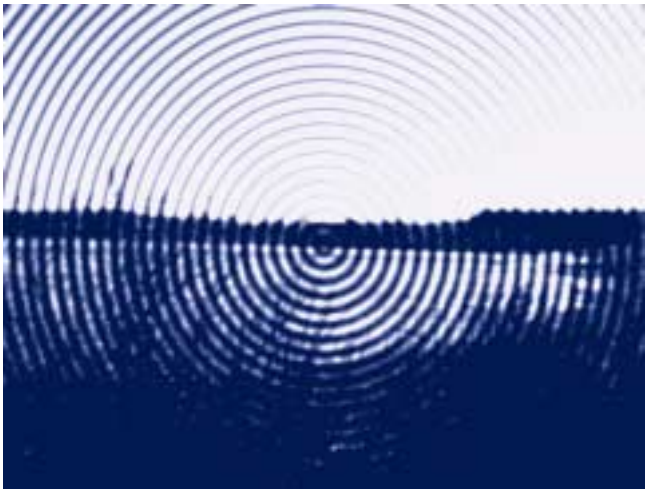
UPPER CHOPTANK RIVER
STRATEGIC WATERSHED RESTORATION ACTION PLAN



Five-Year Strategic Plan for Assisting in the Restoration of the Upper Choptank River Watershed in Caroline and Talbot Counties, Maryland.

Prepared by: The Caroline and Talbot County Departments of Planning, the Talbot County Department of Public Works, the Caroline and Talbot County Soil Conservation Districts, Choptank Tributary Team, University of Maryland Center for Environmental Science, the Maryland Department of Agriculture, and the Maryland Department of Natural Resources

May 2003

Choptank River: Strategic Watershed Restoration Action Plan
May 2003 "Draft"

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ATTACHMENTS

Upper Choptank River Watershed Characterization, as prepared by the Maryland Department of Natural Resources and Caroline and Talbot Counties; and

Upper Choptank River Watershed Synoptic Sampling, as prepared by the Maryland Department of Natural Resources.

INTRODUCTION

In January of 2002, Caroline and Talbot Counties jointly began preparation of a *Watershed Restoration Action Strategy* (WRAS) for the Upper Choptank River Watershed. Partners included the Maryland Departments of Agriculture (MDA) and Natural Resources (DNR), the Caroline and Talbot County Soil Conservation Districts, the Choptank River Tributary Team, and University of Maryland Center for Environmental Studies (UMCES).

VISION STATEMENT: Improve the water quality in the Upper Choptank River Watershed by reducing point and non-point source pollution through the implementation of targeted long-term action strategies, policies, and regulations.

The WRAS process consists of phased elements to identify the most important causes of water quality degradation on a localized watershed-by-watershed basis. The WRAS process also provides detailed implementation measures needed to address water quality problems and establish a process by which to measure performance.

In September of 2002, the *Upper Choptank River Watershed Characterization* was completed by DNR (Watershed Services) in partnership with the local governments of Caroline and Talbot Counties. The *Upper Choptank River Watershed Characterization* forms the foundation and basis for this *Strategic Watershed Restoration Action Plan for the Upper Choptank River* (Strategic Plan).

As a continuation of the WRAS program, the Strategic Plan provides an implementation mechanism to address policies to improve water quality and reduce pollution in the Upper Choptank River Watershed. The Strategic Plan highlights goals, objectives, and action strategies based on a realistic time-frame from January 2003 to January 2008. The time-frame is based on a five-year period for implementation and does not reflect costs, which will need to assessed on an individual basis as tasks progress and costs are determined.

CHAPTER I: BACKGROUND

Under the 1998 *Maryland Clean Water Action Plan*, the State conducted a "Unified Watershed Assessment" for each of its 58 watersheds. The Choptank River was cited as a "Priority One Restoration Watershed," according to US Environmental Protection Agency (EPA) standards under the Federal *Clean Water Act*, being impaired by one or more pollutants, such as nutrients, sediments, toxic substances, acidity, or fecal coliform.

