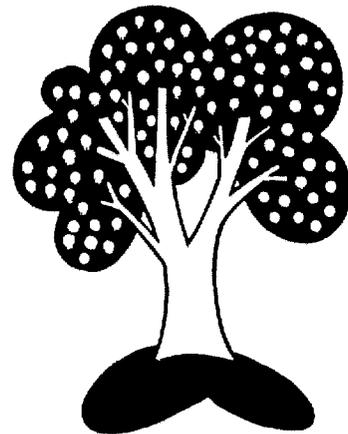
The Harford County Department of Planning and Zoning works with the Harford Community College's Environmental Technology Institute, the County's Department of Public Works' Bureau of Environmental Affairs, and state and federal officials to provide technical update courses to exchange ideas, problems, solutions and "tricks of the trade."

The courses are geared around Harford County's environmental regulations and procedures. In particular, the county designed courses to discuss stormwater man-

A SPECIAL CAREER SERIES

**Harford
Community
College**

***Environmental
Technology Training***



Offered by the
Environmental Technology Institute
Division of Continuing Education
401 Thomas Run Road
Bel Air, Maryland 21014
and
co-sponsored by
The Harford County Government
Department of Planning and Zoning
DPW Bureau of Environmental Affairs

agement requirements and design, water and sewer, roads, erosion and sediment control, recycling, watershed protection, and buffering protection.

The courses are directed toward individuals working as contractors, developers, engineers, designers, realtors, inspectors, and individuals involved in homeowner development associations.

Contact: Andy Meyer
Harford County
Dept. of Planning and Zoning
220 S. Main Street
Bel Air, MD 21014
(301) 838-6000

I ntergovernmental Cooperation



The county's Local Government Services Program was developed to provide professional planning services to communities in the area who otherwise could not afford them.

Both the County Planning Department and the Public Works Department provide staff assistance to twelve incorporated municipalities within the county. Assistance includes:

- Review of municipal site plans,
- Building permits,
- Sediment control,
- Stormwater management and other regulations;
- Aid in development or updating of municipal master plans, zoning ordinances, and
- Special studies.

Intergovernmental Cooperation

The ability to address environmental problems on a regional level necessitates a need for strengthened communications between all levels of government. The cause and effect relationship between activities taken by one jurisdiction to another is particularly important in responding to these environmental quality issues.

Regional intergovernmental cooperation is particularly important to bring together those local governments with a vested interest in problem solving. Overcoming the "not in my backyard" syndrome may be easier when the opportunities for redress are expanded. In addition, neighboring local jurisdictions that are made aware of potential problems caused by their activities, or those generated by others, are more willing to use this cooperative forum to establish regional perspectives and priorities.

A number of programs of this nature are ongoing in the watershed, often administered by Councils of Government, Planning District Commissions and others. They have been successful in promoting the regional aspects of Chesapeake Bay restoration. Several examples are included:

**Frederick County, Maryland
Planning and Zoning Department**

The program has been well received by the municipalities and serves as a built-in communication and coordination process between the county and municipal officials. There are no specific costs for this program beyond staff time which is paid through the county planning budget.

Contact: James Shaw
Winchester Hall
12 East Church Street
Frederick, MD 21701
(301) 694-1134

**York County, Virginia
Department of Community Development
(in association with the Peninsula Planning District
Commission)**

The Peninsula Planning District Commission created a Local Task Force to address Chesapeake Bay Program implementation issues.

As a member of the Local Task Force, York County and other localities (the counties of Henrico, Chesterfield, King George, Northampton, Richmond, King William, Mathews, Prince William, and the Virginia Municipal League) participate in a once-a-month round

table discussion about problems and successes with the implementation of the Chesapeake Bay Preservation Criteria.

The program resulted in the identification of areas of regional concern and is working to access new information to assist local governments in complying with program goals. Most recently, the Task Force has been discussing ways in which to improve methods to address stormwater runoff. There is no specific funding needed for the program.

Contact: Cynthia Taylor
P.O. Box 532
Yorktown, VA 23690
(804) 898-0085

Tri-County Council of Southern Maryland

As a regional Council of Governments, including Charles, Calvert, and St. Mary's Counties, the Tri-County Council of Southern Maryland provides a wide variety of local intergovernmental programs and services to further the goals of the Chesapeake Bay Agreement.

