2007

Supplemental Documentation In Support Of The Patuxent Reservoirs Technical Advisory Committee's Annual Report

June 2008

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EXECUTIVE SUMMARY

Every year, the Technical Advisory Committee (TAC) of the Patuxent Reservoirs Watershed Protection Group completes an Annual Report to summarize accomplishments towards achieving long-term protection of watershed priority resources. The priority resources include:

- Reservoirs and Drinking Water Supply
- Terrestrial Habitat
- Stream Systems
- Aquatic Biota
- Rural Character and Landscape
- Public Awareness and Stewardship.

This 2007 Supplemental Documentation in Support of the Patuxent Reservoirs Technical Advisory Committee's Annual Report contains more detailed information on several elements of the TAC work program for FY07 and FY08. In addition, the appendices contain the 1996 Patuxent Reservoirs Watershed Protection Agreement, the TAC and Policy Board meeting agendas and summaries for 2007, TAC correspondence for 2007, and the Agricultural Memorandum of Understanding with amendments.

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

Page

APPENDICES

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS AND ABBREVIATIONS

Chl-a	Chlorophyll-a
COMAR	Code of Maryland Regulations
Deg C	Degrees Celsius
DNR	DNR - Maryland Department Of Natural Resources
DEP	Montgomery County Department Of Environmental Protection
DGPS	Differential Global Positioning Service
DO	Dissolved Oxygen
DPWT	Montgomery County Department of Public Works and Transportation
Fe	Iron
Ft	Feet
GIS	Geographic Information System
HSCD	Howard Soil Conservation District
ICPRB	Interstate Commission On The Potomac River Basin
IWLA-WAC	Izaak Walton League of America-Wildlife Achievement Chapter
LA	Load Allocation
lbs/yr	Pounds per year
MDE	Maryland Department Of The Environment
Mg/l	Milligrams per liter
Mg/m3	Milligrams per cubic meter
MGS	Maryland Geological Survey
Mn	Magnesium
M-NCPPC	Maryland-National Capital Park and Planning Commission
MOS	Margin of Safety
MSCD	Montgomery Soil Conservation District
NPDES	National Pollutant Discharge Elimination System
OSI	Ocean Surveys, Inc
RG	Rocky Gorge
SCERP	Small Creeks and Estuaries Restoration Program grant
SOD	Sediment Oxygen Demand
TAC	Technical Advisory Committee
Temp	Temperature
TMDL	Total Maximum Daily Loads
TOC	Total Organic Carbon
tons/yr	Tons per year
TR	Trees (e.g., “A population of Gray birch (TR stand 3)”)
TRI	Triadelphia
TSS	Total Suspended Solids
TU	Patuxent-Potomac Chapter of Trout Unlimited
WLA	Waste Load Allocation
WSSC	Washington Suburban Sanitary Commission

1.0 RESERVOIR AND TRIBUTARY WATER CHEMISTRY MONITORING

In 2007, the WSSC continued its water quality monitoring program to determine water quality trends in the reservoirs. Also in 2007, two studies were completed: a study of sediment oxygen demand and a study of sedimentation rates. This section reports on all of those efforts.

Figure 1-1. Reservoir monitoring

1.1 RESERVOIR WATER MONITORING

In addition to chemical monitoring, in-situ transparency and profile measurements are taken at three locations in each reservoir. To date, the reservoirs still show a trend toward eutrophic conditions -- an over enrichment of nutrients. The 2007 proposed Total Maximum Daily Loads (TMDLs) recommend a reduction in sedimentation to lower phosphorous inputs which will lessen eutrophication impacts. Table 1-1 below is Maryland Department of the Environment's (MDE's) suggested reductions in phosphorous and sediment to the reservoirs.

Table 1-1. The elements of nutrient and sediment TMDLs for Triadelphia and Rocky Gorge Reservoirs

	Triadelphia Reservoir	**Rocky Gorge Reservoir**	**Triadelphia Reservoir**
Constituent	TP (lbs/yr)	TP (lbs/yr)	Sediment (tons/yr)
Baseline Load	65,953	46,935	32,141
Percent Reduction	58%	48%	29%
TMDL	27,700	24,406	22,820
WLA	5,288	7,429	400
LA	21,027	15,757	22,420
MOS	1,385	1,220	Implicit

Table 1-2 and Figures 1-2 thru 1-8 show Chl-a, total phosphorous, and secchi readings for the 2007 monitoring period (the data is not continuous due to technical difficulties and dam maintenance). Additional charts show summer dissolved oxygen concentrations for Rocky Gorge and Triadelphia Reservoirs.

Table 1-2. 2007 reservoir averages

	Average Total Phosphorous	**Average Chl-a**	**Average Secchi Depth**
Rocky Gorge	.03mg/l	4.96mg/m^3	6.22ft
Triadelphia	.025mg/l	6.32mg/m^3	7.11ft

1.2 SEDIMENT OXYGEN DEMAND STUDY

In order to provide additional chemical sediment data for modeling of Rocky Gorge and Triadelphia Reservoirs, the Washington Suburban Sanitary Commission (WSSC) contracted the Maryland Geological Survey (MGS) to conduct a study to characterize the physical and chemical properties of recently deposited sediments, and to provide estimates of the Sediment Oxygen Demand (SOD) for different sediment types, which could be applied to the TMDL modeling.

