



**PATUXENT RESERVOIRS WATERSHED
ANNUAL REPORT
2007**

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List of Acronyms

ac	Acres
BMP	Best Management Practice
CHL-a	Chlorophyll-a
DNR	Maryland Department of Natural Resources
DEP	Montgomery County Department of Environmental Protection
DO	Dissolved Oxygen
DPWT	Montgomery County Department of Public Works and Transportation
EPA	US Environmental Protection Agency
FY	Fiscal Year
HC	Howard County
HSCD	Howard Soil Conservation District
HUA	Heavy Use Area
IBI	Index of Biological (or Benthic) Integrity
ICPRB	Interstate Commission on the Potomac River Basin
IWLA-WAC	Izaak Walton League of America-Wildlife Achievement Chapter
lf	Linear Feet
MC	Montgomery County
MDE	Maryland Department of the Environment
mg/L	Milligrams per Liter
mgO ₂ /m ² /day	Milligrams Oxygen per Square Meter per Day
MGS	Maryland Geological Survey
M-NCPPC	Maryland-National Capital Park and Planning Commission
MSCD	Montgomery Soil Conservation District
PGC	Prince George's County
SCERP	Small Creeks and Estuaries Restoration Program
SOD	Sediment Oxygen Demand
TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TU	Trout Unlimited
µg/L	Micrograms per Liter
USGS	US Geological Survey
WSSC	Washington Suburban Sanitary Commission

A MESSAGE FROM THE CHAIR

The Patuxent Reservoirs Watershed Technical Advisory Committee (TAC) was formed pursuant to the Patuxent Reservoirs Watershed Protection Agreement signed on October 29, 1996. The parties to the Agreement desired, among other goals, “to develop and implement a multi-barrier watershed management approach to assure the integrity of a continued supply of high quality potable water at reasonable cost.” The TAC's main role was to periodically review and evaluate existing problems and proposed actions which may affect the reservoirs and the watershed for providing: 1- high quality raw water for water supply, 2- habitats to support high quality aquatic and riparian communities, 3- desirable places for environmental enhancement and wildlife habitat, and 4- aesthetic, recreational and other beneficial uses. The TAC was also required to submit an Annual Report to the Policy Board for its review and approval of all recommendations, determinations and proposals.

It is my pleasure to submit on behalf of the TAC our 11th Annual Report. The report provides a summary of the TAC activities during the year and the challenges we still face. We continued water quality monitoring of the reservoirs, completed four studies focusing on sedimentation in the reservoirs, determination of bottom sediment oxygen demand, forestry management for the Washington Suburban Sanitary Commission (WSSC) lands surrounding the reservoirs, and locating important archeological sites. We also achieved some stream restoration in Montgomery and Howard Counties. We have expanded our outreach program significantly and hope to do more in the coming years.

We initiated a new effort funded by the WSSC with a budget of \$100,000 to pursue grant opportunities using consultant services. The first year included establishing close links with organizations that sponsor grants and getting organized for more effective applications. Members of the TAC worked closely with the consultant and submitted applications for several grants for watershed protection. Unfortunately, we had no success in the first year. We now have developed a plan of action for continuing this effort during Fiscal Year 2008 (FY08).

Another major development during the year is publication of a draft Total Maximum Daily Load (TMDL) report by the Maryland Department of the Environment (MDE) for the Patuxent Reservoirs. Members of the TAC reviewed the draft and provided comments to MDE. The draft TMDL requires significant reductions in phosphorus and sediment loadings to the reservoirs. These requirements are subject to review by the US Environmental Protection Agency (EPA). The TMDL, if approved, may create a regulatory driver for more corrective actions in the watershed. However, this could become a challenge as all parties to the Agreement face difficult funding priorities.

M.T. Habibian, PhD, PE

1 Background

Since 1997, the TAC has completed an Annual Report to summarize accomplishments and identify funding needs to address watershed priority resource issues. The priority resources are:

- reservoirs and drinking water supply
- terrestrial habitat
- stream systems
- aquatic biota
- rural character and landscape, and
- public awareness and stewardship.

Table 1, *Priority Resources Chart*, lists each priority resource and describes the associated issue, measures, goals, implementation items, time line, and responsible partners.

This Annual Report will be accompanied by a separate Technical Supplement to provide detailed background information and additional documentation for items summarized in this report. The Technical Supplement will be issued at the end of the year.