The Tri-County Council's program works to promote environmentally sound policies and practices throughout Southern Maryland through intergovernmental networks and consistent regionally oriented environmental services. Elements of the program include:

- Conducting a Regional Stream Survey to develop a multi-year water quality management program which identifies and assesses areas in the region's waters that demonstrate pollution problems and sensitive and valuable areas,
- Participating in the implementation of the Patuxent River Watershed Protection Plan through cooperation in the Patuxent River Discovery Day Planning Committee, monitoring the Patuxent Water Quality Management Plan and assisting local governments in implementing water quality protection plans;
- Providing technical assistance to counties on coastal zone management issues, sewage treatment needs, and water quality planning; and

- Developing a Geographic Information System database for use in hydrologic modeling and monitoring and tracking non-point source pollution through a grant from the Maryland Department of the Environment.

Funding for the Tri-County Council's programs is provided by the counties and municipalities who are members of the Council.

Contact: Michael Kakuska
Tri-County COG
Box 1634
Charlotte Hall, MD 20622
(301) 870-2520

Southeastern Virginia Planning District Commission

The Southeastern Virginia Planning District Commission established a Regional Environmental Management Program to facilitate local government coordination and cooperation in addressing regional environmental problems and opportunities.

The Regional Environmental Management Program provides educational information, technical analyses and management plan recommendations to local officials and citizens on the following subjects:

- Surface and groundwater resources (quantity and quality),
- Solid and hazardous waste management,
- Land use,
- Recreation,
- Critical resources, and
- Air quality.

The program was instituted in response to local requests. Demands for technical assistance and problem solving have greatly exceeded the present resources. Funding is provided through the annual Planning District budget as well as through federal and state agencies (EPA, VA Dept. of Waste Management, etc.) on a program-specific basis.

Contact: John Carlock
723 Woodlake Drive
Chesapeake, VA 23320
(804) 420-8300

Intergovernmental Cooperation

Metropolitan Washington Council of Governments

Working in cooperation with local governments and regional and state agencies, COG coordinates a full range of environmental programs designed to protect the region's environmental integrity.

As part of an interconnected effort to plan for the region's water quality and participate in efforts to restore and preserve the Chesapeake Bay, COG develops management plans for the area's water resources. These include the Potomac and Anacostia rivers as well as other waters located throughout the Region.

In conjunction with its water resources management responsibilities, COG performs many technical and reporting functions. For instance, water quality trends are monitored, and water quality modeling performed on both the Potomac and Anacostia.

COG also is a recognized leader in the area of storm-water runoff control in urban and developing regions. The organization provides technical information, design guidance and demonstration projects.

COG provides related services in other areas of water management. For example, COG coordinates harvesting of hydrilla in the Potomac River, and assists local

governments in the clean-up of the Potomac River and the Chesapeake Bay. Additional work and coordination with the Region's air quality, transportation, growth and development forecasting, and recycling, along with providing technical assistance to agencies involved in the operation of the Blue Plains Wastewater Treatment Plant are also included in COG's work program.

Contact: Stuart Freudberg, Director
Department of Environmental Programs
Metropolitan Washington COG
777 North Capitol Street, NE
Suite 300
Washington D.C. 20002
(202) 962-3340

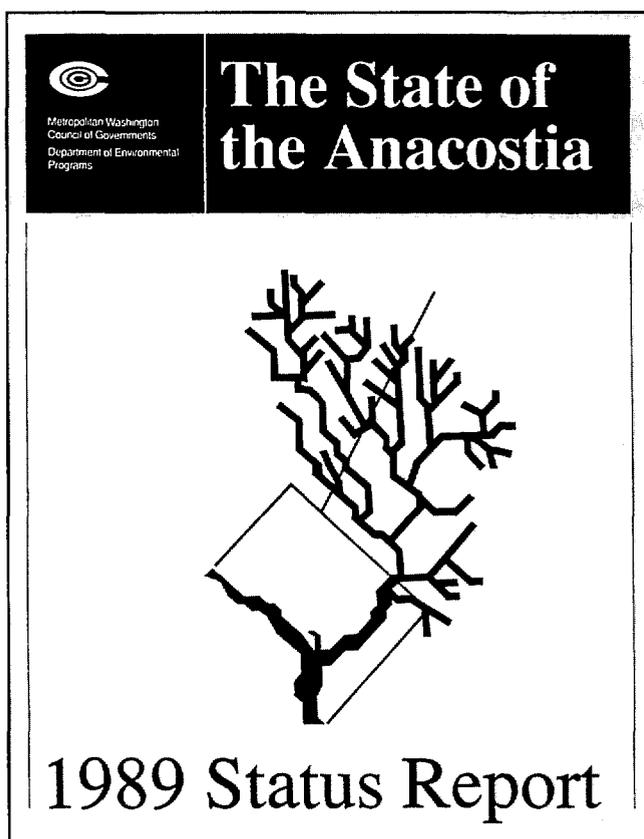
Baltimore Regional Council of Governments

The Baltimore Regional Council of Governments coordinates environmental activities for Baltimore City, Anne Arundel, Baltimore, Carroll, Harford and Howard Counties and area municipalities.