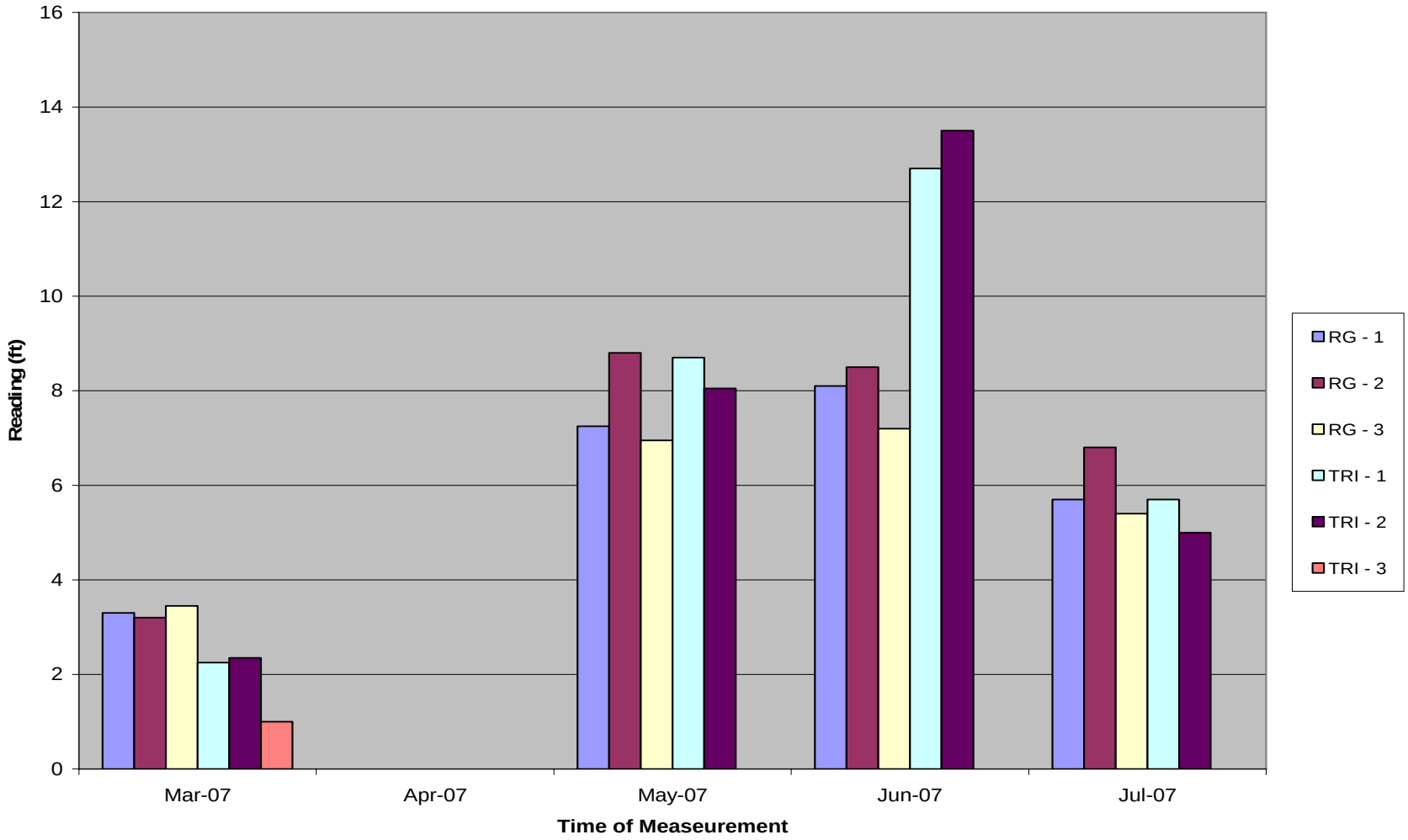

Figure 1-2. Secchi 2007

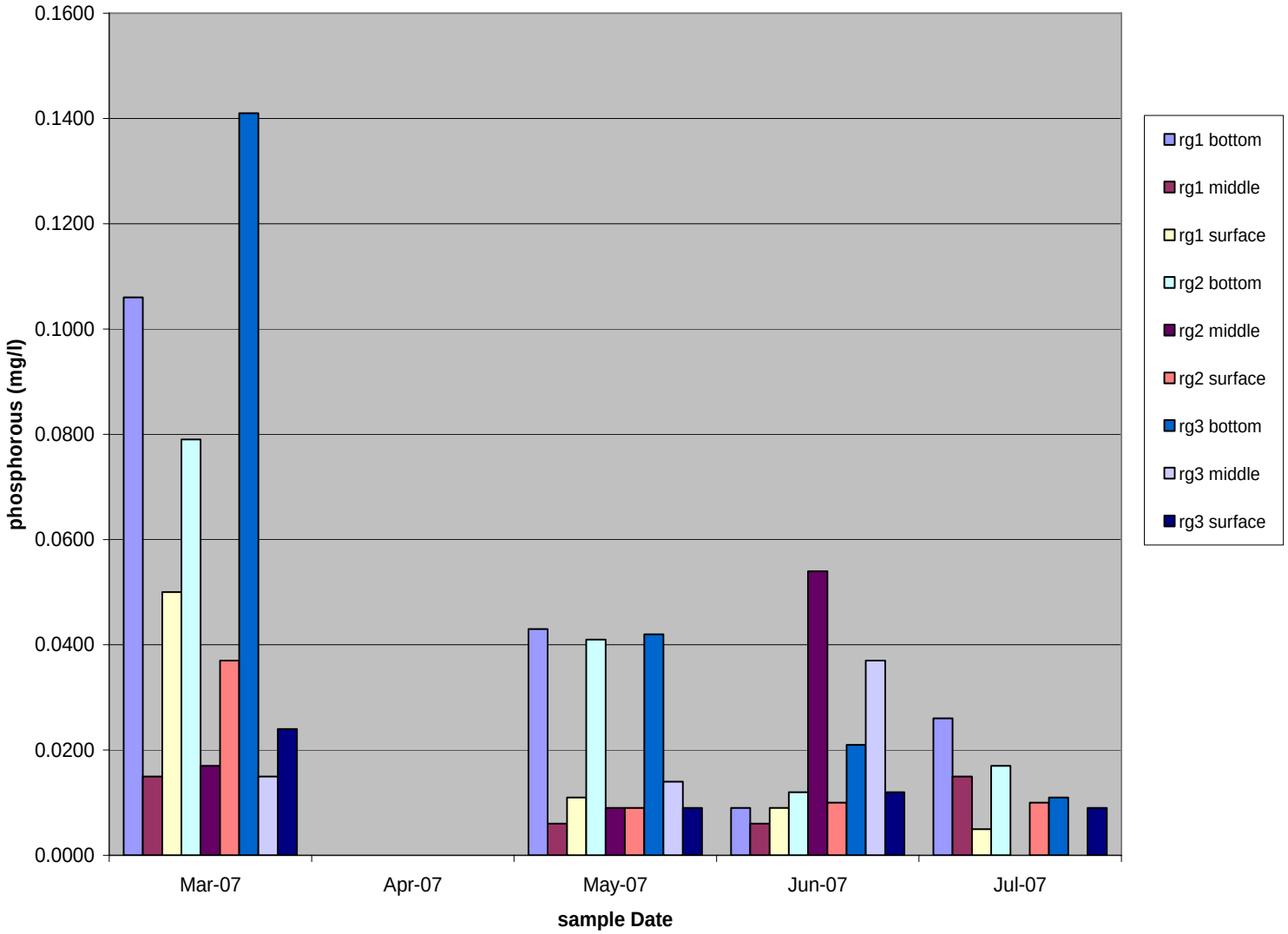

Figure 1-3. Rocky Gorge total phosphorous 2007

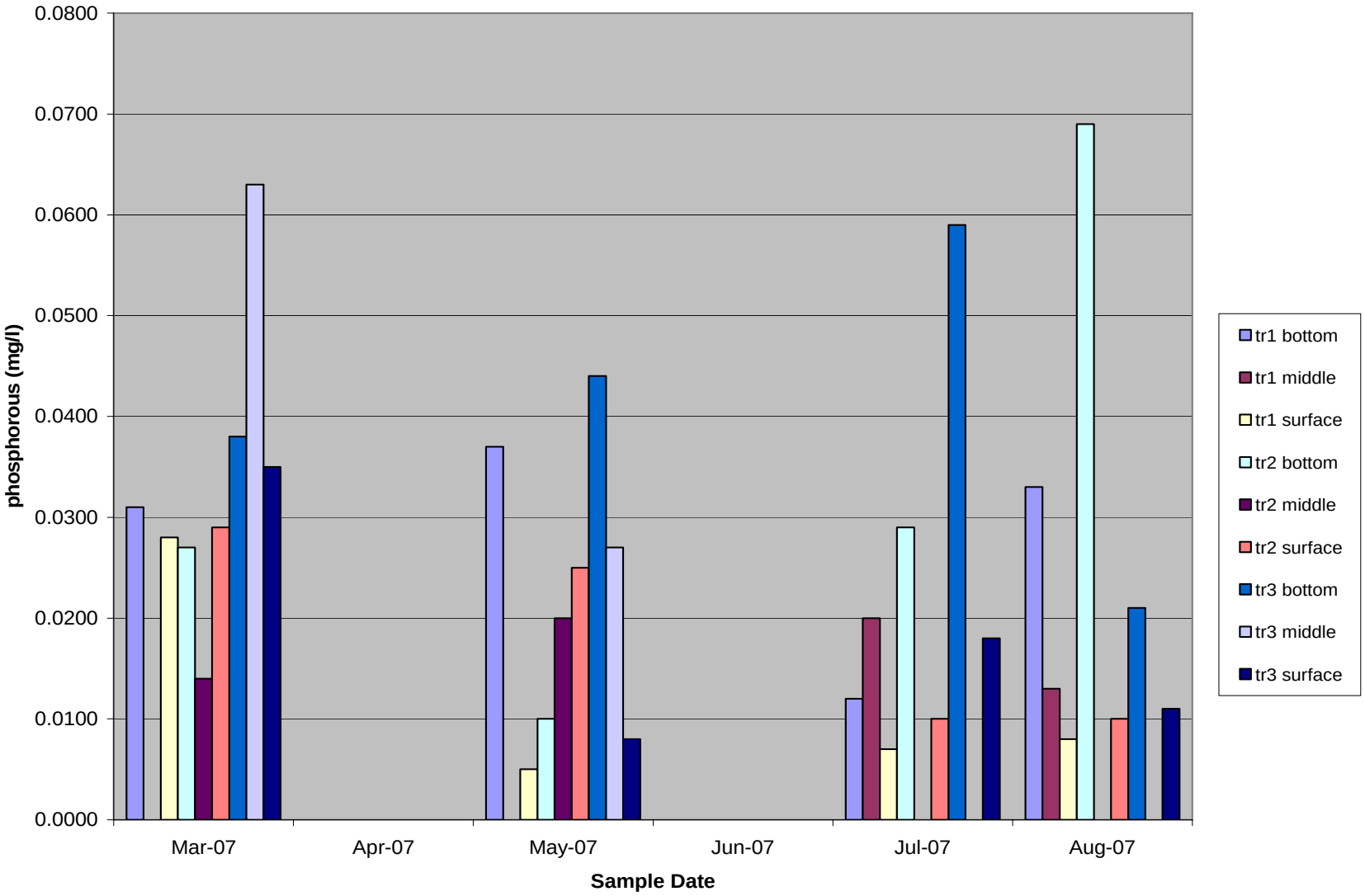

Figure 1-4. Triadelphia total phosphorous 2007

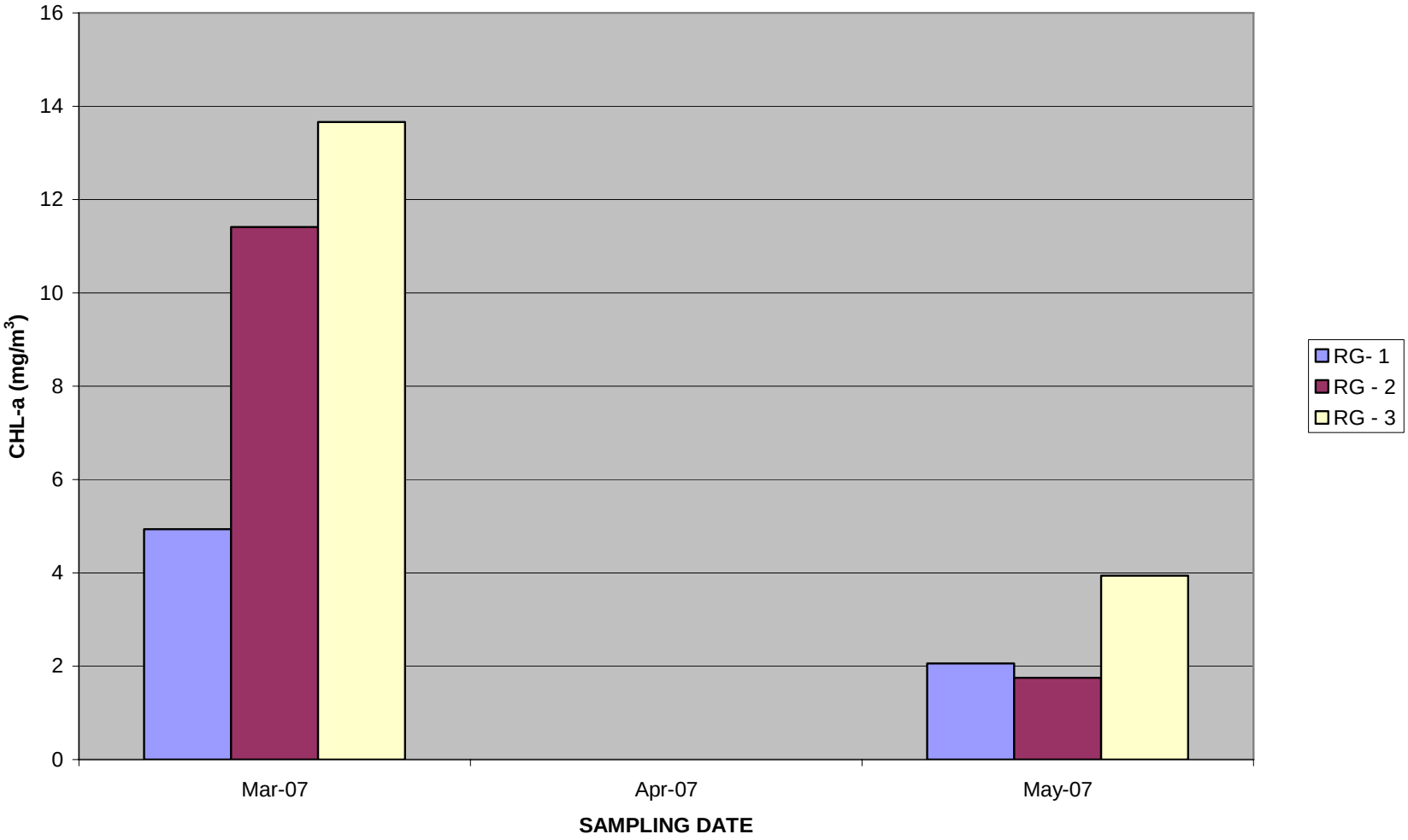

Figure 1-5. Rocky Gorge 2007 Chl-a

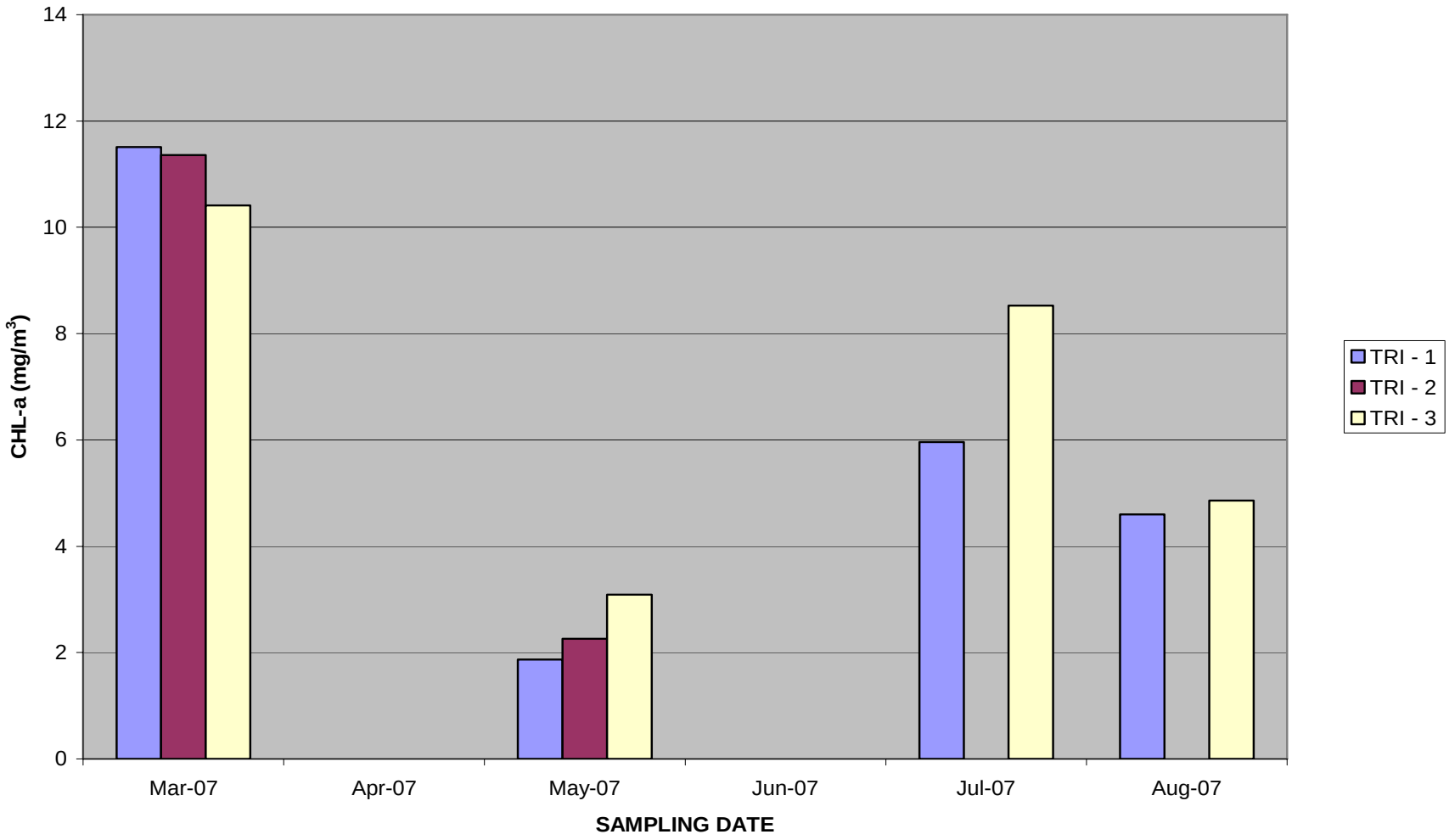

Figure 1-6. Triadelphia 2007 Chl-a

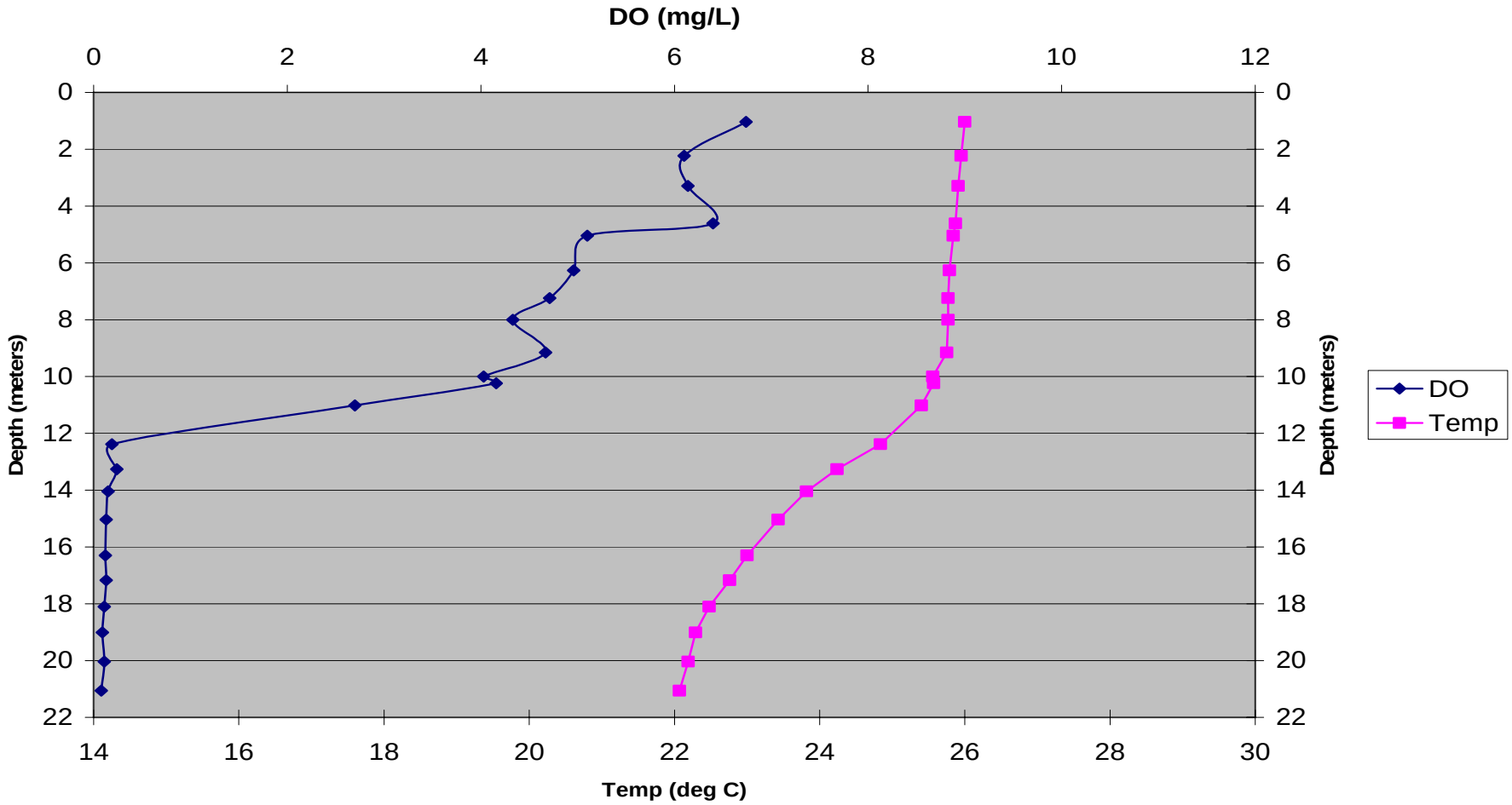

Figure 1-7. Rocky Gorge RG1 DO and Temp July 2007

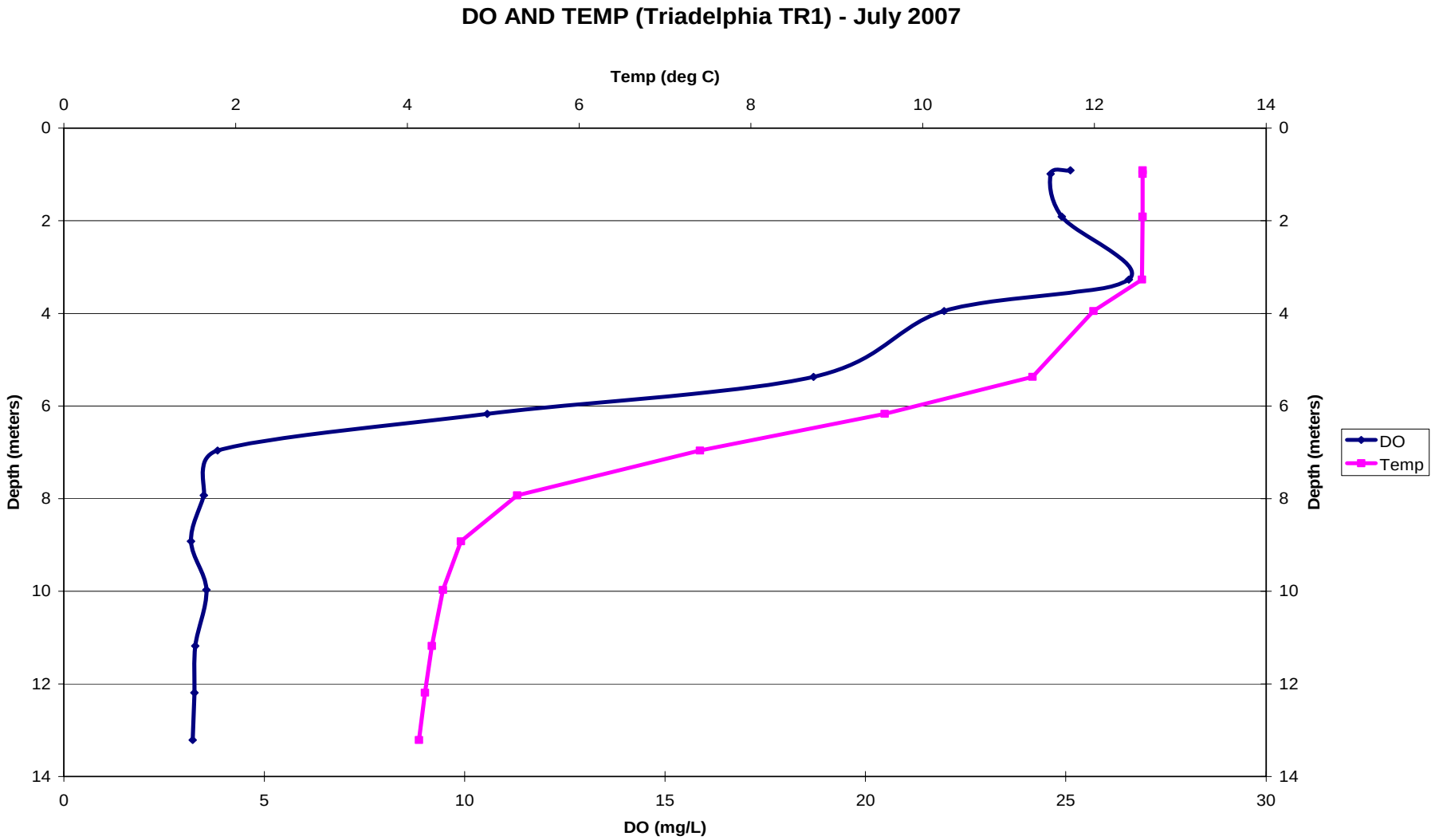

Figure 1-8. Triadelphia TR1 DO and Temp July 2007

Triadelphia and Rocky Gorge reservoirs are sources of water for the Washington, DC - area drinking water supply. They are located on the Patuxent River. Ongoing efforts to improve surface water quality are being conducted by various organizations. The Interstate Commission on the Potomac River Basin is currently developing a model to determine the Total Maximum Daily Loads (TMDLs) for nutrients that would be permissible in the basins. Additional data on the sediment are needed to assess further bottom sediment contribution to dissolved oxygen and nutrient cycling within the reservoirs.

Ocean Surveys, Inc (OSI) conducted an examination of these reservoirs in 1995 and 1996 (OSI, 1997). The OSI study collected 40 cores in Triadelphia Reservoir, thoroughly documenting the physical properties of sediments in the reservoir. However, the chemical composition analyses of the sediments were limited to composite samples from three core sites, and the analyses did not include organic carbon, nitrogen, or sulfur. OSI did not collect sediments in Rocky Gorge Reservoir.