TABLE 1: PRIORITY RESOURCES CHART

Resource: Reservoir/Water Supply				
Issue: The public need for a sufficient quantity of safe and high quality drinking water calls for adopting a proactive and multi-barrier approach, which starts with utilizing raw water of the highest quality and sustainable quantity, now and in the future. To achieve this for the Patuxent water filtration plant, we need to control reservoir eutrofication, reduce disinfectant by-products precursors, and limit reservoirs capacity loss.				
Measures	Goals	Implementation Items	Time Line	Responsible Partner
Chlorophyll-a (CHL-a)	<ul style="list-style-type: none"> CHL-a not to exceed a 10 µg/L mean during the growing season and not to exceed a 30 µg/L instantaneous concentration 	<ul style="list-style-type: none"> Perform reservoir monitoring for CHL-a, DO, and TOC during the growing season 	Ongoing	WSSC
Dissolved oxygen (DO)	<ul style="list-style-type: none"> DO not to fall below 5 mg/L at any time in the epilimnion, not to fall below 5 mg/L in the entire water column during completely mixed periods, and not to fall below 10% saturation at any time in the hypolimnion 	<ul style="list-style-type: none"> Perform reservoir monitoring for CHL-a, DO, and TOC during the growing season 	Ongoing	WSSC
Suite of water quality parameters in reservoir monitoring protocol	<ul style="list-style-type: none"> Five-year data trend analysis for other monitored water quality parameters shows no net deterioration 	<ul style="list-style-type: none"> Enhance and fine tune model reliability for watershed management Develop and begin implementation of a plan to reduce nutrients, based on model/TMDL requirements <ul style="list-style-type: none"> Update trend analysis for reservoir water quality parameters on a 5-year cycle 	Draft TMDL submitted to EPA for Approval 2006 – 2008 2009	WSSC/MDE TAC WSSC
Total organic carbon (TOC)	<ul style="list-style-type: none"> TOC – 20% annual reduction goal, with 40% reduction for peak quarter at the location where water is withdrawn for treatment purposes 	<ul style="list-style-type: none"> Perform reservoir monitoring for CHL-a, DO, and TOC during the growing season 	Ongoing	WSSC
Sediment	<ul style="list-style-type: none"> Sediment accumulation rate not to exceed previous years 	<ul style="list-style-type: none"> Perform bathymetric survey of reservoirs at 10 year intervals or less 	Draft is under review	WSSC

TABLE 1: PRIORITY RESOURCES CHART

Resource: Terrestrial Habitat				
Issue: Preservation of forests provides water quality benefits by reducing sediment and nutrient loading of streams from surrounding land uses.				
Measures	Goals	Implementation Items	Time Line	Responsible Partner
Forest Cover	<ul style="list-style-type: none"> Maintain and increase forest cover Increase forest interior habitat 	<ul style="list-style-type: none"> Encourage private property owners to participate in tree planting programs Ensure publicly owned parkland and open space is forested to the maximum extent possible 	Ongoing	TAC
			2006 – 2023	TAC
Forest Connectivity	<ul style="list-style-type: none"> Improve forest connectivity (larger forest tracts are connected by forest corridors) 	<ul style="list-style-type: none"> Target reforestation and forest conservation programs to increase forest connectivity and forest interior habitat 	Ongoing	TAC
Forest Size	<ul style="list-style-type: none"> Increase forest size 	<ul style="list-style-type: none"> Encourage private property owners to participate in tree planting programs Ensure publicly owned parkland and open space is forested to the maximum extent possible 	Ongoing	TAC
			2006 – 2023	TAC
Forest Diversity	<ul style="list-style-type: none"> Ensure diverse forest communities (communities contain a variety of species and ages) 	<ul style="list-style-type: none"> Develop a forest management plan to ensure forest diversity and long-term natural regeneration, identifying and addressing potential problems such as excessive deer populations, invasive species and human impacts 	2006 – 2013 Draft plan is being refined	TAC
Forest Sustainability	<ul style="list-style-type: none"> Ensure forests are self-sustaining and capable of long-term natural regeneration 	<ul style="list-style-type: none"> Implement deer management programs Implement strategies for control of invasive plants 	Ongoing	TAC
			2006 – 2008	TAC

TABLE 1: PRIORITY RESOURCES CHART

Resource: Stream System

Issue: Preventing stream habitat degradation - The stream system includes all intermittent and perennial streams and their adjacent floodplains. A stable stream system provides significant nutrient and sediment removal during both baseflow and stormflow events. The stream and its associated riparian buffer are also important as sources of high quality food and habitat for both aquatic and terrestrial organisms.