The Regional Council's Development Division conducts environmental research, facilitates inter-local coordination on environmental planning and management, and prepares reports and workshops on a number of issues. Specific activities include:

- Support for the Regional Environmental Board
- Facilitation and staffing of Regional Environmental Technical Teams on a number of issues including:
 - o reservoir watershed protection
 - o open space and greenways
 - o coastal area planning
 - o recycling
- Preparation of a Regional Development Plan, and
- Technical studies of water quality.

Contact: Jim Holway, Coordinator
Environmental Planning
Baltimore Regional COG
2225 North Charles Street
Baltimore, MD 21218-5767
(301) 554-5621



Financing

Financing Local Environmental Protection

The key issue facing local governments as they debate their level of participation in Chesapeake Bay restoration and other environmental activities is -- **Who pays, why, and how?**

Local governments in the Chesapeake Bay watershed, like their counterparts throughout the country, are fighting to meet increasing public service pressures in an era of resource constraints. Local governments serve on the frontlines in tackling issues like environmental protection, illegal drugs, education, transportation, health care, crime, and housing. But, as municipalities attempt to meet these challenges, they often find that existing revenues are inadequate for addressing the service needs of their communities.

Environmental issues in particular will gain increasing attention in this decade. Not since Earth Day in 1970 has public attention to the environment and its place in policy debate received such attention from the public and federal, state, and local policy makers. Debate over the greenhouse effect, acid rain, and water shortages dominate the national agenda, while the local scene is characterized by new found priorities including wastewater, drinking water, and solid waste disposal services.

A 1986 New York Times/CBS poll found that 66 percent of those polled agreed with the statement that "protecting the environment is so important that requirements and standards cannot be too high, and continuing environmental improvements must be made **regardless of cost.**" This represented a steady increase over the 58 percent who agreed with the statement in 1983, and the 45 percent who agreed in 1981. Percentages may be even higher today.

Local government officials must contend with this public perception, and work to meet their requests for high quality of life standards. In attempting to do this, local governments find that the required revenues are often nonexistent. Cutbacks in federal funding, often resulting in cutbacks in state appropriations, leave the burden of fi-

ancing environmental projects squarely on the shoulders of the local governments. To complicate matters, changes to municipal bond structures recently amended into the Tax Code make this more difficult.

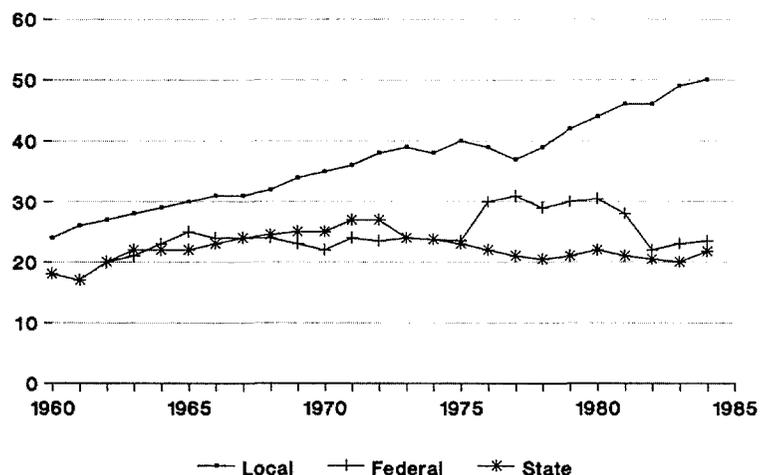
Local Environmental Grant Programs

To overcome this shortfall in funds, local governments are turning to innovative financing mechanisms to meet their mandated environmental goals. Although local governments continue to rely on grants from various state and federal agencies for major infrastructure projects, other alternatives are being explored to meet the large number of need at the environmental front.

For projects including stream retrofitting, river and dump-site clean-up, monitoring, tree planting, and habitat restoration, local governments have been able to utilize innovative financing and volunteer assistance methods to maximize resources and distribute the burden. Local governments are also turning to development of their own local environmental grant programs. Program mechanics are relatively simple:

Local governments make an annual lump sum appropriation from the general fund, or from revenues generated from payment of fines from environmental regulation violations.

Total Public Works Outlays by Level of Government (Billions of 1984 Dollars)



Source:

Apogee Research from Bureau of the Census and *Budget of the US Government*, Various Years (National League of Cities, *Financing Infrastructure at the Local Level*, December 1987)

Financing Local Environmental Protection

Local civic organizations are then encouraged to apply for small grants to carry out environmental projects.

Local funds are matched with community participant funds, so the local government receives double the benefit for half the cost.