In 2002, Versar, Inc. completed a three-year study during which they monitored tributary and reservoir water quality. That data was used to calibrate the pollutant-loading model to determine baseline contributions to the reservoirs. The monitoring effort also included a sediment flux study to determine phosphorus loading from the sediments in Triadelphia Reservoir (Cornwell and Owens, 2002). The results of this flux study were inconclusive, suggesting the need for additional sediment data.

1.2.1 Scope Of The SOD Study

The SOD study was composed of two phases: a surficial sediment mapping phase and a sediment-oxygen demand phase.

1.2.1.1 Phase I – Surficial Sediment Mapping

Phase I focused on mapping the specific physical and chemical characteristics of the bottom sediments to determine spatial variability. Tasks included collecting surficial sediments and analyzing them for bulk and textural properties and chemical contents, including total, organic and reactive carbon, total nitrogen, total phosphorus, total sulfur, and metals (specifically Fe and Mn). Chemical data were used to determine the maximum potential sediment demand for oxygen, and for the selection of sites for *in-situ* SOD measurements. Physical and chemical data were mapped to document existing conditions of reservoir bottom.

1.2.1.2 Phase II – Sediment Oxygen Demand Determinations

During Phase II of the Study, MGS was to conduct *in-situ* measurements of sediment oxygen demand at four sites within Triadelphia reservoir. The sites were selected based on differing sediment patterns from the Phase I mapping.

MGS completed the tasks in *Phase I*, the results of which were detailed in a draft report submitted to WSSC in March, 2006. However, before MGS could conduct *in-situ* SOD measurements in Triadelphia Reservoir, the water level of the reservoir was dropped significantly in order to complete repair work on Brighton Dam. Because of the lower water

level, two of the four sites selected for *in-situ* SOD measurements were exposed, precluding the completion of *Phase II* tasks. As a result, the study was modified to include surficial sediment mapping and SOD measurements in Rocky Gorge Reservoir. The extended work was to be completed in two phases, identical in tasks as described previously for Triadelphia Reservoir.

1.3 SEDIMENT STUDY

In response to a request by the Watershed Services Division of DNR, the MGS was contracted by the WSSC to study the bathymetry and sedimentation of Triadelphia and Rocky Gorge Reservoirs. Information from this study updates WSSC's previous surveys and helped in assessing changes in sedimentation rates.

This was a three-year study, from July 2004 to June 2007. Phase I of the study was completed in June 2006. Bathymetric data was collected for the reservoirs, the current 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. This data was collected using differential global positioning service techniques and digital echo-sounding equipment. Over 400,000 discrete soundings were collected and used to generate a current bathymetric model of Triadelphia and Rocky Gorge Reservoirs. The bathymetric models indicate a current storage capacity of 6.66 billion gallons (25.2 million cubic meters) for Triadelphia Reservoir, with a surface area of 824 acres (3.33 million square meters) and 5.54 billion gallons (21.0 million cubic meters) for Rocky Gorge Reservoir, with a surface area of 618 acres (2.50 million square meters).

An additional study funded by WSSC in conjunction with the MGS was to conduct in-situ SOD measurements in the Rocky Gorge Reservoir to support development of the reservoir model and TMDL. The SOD results will be used to compare reservoir model output to actual data collected.

1.3.1 Bathymetry

In response to a request by the Watershed Services division of the DNR, MGS was contracted to study the bathymetry and sedimentation of Triadelphia and Rocky Gorge Reservoirs located in Howard, Montgomery and Prince George's counties in the State of Maryland.

Bathymetric data was collected for the reservoirs, current storage capacities and drawdown curves were determined, and volumes of sediment accumulation for the reservoirs were calculated. The collection, analysis, and presentation of this report were made to be consistent with the most recent bathymetric and sedimentation reports from Loch Raven and Prettyboy Reservoirs (Ortt et. al. 2000) and Liberty Reservoirs (Ortt et al. 2004) located within the State of Maryland.

Bathymetric data for the reservoirs was collected in May and June of 2004 for Triadelphia and in April and August of 2005 for Rocky Gorge. This data was collected using differential global positioning service (DGPS) techniques and digital echo-sounding equipment. Over four hundred thousand discrete soundings were collected and used to generate a current bathymetric model of Triadelphia and Rocky Gorge Reservoirs. Several methods of analysis were used to generate the models. The bathymetric models indicate a current storage capacity of 6.66 billion gallons [25.2 million cubic meters] for Triadelphia reservoir with a surface area of 824 acres [3.33 million square meters] and 5.54 billion gallons [21.0 million cubic meters] for Rocky Gorge Reservoir with a surface area of 618 acres [2.50 million square meters].

1.3.2 Confluence

The Watershed Services of the Maryland Department of Natural Resources was contracted by the Washington Suburban Sanitary Commission to provide an assessment of the sedimentation in Triadelphia and Rocky Gorge Reservoirs in the upper Patuxent River watershed.

Phases I and II of the project involved the measurement of the accumulations in the main body of each of the reservoirs and calculation of capacity changes since their construction.

Phase III of the project involved the investigation of sediment accumulation in tributary confluence areas that have been unencumbered by the past and current reservoir surveys. The evaluation was provided a limited budget relative to the size of the areas characterized as tributary-reservoir confluences, but enough to perform a first order approximation of sedimentation in those locations.

The investigation relied on detailed data collection from one tributary confluence in each reservoir (Cattail Creek in Triadelphia Reservoir and Scott's Cove in Rocky Gorge Reservoir), estimations of the accumulation areas associated with other unmeasured tributaries, and extrapolation of the accumulation thickness estimates from the detailed study areas to the unmeasured tributary confluences.

Data collected included historical photo reviews, topographic surveys, analysis of sediment properties, and spatial data mapping. Evidence derived from the investigation indicates that sediment has accumulated in the confluence areas. Accumulation rates are complicated by the unique geomorphic characteristics at each site, as well as periodic changes in the hydraulic conditions caused by the raising and lowering of water levels behind each dam.

Extrapolation of estimated average thickness of sediment accumulation in the study sites to all of the tributary confluence areas in each reservoir resulted in a total volume of 48 ac-ft in Triadelphia Reservoir and 26 ac-ft in Rocky Gorge Reservoir. These volumes comprise 3.22 and 1.87 % of the measured accumulations in main water bodies of each of the reservoirs, respectively. Only portions of those volumes are readily available for rapid evacuation and movement into to the main portion of the reservoirs because of vegetation growth over some of the areas of deposition.

The morphology of the area formed by the deposits, combined with recurring draw-downs in the reservoir water levels, appears to have created an over-widened active channel in the Cattail Creek confluence area. Enlarged delta channels may have the potential to increase the efficiency of sediment movement into the main body of the reservoirs, thereby increasing the rate of sediment accumulation in the main portion of the reservoirs resulting from large storm runoff events. The larger tributaries draining into the Triadelphia Reservoir are the most likely candidates for such conditions to occur.

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2.0 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.

However, in the course of researching methods of measuring the results of planned stream corridor management activities, ongoing tributary monitoring activities were identified as being conducted by MDE and the United States Department of Agriculture (USDA).

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3.0 STREAM CORRIDOR MANAGEMENT

In 2005, the TAC decided that establishing and maintaining 35-foot forested riparian buffers on all streams in the watershed would be the highest priority implementation project. Howard and Montgomery County conducted assessments on opportunities for establishing riparian buffers in the watershed and Montgomery County selected a site for a pilot planting project. In August 2006, WSSC hired a consultant to work with Montgomery and Howard County to identify possible grant funding sources for pilot planting projects. The first project to move forward for grant solicitation was a 10 acre riparian buffer planting in Reddy Branch Stream Valley Park in Montgomery County. Howard County continues to refine its assessment of properties where there may be planting opportunities.

As reported in 2005, based on a GIS analysis, establishing riparian buffers on all streams in Howard County will require planting approximately 475 acres of riparian buffers on approximately 1,800 separate properties. Approximately 25 acres are on open space lots, Washington Suburban Sanitary Commission property, State and County parks and open space. The remaining properties are privately owned. During 2007, Howard County Department of Planning worked with the WSSC consultants to identify suitable riparian buffer projects that would be eligible for funding as well as beneficial to the watershed.

In early 2006, Howard County refined the GIS analysis of riparian buffers using updated forest cover information and developed criteria for selecting properties for planting. Since there is limited acreage available for planting on publicly owned land, the focus of efforts will be on working with private landowners, with an emphasis placed on private properties with agricultural or environmental easements.

3.1 UPPER REDDY BRANCH SUBWATERSHED PROJECT

The Reddy Branch Stream Valley Park is publicly owned. One side of the stream is completely forested with a mature, high quality forest, but one side of the stream was previously part of a farm and lacks a forested buffer. Approximately half of the area proposed for reforestation is still being cropped, and the remainder was recently abandoned and is in an old-field condition. This area includes some moderately steep (15-25%) slopes and over an acre of wetlands. The channel is highly eroded along its entire length (Figure 3-1).

The Reddy Branch restoration project will provide the best multi-barrier approach based on known research of proven field methods for long term source water protection (Carlton 1990; Dunne and Leopold 1978) – addressing a complete subwatershed of the Hawlings River which ultimately flows through the Patuxent and into the Chesapeake Bay. Restoration will include establishing a 100 foot riparian stream buffer along 7,000 linear feet of non-buffered stream, construction of wetlands, a meadow demonstration area, and enhanced storm water management throughout the subwatershed.

Figure 3-1. Reddy Branch

Upon completion of this project, water quality in Reddy Branch will improve through the reduction of non-point source pollution by:

1. Filtering agricultural nitrogen through multi-species riparian forested buffers.
2. Capture, retention, and filtering of agricultural runoff in a wetland area reducing total suspended solids (TSS), total nitrogen concentrations, and total phosphorous concentrations to receiving waters.
3. Reduction of highway runoff through the establishment of vegetative meadow filtering area.
4. Reduction of fertilizer runoff from multi-use sports complex by enhancing existing storm water management by implementing bio-retention areas and wetland restoration.
5. Providing shade by increasing forest canopy, thus cooling areas of the existing stream for enhanced aquatic habitat, better nutrient cycling, reduction of algae, and increasing dissolved oxygen concentrations.
6. Reducing soil and stream bank erosion thus reducing sedimentation to Reddy Branch.

The Reddy Branch project has been divided into several segments for planning purposes. A brief description of each segment is provided below:

- **Area A**. The mainstem of Reddy Branch parallels the south side of Brookville Road, and the stream passes through a grass meadow immediately upstream and adjacent to Reddy Branch Stream Valley Park and its large contiguous forest. The meadow provides inadequate riparian buffer protection and invasive species (i.e., multiflora rose) are becoming established in the eastern end. Heavy deer browsing in the area, in addition to mowing, prevent the adjacent forest from expanding along the stream. Minor streambank erosion was also evident in localized areas along this stream reach (Figure 3-2).

Mainstem Reddy Branch facing downstream, as it passes through a meadow and enters existing forest. Photo date: January 2007.

Mainstem Reddy Branch facing upstream, as it passes through a meadow. Photo date: January 2007.

Figure 3-2. Reddy Branch Area A

- **Area B**. An unnamed tributary to Reddy Branch flows northward toward Brookville Road. The west side of the stream is bordered by croplands, grass meadow, and residential lawns; the eastern side of the stream is forested and part of Reddy Branch Stream Valley Park. The croplands, grass meadow, and lawns extended down to the edge of the streambank, offering little to no riparian buffer protection. Horse manure from the neighboring farm had recently (fall 2006) been spread in the meadow adjacent to the stream. Invasive species (i.e., multiflora rose, Asiatic bittersweet, garlic mustard, mile-a-minute, etc.) have also become established along the stream. Minor to moderate streambank erosion was also evident in localized areas along this stream reach (Figure 3-3).

- **Area C**. An abandoned farm field is located next to the unnamed tributary to Reddy Branch that flows northward toward Brookville Road. The roughly triangular shaped area possesses a dense cover of herbaceous, shrub, and woody vine species, and is surrounded by a narrow band of woods on all three sides. A few invasive species, such as wineberry, multiflora rose, Asiatic bittersweet, and mile-a-minute, and others are becoming well established in large areas of the field (Figure 3-4).

Upper end of the proposed project site, facing downstream. Photo date: January 2007.

Proposed project site, facing upstream. Photo date: January 2007.

Figure 3-3. Reddy Branch Area B

Proposed project site, facing east. Photo date: January 2007.

Proposed project site, facing south. Photo date: January 2007.

Figure 3-4. Reddy Branch Area C

- **Area D**. South of Brookville Road, the headwaters of this tributary receive drainage from cropland on both sides of the stream. Drainage is currently through low-lying swales that are not actively farmed. Uncontrolled runoff from the fields is causing minor to moderate downstream streambank erosion and other stream channel adjustments. A forested wetland area is located in the corner of the existing tree line along the stream (Figure 3-5).

Adjacent cropland contributes uncontrolled runoff directly to the stream. View is facing west-southwest. Photo date: January 2007.

View of proposed forested buffer enhancement area, facing east. Photo date: January 2007.

Figure 3-5. Reddy Branch Area D

- **Area E**. A large section of mainstem Reddy Branch, on the south side of Brookville Road, passes through an agricultural and residential area. This part of the stream is bordered in various locations by croplands, grass meadow, residential lawns, and in some places forest. The croplands, grass meadow, and lawns extended down to the edge of the streambank, offering little to no riparian buffer protection. Invasive species (i.e., multiflora rose, Asiatic bittersweet, garlic mustard, etc.) have also become established along portions of the stream (Figure 3-6).

View of the proposed project site, facing southeast from Brookville Road. Photo date: September 2006.

View of the proposed project site, facing southeast from Brookville Road. Photo date: September 2006.

Figure 3-6. Reddy Branch Area E

- **Area F**. The headwaters of Reddy Branch begin on a large agricultural property on the east side of Zion Road. Part of Reddy Branch begins as a spring-fed stream draining to a large, in-line farm pond, while another small headwater stream begins in a tree nursery and wooded area to the south. These streams are bordered in various locations by a croplands, grass meadow, tree nursery, and in some places forest. The croplands and grass meadow extended down to the edge of the streambank, offering little to no riparian buffer protection. Invasive species (i.e., multiflora rose, Asiatic bittersweet, garlic mustard, etc.) have also become established along portions of the stream. The 2.3-acre pond on the Our House property is impounded by an earthen embankment on its south and east sides; according to Our House staff it has a maximum depth of 9 feet. A single 16-inch steel pipe drains the pond on its southern end; the pipe is covered by a concrete walkway. The pond is currently clogged with algae; drainage and water quality appear poor. Some small areas of vegetated wetlands currently exist on its west (above embankment) and south (below embankment) sides. The pond is forested on its north There is a large meadow on the eastern side of the property that is currently not used, and regenerative growth is taking hold (Figure 3-7).

Pond, facing northwest from the earthen embankment. Photo date: May 2007.

The concrete structure and walkway at the southern end of the pond. Photo date: May 2007.

Figure 3-7. Reddy Branch Area F

- **Area G**. A private community park on Olney Laytonsville Road (MD Route 108) drains northward into a small tributary to Reddy Branch. The receiving stream, located in the strip of woods extending southward into the center of the property, has become severely eroded and downcut. This stream channel erosion appears to have been caused by excessive stormwater runoff. Two large wetland meadow areas, containing numerous invasive species, were observed adjacent to the central strip of woods.

3.2 CHERRY CREEK PROJECT

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 (Figure 3-8).