Measures	Goals	Implementation Items	Time Line	Responsible Partner
Buffer corridor width and continuity	<ul style="list-style-type: none"> A minimum 35-foot riparian buffer on all streams on properties that were developed prior to current stream buffer requirements 	<ul style="list-style-type: none"> Establish and maintain minimum 35-foot riparian buffers on all publicly-owned land Accelerate programs to establish and maintain streamside buffers to a minimum of 35 feet on privately-owned lands to the maximum extent possible 	<p>2006 – 2013</p> <p>2006 – 2023</p>	<p>WSSC, M-NCPPC, HC, MC</p> <p>WSSC, M-NCPPC, HC, HSCD, MC, MSCD</p>
Stream bank and stream channel stability	<ul style="list-style-type: none"> No areas of "severe" or "very severe" stream bank erosion based on the Stream Corridor Assessments and other locally collected data. 	<ul style="list-style-type: none"> Establish and maintain streamside fencing programs to keep all livestock out of streams to the maximum extent possible Address <u>significant</u> areas of stream bank and channel instability through stream restoration projects and stormwater retrofits to the maximum extent possible 	<p>2006 – 2013</p> <p>2006 – 2013</p>	<p>HSCD, MSCD</p> <p>HC, HSCD, M-NCPPC, MC</p>

TABLE 1: PRIORITY RESOURCES CHART

Resource: Aquatic Biota

Issue: Biological Integrity– This is the condition of the benthic macroinvertebrate communities based on a comparison to a reference stream in Montgomery County. A reference stream is relatively undisturbed and therefore the best quality to be expected in the region that includes the Patuxent Reservoirs Watershed.

Measures	Goals	Implementation Items	Time Line	Responsible Partner
IBI - Index of Biological Integrity	<ul style="list-style-type: none"> No subwatershed with a benthic IBI indicating "fair" or "poor" condition 	<ul style="list-style-type: none"> Aggressively pursue cost-share funds to construct agricultural BMPs, stream restoration, and stormwater retrofit projects to address factors contributing to degraded biological integrity 	2006 – 2023	HC, HSCD, MC, MSCD, M-NCPPC
		<ul style="list-style-type: none"> Mitigate runoff impacts from land use changes 	2006 – 2023	HC, MC, M-NCPPC
	<ul style="list-style-type: none"> Preserve conditions in subwatersheds with "excellent" and "good" benthic IBIs 	<ul style="list-style-type: none"> Protect existing habitat and water quality of streams in high-quality subwatersheds to the maximum extent possible by pursuing programs to maintain or increase existing land cover 	2006 – 2023	HC, HSCD, MC, MSCD, M-NCPPC

IBI - Index of Biological Integrity, is also referred to as Index of Biotic Integrity in Maryland Biological Stream Survey publications.

TABLE 1: PRIORITY RESOURCES CHART

Resources: Rural Character and Landscape

Issue: Preserving open spaces and maintaining an economically viable and environmentally protective agricultural community.

Measures	Goals	Implementation Items	Time Line	Responsible Partner
Agricultural Preservation Enrollment <ul style="list-style-type: none"> • Total acres enrolled • Number of farms enrolled 	<ul style="list-style-type: none"> • Preserve the agricultural and rural nature, and open space of the watershed 	<ul style="list-style-type: none"> • Continue easement acquisition through agricultural land preservation programs 	Ongoing	HC, MC
		<ul style="list-style-type: none"> • Continue agricultural economic development programs 	Ongoing	HC, MC
Agricultural Demographics <ul style="list-style-type: none"> • Acres of agricultural land • Market value of agricultural production • Size of farms • Types of farms 	<ul style="list-style-type: none"> • Preserve the agricultural and rural nature, and open space of the watershed 	<ul style="list-style-type: none"> • Continue zoning and land use policies in the watershed to maintain rural character 	Ongoing	HC, M-NCPPC
		<ul style="list-style-type: none"> • Continue agricultural economic development programs 	Ongoing	HC, MC
Open Space and Parkland Acquisition and Easement Programs <ul style="list-style-type: none"> • Acres of open space land preserved by non-agricultural easements or acquisition 	<ul style="list-style-type: none"> • Create a landscape that is protective of water quality 	<ul style="list-style-type: none"> • Utilize effective open space land management practices that are beneficial to water quality 	Ongoing	HC, M-NCPPC, WSSC
Participation in agricultural conservation programs and percent of conservation plans that are implemented	<ul style="list-style-type: none"> • Create a landscape that is protective of water quality 	<ul style="list-style-type: none"> • Encourage participation in other conservation and open space preservation programs 	Ongoing	HC, MC, M-NCPPC
		<ul style="list-style-type: none"> • Encourage enrollment in federal and state nutrient management and stream protection programs 	Ongoing	HSCD, MSCD
		<ul style="list-style-type: none"> • Promote greater utilization of funding provided by the Reservoir Protection Group to supplement federal and state agricultural programs 	Ongoing	HSCD, MSCD
		<ul style="list-style-type: none"> • Create and routinely update an electronic map based system to track BMP implementation 	2006 – 2013	HSCD, MSCD