These grant programs have been successful in meeting many of the challenges facing local governments, especially in areas where they have neither the available time or resources necessary to accomplish them.

Local governments are also turning to development of public-private partnerships as a mechanism to finance environmental, and specifically Bay restoration, initiatives.

Two examples of these financing programs operating within the Bay watershed that access revenues, and provide for their efficient distribution include:

Anne Arundel County, Maryland Community Services

The program provides necessary local government funds to encourage citizen groups to conduct environmental improvement projects in their communities.

Communities may apply to Anne Arundel County for an environmental grant of up to \$2,000. The community then provides matching funds; the preferred form of which is volunteer time or tools.

This program is a cost efficient way to create environmental improvements in the county because citizens generally know what needs attention and will provide future maintenance of the project area. Community project activities have included:

Installation of bulkheads

Planting of aquatic grasses in conjunction with the County's Emergent Grasses Program (see Wetlands) for erosion control and shoreline stabilization, and

Planting trees and shrubs to enhance open areas for wildlife habitat.

To date, the program has provided over 65 communities with Environmental Grant funds. Although the

number of communities applying for and receiving grants has varied from year to year, the county budgets \$100,000 per year for Grant distribution through Community Services.

Contact: Rosemary Church
Arundel Center North
101 Crain Highway
Glen Burnie, MD 21061
(301) 222-6880

York County, Pennsylvania Action Group to Save the Bay

Creating ties with private enterprise in order to maximize available revenues for Chesapeake Bay and other significant environmental education initiatives, lead to the participation of a member of the York County Commissioners in development of the York County Action Group to Save the Bay.

The York County Action Group to Save the Bay was formed due to the interest of several residents of the county who made a commitment in saving the Bay. Organization and incorporation of the group relied on joint cooperation from representatives of the County Commissioners, the agricultural community, and the local education system.

The Chesapeake Bay Foundation was tied into the mission of the group, working to organize the local/county group with the ability to raise funds for an estuarine field study program in Pennsylvania.

During its first year, the Action Group raised over \$15,000, and in association with the Chesapeake Bay Foundation started a field study program. The local education program involves selected science and agricultural junior and senior high school students from five different school districts in the county.

As the Action Group gains continued credibility it intends to focus additional efforts into improving best management practices by the county's farmers.

Contact: Milton Menchey, M.D.
York County Action Group
to Save the Bay
924 B Colonial Avenue
York, PA 17403
(717) 845-8623

Appendix

Survey responses were received from over 300 local governments throughout the Chesapeake Bay watershed, 275 of which have been catalogued in this Appendix.

The survey asked local governments to indicate those environmental areas in which they had developed specific programs. Each is marked with a “✓.”

Additional information and contacts from these local governments can be obtained by contacting the individual local government or the:

Chesapeake Bay Local Government Advisory Committee
Suite 300
777 North Capitol Street, NE
Washington, D.C. 20002

800-446-5422

	Land Trusts	Land Use Regulation/Zoning	Comprehensive Planning	Trees and Greenspace	Inventory & Mapping	Solid Waste & Recycling	Floodplain/Stormwater Mgmt.	Erosion & Sediment Control	Wetlands	Wildlife & Fisheries Mgmt.	Groundwater Protection	Watershed Protection	Nutrient Management	Point Source Controls	Nonpoint Source Controls	Toxics	Boating Pump-outs	Public Info. & Education
Accomack County, VA		✓	✓			✓		✓										
Adams Twp. (Snyder), PA						✓	✓	✓										
Adams Twp.(Cambria), PA		✓	✓				✓				✓	✓						
Adams County, PA	✓	✓	✓				✓											
Alexandria, VA		✓	✓	✓		✓	✓	✓									✓	
Allegany County, MD				✓														✓
Anne Arundel County, MD	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓				✓		✓
Antrim Township, PA		✓	✓				✓	✓										
Arlington County, VA		✓	✓	✓	✓	✓	✓	✓		✓						✓		
Ashland Boro., PA		✓	✓					✓				✓	✓					
Ashville Boro., PA							✓		✓									
Athens Twp., PA		✓	✓				✓	✓										
Baltimore Regional COG			✓	✓	✓	✓						✓	✓					✓
Barr Twp., PA						✓												
Bear Creek Twp., PA			✓			✓	✓					✓						
Beavertown Boro., PA						✓	✓	✓			✓	✓						
Benzinger Twp., PA		✓	✓			✓	✓	✓	✓		✓	✓				✓		
Berks County, PA	✓	✓	✓			✓		✓	✓									
Berryville, VA			✓															
Bethel Twp., PA		✓	✓				✓	✓										
Bingham Twp., PA	✓					✓	✓	✓										
Blair County, PA													✓					✓
Blakely Boro., PA		✓	✓			✓	✓											
Blossburg, PA		✓	✓			✓	✓							✓				
Bradford Co. Cons. Dist., PA				✓	✓			✓	✓			✓	✓		✓			✓
Bradford County, PA	✓	✓	✓				✓	✓										
Brady Twp. (Clearfield)	✓		✓				✓				✓							