Land Use: The Upper Choptank Watershed has approximately 162,000 acres included within the WRAS project (72% of the total Watershed). Remaining portions of the watershed exist in Delaware and Queen Anne's County, Maryland. According to land use data from the Maryland Department of Planning (MDP) for the Upper Choptank watershed: 60% is Agricultural; 30% is Forest/Brush Land; and 8% is Developed.

Watershed Drainage: Large areas of land used for agriculture or development are located on poorly drained hydric soils. Many of these areas are drained by water courses maintained by Public Drainage Associations (PDA's) with assistance from the Caroline County Soil Conservation District and the Maryland Department of Agriculture. The maintenance of adequate drainage is a key element for preserving the economic viability of agriculture in the watershed and for reducing pollution.

Federal/State Water Quality Initiatives: As an element to improve water quality, Total Maximum Daily Loads or TMDL's establish limits on the amount of pollutants permitted from each potential source through an allocation system, as the sum of allowable loads of a single pollutant from all contributing point and non-point sources. A TMDL is a calculation of the maximum amount of a pollutant that a water-body can receive and still meet water quality standards. Water quality standards identify the uses for each water-body, for example, drinking water supply, contact recreation (swimming), and aquatic life support (fishing), and the scientific criteria to support that use. Any TMDL calculation must include a margin of safety to ensure that the water-body can be used for the purposes that the State has designated. The *Clean Water Act*, Section 303, establishes water quality standards and TMDL programs.

County Water Quality Initiatives: Policies in Caroline and Talbot Counties identify natural resources as a fundamental part of County character and a vital part of what makes communities an attractive place to live and work. Natural resource management, whether for the purpose of protection or utilization (as in the case of forest and mineral resources), requires the use of current "Best Management Practices" (BMP's). Although, each County requires many of these BMP's, such as Chesapeake Bay Critical Areas, Sensitive Areas, Forest Conservation, Floodplain, and Stormwater Management, and Erosion and Sediment Control regulations, more refinements are needed, including:

- Better stream protection standards;
- More cooperation between public and private entities for land protection programs;
- More cooperation between public and private entities for water quality improvement; and
- Improved overall resource management and dedicated funding.

CHAPTER II: GOALS, OBJECTIVES, & ACTION STRATEGIES

Section 1: Cover Crops

Description: Cover crops on agricultural lands have been identified as the most effective management strategy to reduce the amount of nitrogen, phosphorus, and sediments that enter the waters of Upper Choptank River Watershed. Cover crops are highly effective in reducing nutrients and sediments from surface flows. Cover crops also are recognized as the most effective way to reduce nitrate leaching into groundwater.

Nutrient reduction goals for the watershed can not be met without an effective long-term cover crop program.

Goal

Establish a long-term permanently funded cover crop program for the Upper Choptank River Watershed to reduce non-point source pollution and improve water quality.

Objectives

Objective #1: Develop an *Upper Choptank River Cover Crop Program* to be administered by Caroline and Talbot County Soil Conservation Districts as part of standard BMP's for farms.

Objective #2: Identify potential current funding sources to assist in the implementation of an *Upper Choptank River Cover Crop Program*, for example Federal initiatives such as Congressman Gilchrest's "Conservation Corridor Program."

Objective #3: Review the feasibility of nutrient trading through special fees to supply permanent funding for a *Maryland Cover Crop Program*, as part of a larger BMP strategy for farmers.

Objective #4: Initiate and promote legislative action to develop a fully funded *Maryland Cover Crop Program* to be administered by State Soil Conservation Districts through Maryland Department of Agriculture.

Action Strategy

Currently, the Caroline and Talbot County Soil Conservation Districts, with assistance from the Maryland Department of Agriculture, are proposing an *Upper Choptank River Cover Crop Program* to assist in the reduction of non-source point pollution within the watershed. A comprehensive and permanently funded cover crop program is endorsed by the Choptank Tributary Team as the most important measure for restoring water quality in the region.

The success of a cover crop program depends on funding and must be a multi-agency and multi-jurisdictional effort, including Maryland Soil Conservation, the Maryland Department of Agriculture, Maryland Tributary Teams, Maryland Department of Natural Resources, Maryland Department of the Environment, US Department of Agriculture, US Army Corps of Engineers, US Environmental Protection Agency, and US Coastal Zone Management.