TABLE 1: PRIORITY RESOURCES CHART

Resource: Public Awareness and Stewardship				
Issue: Awareness and support by residents and resource users				
Measure	Goals	Implementation Items	Time Line	Responsible Partner
Residents participating in stewardship activities	<ul style="list-style-type: none"> • Citizen action to improve watershed resources – see evidence of watershed friendly activities and practices • 10 to 15 stewardship offerings per year 	<ul style="list-style-type: none"> • Identify citizen groups throughout watershed and be available for presentations upon request 	2006 – 2008	TAC
		<ul style="list-style-type: none"> • Organize stewardship events and participate in other community events 	Ongoing	TAC
		<ul style="list-style-type: none"> • Recognize good stewards through annual awards 	2006 – 2008	MC, PGC, HC, M-NCPPC
		<ul style="list-style-type: none"> • Form “Friends of the Watershed” group of citizen volunteers that will take on tasks such as newsletter preparation and some Earth Month planning 	2006 – 2008	TAC
Schools participating in mentoring	<ul style="list-style-type: none"> • School and community involvement – 20 participating Green School partners by end of 2003 and 5 additional schools participating each year thereafter until all 43 are attained 	<ul style="list-style-type: none"> • Continue and expand Green Schools Mentoring Partnership 	Ongoing	WSSC, HC, MC, PGC, M-NCPPC
Active support by elected officials	<ul style="list-style-type: none"> • Routine communication with elected officials 	<ul style="list-style-type: none"> • Routine communication with elected officials 	Ongoing	TAC
Routine coverage by media	<ul style="list-style-type: none"> • Expanded media coverage of watershed events – print, radio and TV 	<ul style="list-style-type: none"> • Increase communication with media 	2006 – 2008	TAC
		<ul style="list-style-type: none"> • Support regional efforts to establish media-savvy campaigns that emphasize water quality protection 	2006 – 2008	

Implementation dates are contingent upon adequate staff support, with limited support focus will be on Earth Month activities and Green Schools Partnership

2 Progress on Implementation Items

Table 2, *Patuxent Reservoirs Watershed Work Program for FY08 and FY09*, lists ongoing implementation items and identifies the priority resource or resources that will be protected or enhanced by completion of the associated task. Progress made for each implementation item during 2007 is given below. Because 2007 was a year during which several projects were completed, it is worthwhile to note that several of the implementation items discussed below are not listed in Table 2, which only lists those implementation items that necessitate continuing work during FY08 and FY09.

2.1 Reservoir and Tributary Water Chemistry Monitoring

The WSSC is in the 16th year of monitoring reservoir water quality to provide data for technical analysis and long-term trending to support protection of the reservoirs and drinking water supply. Three sites at each reservoir are monitored monthly or bimonthly, except during winter months. The reservoirs are monitored for phosphorus, nitrogen, total organic carbon, pesticides, metals, turbidity, fecal coliform and chlorophyll. In addition, in-situ transparency and profile measurements of pH, conductivity, temperature, reduction-oxidation potential and dissolved oxygen are performed. To date, the reservoirs still show a trend towards low dissolved oxygen during the summer months.

2.2 Tributary and Habitat Monitoring

Biological and habitat monitoring of the tributaries is used to track progress in protecting the stream system and aquatic biota, as land cover changes occur and stream restoration and streamside best management practices are implemented. These monitoring efforts can also locate problem areas and provide indicators for possible problem sources, to help guide future restoration efforts.

Howard County is on a five-year biological monitoring cycle for watersheds in the County. The reservoir watersheds were last monitored in 2005.

There was no Montgomery County Department of Environmental Protection (DEP) monitoring in the Patuxent watershed during 2007. Monitoring is next scheduled for 2009.

2.2 Stream Corridor Management

Stream corridor management activities include stream channel stabilization and restoration, and implementing streamside best management practices. These activities are targeted at stream channel reaches that were identified in stream

corridor assessment surveys as severe problem areas for erosion. These activities help restore and protect the stream system, improve habitat and water quality for aquatic biota, and support protection of the reservoirs and water supply.