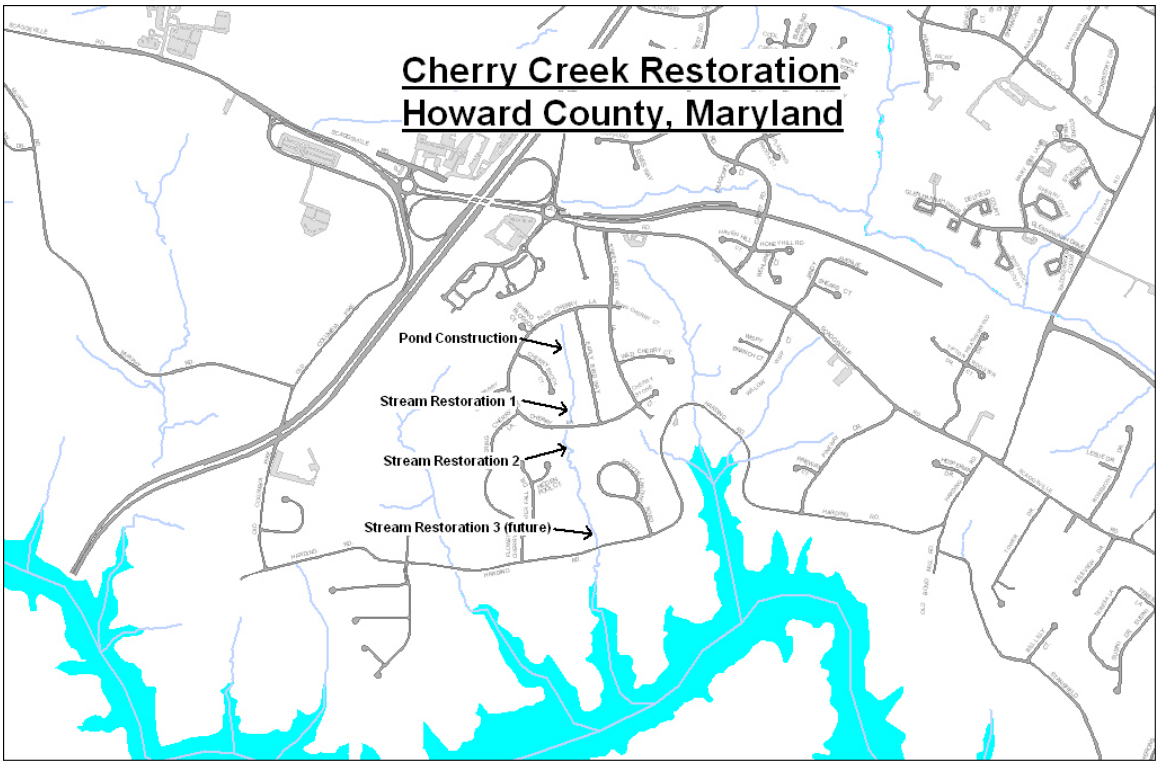

Figure 3-8. Cherry Creek Restoration

Howard County has completed a comprehensive watershed study of Cherry Creek and identified three stream reaches in need of restoration (Figure 3-9).

1. Reach 1 uses 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.

2. 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.

3. 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.

Cherry Creek Stream Preconstruction

Cherry Creek Stream Construction

Cherry Creek Stream Post Construction

Cherry Creek Ponds Construction

Cherry Creek Ponds Post-construction

Figure 3-9. Cherry Creek Reach 1

3.3 LOWER HAWLINGS RIVER

The Lower Hawlings River stream restoration project was completed in fall 2005. The project withstood the test of several significant runoff events during 2006. Critical reaches were treated within 2300 linear feet of stream. Meander preservation: high-flow cut-through was lowered by approximately 2 feet to meet elevation of bank-full and larger events. Where needed, banks were regarded and planted, structures were added, and large channel obstructions were removed to prevent instability. Log vanes and j-hooks were installed to reduce bank shear stress, improve habitat and retain narrower, more competent channel at lower flows. Flood-benches were provided on the outsides of certain turns to simulate floodplain function during higher flows and to provide a sediment sink. Live large woody debris was partially buried in the bank at approximately bank-full elevation to measure success of this large-scale live stake technique.

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 (Figure 3-10).

Introductions and Training

Introductions and Training

Tree Planting

Tree Planting

Figure 3-10. Lower Hawlings planting March 2007

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.

3.4 CATTAIL CREEK SUBWATERSHED

To further Stream Corridor improvement efforts, in the spring of 2007 the Howard County TAC representatives identified the Cattail Creek watershed as a potential source of nutrient and sediment reduction activities. Howard County identified approximately twenty viable parcels of land for establishing riparian forest buffers (Figure 3-11). Reviewing existing agricultural and environmental preservation easements and layering them with existing forest buffers along Cattail Creek and its tributaries identified these parcels. Initially, Howard County intended to approach property owners with Agricultural and environmental Preservation easements, and offer incentives and assistance to establish forested riparian buffers throughout the Cattail Creek watershed. Landowners in the headwaters were be approached first, in order to progressively increase riparian forest buffer from the headwaters to the Patuxent River at Triadelphia Reservoir.

GIS analysis identified areas with inadequate riparian buffer located on properties with agricultural and other environmental easements within the study area, a rural portion of Howard County, located in Cattail Creek watershed upstream of the Triadelphia Reservoir (Figure 3-12). This GIS analysis was then used, in combination with high-resolution aerial photography from 2006, to map candidate locations for riparian buffer projects. This portion of Cattail Creek is bordered in various locations by croplands, grass meadow, residential lawns, and forest. In many places, aerial photographs indicate that the croplands, grass meadow, and lawns extended down to the edge of the streambank, which would offer little to no riparian buffer protection.

During the summer of 2007, the WSSC contractor met with Chesapeake Bay Trust Staff and the Howard Soil Conservation District Manager to briefly discuss the project. During that discussion, the Trust was clear that its funds would not be awarded for such a project, and so further project development was postponed. Instead, efforts were turned to a similar effort described later in this document under the agricultural assistance section.

3.5 LAUREL-AREA OF RESERVOIR WATERSHED

In April 2007, TAC representatives from Prince George's County identified a priority need to seek funding for general public outreach/education. The goal would be to apply these grants across all three counties,-- thus enhancing protection in Prince George's County as well. In response, WSSC staff and the contractor conducted preliminary research to identify Stormwater management in the residential areas of the watershed in Prince George's County (Figure 3-13).

Initial plans were made to offer free Stormwater management resources such as downspout diverters and rain barrels to residents during the 2008 water festival.

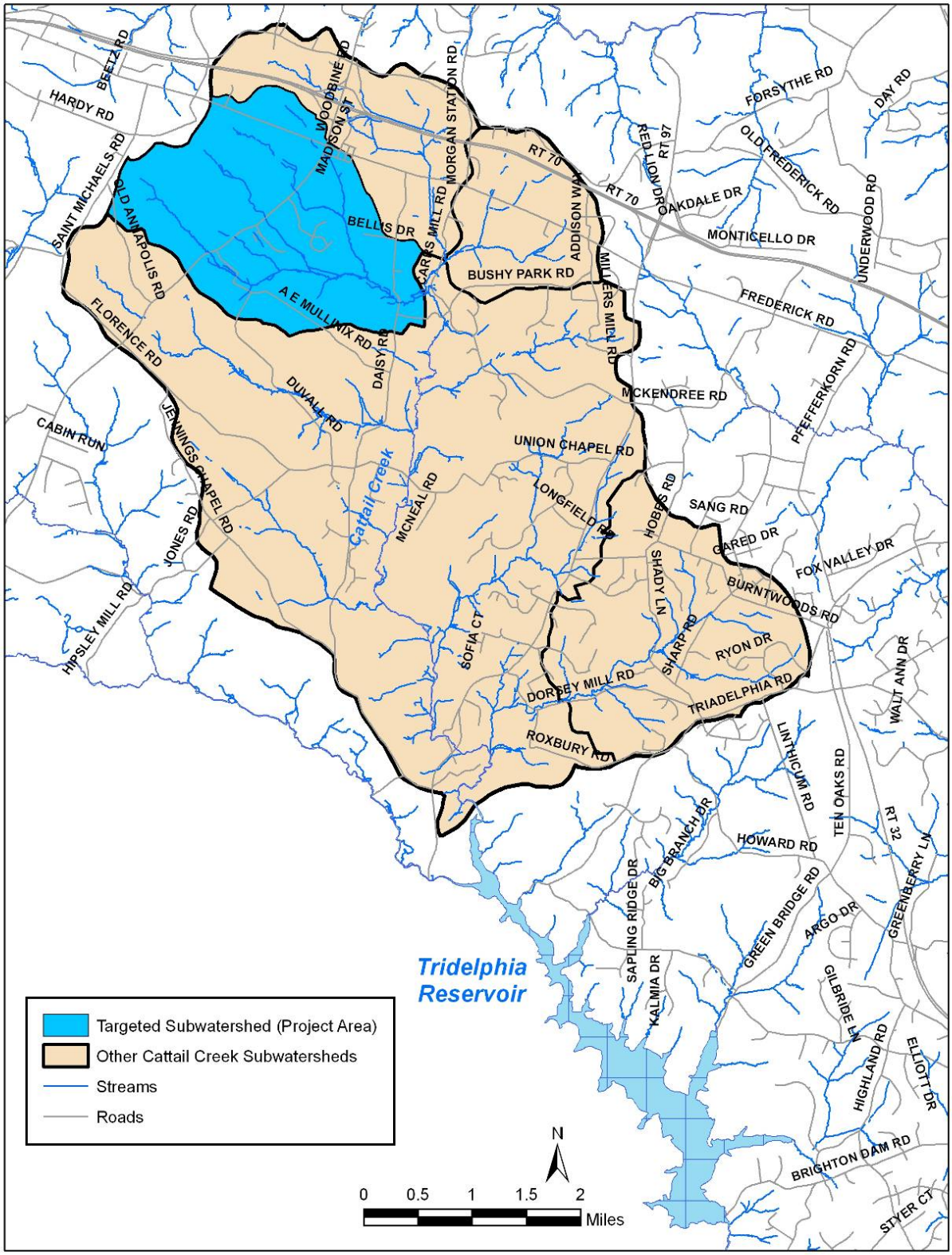

Figure 3-11. Cattail Creek subwatershed

Figure 3-12. Cattail Creek buffer needs

Figure 3-13. Prince George's County area of watershed

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4.0 RESERVOIR AND WATERSHED MODELS

During 2007 Maryland Department of the Environment (MDE) and the Interstate Commission on the Potomac River Basin (ICPRB) refined and enhanced existing watershed and reservoir models to develop Total Maximum Daily Loads (TMDL) to address nutrient impairments in the Rocky Gorge Reservoir and nutrient and sediment impairments in the Triadelphia Reservoir. The TMDLs were submitted to the U.S. Environmental Protection Agency for review and approval in fall 2007. Implementation of the TMDLs will help support protection of the reservoirs and water supply.

The full 2007 document establishes Total Maximum Daily Loads (TMDLs) for phosphorus and sediments in Brighton Dam, (basin code 02-13-11-08), and for phosphorus in Rocky Gorge Reservoir (basin code 02-13-11-07).

Triadelphia Reservoir and Rocky Gorge Reservoir have been designated as Use IV-P and Use I-P waterbodies, respectively, in the Code of Maryland Regulations (COMAR26.08.02.08M(6) and COMAR 26.08.02.08M(1)). Both reservoirs were identified on the303(d) list submitted to EPA by the Maryland Department of the Environment (MDE) as impaired by the following (years listed in parentheses): nutrients (1996) and impacts to biological communities (2002 and 2004). In addition, Triadelphia Reservoir was listed as impaired by sediment in 1998. Biological impairments within these watersheds will be addressed separately at a future date.

The water quality goal of the nutrient TMDLs is to reduce high chlorophyll-*a* (Chl-a) concentrations that reflect excessive algal blooms, and to maintain dissolved oxygen(DO) at a level supportive of the designated uses for Triadelphia and Rocky Gorge Reservoirs. The water quality goal of the sediment TMDL for Triadelphia Reservoir is to increase the useful life of the reservoir for water supply by preserving storage capacity.

The TMDLs for total phosphorus were determined using a time-variable, two-dimensional water quality eutrophication model, CE-QUAL-W2 (“W2”), to simulate water quality in each reservoir. The TMDLs are based on average annual total phosphorus (TP) loads for the simulation period 1998-2003, which includes both wet and dry years, thus taking into account a variety of hydrological conditions.

Chl-a concentrations indicative of eutrophic conditions can occur at any time of year and are the cumulative result of phosphorus loadings that span seasons. Thus, although daily loads were calculated for these TMDLs, average annual TP loads are the most appropriate measure for expressing the nutrient TMDLs for Triadelphia and Rocky Gorge Reservoirs.

Similarly, the sediment TMDL for Triadelphia Reservoir, which is based on the water quality modeling performed for the nutrient TMDLs, is expressed as an average annual load in keeping with the long-term water quality goal of preserving the storage capacity of the reservoir

The TMDLs include (1) a waste load allocation (WLA) to one municipal wastewater treatment plant and to municipal separate storm sewer systems (MS4s), (2) a load allocation

(LA) to nonpoint sources, and (3) a 5% margin of safety (MOS) for the nutrient TMDLs and an implicit MOS for the sediment TMDL. Table 4-1 summarizes the nutrient and sediment TMDLs. The table also shows baseline loads and the percent reductions in loads necessary to meet the TMDLs.

Table 4-1. The Elements of Nutrient and Sediment TMDLs for Triadelphia and Rocky Gorge

	Triadelphia Reservoir	**Rocky Gorge Reservoir**	**Triadelphia Reservoir**
Constituent	TP (lbs/yr)	TP (lbs/yr)	Sediment (tons/yr)
Baseline Load	65,953	46,935	32,141
Percent Reduction	58%	48%	29%
TMDL	27,700	24,406	22,820
WLA	5,288	7,429	400
LA	21,027	15,757	22,420
MOS	1,385	1,220	Implicit

Maximum daily loads were calculated by flow regime. Table 4-2 shows the maximum daily loads under low flow and high flow conditions for the nutrient and sediment TMDLs for the Patuxent Reservoirs.

Table 4-2. Total phosphorus and sediment

Flow Regime (cfs)	**TMDL**	**WLA**	**LA**	**MOS**
Total Phosphorus, Triadelphia Reservoir (lbs/day)				
<326	852	356	453	43
>326	17,003	1,504	14,649	850
Total Phosphorus, Rocky Gorge Reservoir (lbs/day)				
<291	770	314	418	39
>291	4,003	1,102	2,701	200
Sediment, Triadelphia Reservoir (tons/day)				
<326	662	40	621	Implicit
>326	25,468	157	25,311	Implicit

Five factors provide assurance that these TMDLs will be implemented. First, National Pollutant Discharge Elimination System (NPDES) permits for both wastewater treatment plants and urban stormwater systems will play an important role in ensuring implementation. Second, Maryland has several well-established programs that may be drawn upon, including Maryland's Tributary Strategies for Nutrient Reductions developed in accordance with the Chesapeake Bay Agreement. Third, Maryland's Water Quality Improvement Act of 1998 requires that nutrient management plans be implemented for all agricultural lands throughout Maryland. Fourth, local jurisdictions, soil conservations districts, and the Washington Suburban Sanitary Commission (WSSC) have implemented a formal agreement, the Patuxent Reservoirs Protection Agreement, to protect water quality in the reservoirs. Finally, Maryland has adopted a watershed cycling strategy, which will assure that routine future monitoring and TMDL evaluations are conducted.

5.0 AGRICULTURAL AND MANAGEMENT LOCAL COST SHARE INITIATIVE

During 2007, increased emphasis was placed on expanding use of the cost-share program.

5.1 RESERVOIR COST-SHARE PROGRAM

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. Figure 5-1 provides summary information on cost-share projects in the watershed to date.

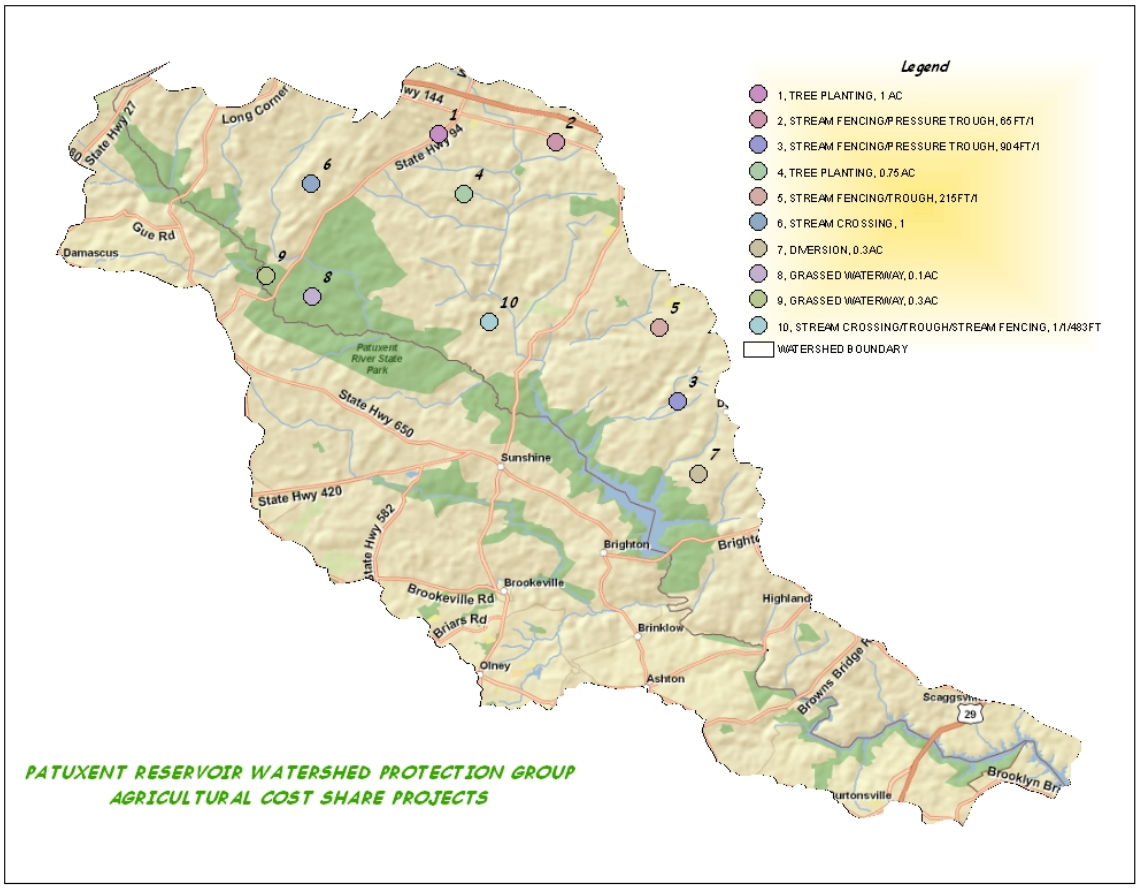

Figure 5-1. Cost –share projects

5.2 POSITIVELY PURE PATUXENT HEADWATERS PROJECT

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.