Action Strategy - Cover Crop Program: Task and Time-line					
Time-Line	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**
Task 1: Continually develop the Upper Choptank Cover Crop Program through Soil Conservation District and MDA.	X	X	X	X	X
Task 2: Actively seek sources of potential funding through local, state, and federal grants and programs to create and administer the Upper Choptank Cover Crop Program.	X	X	X	X	X
Task 3: Develop a feasibility study to research nutrient trading through special sewer fees.		X			
Task 4: Initiate legislative action to develop a multi-year funded MD Cover Crop Program.			X		
Task 5: Establish mechanisms to track the success of Cover Crop Programs.					X

Section 2: Public Drainage Associations (PDA's)

Description: The Soil Conservation District for Caroline County assists Public Drainage Associations (PDAs), which are cooperative programs for agricultural drainage with local landowners that manage drainage ditches. As an historical legacy, public drainage ditches for farmland were first channelized in the late 1700's. PDA's are located almost exclusively in rural Eastern Shore Counties with 343.6 miles of manmade channels in Caroline County alone. Due to the County's flat topography, drainage ditches are vital to the healthy functioning and productivity of farms. They also benefit the County's highway system, towns, and residential properties, by assisting in the drainage of excess water. PDA's are inspected annually by PDA managers and Soil Conservation District personnel to identify maintenance needs.

Goal

Establish a long-term permanently funded maintenance and buffer program for PDA's for the Upper Choptank River Watershed to reduce non-point source pollution and improve water quality.

Objectives

Objective #1: Develop improved information systems for PDA management, including Geographic Information Systems (GIS) data and high resolution digital photography to assist mapping efforts.

Objective #2: Develop materials and information to assist farmers in implementing a *PDA Maintenance and Buffer Program* to reduce nutrients and sediments in water courses.

Objective #3: Identify potential funding sources to assist in the implementation of a *PDA Maintenance and Buffer Program*, for example Federal initiatives such as Congressman Gilchrest's "Conservation Corridor Program."

Objective #4: Initiate and promote legislative action to develop a fully funded *PDA Maintenance and Buffer Program* to be administered by State Soil Conservation Districts and Public Drainage Associations through MDA.

Action Strategy

Currently, the Caroline County Soil Conservation District assist Public Drainage Associations to manage drainage ditches. These efforts assist in the reduction of non-point source pollution within the watershed. A comprehensive and permanently funded *PDA Maintenance and Buffer Program* is an important measure for restoring water quality in the region. PDA maintenance may require a coordinated State and Federal effort to refine management requirements for threatened and endangered species habitat that may exist in water courses (the objective of this process should be to prepare more accurate habitat maps, verify species presence, and streamline permit approval processes for maintenance).

The success of a *PDA Maintenance and Buffer Program* depends on funding and must be a multi-agency and multi-jurisdictional effort, including local County and Municipal governments, Maryland Soil Conservation Districts, the Maryland Department of Agriculture, Maryland Tributary Teams, Maryland Department of Natural Resources, Maryland Department of the Environment, US Department of Agriculture, US Army Corps of Engineers, US Environmental Protection Agency, and US Coastal Zone Management.

Action Strategy – PDA Buffer Maintenance Program: Task and Time-line					
Time-Line	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**
Task 1: Develop improved GIS and other data/information to assist agencies and farmers in PDA maintenance.	X	X	X	X	X
Task 2: Actively seek sources of potential funding through local, state, and federal grants and programs to create and administer *PDA Maintenance and Buffer Programs*.	X	X	X	X	X
Task 3: Initiate legislative action to develop a fully funded *PDA Maintenance and Buffer Program*.			X		
Task 4: Establish mechanisms to track the success of *PDA Maintenance and Buffer Programs*.					X

Section 3: Wetlands, Buffers, & Forests

Description: Wetlands are lands continuously or intermittently inundated with water. Tidal wetlands are found along tidal rivers and streams and are subject to the rise and fall of tides. Non-tidal wetlands are influenced by surface and groundwater. Both types of wetlands host a myriad of plants that contribute to the natural food chain and also act as a filter for pollution from land sources. Caroline County contains a preponderance of non-tidal wetlands, whereas Talbot County contains many tidal wetlands. Wetlands are protected by federal and state regulations.