	Land Trusts	Land Use Regulation/Zoning	Comprehensive Planning	Trees and Greenspace	Inventory & Mapping	Solid Waste & Recycling	Floodplain/Stormwater Mgmt.	Erosion & Sediment Control	Wetlands	Wildlife & Fisheries Mgmt.	Groundwater Protection	Watershed Protection	Nutrient Management	Point Source Controls	Nonpoint Source Controls	Toxics	Boating Pump-outs	Public Info. & Education
Brady Twp. (Huntingdon), PA						✓	✓											
Brecknock Twp., PA	✓		✓															
Broad Top City Boro., PA												✓						
Brunswick, MD			✓		✓			✓										
Brush Creek Twp., PA					✓													
Buffalo Twp., PA			✓		✓													
Burlington Twp., PA						✓												
Butler Twp., PA	✓	✓	✓			✓												
Cameron County, PA		✓				✓	✓				✓							
Cape Charles, VA		✓	✓				✓	✓	✓								✓	
Carlisle Boro., PA		✓	✓	✓			✓	✓				✓	✓	✓		✓		✓
Caroline County, VA		✓	✓				✓	✓										
Carroll County, MD	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓		✓
Carrolltown Boro., PA				✓		✓		✓		✓								
Cass Twp., PA						✓												
Cecil County, MD		✓	✓	✓	✓	✓	✓	✓	✓				✓					
Centre Twp., PA							✓											
Centre Co. Cons Dist., PA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓
Chapman Twp., PA								✓			✓	✓						
Charles City Co., VA		✓	✓		✓		✓	✓										
Chesapeake, VA			✓	✓			✓	✓	✓			✓			✓			✓
Chesterfield County, VA			✓			✓	✓	✓	✓					✓	✓	✓		✓
Chincoteague, VA			✓			✓		✓	✓					✓			✓	
Choconut Twp., PA							✓											
Clarks Summit Boro., PA			✓			✓	✓											
Clarks Green Boro., PA						✓												
Cogan House Twp., PA	✓																	

	Land Trusts	Land Use Regulation/Zoning	Comprehensive Planning	Trees and Greenspace	Inventory & Mapping	Solid Waste & Recycling	Floodplain/Stormwater Mgmt.	Erosion & Sediment Control	Wetlands	Wildlife & Fisheries Mgmt.	Groundwater Protection	Watershed Protection	Nutrient Management	Point Source Controls	Nonpoint Source Controls	Toxics	Boating Pump-outs	Public Info. & Education
Conestoga Twp., PA	✓																	
Conygham Boro., PA		✓	✓				✓	✓				✓					✓	
Covington Twp. (Tioga), PA		✓	✓					✓										
Covington Twp., PA		✓	✓			✓		✓										
Cumberland Co. Cons. Dist., PA	✓			✓				✓	✓	✓	✓	✓	✓	✓	✓			✓
Cumberland Twp., PA		✓	✓			✓	✓											
Cummings Twp. PA		✓				✓	✓											
Dallas Boro., PA		✓	✓		✓		✓		✓		✓							
Dallastown Boro., PA		✓	✓				✓											
Dauphin Boro., PA		✓	✓				✓											
Dauphin Co. Cons. Dist., PA	✓						✓	✓					✓					✓
Denver Boro., PA							✓											
Derry Twp. (Montour), PA		✓					✓	✓	✓		✓	✓						
Derry Twp. (Dauphin), PA		✓	✓			✓	✓	✓										
E. Hanover Twp., PA		✓	✓				✓											
E. Petersburg Twp., PA		✓					✓											
E. Buffalo Twp., PA		✓	✓			✓	✓	✓				✓						
E. Brunswick Twp., PA	✓	✓			✓	✓	✓	✓	✓									
Eagles Mere Boro., PA		✓				✓												
Eastern Shore SWCD, VA								✓										
Eden Twp., PA							✓											
Elmhurst Twp., PA		✓	✓	✓		✓	✓	✓	✓		✓						✓	
Ephrata Twp., PA			✓				✓											
Eulalia Twp., PA			✓															
Fairfax County, VA	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓			✓	✓		✓
Fairview Twp., PA	✓	✓					✓	✓	✓			✓		✓	✓			
Falls Church, VA			✓			✓	✓											