To educate property owners with 7 or less horses on existing assistance programs to implement water quality improvement actions. The applicants, in cooperation with multiple county agencies will conduct a mail survey to identify watershed landowners with 7 or less horses, They will then conduct hands-on educational events for the identified landowners, provide assistance to secure planning and financial assistance to implement water quality improvement actions, conduct outreach to encourage other water quality improvements on neighboring residential properties, and encourage effective maintenance for project life spans.

The specific objectives of the project are to increase community engagement in actions to improve water quality utilizing Best Management Practices in the Patuxent Reservoirs Watershed, focusing on *outreach for horse management.* This is extremely important because these property owners may not be part of the traditional farming community and may be unaware of steps they can take to protect the watershed using the available agricultural assistance programs. Federal, State, and County funding assistance programs exist[1], but these landowners often have low participation in existing programs.

Further, in addition to landowners lacking familiarity with existing assistance programs, elected officials at many levels are also not aware of existing assistance programs. This lack of awareness makes outreach to educate the public a very important activity.

The steps that will be taken to complete the project are that first, a survey will be mailed to owners of parcels over 2, but less than 100 acres in size in phased segments of the watershed querying whether they have horses on the land. Once identified, those landowners will be invited to a series of hands-on educational events (such as 2-hour field walks in evenings and on weekends) throughout the fall and then offered assistance to prepare applications for assistance to implement water quality improvement actions.

The project is intended to:

- Raise awareness about the challenges and solutions to restoring the Chesapeake Bay and its rivers; the mailing will reach hundreds of property owners in the watershed, raising their awareness of the issue. Those who respond will benefit from the educational programs and hands on assistance in identifying BMPs on their property.

- Promote collaborative watershed restoration solutions between citizens, businesses, and government; This is a collaborative project between SCDs and DEPs in Howard and Montgomery Counties and the Washington Suburban Sanitary Commission, exemplifying effective multi-governmental approaches to watershed improvement.

[1] MACS, CREP, WHIP, Patuxent Reservoir Protection BMP Cost Share, Stream ReLeaf, MDA Conservation Innovation Grants

In addition, by working directly with county residents who either own or board horses, this will embody an exemplary cooperative effort between business, citizens and government

- Engage citizens in community-based restoration and protection projects that benefit watershed health; Watershed land owners with horses on their property are the target audience for this project. Thus, those property owners and other local citizens will be engaged in a series of restoration and protection projects to benefit watershed health on their own property.

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6.0 FORESTRY MANAGEMENT AND RECREATIONAL USE SURVEY

In May 2003, the Maryland Department of Natural Resources 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. Based on the results of this study, a Forest Conservation Plan has been drafted. Using an ecosystem-based approach, the 2006 draft, "Forest Conservation Plan for Washington Suburban Sanitary Commission Reservoir Properties," identifies existing and future conditions and goals for the WSSC forested lands around Triadelphia and T. Howard Duckett (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.

The study recommends forest protection, restoration, and conservation as long term management goals to sustain a viable ecosystem for sustainable reservoir water quality, biodiversity and, wildlife habitat. Recommendations address forest operations to maintain forest health, reduce density in overstocked stands, and control invasive species prior to forest operations.

During the study, 75 forest stands were identified and sampled. Forest stand data collection was completed in fall 2005, and the US Forest Service decision support software for forest ecosystem management, NED-1, was used for data summary and analysis. This approach includes collecting data on overstory trees, understory conditions, forest canopy layers, and habitat elements for wildlife: woody debris, snags, seeps, rock piles, perches, and ponds. Stand acreages have been generated from the GIS files. Stand summaries include data on species, stocking (trees/acre), basal area (sq. ft./acre), wood volume, site quality, and median diameter at breast height (4.5 ft).

A forest management plan written in 1986 focused on the portions of the forest in plantations (242 acres around Triadelphia, and 411 acres on Rocky Gorge). The last harvests occurred in 1993 and 1994, covering 62 acres of clearcuts in Virginia and loblolly pine and 19 acres of selective thinning in white pine. Some of the harvest and thinning operations that were recommended in the late 1990s have not occurred, leaving very dense plantations.

During the 1990s, deer populations rose, and increased browse was observed on regenerating trees. WSSC began a deer management program in 2000 and has expanded acreage eligible for managed hunts over the ensuing years to limit ecological damage from large deer herds.

6.1 DESIRED FUTURE CONDITION

The desired future condition is the vision of what an ideal forest stand would look like, that management recommendations would be intending to move the forest towards.

The WSSC forest lands are:

- vigorous and diverse
- actively regenerating at levels adequate to sustain the forest
- capable of rapidly assimilating and retaining nutrients and sediment to protect water quality
- resistant to disturbances that would degrade water quality
- resilient, capable of restoring forest on the land after large or intense disturbances

Diversity in species and canopy structure enhances overall forest health, reduces the risks of catastrophic loss of invasive pests on any particular species or suite of species, and avoids excess nutrient releases following tree defoliation or death.

Stands are well-stocked and most have multiple canopy layers from overstory to understory, shrubs, and ground cover. Diversity in height and canopy layers reduces risk of trees toppled by wind. Stands represent a mix of early, intermediate, and advanced stand structure, with early structure have newly established trees, grasses, herbs, and shrubs; intermediate structure having a closed forest canopy with developing midstories, shrubs, and herbs; and advanced structure having several well-developed layers of canopy, significant understory, and substantial coarse woody debris on the forest floor.

The forest lands are continually changing and the exact location of a structural type or species changes over time, but a continuous cover of forest is maintained. Insects and diseases are present at low levels, considered a normal part of a healthy forest. Cultural resources are marked and protected during forest operations. Recreation occurs in focused areas, with water quality impacts avoided through proactive measures to control erosion and litter.

6.2 FOREST CONSERVATION GOALS

The goals for forest conservation were developed through collaboration of WSSC and DNR. The goals were, in order of importance:

1. Protecting and enhancing water quality
2. Providing security for water supplies
3. Maintaining and restoring regional biological diversity within the public lands surrounding the reservoirs
4. Providing recreational opportunities compatible with the above objectives

These goals are hierarchical and exclusionary. Goal #1 is to be completely addressed before considering any of the following three. All actions to address goals 2 through 4 must not degrade the value of the forest to protect and enhance water quality.

6.3 FOREST MANAGEMENT APPROACH

Several key concepts were used in applying the forest management approach:

1. Management is used to direct how forests grow, die, and regenerate, taking into account current and historic disturbance regimes, stand development, and soil productivity

2. Diversity in stand types and structure supports biological diversity and resilience at the landscape level;

3. Diversity in stand species composition, changing stand structure, and multiple canopy layers support biological diversity and resilience at the stand level;

4. Integrated pest management with monitoring of pest populations and early control maintains a healthy, diverse forest;

5. Riparian protection and limited selective management maintains healthy functioning aquatic systems.

This plan and the management approach build on the Forest Conservation Plan developed for the City of Baltimore for their three reservoir properties, which is based on an ecosystem and adaptive management approaches and decades of experience actively managing forests at the Quabbin Reservoir System in Massachusetts.

The working hypothesis for a watershed protection forest is that of a multi-layer, actively regenerating forest with at least three qualities: 1) regeneration provides a reserve of trees ready to grow following a catastrophic disturbance such as a hurricane; 2) vigorous young and middle-aged trees and stands able to effectively sequester nutrients, carbon and accumulate biomass; and 3) mature trees and stands to ensure mixed-species regeneration through seed crops, and moderated light, temperature, and soil moisture (Barten et al. 1998).

Maintaining infiltration and limiting overland flow are accomplished by maintaining multiple layers of canopies, undisturbed litter, and dense rooting. Diversity is key to resilience since different species and ages of trees respond differently to disturbances, whether a species-specific pest like emerald ash borer or tendency to break tops or blow down in wind and ice storms.

Active management is needed to maintain healthy native forests in the context of a settled landscape.

Changes in natural disturbance mechanisms include:

- Loss of wildfire, which historically favored oak reproduction;
- Increased nutrients from land use and atmospheric deposition;
- Increased deer population from lack of predators, which preferentially browse native seedlings;

- Increased exotic species of plants, insects, and diseases like kudzu, gypsy moth, chestnut blight
- Increased runoff from developed landscapes.

Changes in disturbance regimes tend to result in changes in forest community types. Studies in the Northeast US have found lower levels of nutrient exports from oak-hickory dominated forests, while maple/beech/birch forests with more readily decomposable litter tend to have higher rates of release, particularly as nitrate (Lovett and Mitchell, 2004).

Maintaining diverse forest species and ages would seem to have a role in supporting stable nutrient levels and minimizing problems with disinfection byproducts from natural organic matter.

Some native pests like southern pine beetle are problematic only when stand conditions favor it, such as the very dense conifer stands that have come about by delaying intended management actions like thinning. Pine beetle damage has already been noted in some of the existing dense pine stands on WSSC lands.

Several of the most problematic invasive species in the woods were originally introduced (with most still commonly used) as landscaping: Japanese honeysuckle, Oriental bittersweet, and porcelainberry.

In the Quabbin Reservoir Forest, deer densities of more than 15/sq. mi. during hunting prohibitions limited tree regeneration below acceptable levels of 2000 seedlings/acre; four years after controlled hunting began, tree regeneration increased to sustainable levels (Barten et al., 1998).

Active forest and wildlife management are needed even to maintain the traditional native forest types and encourage healthy tree regeneration (Ozier et al. 2006).

Management approaches were premised on maintaining water quality rather than increasing water yield to the reservoirs. While it is possible to increase water yield following harvesting for several years, WSSC lands are not of sufficient extent to generate measurable increases in water, particularly if management measures like buffers and harvest size limits are in place to avoid undesirable effects on water quality and habitat.

6.4 FOREST INVENTORY KEY FINDINGS

- **Diverse forest species.** The forestlands have substantial diversity, with 12 different types of forest plant communities, and over 100 plant species. In the overstory alone, there were 37 different species, almost all being native to the region. Yellow-poplar had the greatest proportion of the basal area overall, with northern red oak, loblolly pine, Eastern white pine, and red maple being the other species making up the majority of the basal area.

- **Tree regeneration concerns.** While seedlings and young trees would be expected on all of the understory plots, they were found on only 82%. Oaks and hickories that need young trees established in the stand for normal regeneration were present on less than half of the plots. Neither reservoir forest had seedling densities near or above the 2,000+ trees/acre desired for dependable regeneration.

- **Dense high-hazard stands.** Inventory data showed several areas of excessively dense stands, where risks of pests and fire are increased and habitat value can be diminished. These are primarily planted pine stands that have not had thinning or other management that was intended at the time of planting.

- **Low shrub and ground cover.** The inventory documented low levels of shrubs and ground cover, particularly in Rocky Gorge plots. This lack of a multi-layering of vegetation reduces the ability of the forest to intercept rainfall and protect soil from erosion and to prevent sediment moving into the streams and reservoirs.

- **Lack of age and size diversity.** The forest is even-aged, with trees of the same size predominating. This lack of a diversity of trees of various ages and sizes does not provide an assurance of a renewable forest in the face of small or large-scale disturbances that lead to tree damage and death.

- **Widespread invasive plants.** Invasive species were well-distributed throughout Rocky Gorge and parts of Triadelphia forests, with several species that can be problematic for new trees being established. Some of the invasive species are unpalatable to deer, while native seedlings are preferentially browsed, resulting in increasing dominance of the invasive exotic species that tend to reduce plant diversity over time.

Expanding regeneration and understory growth are critical elements for improving the watershed protection function of the reservoir forests. Control of two factors that interfere with successful regeneration and ground cover, high levels of deer and invasive plants, is needed to move the reservoir forests to their desired future condition through appropriate silvicultural harvests.

6.5 FOREST HABITAT KEY FINDINGS

- **Sparse shrub habitat.** Upper level forest canopy was well represented, but other elements of vertical layering of vegetation, especially shrubs and understory trees were not available for habitat use.

- **Importance of WSSC forests in watershed function.** Reservoir forests are significant contributors to forests in the watersheds, comprising 14% of the forest, but less than 8% of the land area of the two watersheds, which are only 1/3 forested.

- **Rare plants in wetlands.** The search of the Department of Natural Resources – Natural Heritage Database identified several species of concern along the reservoir

fringe and a Wetland of Special State Concern, but none within the forestlands. Both of the reservoirs contains areas of uncommon habitat that are of conservation interest and that enhance regional biological diversity.

- **Uncommon forest types.** A population of Gray birch (TR stand 3) and a few surviving American chestnut trees (Mont. Co. side, lower half of RG) have been reported near the water. WSSC could participate in American chestnut restoration projects.

- **Eagle nesting habitat.** Rocky Gorge and Triadelphia forests both support reproducing pairs of bald eagles.

- **26% interior forest.** Despite the significant acreage of forest, only a quarter is likely to provide interior forest conditions, based on the linear nature of the reservoir forests, roads, and the openings provided by the reservoir itself. Forest interior dwelling birds may use some portion of the larger stands, with an estimated 422 acre of interior forest in Rocky Gorge stands, and 565 acres in Triadelphia stands.

- Nesting cavities present but snags low-Cavities in live or dead trees were found within 93% of the forest units, creating well-distributed nesting features. Snags, dying or dead standing trees, were found within 43% of the forest units, although they would be expected to be found in all units across the forest. Rocky Gorge stands generally lacked high perches or snags, although low perches were well-distributed.

- Woody debris habitat present-Coarse woody debris, dead limbs, and logs on the ground, were found at an average rate of 1927 cubic feet per acre for Rocky Gorge and 1917 for Triadelphia. The total accumulation of this important habitat component is high for the forest's age and size, though the diversity of coarse woody debris sizes was dominated by branch and limb sized pieces, lacking the larger forms contributed by fallen trees.

6.6 FOREST ROADS KEY FINDINGS

- The reservoir lands contain few internal low-use roads. Nonetheless, the roads extend over 50 miles (84511m, 277267 ft) and cover 80 acres (82.7 ac).

- Stream and drainageway crossings are a critical point for sediment entry, and need to be better maintained to reduce sediment and phosphorus input.

- The suitability of road access for forest management varies, with portions of the roads having constraints for typical log truck size, which could limit management options or lengthen skid distances, which increases costs.

- The existing road network is important to maintain for at least custodial access, although a fully connected perimeter road is not necessary if impacts on environmentally sensitive areas are great, such as a steep stream crossing or wetlands.

6.7 FOREST MANAGEMENT OPERATIONAL GOALS AND OBJECTIVES

Management is the means to a series of goals for protection, restoration, and long-term conservation of the forests. Protection involves actions needed to avoid destruction of the existing forest from direct threats such as forest fire, illegal harvesting, dumping, or other damage (Table 6-1). For the WSSC objectives, restoration involves improving the condition of the forest and forest floor to increase functionality for water quality protection, using silviculture to change forest types gradually over time. Long-term conservation means creating conditions for the forest and its functions to continue over time, including planning for regeneration of future trees (Table 6-2). Each one of these is essential to the long-term protective forest functions, and each depends on implementing the other.