2.3.1 Upper Reddy branch Subwatershed Project– For several years the TAC has been collaborating on a stream corridor management effort in the Upper Reddy Branch subwatershed. The project has reservoir water quality, stream system, terrestrial habitat, and rural character and landscape benefit. Despite its rural nature, and an impervious level of less than four percent, the water quality of Upper Reddy Branch is rated as “fair”. It is one of only 16 subwatersheds within Montgomery County’s 61 Patuxent subwatersheds that has less than “excellent” or “good” water quality. This is most likely due to the high level of stream channel erosion and the large portion of the stream buffer that is cropped.

Over the past year, with the help of WSSC consultants, the proposal to reforest a half-mile stream reach of Upper Reddy Branch blossomed into a multifaceted subwatershed project with different members of the TAC taking leadership for various aspects of restoration. In 2005, the Policy Board had agreed to provide contract staff through WSSC to assist the TAC in seeking grant funding. WSSC hired a consultant in August 2006. The consultant has since been working with the TAC. The first project to move forward was a significant stream restoration effort throughout Upper Reddy Branch. Nearly \$500,000 in grant funds was sought from two granting agencies. Although no grant funds were awarded, the TAC continued to move forward on a variety of stream corridor management efforts in the Upper Reddy Branch.

The Montgomery County Planning Department focused on planning for buffer restoration within the publicly owned part of the subwatershed. This involved a great deal of coordination with their counterparts in the Department of Parks. First they developed a set of planting and maintenance standards that were acceptable for parkland. They then agreed upon a division of labor for the different phases of the project. Most important, they overcame long-standing reluctance on the part of the Department of Parks to use Planning Department funds (originally obtained from developers) on parkland. Initially the Planning Department sought to leverage limited forest restoration funds to obtain grant money. This would have enabled them to plant up to ten acres of buffer this fall. Although grant money has not yet been awarded to this project, the Planning Department is preparing to move forward with between one and two acres of buffer planting immediately, hoping for more funds to become available next year.

In addition to the buffer planting, the Montgomery County Planning Department has approved a 12-acre forest conservation bank on a private property within the Upper Reddy Branch subwatershed. Most of the “Our House” bank is located along a stream reach that is almost entirely dedicated to active agriculture. When planting is completed within the newly created conservation easement, this bank

will provide 1,500 linear feet of buffer along a stream reach that is currently unforested.

	
<p>Reddy Branch Stream Valley Park</p>	<p>Our House Forest Conservation Bank</p>

2.3.2 Cherry Creek – Howard County continues to improve the Cherry Creek Watershed, which drains directly to the Rocky Gorge Reservoir. Cherry Creek has degraded due to unmanaged stormwater runoff in the headwaters of the watershed. Stream bank and channel erosion are recognized as contributing a significant sediment load to the water supply reservoir. Howard County has completed a comprehensive watershed study of Cherry Creek and identified three stream reaches in need of restoration.

Reach 1 – Using a \$25,000 grant from the Maryland Department of Natural Resources (DNR) and \$37,600 from the Chesapeake Bay Trust, the County restored 300 linear feet of headwater stream and also constructed three new stormwater management ponds in the headwaters. Construction of the ponds and the stream restoration was completed in early 2006.

Reach 2 is a 600 linear foot stream channel located near the Scotts Cove boat launch. This reach is unstable, with grade control problems and high bank erosion rates. The design for restoration of this reach is 95% complete, with construction scheduled to begin and end in Fall/Winter of 2008 (FY09). The project construction cost for the restoration of this reach is estimated as \$330,000. A pre-application was submitted to MDE requesting \$165,000 in a Small Creeks and Estuaries Restoration Program (SCERP) grant; the remaining funds will be provided by Howard County.

Reach 3 is a 250 linear foot stream channel located upstream of the Harding Road culvert. The channel is relatively straight with a fairly high channel slope. In the lower section the channel is incised, having vertical stream banks and no riparian buffer. Implementing a meander pattern to increase sinuosity will necessitate relocation of a sewer line. The project cost for both design and construction is estimated at \$300,000. Design is planned to begin in FY09, with construction in FY11.

2.3.3 Lower Hawlings River – The Lower Hawlings River stream restoration project was completed in fall 2005, the first project from the watershed assessment was completed in 2003. The project withstood the test of several significant runoff events during 2006. There have been two volunteer plantings to enhance the buffer, one in 2006 and another in March 2007. The plantings were funded by the Chesapeake Bay Trust to the Patuxent-Potomac Chapter of Trout Unlimited (TU) and the National Tree Trust to the Wildlife Achievement Chapter. At the Lower Hawlings Project, about 400 native trees and shrubs have been planted along part of the 2,800 feet of restored reach. The DEP provided technical guidance and also acted as a liaison with three local high schools to solicit additional volunteers for the planting phase.