Buffers along wetlands, shorelines, and streams are currently governed by federal, state, and local regulations. However, buffer establishment and maintenance is an extremely effective means of preventing nutrient and sediments from entering surface waters. Buffers can be established and enhanced in many areas of the watershed.

Maryland's *Forest Conservation Act of 1991* (Natural Resources Article Sections 5-1601-5-1613) was enacted to protect the forested areas of Maryland by making forest conditions and character an integral part of the development site planning process. The *Forest Conservation Act* is regulated by the Maryland Department of Natural Resources, but implemented and administered by local government. It seeks to maximize the benefits of forests and slow the loss of forestland in Maryland, while still allowing development to take place. Forested areas and regions within Caroline and Talbot Counties are subject to the forest conservation regulations. Development must account for forested areas, insuring that these resources are protected and enhanced for habitat and water quality protection.

Goal

Improve current management techniques to protect wetlands, buffers, and forests in Caroline and Talbot Counties, as an overarching watershed restoration strategy.

Objectives

Objective #1: Develop improved information systems for wetlands, buffers, and forest conservation management, including Geographic Information Systems (GIS) data and high resolution digital photography to assist mapping efforts.

Objective #2: Enforce the *Floodplain Management Ordinance* in Caroline and Talbot Counties, including Caroline County's continued participation in the Federal Emergency Management Agency's (FEMA) *Community Rating System Program* (CRS), *Stormwater Management*, *Erosion and Sediment Control Regulations*, *Forest Conservation Ordinances*, and *Chesapeake Bay Critical Areas Programs*.

Objective #3: Continue to cooperate with State and Federal agencies and entities for the protection of wetlands by utilizing the National Wetlands Inventory (NWI), Soil Surveys, and on-site jurisdictional wetlands delineation as an indicator of wetland presence during the development review process and insuring that proposed developments comply with existing wetland protection regulations.

Objective #4: Request funding for continued Synoptic Sampling in the Upper Choptank River Watershed.

Action Strategy

Currently, Caroline and Talbot Counties administer local regulations related to water quality, including the *Chesapeake Bay Critical Areas Program*, *Floodplain Management Ordinance*, *Forest Conservation Ordinance*, *Stormwater Management*, and *Erosion and Sediment Control Regulations*. The *Upper Choptank River Watershed Characterization*, continued synoptic water quality sampling, and this Strategic Plan will assist efforts to enhance current management and protection of the watershed.

Caroline and Talbot Counties are currently developing high resolution digital aerial photography and improved GIS systems and data. This new information technology will be utilized in the improved management and protection of wetlands, buffers, and forests.

Action Strategy – Wetlands, Buffers, and Forests: Task and Time-line					
Time-Line	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**
Task 1: Develop improved GIS and other data/information to assist in the management of natural resources.	X	X	X	X	X
Task 2: Enforce County regulations for sensitive areas.	X	X	X	X	X
Task 3: Assist municipal areas to develop regulations for sensitive areas and improve current information systems.	X	X	X	X	X
Task 4: Request funding for continued synoptic water quality sampling in the Upper Choptank Watershed for a minimum of two more years.		X	X		

Section 4: Updated Soil Surveys

Description: An updated soil survey for Caroline and Talbot Counties will assist farmers in the application of BMP's and aid in the local development review process. The soil survey can be digitized and integrated with new GIS software and high resolution aerial photography, presently being prepared by both Counties.

Goal

Develop an updated digital soil survey that is integrated with current GIS technology and high-resolution aerial photography to assist agriculture, forestry, and for development review.

Objectives

Objective #1: Develop improved information systems for soils, including Geographic Information Systems (GIS) data and high resolution digital photography to assist mapping efforts.

Objective #2: Identify potential funding sources to assist in the implementation of an updated soil survey, for example Federal initiatives such as Congressman Gilchrest's "Conservation Corridor Program."

Objective #3: Complete the updated soil survey for Caroline and Talbot Counties.

Objective #4: Integrate the soil survey and County GIS data to produce a soils overlay layer for Caroline and Talbot Counties.