Table 6-1. Operational goals and objectives for management of WSSC reservoir forests

Goals	Objectives
Forest Protection	
1. Limit land uses on the reservoir forest lands to those that do not threaten water quality;	A. Maintain the boundaries of the reservoir lands to control illegal activities (e.g. dumping) and prevent encroachment.
2. Minimize non-forest land use (e.g., roads), the impacts of deer browse, natural events (e.g., flood, drought, fire, ice/wind storms, etc.) and human activities that threaten water or other natural resources.	B. Manage recreational impacts to limit effects on water quality. C. Maintain roads, particularly culverts and other stream crossings, and control access. D. Protect the forest from wildfire.
Forest Restoration	
3. Restore native forest communities to sites presently occupied by pine plantations.	E. Maintain vigorous forest cover (Most trees up to 130 years with reserve trees that reach over 200 years old).
4. Restore natural regeneration to levels adequate to quickly recover control of hydrology and nutrient cycling following an intense large-scale disturbance.	F. Establish 535 acres of natural areas managed for interior forest conditions. G. Establish a Science and Technical Advisory Committee of experts in natural resource and watershed management to suggest approaches to solving new or evolving problems.
Long-term Forest Conservation	
5. Maintain a vigorous and diverse forest, with multiple canopy layers and varied species composition.	H. Monitor the implementation and effectiveness of all management practices based upon established indicators with advice from the Science/Technical Advisory Committee.
6. Maintain the forest cover by assuring the continuing establishment of adequate natural regeneration of seedlings.	I. Use uneven-aged, two-aged, or even-aged with reserves silvicultural systems to maintain an aggrading forest cover within the active management zone.
7. Maintain a forest that achieves active growth, nutrient assimilation, water infiltration, and the regulation of soil and stream temperatures.	J. Maintain approximately 535 acres of natural areas as source sites for the natural regeneration of all forest plants and as control sites for a monitoring program.
8. Prevent sediment and nutrients from the WSSC's lands from entering the streams and reservoirs.	K. Maintain 50-foot or greater riparian zones along the streams and reservoirs, restricting tree removal to invasive plants, control for damaging insects, and light selective harvest to aid native species regeneration.
9. Provide for the active assimilation of nutrients and other pollutants entering the WSSC properties from adjacent land holdings.	
10. Limit the effects of atmospheric pollution through the filtering and buffering of pollutants.	L. As available, acquire adjacent properties within the watersheds that pose a high risk to water quality.

Table 6-2. Risk of Damage to forests on WSSC-owned lands from forest pests able to cause tree mortality

Species	Target Species Abundant	Likelihood of Introduction	Ability to Control
Asian Long-horned Beetle	Y	Moderate	Moderate
Sirex Wood Wasp, Sirex noctilio	Y	Moderate	Moderate
Gypsy Moth	Y	Present	High
Sudden Oak Death	Y	Moderate	Low
Emerald Ash Borer	N	High	Low
Southern Pine Beetle	Y	Native	Moderate
Hemlock Woolly Adelgid	N	Present	Low/Moderate
Bacterial Leaf Scorch	Y	Present	Low
Dogwood Anthracnose	Y	Present	Low
White Pine Blister Rust	Y	Present	Moderate

Recommendations to prioritize forest stand operations were based on a strategy of reducing risk from the substantial area of very dense stands. Stands with over 150 square feet of basal area or more than 700 trees/acre were identified as priority areas to treat. The older pine stands tended to have some of the highest densities and greatest potential susceptibility to density-dependent insects and disease.

Recommended treatments are based on the goal of developing more multi-layered stand structure, and increasing natural regeneration present in the forest. The regeneration harvests are designed to encourage natural regeneration rather than planting, and allow pine plantations to develop into mixed species stands that retain a strong pine component.

6.8 MANAGEMENT ACTIONS NEEDED

- **Managing Wildlife.** Continue and expand the WSSC's preferred deer control strategy to support natural regeneration of forests and improved habitat conditions over time, essential to the long-term sustainability of the forestlands.

- **Reducing Weeds.** Manage invasive species, particularly before any silvicultural operation. This may take two to three years of seasonal control (pulling, mowing, spot spraying) to reduce invasive plants, but will involve much less overall chemical use than if not addressed prior to a thin, harvest or other disturbance. Ailanthus is the major overstory invasive species, and is of sufficiently limited extent that it could be controlled.

- **Thinning Woods.** Reduce density of overstocked stands to increase resilience in the event of pest outbreaks and encourage structural diversity and advanced regeneration, an average of 1.6% of forest area per year for 15 years.

- **Managing People.** Reduce the immediate human impacts to soil, vegetation, and wildlife habitat and water quality through:

  - Active (programs) and passive (signs) public education
  - Treatments of high-use recreation areas
  - Law and regulation enforcement
  - Controlling access and maintaining roads

- **Maintaining Roads.** Maintain roads and boundaries for protection, management, and emergency access. Reduce sediment moving off the internal road system. Sediment reduces water quality and is the major source of phosphorus moving into the reservoirs. Improve wildfire response capability by training WSSC staff in wildfire suppression

- **Responding to Storms and Fires.** Survey stand damage after major storms. Identify damage and need for invasive species control. Train WSSC staff in wildfire suppression and coordinate with local fire departments to improve wildfire response capacity.

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7.0 PUBLIC OUTREACH AND INVOLVEMENT

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.

7.1 EARTH MONTH - APRIL 2007

The WSSC, along with the local agencies that make up the Patuxent Reservoirs Watershed Protection Group, observed April as Earth Month, with many opportunities to show that we care for the earth, our property and especially our water. We hosted numerous activities for families, local residents and school children to educate our watershed neighbors about environmental issues and ways that we can preserve and protect our precious resource. 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.

7.2 VOLUNTEER OPPORTUNITIES

Two cleanup days were on the calendar again this year. The Izaak Walton League Wildlife Achievement Chapter in Damascus held its annual spring cleanup in the Upper Patuxent watershed on Saturday, April 7. They provided water, gloves, lunch and a tee-shirt to all participants. On Saturday, April 14 approximately 75 dedicated watershed neighbors, scouts and students met at various WSSC recreation area sites on Rocky Gorge and Triadelphia Reservoirs for the annual Patuxent River Cleanup Day which is organized by the Patuxent Riverkeeper (Figure 7-1). Several other school groups accomplished clean up efforts on Thursday, April 12, Thursday, April 19 and Sat. April 21, at other designated locations. Large amounts of trash were removed from along the river including a four wheel ATV which turned out to be the largest single item removed from anywhere along the river this year. Our third volunteer opportunity, a day with a Weed Warrior from Montgomery County master gardeners program to remove invasive plants from the area around the Brighton Dam Azalea Garden was cancelled due to heavy rain and thunderstorms.

7.3 LIBRARY PROGRAMS

Again this year, source water protection programs for children were scheduled at three county libraries as listed below (Table 7-1). Some of the programs were not well attended and one was cancelled due to no registration. In spite of that, some very important networking was accomplished. Attendance at the pre-school program at the Laurel Library included only one child and his mother and a small day care group that happened to be in the library that morning. By networking with that one mother, we were invited to provide a program about the watershed and source water protection to the entire student body at Bond Mill Elementary School in Prince

George's County (Figure 7-2). We also helped them find professional resources to enhance their annual spring planting project and have made a start in helping them towards Maryland Green School certification next spring. Contact was made at the Olney Library program with teachers from Olney Elementary School, who we will begin to work with on their environmental programs. Other 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. The networking possibilities at the libraries may be worth the effort of continuing to hold these children's programs. Attendance totaled 139 people plus library staff. The breakdown for attendance at each library is given below (Table 7-1).

Figure 7-1. Volunteer opportunities

Table 7-1. Library programs

Prince Georges County	Montgomery County	Howard County
Laurel Library Pre-School: 3 adults, 6 children Elem. School: 12 adults, 15 children	Olney Library Pre-School: 20 adults, 25 children Elem. School: 12 adults, 16 children	Glenwood Library Pre-school: 10 adults, 15 children Elem. School: Cancelled (no registration)

Figure 7-2. Library programs

7.4 SPEAKER'S 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 (Figure 7-3).

Figure 7-3. Rain Barrel Workshop - Brighton Dam April 10, 2007

Two of the seven scheduled workshops were cancelled due to no registration. There is still work to be done to reach the perfect target audience for these and other similar presentations. A description of each workshop is listed below (Table 7-2).

Table 7-2. Workshops

Date	Title	Participants	Description
Tuesday, April 10	Rain Barrels Workshop (Make/take home a rain barrel)	35 attendees	Twenty five rain barrels were purchased by WSSC with an order that was being placed by the Isaak Walton League in Damascus. Twenty four rain barrels were given to those who attended along with information about using it at their homes. One barrel was left that will be placed on a building at Brighton Dam. Montgomery County DEP provided the hardware for the barrels, and Meo Curtis of Montgomery County DEP and Jeff Deschampes of the Izaak Walton League presented the workshop
Thursday, April 12	Composting Workshop (Take home a composting bin)	8 attendees	This was a very good presentation by the Montgomery County Office of Solid Waste Management. They are willing to come out and do this presentation again at our request. Very good information was given along with specific instructions about how to put together the composing bin, how it works and how to manage it in your yard.
Tuesday, April 17	Using Native Plants in Your Garden Landscape	8 attendees	Presented by Howard County Master Gardeners, this was an informative presentation on how and why to plant native plants and how to identify some of the invasive plants

Table 7-2. (Continued)

Date	Title	Participants	Description
Thursday, April 19	Composting Workshop (Take home a composting bin)	10 attendees	Presented by the Howard County Dept. of Public Works. (See above for description of this program). This presentation was a little less formal, but those that attended got great information on composting and the Howard County recycling program.
Monday, April 23	IPM (Integrated Pest Management) outside your home	Cancelled due to no registration	Montgomery County Master Gardeners
Tuesday, April 23	Recycling	Cancelled due to no registration	Maryland Department of Environment
Thursday, April 26	Organic Lawn Care – How to do it better!	12 attendees	John DeNoma, a Board Certified Professional Agronomist and Horticulturist in Montgomery County, provided expert information and tips on how to maintain your lawn to protect the environment, the watershed and the bay. The presentation was very well organized and there was so much interest that those who attended had to be asked to leave so that the Brighton Dam Visitors Center could be closed. More programs of this type could be added to our outreach efforts at other times throughout the year

7.5 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 (Figure 7-4). 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 Md. Department of Natural Resources fishing program and numerous children tried their hand at casting a line into the reservoir. The instruction was not as good as in the past, so we will find another volunteer for this program. This year we also provided some interactive activities for the children; the Enviroscape model, a watershed game from the DNR and a craft table. These were well received and provided valuable information about the watershed and source water protection to those who attended, children and adults alike.

Figure 7-4. Family Watershed Day

7.6 CHARITY BIKE RIDE

On Saturday, April 28, 2007--- 9:00 a.m. to Noon at the Brighton Dam/Triadelphia Reservoir, 50 riders participated in the Charity Bike Ride (Figure 7-5). 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. The suggested donation was $22.50, the approximate amount to provide water for a family of four for one month. 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. This activity continues to grow in popularity each year. WSSC provides all the pre-ride details such as mapping out the ride, preparing ride sheets and instructions, staff and security and vehicle support during the ride.

Figure 7-5. Charity Bike Ride Brighton Dam/Triadelphia Reservoir April 28, 2007

7.7 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 (DPWT supplies and removes roll-off containers for the trash being collected), 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. The IWLA-WAC hosted the DNR's 'Stream Waders Training' course during spring 2007, in which volunteers are taught how to collect macroinvertebrates to add to the State's information base on stream aquatic health. The IWLA-

WAC was also a site for the 'Growing Native' acorn collection project with the Potomac Conservancy.

7.8 PLANNING FOR EARTH WEEK 08

During 2007, planning began for Earth Week 2008. There was consensus that an Environmental Fair, on a Saturday in April, 2008 would be an excellent forum for our source water protection and environmental focus for this coming year. It should be a rain or shine event with appropriate tents for displays and activities. The speakers program of this past year would be incorporated into the "fair" with individual workshops being held throughout the day with speakers and hands on activities. The event should be educational with particular emphasis on those things that can affect source water:

7.9 BRIGHTON DAM NATURE CENTER AND GARDENS

Beginning in January of 2007, TAC members began discussions with the WSSC Community Outreach Manager regarding enhancement of the Brighton Dam Visitor's Center and gardens. Initial scoping was conducted to identify methods of funding to conduct the projects. The WSSC contractor prepared initial project documents to create a "Friends of" non-profit organization dedicated to educational programs that promote water conservation and source water protection practices on the landscape. That could provide volunteer support as docents, plant propagators, plant sale workers, and teachers. This effort culminated with a multi-party summit at Brighton Dam in October 2007 and creation of an Outreach Plan for WSSC management in December 2007.

7.9.1 Weed Warriors

In response to encouragement in October of 2007 to establish a Weed Warriors program, the WSSC contractor prepared and submitted a funding request to the National Fish and Wildlife Foundation in November 2007 to support creation of such a program for WSSC's 4,000 acres surrounding the two Reservoirs.

1. Weed Warrior program would target specified areas on selected weekends, quarterly.

2. WSSC employee volunteers can be trained to assist with the interior areas (not visible or

3. accessible to the public) where invasives are threatening new tree plantings.

4. Citizen volunteers can work in visible areas where we can install signage to educate the

5. public.

8.0 CONSULTANT SUPPORT

At the Policy Board meeting in 2005, the TAC recommended that WSSC provide two full-time staff positions to ensure that the rate of completing implementation items would be accelerated to most benefit drinking water quality in the reservoirs. The Policy Board agreed that WSSC should consider a full-time contractual position that would focus on obtaining grant funding to support implementation projects and also provide more direct coordination among the agencies to achieve priority resources protection.

In August 2006, Versar, Inc. was awarded a one-year contract with WSSC to provide technical and administrative support and coordination services for the TAC. Under a subcontract, Capuco Consulting Services, Inc. has provided on-site staff since August 2006.

Services provided to the TAC include the following:

- Identify and pursue relevant environmental grant opportunities and coordinate with appropriate members of the TAC to obtain grant funding for project implementation.
- Provide all support and coordination necessary for smooth, timely and effective working of the TAC and its meetings.
- Bring together TAC workgroups and coordinate their efforts to address issues of importance to the TAC.
- Keep the TAC current on local reservoir watershed protection issues and studies.
- Report to WSSC's Environmental Group Leader or his designee.

8.1 ACTIVITIES CONDUCTED

The following tasks were performed by the consultants:

- Routine project management tasks and reporting requirements were fulfilled.
- During the week of January 2, 2007, Ms. Capuco prepared and distributed the draft agenda for the January meeting of the Technical Advisory Committee (TAC) of the Patuxent Reservoirs Watershed Protection Group.
- Also during the week of January 2, 2007, Ms. Capuco reviewed and incorporated comments on the draft Technical Supplement to the Annual Report and provided the revised draft for review by the TAC.
- On January 4, 2007 Ms. Capuco mailed draft fact sheets on the Reddy Branch stream restoration projects to the Chesapeake Bay Trust and the National Fish and Wildlife Foundation.

- On January 8, 2007, Ms. Capuco escorted Versar Technical staff with Mr. Kagan for a field examination of Reddy Branch.

- On January 9, 2007, Ms. Capuco attended meetings with the WSSC Project Manager and the Versar Project Manager to review contract status and future activity

- Also on January 9, Ms. Capuco attended and served as recording secretary for the TAC January meeting. Draft minutes for the meeting were provided on January 11, 2007.

- During the week of January 15, Ms. Capuco revised the draft TAC minutes and submitted them to the TAC.

- Also during the week of January 15, 2007, Ms. Capuco compiled research on nature centers and began development of a funding plan for construction of a nature center at Brighton Dam.

- On January 19, 2007 Ms. Capuco met with the Executive Director of Our House to discuss the Reddy Branch stream restoration projects and to secure partnership with Our House in the restoration projects.

- During the week of January 23, 2007, Ms. Capuco initiated contact with the watershed coordinator at the Maryland Department of Natural Resources.

- During the week of January 29, Ms. Capuco met with the Katherine Nelson of MNCPPC to discuss strategy for seeking funds for the Reddy Branch Project.

- During that week Ms. Capuco also met with John McCoy and Claudia Donegan of Maryland DNR to secure their support of the Reddy Branch project.

- Also during that week, Ms. Capuco met with Paul Saiz of the gold Leaf Group to secure that business' support of the Reddy Branch project.

- Also during the week of January 29, Ms. Capuco spoke with the Executive Director and President of Olney Boys and Girls Club to secure their support of the Reddy Branch Project. A meeting was scheduled and then cancelled due to weather.

- On February 6, Ms. Capuco met with David Plummer of the Montgomery County Soil Conservation Service to identify areas where he might be of assistance in the Reddy Branch Project. As a result of that meeting, a process was developed between MNCPPC and the Soil Conservation Service to contact the private land owners in the Reddy Branch watershed to address forest cover concerns.