The TU initially committed to monitoring and maintaining the buffer planting over the next several years to control invasive plant overgrowth. However, the volunteer component has not worked out and Maryland-National Capital Park and Planning Commission (M-NCPPC) and DEP staff have had to return to the project to control invasive plants, primarily mile-a-minute and stilt grass. Overall the trees and shrubs are doing very well.

2.4 Reservoir and Watershed Models

The MDE and the Interstate Commission on the Potomac River Basin (ICPRB) completed the draft TMDL reports for phosphorus and sediment for Triadelphia Reservoir and the TMDL for phosphorous for the Rocky Gorge Reservoir.

The TMDLs were based on water quality models jointly developed by MDE and the ICPRB for the simulation period 1998 to 2003. The total loads to the reservoirs are primarily the result of non-point sources and stormwater runoff.

The water quality goal of the nutrient TMDL is to reduce high CHL-a concentrations that reflect excessive algal blooms, and to maintain DO levels at a level to support the designated uses for the reservoirs. The goal of the sediment TMDL for Triadelphia is to increase the useful life of the reservoir.

MDE's draft report concluded that low DO concentrations in the bottom layers of the reservoirs are a naturally occurring condition and therefore no TMDL for DO required promulgation. The WSSC has questioned this conclusion and attributes this to ignoring legacy sediment and phosphorous in model calibration.

To achieve the TMDL for phosphorous and sediment in Triadelphia Reservoir, a 58% reduction in total phosphorous equating to a 29% reduction in sediment load is recommended. This reduction results in a loading cap of 22,820 tons/year for sediment. For Rocky Gorge Reservoir, a 48% reduction in phosphorous equating a 24% reduction in sediment load is necessary to meet the TMDLs.

2.5 Agricultural Management Local Cost Share Initiative

Montgomery Soil Conservation District (MSCD) did receive an application for the Reservoir cost-share program from an equine operation this year. It was the first one received in Montgomery since the guidelines were changed regarding agriculturally zoned properties. Table 3, *2007 Patuxent Reservoirs Watershed Agricultural Progress*, provides summary information on this and other agricultural progress in the Reservoirs Watershed during the past year.

Both MSCD and the Howard County Soil Conservation District (HSCD) have determined that the horse industry seems to be the best potential fit for the reservoir cost-share program. Consequently, they are working together in an attempt to expand its success. Working with the WSSC contractor, HSCD and MSCD are exploring options to promote and advertise the cost share program. Grants are being sought to conduct other outreach and education to the agricultural community. These grant projects are representative of planned future collaborative efforts.

Table 2 2007 Patuxent Reservoirs Watershed Agricultural Progress

Practice	Howard SCD*	Montgomery SCD
Conservation Plans developed	14 (348.3 ac)	8 (811 ac)
Conservation Plans Revised	31 (4034 ac)	
Landowners Contacted or Requested information	34	60
Landowners Applying BMP'S	22	23
BMP'S Installed	51	178
Cover Crop	885 ac	1164 ac
Conservation Tillage		348 ac
Grassed Waterways	2 (0.44 ac)	
Diversion		
Fencing	8 (2741.4 lf)	1 (1241 ft.)
Filter Strip		
Grade Stabilization Structure		
HUA (Heavy Use Area)	3 (0.24 ac)	1
Nutrient Management	10 (513.9 ac)	866 ac
Pest Management	7 (454.3 ac)	1209 ac
Roof Runoff		
Stream Crossing	2	
Trough	4	
Waste Storage Structure		
New Cost Share Agreements	0	1
Cost Share Agreements Completed	0	
Pipeline	2 (640 lf)	
Ag Chemical Facility		
Subsurface Drainage	2 (1290 lf)	
Educational/Outreach Events		6
Lined Waterway	1 (0.1 ac)	
Spring Development	2	
Wildlife Upland Habitat Management	1 (16 ac.)	
Pasture / Hayland Planting	1 (41 ac)	
Pond	3	

* Numbers provided are only projects within the Patuxent Reservoirs Watershed portion of Howard County.

2.6 Sedimentation Study

The Maryland Geological Survey (MGS) was contracted by the WSSC to study the bathymetry and sedimentation of Triadelphia and Rocky Gorge Reservoirs. Information from this study will be used to update WSSC's previous surveys and

helps in assessing changes in the sedimentation rate, supporting protection of the reservoirs and water supply.

The draft report was completed in June 2007. Bathymetric data were collected for the reservoirs, water storage capacities and drawdown curves were determined, and sedimentation rates for the reservoirs were calculated. Bathymetric data for the reservoirs was collected in 2004 for Triadelphia, and in 2005 for Rocky Gorge.