	Land Trusts	Land Use Regulation/Zoning	Comprehensive Planning	Trees and Greenspace	Inventory & Mapping	Solid Waste & Recycling	Floodplain/Stormwater Mgmt.	Erosion & Sediment Control	Wetlands	Wildlife & Fisheries Mgmt.	Groundwater Protection	Watershed Protection	Nutrient Management	Point Source Controls	Nonpoint Source Controls	Toxics	Boating Pump-outs	Public Info. & Education
Farmington Twp., PA							✓											
Fishing Creek Twp., PA							✓											
Franklin Twp. (Columbia), PA								✓					✓					
Frederick County, MD	✓	✓	✓			✓	✓	✓	✓		✓	✓						
Frederick, MD		✓	✓	✓		✓	✓	✓				✓		✓				
Freeland Boro., PA						✓												
Galeton Boro., PA				✓		✓												
Garrett County, MD	✓	✓	✓				✓	✓										
Gettysburg Boro., PA		✓	✓	✓		✓	✓				✓							
Graham Twp., PA			✓				✓											
Gratz Boro., PA	✓	✓	✓				✓											
Greencastle Boro., PA		✓	✓	✓			✓											
Greene Twp., PA	✓	✓	✓				✓	✓	✓									
Greenfield Twp., PA		✓	✓				✓		✓									
Greenwood Twp., PA		✓	✓			✓	✓											
Gregg Twp., PA	✓	✓	✓			✓	✓	✓										
Hallam Boro., PA		✓																
Hallwood, VA							✓											
Hamilton Twp., PA	✓						✓	✓										
Hampton, VA		✓		✓					✓			✓		✓	✓			
Hanover Boro., PA		✓	✓	✓	✓	✓	✓	✓			✓	✓		✓				✓
Harford County, MD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						✓
Harris Twp., PA			✓			✓	✓	✓										
Harrisburg, PA		✓		✓		✓	✓	✓	✓				✓	✓				
Hebron Twp., PA						✓	✓											
Henrico County, VA			✓		✓	✓	✓	✓			✓					✓		
Herndon Boro., PA						✓	✓											

	Land Trusts	Land Use Regulation/Zoning	Comprehensive Planning	Trees and Greenspace	Inventory & Mapping	Solid Waste & Recycling	Floodplain/Stormwater Mgmt.	Erosion & Sediment Control	Wetlands	Wildlife & Fisheries Mgmt.	Groundwater Protection	Watershed Protection	Nutrient Management	Point Source Controls	Nonpoint Source Controls	Toxics	Boating Pump-outs	Public Info. & Education
Hollenback Twp., PA							✓											
Hollidaysburg Boro., PA		✓		✓			✓											
Howard County, MD	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓			✓
Huntington Twp., PA		✓					✓											
Isle of Wight Co., VA					✓				✓						✓			
Jackson Twp., PA		✓	✓															
Jacobus Boro., PA						✓	✓											
James City County, VA	✓	✓	✓				✓	✓	✓		✓	✓						
Jefferson Twp., PA	✓	✓	✓			✓	✓	✓				✓	✓					
Johnsonburg Boro., PA		✓	✓	✓		✓	✓	✓				✓						
Juniata Terrace Boro., PA		✓		✓		✓												
Kent County, MD	✓	✓	✓	✓			✓	✓	✓	✓			✓				✓	
King George County, VA							✓	✓										
Kistler Twp., PA														✓				
Knox Twp., PA							✓											
Laceyville Boro., PA			✓			✓	✓				✓							
Lackawanna County, PA						✓	✓											
Laflin Boro., PA		✓				✓	✓											
Lamar Twp., PA			✓				✓											
Lancaster Co. Cons. Dist.	✓			✓		✓	✓	✓			✓	✓	✓	✓	✓			✓
Lancaster County, PA	✓		✓				✓	✓										
Lancaster, PA		✓	✓	✓		✓	✓	✓										
Lancaster Twp., PA		✓	✓				✓	✓										
Leacock Twp., PA		✓	✓				✓											
Lemoyne Boro., PA			✓				✓	✓										
Lewis Twp.(Northumberland), PA		✓																
Lewisburg Boro., PA	✓	✓	✓	✓		✓	✓	✓								✓		