- On February 7, 2007 Ms. Capuco met with Dr. Habibian and Ted Graham to plan the upcoming Environmental Leadership Workshop.

- Also during the week of February 5, Ms. Capuco was contacted by Susan Overstreet, Howard County, regarding a potential forest buffer project the county had identified. Ms. Overstreet will schedule a meeting to discuss the project.

- During the week of February 12, Ms. Capuco developed a first draft and an approximate budget for the Reddy Branch watershed restoration project.

- On February 12, Ms. Capuco met with Ed Gould, a volunteer from Our House, and Katherine Nelson, MNCPPC to walk the Our House property and identify likely candidate areas in the watershed for restoration.

- Also during the week of February 12, Ms. Capuco continued to revise the draft grant application for the Reddy Branch and to prepare preliminary documents for the development of Friends of Brighton Dam.

- On February 13, Ms. Capuco met with Shelley Rentsch of O'Doherty Group Landscape Architecture to learn budgeting parameters for planting plans for the Reddy Branch project

- Also on February 13, Ms. Capuco met with Mitch Keiler of the Maryland Department of Natural Resources to discuss the two wetland restoration initiatives in the Reddy Branch watershed.

- On February 16, Ms. Capuco attended a workshop with the National Fish and Wildlife Foundation to determine strategy and eligibility for funding from NFWF for the Reddy Branch watershed restoration.

- During the week of February 19, Ms. Capuco began preparations for the March TAC meeting and continued preparation of Chesapeake Bay Trust and National Fish and Wildlife Foundation grant applications for the Reddy Branch Project.

- Also during the week of February 19, Ms. Capuco coordinated with Susan Overstreet (Howard County) regarding potential streamside buffer plantings in Howard County.

- During the week of February 26, Ms. Capuco continued preparation of grant applications for Reddy Branch.

- On February 27, Ms. Capuco developed the draft agenda for the March 13 meeting of the TAC. After incorporating comments, that agenda was distributed to TAC members on March 2.

- On February 28, 2007 Ms. Capuco assisted with facilitation of the WSSC Environmental Leadership working group meeting from 9:00 a.m. through 1:00 p.m.

- On March 1, Ms. Capuco attended a meeting with the Secretary of Maryland Department of the Environment where she described agency priorities for funding during the next 9 months.

- Also on March 1, Ms. Capuco met with Howard County TAC representative Susan Overstreet and Jim Myers of the soil conservation district to develop plans for a Riparian Forest Buffer project in Howard County. Cattail Creek Subwatershed was selected.

- On March 5, 2007, Ms. Capuco attended a meeting with Chesapeake Bay Trust Executive Director David O'Neil to hear a presentation on new funding sources for watershed restoration that will be generated by a proposed tax on impervious surfaces.

- On March 6, Ms. Capuco prepared a meeting summary of the February 28 Environmental Leadership meeting.

- Also on March 6, Ms. Capuco met with WSSC Outreach staff to establish next steps in development of the Friends of Brighton Dam and the Brighton Dam nature center.

- On March 7, Ms. Capuco completed the Chesapeake Bay Trust Targeted Watershed grant application for Reddy Branch and provided it to MNCPPC for signature.

- On March 8, Ms. Capuco assembled the attachments for the Chesapeake Bay Trust Targeted Watershed grant application and began preparation of the National Fish and Wildlife Foundation Small Watershed Grant Application for Reddy Branch.

- During the week of March 12, 2007, at the request of the USEPA, Ms. Capuco reviewed the US EPA Office of Water *Sustainable Watershed Funding Guide*. She also continued preparation of the National Fish and Wildlife Foundation grant application for Reddy Branch

- On March 13, Ms. Capuco met with Anne Harriston-Strang to discuss the Reddy Branch project.

- On March 13 and 14, Ms. Capuco prepared for, facilitated, and prepared summary notes of the March meeting of the Patuxent Reservoirs Watershed Protection Group Technical Advisory Committee.

- During the week of March 19, Ms. Capuco coordinated the final preparation of the NFWF grant application for Reddy Branch with MNCPPC.

- Also during the week of March 19, Ms. Capuco began preparation of the Friends of Brighton Dam strategic plan.

- During the week of March 26, Ms. Capuco completed preparation of the attachments for the National Fish and Wildlife Foundation small watershed grant application for Reddy Branch.

- On March 29, Ms. Capuco met with MNCPPC staff to develop strategies for implementing the Reddy Branch project.

- On March 28, Ms. Capuco coordinated with the Chesapeake Bay Trust to arrange a site visit to Reddy Branch.

- During the week of April 2, Ms. Capuco coordinated with MNCPPC to assist with development of level of effort type contracting capabilities within MNCPPC for implementation of the Reddy Branch project.

- Also during the week of April 2, Ms. Capuco coordinated with Chesapeake Bay Trust staff to prepare an agenda and meeting location for the visit to Reddy Branch.

- On April 5, Ms. Capuco began research for a U.S. Environmental Protection Agency Targeted Watershed grant request for the Patuxent Reservoir Watershed.

- On April 10, Ms. Capuco met with MNCPPC staff and a landscape architecture contractor (O'Dougherty Group Landscape Architects) to brainstorm different contracting mechanisms that could be used to implement the Reddy Branch project.

- On April 11, Ms. Capuco met with Versar staff (Nancy Roth) to discuss contract implementation issues, budgets, and the possibility of a second option year for the contract.

- On April 13, Ms. Capuco toured the Reddy Branch site with Chesapeake Bay Trust staff and MNCPPC staff. The tour involved visits to sites A through D and follow-up questions and answers.

- During the week of April 16, at the request of WSSC staff, Ms. Capuco contacted TAC representatives from all signators to the Memorandum of Agreement establishing the Patuxent Reservoir Protection Group to query whether any projects other than Reddy Branch and Cattail Creek were in need of grant seeking assistance. Prince Georges county representative (Maldonaro) indicated that continued search of outreach and education funds would best aid all three counties in the watershed.

- Also during the week of April 16, Ms. Capuco began researching the Maryland Department of Environment section 319 planning grants for applicability to Cattail and Reddy Branch.

- Also during the week of April 16, Ms. Capuco began planning for funding Cattail Creek watershed activities.

- On April 19, Ms. Capuco spoke with a representative from the Chesapeake Bay Trust and provided response to questions posed by the grant evaluation panel.

- Also on April 19, Ms. Capuco began composing a proposal to MNCPPC for transfer of grant funds to WSSC for implementation of the Reddy Branch project.

- During the week of April 23, Ms. Capuco began development of a Chesapeake Bay Trust Stewardship Grant Application for the Cattail Creek Subwatershed Riparian Buffer planting in Howard County

- Also during the week of April 23, Ms. Capuco began development of a Clean Water Act ss319(h) grant application for areas E and F of Reddy Branch.

- On April 26, Ms. Capuco continued research for developing a strategic plan for Friends of Brighton Dam.

- On May 3, Ms. Capuco attended a planning meeting with Maryland Department of the Environment to discuss the 319 grant application for Reddy Branch.

- On May 4, Ms. Capuco coordinated with Katherine Nelson on the preparation of a 319 grant application for Reddy Branch areas E and F.

- On May 7, Ms. Capuco coordinated with Susan Overstreet regarding the Cattail Creek riparian buffer projects. Also, on May 7, Ms. Capuco prepared a list of support requests for Versar to fulfill.

- On May 8, Ms. Capuco and Tobias Kagan met with Nancy Roth of Versar to discuss technical support needs for the remainder of the contract year.

- On May 9, Ms. Capuco met with Ken Shanks of Maryland Department of the Environment to discuss the strengths of Reddy Branch in securing 319 funds.

- On May 10 and 11, Ms. Capuco coordinated with Meo Curtis, and Katherine Nelson regarding watershed restoration action strategies for the Hawlings watershed.

- Also on May 10, Ms. Capuco began preparations for positioning the TAC for additional grant applications in FY2008.

- During the week of May 14, Ms. Capuco updated the photo records for Reddy Branch, continued preparation of the Cattail Creek grant application, and updated the tracking information on possible grant resources for the TAC.

- On May 22, 2007, Ms. Capuco toured the Our House property with Ed Gould of Our House and a team from Versar.

- On May 24, 2007 Ms. Capuco met with Katherine Nelson to discuss next steps in the Reddy Branch projects.

- Also during the week of May 21, 2007, Ms. Capuco coordinated with Jana Davis of the Chesapeake Bay Trust regarding the Cattail Creek project.

- During the week of May 29, 2007, Ms. Capuco continued preparation of an FY 2008 action plan for grant opportunities, coordinated with TAC representatives regarding the June TAC meeting and grant projects, and distributed materials to the TAC for the June meeting.

- During the week of June 4, 2007, Ms. Capuco worked with WSSC staff in coordinating participation for the June TAC and eventually arranging to reschedule the meeting due to delays in TMDL preparation by MDE.

- Also during the week of June 4, Ms. Capuco assisted with preparations for the Environmental Leadership meeting scheduled for June 13, assisted Mr. Kagan with equipment calibration, and began research and preparation for a request for Forestry Board assistance in the Reddy Branch project.

- During the week of June 11, Ms. Capuco coordinated rescheduling of the June TAC meeting, facilitated the Environmental Leadership meeting on June 13, and began preparation of a Reddy Branch project task list for MNCPPC.

- During the week of June 18, 2007, Ms. Capuco coordinated the scheduling of a TAC meeting to discuss the draft TMDLs on the Reservoir watershed.

- On June 19, Ms. Capuco prepared draft meeting minutes from the June 13 Environmental Leadership work session for review by Dr. Graham and Dr. Habibian.

- Also during the week of June 18, Ms. Capuco continued to revise the Cattail Creek CBT Stewardship grant application, eventually scheduling a meeting with Susan Overstreet and other project participants to discuss questions generated during preparation of the application.

- On June 25, Ms. Capuco attended a work shop at Arlington Echo Outdoor Education Facility to learn more detailed information on several Chesapeake Bay Trust grant programs. The program was hosted by Trust grant coordinators and Ms. Capuco was able to directly discuss the Cattail Creek project with the Grants Program Director.

- On June 26, Ms. Capuco attended a working session at the Howard County Carroll Office Building with Ms. Overstreet, Jim Myers, Bob Ensor, and other DPE staff to resolve the questions surrounding the Cattail Creek proposed project. During the course of the meeting the group decided to take a very different approach to stream buffer funding and Ms. Capuco was directed to prepare new project plans and grant applications.

- On June 28, Ms. Capuco continued efforts to schedule a meeting to discuss TMDLs and began preparation of a revised Cattail Creek project description.

- During the week of July 2, Ms. Capuco reviewed and distributed draft worksheets on Cattail Creek and Reddy Branch load reductions that were prepared by Versar.

- Also during the week of July 2, Ms. Capuco prepared and distributed an agenda for the TMDL review meeting scheduled for July 18, 2007.

- During the week of July 9, Ms. Capuco researched required steps to ensure that Reddy Branch and Cattail Creek projects are eligible for MDE funding, continued preparations for Cattail Creek project, and continued preparation for next option year on the contract.

- During the week of July 16, 2007, Ms. Capuco continued researching potential funding opportunities, continued preparation of plans for the Reddy Branch and Cattail Creek projects, and supported the TAC meeting on July 18.

- On July 17, Ms. Capuco participated in a planning meeting for the outreach activities designed to engage reservoir residents in establishing conservation easements on their property to satisfy conditions of the watershed consent decree.

- TAC meeting minutes were prepared, reviewed by WSSC staff and distributed to the TAC by the 24th of July.

- During the week of July 23, 2007, Ms. Capuco met with Katherine Nelson (MNCPPC) to discuss next steps on the Reddy Branch project.

- Also during the week of July 23, Ms. Capuco began development of a funding strategy for a project to enhance source water protection in the Prince George's County portions of the reservoir watershed.

- On July 24, Ms. Capuco spoke with the national Fish and Wildlife Foundation grants program manager, Amanda Bassow, to discuss funding options for forest buffer installation on private lands.

- On July 30, Ms. Capuco met with Gina Foringer of Versar to discuss contract progress and option year administration.

- On July 31, Ms. Capuco met with Bob Ensor, Susan Overstreet, David Plummer, and Jim Myers to discuss development of a Howard County project into a TAC-wide project.

- Also on July 31, Ms. Capuco met with Deborah Weller, Sandy August, and Frank Wise to discuss the availability of funding to support a project in Prince George's county and what might be appropriate components of such a project.

- On August 2, 3, and 6 Ms. Capuco compiled TAC comments on the draft reservoir TMDL for assimilation into a TAC correspondence with the Maryland Department of Environment.

- During the week of August 6, Ms. Capuco worked with Mr. Kagan to research possible tools to offer to Prince George's County residents for groundwater recharge as opposed to storm water management through the storm drain system. Several very good options were identified.

- Also during the week of August 6, 2007, Ms. Capuco compiled comments received by TAC members on the draft TMDL documents. After review by WSSC management, Ms. Capuco then revised the document to conform to reviewer comments.

- Routine project management tasks and reporting requirements were fulfilled.

- During the week of August 20, 2007, Ms. Capuco compiled documentation of the comments submitted by the TAC members on the draft TMDL regulation for the watershed.

- On August 21, Ms. Capuco met with Sandy August to discussed the planned outreach for horse owners and to discuss planned activities for earth week 2008.

- Also during the week of August 20, 2007, Ms. Capuco drafted an agenda for the September 2007 TAC meeting.

- On August 27, 2007, Ms. Capuco continued preparation of a project description for the horse farm educational projects being planned for Howard and Montgomery Counties.

- Sept 5 -- Ms. Capuco coordinated with Katherine regarding a site visit to Reddy Branch stream valley park and coordinated with Susan Overstreet and Angela Morales to incorporate their comments for the draft Annual Report.

- On Sept 6 Ms. Capuco met with Tobias Kagan and Laura Swisher of general counsel to discuss the possibility of working with the horse farm manager to implement BMPs as a demonstration project to support the TAC efforts to implement BMPs on small horse farms

- On Sept 6 draft TAC agenda for 9=18 was provided.

- On Sept 7, draft TAC agenda was distributed

- On Sept 7 Ms. Capuco visited Reddy branch stream valley park with MNCPPC staff Rob, Katherine, and Doug Redmond to develop a scope of work and budget for implementation of forest buffer on areas A and B.

- On September 10, Ms. Capuco met with Katherine Nelson of MNCPPC to develop budget and scopes for the Reddy Branch project

- On September 12, Ms. Capuco researched funding opportunities for TAC outreach projects.

- On September 14, Ms. Capuco attended a meeting of the TAC Outreach Committee

- Also on September 14, Ms. Capuco attended the Governor's Grants Conference in College Park Maryland.

- On September 17, ms. Capuco prepared an initial draft of the TAC annual report, incorporating comments provided by Howard County TAC members.

- Also on September 17, Ms. Capuco met with TAC member Sandy August to discuss funding opportunities identified on September 12 and the outreach approach for the Reddy Branch projects.

- On September 18, 2007, Ms. Capuco attended the TAC meeting at WSSC

- Also on September 18, Ms. Capuco prepared a draft Chesapeake Bay Trust Mini-Grant application for the horse pasture BMP project.

- On September 20, 2007, Ms. Capuco prepared minutes of the TAC meeting of the 18th and following review by Mr. Kagan, they were submitted for review by Dr. Habibiban.

- On September 21, 24, 25, and 27 Ms. Capuco continued work on the TAC Annual report.

- Routine project management tasks and reporting requirements were fulfilled.

- On October 1, 2007, Ms. Capuco provided the draft TAC annual report for review by Martin Chandler. He provided comments which were then incorporated throughout the week.

- On October 2, 2007, Ms. Capuco met with Nancy Roth of Versar to discuss workload and staffing.

- On October 4, 2007, Ms. Capuco completed the Chesapeake Bay Trust grant application for the Howard Soil Conservation District

- On October 9, the revised draft TAC annual report was provided for review by the TAC members.

- On October 10, 2007, Ms. Capuco met with MNCPPC and Our House, Inc. to discuss implementation of the Reddy Branch project portion on property owned by Our House (RBF)

- On October 11, 2007, Ms. Capuco completed the first draft of the Reddy Branch RBA grant application.

- During the week of October 15, Ms. Capuco completed preparation of a $5,000 grant request to the Chesapeake Bay Trust for riparian forest buffer planting in a portion of Reddy Branch Stream Valley Park. MNCPPC will submit the grant application directly.

- Also during the week of October 15, Ms. Capuco continued incorporation of TAC member comments on the draft Annual Report. She also prepared a first draft of the

power point presentation to the Policy Board at the November 8 Policy Board Meeting.