The data from the draft report indicates a storage capacity for Triadelphia Reservoir of 6.66 billion gallons and 5.54 billion gallons for the Rocky Gorge Reservoir.

An additional study funded by WSSC in conjunction with the MGS was the measurement of in-situ sediment oxygen demand (SOD) in the Triadelphia Reservoir to support development of the reservoir model and TMDL. Originally the data collection had been scheduled for Triadelphia, but it was rescheduled for Rocky Gorge Reservoir due to low water levels in Triadelphia caused by dam maintenance activities. The SOD results can be used to compare reservoir model output to actual data collected at the Rocky Gorge Reservoir.

In-situ sediment oxygen values from the draft report ranged from -0.831 $\text{gO}_2/\text{m}^2/\text{day}$ to -2.897 $\text{gO}_2/\text{m}^2/\text{day}$ [negative values indicate oxygen is consumed]. These values fall within the range of other in-situ measurements of freshwater environments. These rates can be related to sediment texture and reactive carbon content to determine first order decay rates of organic carbon content. This decay rate can further be used to estimate the sediment oxygen demand rate at other sites.

2.7 Forestry Management and Recreational Use Survey

In May 2003, DNR entered into an agreement with WSSC to conduct a study of forest resources and associated recreational uses on WSSC land in the Patuxent Reservoirs Watershed. The results of this study will help support protection of all priority resources.

Based on the results of this study, a draft Forest Conservation Plan has been prepared for the WSSC-owned forest lands surrounding the Triadelphia and Rocky Gorge Reservoirs. The goal of the plan is to identify and promote forest practices to improve water quality and regional biological diversity in the reservoirs watershed. Components of the plan include forest stand and understory data summaries, forest management recommendations, and recreational use and attitude surveys.

Invasive exotic plants are a more pervasive problem than anticipated, particularly where reservoir properties are narrow. The impact of deer on forests in the area was also assessed.

Forests around the reservoirs tend to have fairly dense stocking and basal area levels, particularly in areas planted to pine after the reservoirs were created. Most of these areas have not been thinned or harvested. Thinning, timber stand improvement cuts, and shelterwood or seed tree harvests are recommended based on existing stand conditions.

Recreation surveys were designed with input from the TAC and the WSSC Environmental Advisory Committee. Three different surveys were prepared for the different audiences: WSSC rate-payers, recreation area users, and property owners adjoining the reservoir lands. For the rate-payer survey, half received a one-page summary of reservoir forest management issues, and half did not, to allow evaluation of the effect of information on attitudes and beliefs on this topic. Initial analysis of returns from the rate payers showed broad support for recreational use of the reservoir properties. There was a positive relationship between level of knowledge and willingness to increase user fees to cover costs of providing the recreation opportunities. Further analysis is needed to determine if the respondents represent all rate payers.

2.8 Public Outreach and Involvement Initiatives

During 2007, the TAC continued its focus on stewardship and outreach activities. The TAC outreach committee under the coordination of WSSC Outreach staff organized a wide variety of activities.

2.8.1 Earth Month - April 2007 – The TAC observed April as Earth Month, hosting numerous activities for families, local residents and school children. In addition this year, the WSSC hosted an “Earth Month Preview” event in March to highlight all of the environmental and source water protection programs. The evening included a showing of the film “Preacher for the Patuxent” about Senator Bernie Fowler’s relentless efforts to restore and protect the Patuxent River.

2.8.2 Volunteer Opportunities – Two cleanup days were on the calendar again this year – Saturday, April 7 and Saturday, April 14. Additional cleanup was coordinated on Thursday, April 12, Thursday, April 19 and Sat. April 21.

2.8.3 Library Programs – Again this year, source water protection programs for children were scheduled at three county libraries. Some very important networking was accomplished. Parents who attended with their children have asked about programs for their schools, possible tours of WSSC facilities, and volunteer opportunities for themselves and other groups of which they are members. Attendance totaled 139 people plus library staff.

2.8.4 Speakers Programs/Workshops – Brighton Dam Visitors Center – This speaker series was a great beginning in highlighting our environmental and source water protection programs for adults in the community. As expected, the

workshops where there were take home materials (e.g., rain barrel or composting bin) were the best attended.

2.8.5 Family Watershed Day – On Saturday April 21, from 11am – 2 pm at the Supplee Lane Recreation Area, 60+ attendees included families and staff participated in Family Watershed Day. Canoe/kayak instruction was again provided by the MNCP&PC staff with 4 canoes and 4 kayaks in continuous use during the event. Additional WSSC staff assisted with instruction and safety during the program. Two fishermen from Bass Pro-Outdoor World came to provide a fishing experience for participants. Rods and reels were borrowed from the DNR fishing program and numerous children tried their hand at casting a line into the reservoir. This year we also provided some interactive activities for the children. These were well received and provided valuable information about the watershed and source water protection to those who attended, children and adults alike.