	Land Trusts	Land Use Regulation/Zoning	Comprehensive Planning	Trees and Greenspace	Inventory & Mapping	Solid Waste & Recycling	Floodplain/Stormwater Mgmt.	Erosion & Sediment Control	Wetlands	Wildlife & Fisheries Mgmt.	Groundwater Protection	Watershed Protection	Nutrient Management	Point Source Controls	Nonpoint Source Controls	Toxics	Boating Pump-outs	Public Info. & Education
Liberty Boro., PA						✓	✓											
Liberty Twp. (Centre), PA		✓	✓				✓											
Liberty Twp. (Tioga), PA						✓	✓											
Lincoln Twp., PA							✓											
Littlestown Boro., PA		✓				✓												
Liverpool Boro., PA		✓	✓			✓								✓				
Logantown Twp., PA	✓			✓		✓												
Loudon County, VA											✓		✓		✓	✓		
Lower Windsor, Twp., PA		✓					✓	✓										
Lower Frankford Twp., PA							✓											
Loyalsock Twp., PA						✓	✓											
Lykens Boro., PA				✓		✓	✓											
Lykens Twp., PA			✓															
Manassas, VA			✓	✓	✓	✓	✓	✓				✓		✓	✓			
Manheim Twp., PA		✓	✓				✓	✓										
Martic Twp., PA		✓	✓		✓	✓		✓										
McConnellsburg Boro., PA						✓												
McSherrystown Boro., PA						✓	✓	✓										
Melfa, VA		✓				✓	✓											
Middlesex Twp., PA		✓	✓				✓											
Milford Twp., PA		✓				✓	✓											
Miller Twp., PA						✓	✓											
Millersburg Boro., PA				✓			✓											
Millheim Boro., PA							✓				✓	✓						
Monaghan Twp., PA		✓	✓															
Monroe Boro., PA		✓					✓											
Monroe Twp.(Snyder), PA		✓	✓															

	Land Trusts	Land Use Regulation/Zoning	Comprehensive Planning	Trees and Greenspace	Inventory & Mapping	Solid Waste & Recycling	Floodplain/Stormwater Mgmt.	Erosion & Sediment Control	Wetlands	Wildlife & Fisheries Mgmt.	Groundwater Protection	Watershed Protection	Nutrient Management	Point Source Controls	Nonpoint Source Controls	Toxics	Boating Pump-outs	Public Info. & Education
Montgomery Twp., PA		✓	✓					✓					✓					
Montgomery SCD, MD							✓	✓				✓	✓					✓
Morris Twp., PA						✓												
Mount Joy Boro., PA		✓		✓		✓	✓	✓										
Mountville Boro., PA						✓	✓											
Muncy Twp., PA	✓						✓											
N. Branch Twp., PA							✓											
N. Cornwall Twp., PA	✓	✓	✓				✓	✓										
N. Londonderry Twp., PA		✓	✓			✓												
Napier Twp., PA						✓	✓											
Nescopeck Twp., PA		✓	✓				✓	✓	✓			✓		✓				
New Philadelphia Boro., PA						✓												
New Kent Co., VA	✓	✓	✓					✓										
New Salem Boro. (York)		✓	✓													✓	✓	
Newberry Twp., PA			✓															
Newport News, VA		✓	✓	✓		✓	✓	✓				✓		✓	✓			
Newry Boro., PA			✓															
Nippenose Twp., PA		✓	✓				✓											
Norfolk, VA		✓	✓			✓			✓			✓						
Northumberland Boro., PA						✓		✓										
Olyphant Boro., PA		✓	✓			✓	✓	✓										
Oneida Twp., PA			✓				✓											
Orange Twp., PA							✓				✓							
Oswayo Twp., PA						✓												
Overfield Twp., PA														✓				
Palmyra Boro., PA		✓	✓			✓	✓	✓										
Paradise Twp., PA		✓	✓			✓	✓											

	Land Trusts	Land Use Regulation/Zoning	Comprehensive Planning	Trees and Greenspace	Inventory & Mapping	Solid Waste & Recycling	Floodplain/Stormwater Mgmt.	Erosion & Sediment Control	Wetlands	Wildlife & Fisheries Mgmt.	Groundwater Protection	Watershed Protection	Nutrient Management	Point Source Controls	Nonpoint Source Controls	Toxics	Boating Pump-outs	Public Info. & Education
Patton Boro., PA			✓				✓	✓		✓								
Peach Bottom Twp., PA	✓	✓	✓				✓											
Penn Twp. (Huntingdon)			✓			✓	✓						✓		✓			
Pennbrook Boro., PA						✓												
Pequea Twp., PA			✓	✓	✓	✓		✓			✓		✓					✓
Peters Twp., PA	✓						✓	✓										
Philipsburg Boro., PA		✓	✓	✓				✓		✓								
Pillow Boro., Pa							✓											
Plymouth Twp., PA		✓	✓															
Port Royal Boro., PA						✓	✓				✓	✓						
Porter Twp., PA		✓	✓															
Portsmouth, VA									✓									
Prince William County, VA		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	
Queen Anne's County, MD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Reed Twp., PA						✓	✓											
Richmond County, VA		✓			✓													
Richmond Twp., PA						✓												
Roaring Springs Boro., PA							✓											
Royalton Boro., PA							✓	✓										
Rush Twp., PA		✓	✓															
S. Centre Twp., PA		✓	✓			✓	✓											
S. Waverly Boro., PA		✓				✓	✓											
S. Williamsport Boro., PA			✓			✓	✓	✓										
S. Londonderry Twp., PA		✓	✓				✓											
S. Lebanon Twp., PA	✓	✓	✓				✓	✓										
S. Woodbury Twp., PA							✓											
Salem Twp., PA	✓	✓					✓											