Action Strategy

Both the Caroline and Talbot County Soil Surveys were completed in the 1960's and are outdated and need to be updated and revised. Soil survey work is underway in Talbot County and is scheduled for Caroline County in 2004-2005. The integration of soil surveys with County GIS systems and high resolution aerial photography will require expert assistance to create an adequate overlay layer.

The success of soil survey and GIS integration will depend on funding and must be a multi-agency and multi-jurisdictional effort, including local County governments, Maryland Soil Conservation Districts, the Maryland Department of Agriculture, Maryland Department of Natural Resources, Maryland Department of the Environment, US Department of Agriculture, and US Army Corps of Engineers.

Action Strategy – Updated Soil Surveys: Task and Time-line					
Time-Line	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**
Task 1: Develop improved GIS and other data/information that can be applied to soils.	X	X			
Task 2: Actively seek sources of potential funding through local, state, and federal grants and programs to prepare an updated soil survey.	X	X			
Task 3: Complete soil survey and integrate data with County GIS systems.			X		

Section V: On-Site Sewage Disposal Systems (OSDS) and Groundwater protection

Description: An inventory of existing on-site sewage disposal systems, and an assessment of the pollution that enters surface waters and groundwater from such systems, is an important component toward eventually reducing the amount of nutrients that enter waterways. On-site sewage disposal systems in the watershed can be subject to periodic flooding in low-lying coastal areas or subject to high seasonal ground water, which can potentially contaminate water resources. Improperly sited and maintained on-site sewage disposal systems can pose serious risks to water resources and the public health.

Goal

Develop regional OSDS data, approval standards, management policies, and action strategies.

Objectives

Objective # 1: Delineate areas within Caroline and Talbot Counties that now or in the future have serious development constraints for OSDS.

Objective #2: Delineate nutrient sensitive watersheds in priority areas using existing data and inventory of OSDS, highlighting potential problem areas.

Objective #3: Develop improved regional information systems utilizing Global Positioning Systems (GPS) and Geographic Information Systems (GIS) through Salisbury University and the Mid-Shore Regional Council (MSRC) to improve mapped information and data for problematic watersheds.

Objective #4: Incorporate OSDS information into local plans, such as County Master Water and Sewer Plans and Groundwater Protection Reports.

Objective #5: Update Groundwater Protection Reports for Caroline and Talbot Counties in cooperation with the local Health Department and the Maryland Department of the Environment to protect surface and groundwater resources from contamination by OSDS.

Objective #6: Review current OSDS guidelines/procedures and develop OSDS maintenance, management, and permitting policies.

Action Strategy

The Mid-Shore Regional Council with the cooperation of the Maryland Department of Natural Resources and the local governments of Caroline, Dorchester, and Talbot Counties, have initiated a On-Site Sewage Disposal Study for the region, including the Upper Choptank River watershed.

The success of developing effective OSDS strategies, management organizations, and permitting procedures through this efforts will depend on funding and must be a multi-agency and multi-jurisdictional effort, including local Health Departments, County and Municipal governments, Maryland Department of Natural Resources, and the Maryland Department of the Environment.

Action Strategy – OSDS Policies and Regulations: Task and Time-line					
Time-Line	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**
Task 1: Delineate sewer problem areas and nutrient sensitive watersheds.	X				
Task 2: Inventory OSDS within the Mid-Shore region and highlight potential problem areas.	X				
Task 3: Develop GPS/GIS regional data for OSDS to assist in the development of management policies.		X			
Task 4: Incorporate OSDS information and strategies into local plans.			X		
Task 5: Review current OSDS guidelines and develop management policies, implementation strategies, and permitting procedures.			X		

Section VII: Targeted Preservation Areas

Description: Preserving land from development is an important component for preserving the environment and improving water quality. As development increases, it typically places additional stress on natural resources and contributes to the degradation of water quality. Land preservation areas also present unique opportunities to implement measures to enhance and improve existing water quality. Targeted preservation in sensitive watersheds greatly assists in efforts to reduce pollution.

Goal

Design a targeted preservation area for Caroline and Talbot Counties within local plans that incorporate sensitive watershed areas to assist in pollution reduction and overall improvement of water quality.