2.8.6 Charity Bike Ride – On Saturday, April 28, 2007 from 9:00 a.m. to Noon at the Brighton Dam/Triadelphia Reservoir, 50 riders participated in the Charity Bike Ride. This year, we added a charity component to the bike ride around the reservoir. All riders had the option of making a donation to the WSSC Water Fund. Most riders were happy to donate to this cause and \$1000 was raised for the fund. We also added an optional route which gave riders the opportunity to ride either 20 miles or 30 miles around the reservoir. Snacks, water and T-shirts were provided to all participants. REI and Golds Gym were co-sponsors of this event, providing giveaways, and technical support when needed.

2.8.7 IWLA-WAC – The Montgomery County DEP and Department of Public Works and Transportation (DPWT) continued to provide assistance to the Izaak Walton League of America-Wildlife Achievement Chapter (IWLA-WAC) in Damascus for outreach events opened to the general public during 2006 and 2007. This included their Annual Spring Watershed Clean-up, their annual Fall Watershed Clean-up, 'Make and Take' Rain Barrel workshops, Energy Conservation workshop, and tree planting at the Hawlings River. In addition to these activities, during 2006-2007, the IWLA-WAC sponsored at their facility in Damascus a series of workshops open to the public, covering the topics of well and septic management, birds and nest boxes, climate change impacts on wildlife, and invasive plant management.

TABLE 3 PATUXENT RESERVOIRS WATERSHED WORK PROGRAM FOR FY08 and FY09

PRIORITY RESOURCES PROTECTED	IMPLEMENTATION NEED	IMPLEMENTATION ITEM	AGENCY	FY 2008	FY 2009 (proposed)
Reservoir/Water Supply	Reservoir and tributary water chemistry monitoring	Reservoir monitoring and lab analysis	WSSC	In-kind	In-kind
		5 US Geological Survey (USGS) watershed flow gauge stations	WSSC	\$50,000	\$50,000
		Reservoir studies	WSSC	\$60,000	\$40,000
Stream System Aquatic Biota	Tributary biological and habitat monitoring	Conduct second round of biomonitoring program in the reservoir watershed	HC	\$0	\$0
		Upper Patuxent and Hawlings River	MC	In-kind services (monitoring)	
		Hawlings River Restoration Monitoring	MC	\$5,000	\$0
Reservoir/Water Supply Stream System Aquatic Biota	Stream corridor management	Cherry Creek Implementation – Reach 2 Reach 3	HC		\$0 \$330,000 \$300,000 (in 2011)
		Hawlings River Project Implementation	MC	\$0	\$0
		Reddy Branch Project Implementation	M-NCPPC MC MSCD DNR	\$70,000	Not Determined yet
		Hillsborough Low Impact Development Retrofit	PGC	\$15,000	\$0
Reservoir/Water Supply Stream System Aquatic Biota Rural Character and Landscape Public Awareness and Stewardship	Agricultural management local cost-share initiative	Funding for local cost-share program	HC, MC, WSSC	No additional funding	No additional funding
		Program oversight for voluntary implementation of agricultural BMPs	HSCD, MSCD	In kind services	In kind services

TABLE 3 PATUXENT RESERVOIRS WATERSHED WORK PROGRAM FOR FY08 and FY09

Reservoir/Water Supply Terrestrial Habitat Stream System Aquatic Biota Rural Character and Landscape Public Awareness and Stewardship	Public outreach and involvement initiatives	Earth Month, Annual Policy Board Meeting and other outreach activities	All TAC agencies	In-kind services \$ 500 HC \$ 5,000 WSSC \$500 MC	In-kind services HC -- to be determined \$20,000 WSSC (requested) MC -- to be determined
		Green Schools Mentoring Partnership	WSSC and MC	\$ 1,000 WSSC In-kind services (WSSC and MC)	WSSC – to be determined In-kind services (WSSC and MC)
Reservoir/Water Supply Terrestrial Habitat Stream System Aquatic Biota Rural Character and Landscape Public Awareness and Stewardship	Complete Annual Report	Compilation and editing	All TAC Agencies	In-kind services	In-kind services
		Printing and distribution	WSSC	\$200	\$200
Partnership Coordinator and grant application		Provide admin. support, coordination among partners, secure grant funding	WSSC	\$80,000 (one year contract)	\$100,000 proposed
TOTAL FUNDING				\$287,200	\$540,200