	Land Trusts	Land Use Regulation/Zoning	Comprehensive Planning	Trees and Greenspace	Inventory & Mapping	Solid Waste & Recycling	Floodplain/Stormwater Mgmt.	Erosion & Sediment Control	Wetlands	Wildlife & Fisheries Mgmt.	Groundwater Protection	Watershed Protection	Nutrient Management	Point Source Controls	Nonpoint Source Controls	Toxics	Boating Pump-outs	Public Info. & Education
Salisbury Twp., PA		✓	✓				✓											
Scranton, PA		✓	✓			✓	✓	✓										✓
Silver Spring Twp., PA		✓	✓				✓											
Snow Shoe Twp., PA			✓			✓												
Somerset County, MD		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓			✓
Southeastern VA PDC, VA						✓	✓				✓				✓	✓		✓
Southwest Madison Twp., PA	✓			✓	✓	✓	✓	✓		✓						✓		
Spring Garden Twp.(York), PA		✓	✓		✓	✓	✓	✓										
Spring Grove Boro., PA						✓	✓											
Springfield Twp., PA	✓	✓	✓				✓											
Suffolk, VA		✓	✓	✓				✓	✓									
Surry Co., VA			✓															
Susquehanna Depot Boro., PA		✓	✓			✓	✓											
Sylvania Boro., PA						✓												
Taylor Twp., PA							✓											
Terry Twp., PA							✓											
Thompson Twp., PA	✓																	
Throop Boro., PA		✓	✓			✓										✓		
Todd Twp., PA						✓	✓											
Tremont Twp., PA							✓											
Tri-County COG, MD		✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Tri-County RPC, PA		✓	✓			✓			✓									
Turbett Twp., PA						✓		✓			✓		✓					
Tuscarora Twp., PA	✓	✓	✓		✓	✓	✓	✓			✓	✓						
Tyrone Twp., PA	✓		✓															
Ulysses Boro., PA				✓		✓												
Union Twp.(Clearfield), PA						✓	✓											

	Land Trusts	Land Use Regulation/Zoning	Comprehensive Planning	Trees and Greenspace	Inventory & Mapping	Solid Waste & Recycling	Floodplain/Stormwater Mgmt.	Erosion & Sediment Control	Wetlands	Wildlife & Fisheries Mgmt.	Groundwater Protection	Watershed Protection	Nutrient Management	Point Source Controls	Nonpoint Source Controls	Toxics	Boating Pump-outs	Public Info. & Education
Union County Cons. Dist., PA	✓							✓					✓					✓
Union Twp. (Lebanon), PA		✓	✓				✓											
Upper Yoder Twp., PA						✓												
Valley Twp., PA		✓	✓															
Vienna, VA		✓	✓	✓														
Virginia Beach, VA		✓		✓	✓	✓	✓		✓	✓	✓		✓		✓	✓	✓	✓
W. Lampeter Twp., PA			✓			✓	✓	✓	✓	✓								
W. Pennsboro Twp., PA		✓	✓			✓	✓											
Walker Twp., PA		✓	✓			✓	✓											
Walkersville, MD		✓	✓	✓			✓	✓										
Warwick Twp., PA	✓	✓	✓			✓	✓	✓	✓			✓	✓					
Washingtonville Boro., PA						✓												
West Wyoming Boro., PA		✓				✓	✓											
Wicomico County, MD		✓	✓			✓	✓											
Williams Twp., PA									✓	✓		✓						
Windham Twp., PA	✓																	
Windsor Boro., PA		✓	✓			✓	✓	✓										
Winterstown Boro., PA	✓	✓	✓			✓												
Wolf Twp., PA		✓	✓				✓											
Worcester County, MD	✓	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	
Worth Twp., PA							✓											
Wrightsville Boro.							✓											
City of York, PA			✓	✓		✓	✓	✓									✓	
York Springs Boro., PA	✓						✓		✓									
York County, VA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓			✓
York County, PA		✓	✓			✓												✓
York Co. PA Cons. Dist.				✓				✓	✓			✓	✓		✓			✓

Credits

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Chesapeake Bay Foundation

Skip Brown, University of Maryland Sea Grant College

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