Objectives

Objective #1: Identify potential funding sources and partners that can assist County efforts to preserve land and develop new funding sources to further land preservation goals.

Objective #2: Develop detailed County *Land Preservation and Recreation Plans* for Caroline and Talbot Counties that target key preservation areas within sensitive watersheds.

Objective #3: Develop containment strategies to link preservation areas within sensitive watersheds on a regional scale.

Action Strategy

Although, Caroline and Talbot Counties have many acres protected as State and County parks, private Conservation Easements, and through other public easement programs such as *Rural Legacy* and *Greenprint*, the *Maryland Agricultural Land Preservation Program* is the cornerstone of each County's land preservation initiatives.

Caroline County has protected 40,798 acres in agricultural preservation districts and ranks 2nd in the State for the number of acres permanently preserved. Talbot County has protected 13,626 acres in agricultural preservation districts and ranks 12th in the State for the number of acres permanently preserved. Despite the obvious successes of County and State agricultural land preservation programs, more is needed if the both Counties are to reach target objectives.

It is critical for Caroline and Talbot Counties to maintain agriculture as an economically viable industry sector within the overall regional economy. A healthy farm economy is the foundation of a successful agricultural land preservation program. The consideration of agricultural economics should be a prime factor in County and State programs and regulations. For example, County and State programs should focus on preserving the most productive agricultural soils for active farm use to insure the most efficient use of land resources and capital. In addition, Federal and State programs to address environmental problems, associated with agriculture, should be mindful of the economic impacts on farming and seek a balanced approach. The success of creating an effective land preservation program depends on funding and the level of comfort land owners have in regards to the program itself. Local funding for preservation through special taxes can help leverage funding for easements.

Action Strategy – Land Preservation: Task and Time-line					
Time-Line	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**
Task 1: Identify potential funding sources and partners for land preservation and develop new sources of local funding, such as excise taxes, to leverage preservation efforts.	X	X	X	X	X
Task 2: Develop targeted preservation areas as part of the County's comprehensive land preservation planning process.		X	X		
Task 3: Develop strategies to link preservation areas for sensitive watersheds on a regional scale	X	X	X	X	X

Section VI: Choptank Marina

Description: The Choptank Marina is owned by the County Commissioners of Caroline County and operated by the Caroline County Department of Parks and Recreation with assistance from the Maryland Department of Natural Resources. Environmental protection measures are needed for the marina to insure that pollution arising from boat traffic does not further impair water quality. The Choptank Marine Beach is subject to a TMDL for fecal coliform bacteria.

Goal

Improve environmental protection measures for the Choptank Marina to protect water quality from boat and marina related pollutants.

Objectives

Objective #1: Initiate measures to seek compliance with Maryland's "Clean Marina Program" for the Choptank Marina.

Objective #2: Identify potential funding sources to assist County efforts in relation to Choptank Marina.

Objective #3: Obtain certification as a *Clean Marina* for the Choptank Marina.

Action Strategy

Maryland's Clean Marina Program will assist efforts to insure environmental protection and decreased resource degradation. The Clean Marina certification for Choptank Marina will depend on funding and must be a multi-agency and multi-jurisdictional effort, including local County government, Maryland Department of Natural Resources, Maryland Department of the Environment, US Environmental Protection Agency, and US Coastal Zone Management..

Action Strategy – Choptank Marina: Task and Time-line for					
Time-Line	**Yr 1**	**Yr 2**	**Yr 3**	**Yr 4**	**Yr 5**
Task 1: Initiate measures to seek Clean Marina status for Choptank Marina		X			
Task 2: Actively seek sources of potential funding through local, state, and federal grants and programs to assist in efforts to create a clean marina for Chotank Marina.		X	X		
Task 3: Develop a Choptank Marina Feasibility Study to assess the costs associated with clean marina status and develop clean marina standards for Chotank Marina.				X	X

ATTACHMENTS:

Upper Choptank River Watershed Characterization, as prepared by the Maryland Department of Natural Resources and Caroline and Talbot Counties; and

Upper Choptank River Watershed Synoptic Sampling, as prepared by the Maryland Department of Natural Resources.