- On October 18, Ms. Capuco met with Nancy Roth of Versar, and WSSC staff and management to discuss the contract status.

- During the week of October 22, Ms. Capuco continued to complete preparation of the TAC annual report.

- On October 23, Ms. Capuco attending a planning meeting with WSSC outreach staff and other interested parties at Brighton Dam to discuss potential outreach uses at that facility.

- On October 25, Ms. Capuco prepared and submitted a preliminary grant application to the National Fish and Wildlife Foundation Pulling Together Initiative grant program for $22,500 in outreach support for WSSC.

- Also on October 25, Ms. Capuco met with Versar project team members to coordinated their work in preparation of several Reddy Branch grant applications.

- On the week of October 29, 2007, Ms. Capuco consolidated TAC comments on the draft Policy Board presentation and assisted WSSC staff with revisions to the presentation. The Annual Report was also completed during that week and posted to the WSSC web site.

- Also during the week of October 29, Ms. Capuco coordinated with Versar staff for the preparation of grant applications on Reddy Branch area B.

- On November 1, Ms. Capuco met with staff from Our House to plan grant preparation in furtherance of the establishment of riparian forest buffer on their property.

- During the week of November 5, Ms. Capuco continued coordination with Versar staff regarding MNCPPC grant applications, She also coordinated directly with volunteers at Our House regarding reforestation on their portions of the Reddy Branch sub watershed.

- Also during the week of November 5, Ms. Capuco assisted with the preparation of and distribution of the Policy Board meeting agenda.

- On November 6, Ms. Capuco provided WSSC outreach staff with project summaries for the Brighton Dam volunteer recruitment garden and the Stormwater management demonstration.

- On November 8, Ms. Capuco assisted with facilitation of and note taking for the Policy Board meeting.

- On November 9, Ms. Capuco coordinated directly with the Chesapeake Bay Trust regarding submission of the Mini-grant application for Reddy Branch and the Stewardship grant application.

- On November 13, a draft grant application for the Chesapeake Bay Trust Stewardship grant program was provided to MNCPPC for reforestation of the Reddy Branch. Revisions were made and the draft was resubmitted on the 15th of November.

- On the 16th of November, Ms. Capuco began planning with Versar regarding the establishment of forest on the 10 acres of designated forest conservation bank on the Our House portion of Reddy Branch.

- Throughout the week of November 19, Ms. Capuco continued revising and finalizing the Chesapeake Bay Trust Reddy Branch Stewardship Grant application.

- On November 19, Ms. Capuco prepared a draft table of contents for the TAC Annual Report Technical Supplement.

- On November 21, 2007, Ms. Capuco incorporated comments on the draft Policy Board meeting minutes and distributed the revised minutes to the TAC.

8.2 RECOMMENDED ACTIVITIES TO POSITION THE TAC FOR FUTURE GRANT APPLICATIONS

According to the Environmental Finance Center at the University of Maryland, Financing is predicated on two key activities:

1. Identifying and leveraging sustainable revenue

2. Spending the money efficiently with high return on investment

With that in mind, and based on 10 month's experience attempting to seek grant funding, the following activity is recommended to continue TAC pursuit of grant funds.

- **Take steps needed to obtain top administration recommendations for receipt of EPA directed funds (i.e., targeted watershed, CWA ss319 and Small Creeks and Estuaries)**

  - Delineate projects by subwatershed
    - Identify each subshed's ideal source water protection measures and ancillary benefits (i.e. habitat preservation)
    - Prioritize projects by defensible criterion
      - Link project prioritization to TMDL determinations
    - Specifically identify potential tangible, measurable environmental results
    - Develop cost estimates for projects

- Develop a WRAS similar to the Corsica and Hawlings documents
  - Gather all studies within Reservoir Watershed
  - Develop GIS layers needed
    - CSPS subwatershed boundaries
    - Soils
    - Topography
    - Existing land use
      - AgBMPs
      - Woodlands
      - Open spaces
      - Developed areas
    - Impervious areas
      - Building roofs
      - Parking lots
      - Roads
      - Sidewalks
    - Existing SWM ponds
    - Storm drain system
    - Monitoring stations
    - Streams
    - Property boundaries
    - Wetlands
  - Prepare compilation documentation

- Obtain letters of support for Priority Resources and Work Plan from top-level managers at all TAC agencies
  - County Executives
  - MDE Secretary
  - DNR Secretary

- Engage EPA Region 3

- Ready/prepare projects for implementation
  - Secure in-kind resources
  - Resolve contractual issues
  - Remove internal barriers
    - Sign-off fears
    - Inter-departmental cooperation

❖ **Partner sufficiently with a 501c(3) to be able to seek Foundation grants for projects together**

- Revitalize Effort to partner with Patuxent Riverkeeper
- Engage Chesapeake Bay Foundation
- Engage Center for Watershed Protection
- Engage Izaak Walton League
- Others?

- **Strengthen community and business partnerships to show volunteerism and community support**

  - Work with community to develop appropriate goals, objectives and strategies for projects
    - Define community roles
    - Identify community capacity gaps (i.e., education)
    - Develop marketing strategy to unify stakeholder perception of projects

  - Focus Reddy Branch outreach on
    - Olney Mill Community Association
    - Olney Boys and Girls Club
    - Rosa Parks MS
    - Belmont ES
    - Local Chamber of Commerce/Business Association
    - Area developers
    - Neighboring Farms
    - Our House
    - Others?

  - Focus Cattail Creek outreach on
    - Local schools
    - Residents
    - Civic clubs
    - Area developers
    - Others?

- **Develop a funding strategy for the Reservoir watershed as a whole**

  - Develop a funding feasibility study
    - Engage funding stakeholders
      - Campbell Foundation
      - Chesapeake Bay Trust
    - Engage other experts
      - Environmental Finance Center UMD
      - Center for Watershed Protection
    - Engage project participants
      - TAC
      - Community members

  - Review and map approach to potential funding sources already identified
    - Develop prioritization criterion
      - Type of opportunity
      - Dollar level
      - Administrative burden
      - Dissemination of cash
      - Political barriers

- Prioritize all opportunities including re-applying where denied
- Develop 18 month calendar

- Establish a financing workgroup charged with developing and implementing the strategy to make financing goals a reality

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APPENDIX A

PATUXENT RESERVOIRS WATERSHED PROTECTION AGREEMENT WITH AGRICULTURAL MEMORANDUM OF UNDERSTANDING AND AMENDMENTS

PATUXENT RESERVOIRS WATERSHED PROTECTION AGREEMENT

This agreement is effective this 29th day of October, 1996, by and among Howard County, Montgomery County, Prince George's County (a body corporate and politic), the Howard Soil Conservation District (HSCD), the Montgomery Soil Conservation District (MSCD), the Maryland National Capital Park and Planning Commission (M-NCPPC), and the Washington Suburban Sanitary Commission (WSSC)

WHEREAS, the parties agree that the Patuxent Reservoirs Watershed includes the Triadelphia and T Howard Duckett (Rocky Gorge) reservoirs, the contributing Patuxent River and its tributary streams and associated groundwater resources,

WHEREAS, the parties to the agreement recognize the importance of protecting the long-term biological, physical, and chemical integrity of the Patuxent Reservoirs Watershed;

WHEREAS, the parties recognize the work of the Patuxent Reservoirs Protection Group (PRPG) as valid and recognize that an interjurisdictional partnership is needed to promote reservoir watershed protection strategies.

WHEREAS the parties desire 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.

WHEREAS, the parties acknowledge the importance of integrating a Patuxent Reservoir Protection Strategy with the Patuxent Tributary Strategy to address the goals of the 1987 Chesapeake Bay Agreement; and

WHEREAS, the parties desire that the benefits of and responsibilities for necessary actions be shared equitably by all parties.

NOW, THEREFORE, BE IT RESOLVED, that in consideration of the covenants and agreements set forth hereinafter, it is mutually covenanted and agreed as follows:

ARTICLE I - ESTABLISHMENT OF A PATUXENT RESERVOIR PROTECTION STRATEGY

The need for establishing a protection strategy as outlined in the interim report Developing a Patuxent Reservoir Protection Strategy (March 1995) is hereby recognized by the parties. The parties hereby agree to cooperate with each other regarding initiatives that will help fulfill recommendations of the "Interim Action Plan for Reservoir Protection" and to the "Development of a Long-Term Reservoir Protection Program" as outlined in that report.

ARTICLE II - POLICY BOARD

A Members

The Policy Board ("Board") shall be composed of the County Executives for Howard County, Montgomery County, and Prince George's County; the Chairpersons for the Howard Soil Conservation District (HSCD) and the Montgomery Soil Conservation District (MSCD) Boards, the Executive Director for the Maryland-National Capital Park and Planning Commission (M-NCPPC); and the General Manager of the Washington Suburban Sanitary Commission. Any Board member may designate an alternate by written notification to other Board members.

The Policy Board may change its membership by consensus among existing members.

B Functions

The Board shall meet yearly to receive the Technical Advisory Committee's annual report and to review ongoing activities and the results of studies targeted toward protecting the reservoirs and their resources. The Board may meet more frequently to consider issues and make recommendations as necessary. The Board shall encourage cooperative arrangements to ensure that all parties participate actively in programs and policies that maintain and improve water quality and habitat throughout the reservoirs watershed.

The Board shall consider:

1. Review and evaluation of information from the Technical Advisory Committee;
2. Strategies to address present or anticipated problems;
3. Work activities among parties for the coming year; and
4. Other matters found necessary or desirable for reservoir watershed protection.

The Board will agree by consensus on all recommendations, determinations, and proposals. The Board's decisions shall be advisory only, and shall not be binding on any political subdivision or agency participating in this agreement. An annual summary of the Board's decisions shall be prepared and made available to the public.

C Chairpersons

The County Executives of Howard County, Montgomery County, and Prince George's County will serve successive terms as the Chairperson The Chairperson will serve from July 1st of one year to June 30th of the following year The County Executives will agree upon the order of the succession

ARTICLE III - TECHNICAL ADVISORY COMMITTEE

A Members

The Technical Advisory Committee ("Committee") consists of representatives from. (1) Howard County· Department of Health; Department of Planning and Zoning; and Department of Public Works; (2) Montgomery County· Department of Environmental Protection and Department of Permitting Services; (3) Prince George's County: Department of Environmental Resources and Department of Health; (4) the M-NCPPC, (5) the HSCD, (6) the MSCD, (7) State of Maryland: Department of Agriculture; Department of the Environment; and Department of Natural Resources; and (8) the WSSC.

The Committee will meet at least once per year to review the results of that year's work efforts, to recommend a work plan for the next year, and to prepare the annual report to the Board. The Committee will meet more frequently as needed to review, evaluate, and make recommendations on reservoir-related concerns.

The Committee may propose standing subcommittees or ad hoc workgroups as needed to evaluate specific reservoir protection issues. The subcommittees and workgroups may request representatives from agencies or groups that are not permanent members of the Committee to participate.

B Functions

1 The Committee or designated workgroups shall meet as necessary to periodically review and evaluate existing problems and proposed actions which may affect the reservoirs and the watersheds, including the following functions:

a. Providing sources of high quality raw water as a regional water supply system;

b. Providing habitats to support high quality aquatic and riparian communities;

c. Providing desirable places for environmental enhancement and wildlife habitat; and

d. Providing aesthetic, recreational, and other beneficial uses.

2 The Committee or designated workgroups will work cooperatively to expeditiously recommend balanced pollution control strategies and management measures to

a Control sediment loadings to the reservoirs;

b Minimize the levels of nutrients and pollutants entering the reservoirs and the tributary streams;

c. Prevent degradation of the high quality, interconnected surface and groundwater resources of the tributary streams and throughout the watershed; and

d Encourage stewardship of the reservoirs watershed and resources

3. The Committee may develop and formulate public education and outreach initiatives, urban, forestry, and agricultural best management practices; innovative site designs; alternative on-site disposal systems, natural resource management strategies; stream restoration projects; and any other measures that protect and enhance water quality or habitat throughout the watershed.

Whenever major reservoir water quality problems must be addressed, the Committee shall evaluate alternative solutions and the cost-effectiveness of these measures in making recommendations for reservoir resource protection.

4 The Committee shall prepare a written report to submit to the Board for its annual meeting *The Annual Report shall include:*

a. Results of reviews and evaluations on reservoir protection issues;

b. Progress on programs and practices being implemented by the parties to protect the reservoirs and their resources;

c. Recommendations on strategies to encourage reservoir resource protection; and

d. A recommended work plan for the coming year.

C <u>Chairpersons of Committee and Workgroups</u>

The Committee and its workgroups shall agree by consensus on the method of selection and terms for Chairpersons to lead all meetings.

ARTICLE IV - MODIFICATIONS AND AMENDMENTS

A Membership of the Policy Board

Any changes in Policy Board membership, except designation of an alternate, shall initiate the process for modification of this agreement. The modified agreement must indicate the change(s) in Policy Board composition and shall become effective after being signed by all members of the modified Policy Board.

B Modification or Amendment of the Agreement

This agreement may be modified or amended by consensus of the Policy Board members. The Policy Board shall consider changes in membership or any other modifications and amendments of this agreement at its annual meeting.

Changes based on consensus among Policy Board members will initiate the process for agreement modification. The modified or amended agreement will not become effective until signed by all members of the Policy Board as defined in the modified or amended agreement.

ARTICLE V - RIGHTS OF PARTIES NOT TO BE ABROGATED

A. Nothing in this agreement shall limit or abrogate any right or rights delegated to any of the governments or agencies which are parties to this Agreement by acts of the General Assembly of the State of Maryland.

B Each party hereto agrees that participation by any party to the agreement may be terminated by that party with three months written notice to the other parties of the agreement.

PATUXENT RESERVOIRS WATERSHED PROTECTION AGREEMENT

Charles I. Ecker
County Executive
Howard County

10/29/96
Date

Douglas M. Duncan
County Executive
Montgomery County

11/6/96
Date

Wayne K. Curry
County Executive
Prince George's County

10/29/96
Date

William E. Barnes
Chairman
Howard Soil Conservation District
Board of Supervisors

10/29/96
Date

George E. Lechlider
Chairman
Montgomery Soil Conservation District
Board of Supervisors

10-29-96
Date

Trudye Morgan Johnson
Executive Director
Maryland-National Capital
Park and Planning Commission

October 29, 1996
Date

Cortez A. White
General Manager
Washington Suburban Sanitary Commission

10/29/96
Date

A-6

Patuxent Reservoir Protection Strategy
Memorandum of Understanding

This memorandum is effective this 1st day of October, 1998, by and among Howard County (HC), Montgomery County (MC), Prince George's County (PGC, a body corporate and politic), the Howard Soil Conservation District (HSCD), the Montgomery Soil Conservation District (MSCD), Maryland-National Capital Park and Planning Commission (M-NCPPC) and the Washington Suburban Sanitary Commission (WSSC).

Whereas, on October 29, 1996, the parties signed the Patuxent Reservoir's Watershed Protection Agreement which recognizes the importance of protecting the long term biological, physical and chemical integrity of the Patuxent Reservoir's Watersheds;

Whereas, the parties desire 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;

Whereas, the parties recognize the economic benefit of agriculture within the reservoir's watersheds;

Whereas, on October 6, 1997, the parties adopted the 1997 Annual Report and Action Plan which established two agricultural initiatives;

Whereas, the first initiative will accelerate the volunteer agricultural conservation planning outreach through the two soil conservation districts, and the second initiative is the development of a local cost-share program for the installation of stream-side best management practices;

Now, Therefore, subject to available funding and future appropriations and in consideration of the covenants and agreements set forth hereinafter, the parties mutually covenant and agree as follows:

Article I - Funding

A. General

An amount not to exceed $100,000 will be provided by equal contributions of $33,333 from WSSC, Howard and Montgomery Counties for the initial year of the program. Funding thereafter is contingent upon the success of the program as determined by WSSC, Howard and Montgomery Counties and their respective budgetary constraints. The amounts required by HSCD and MSCD will be equally divided within their respective districts between the planner position initiative and the stream-side best management practices initiative. Any surplus funds will be either: 1) redirected to the funding account for the other initiative; 2) equally disbursed to WSSC, Howard and Montgomery Counties; or 3) rolled over into the next fiscal year as determined by

consensus of the Technical Advisory Committee as established in the Patuxent Reservoir's Watershed Protection Agreement.

The initial contribution of $100,000 is to be made on July 1, 1998, (or thereafter), with payment of $75,000 to MSCD and $25,000 to HSCD.

B. Stream-Side Cost-Share Program

The need for development of stream-side cost-share programs will be funded through an annual $50,000 contribution (subject to future appropriations) equally in the amount of $16,666 from the WSSC, Howard and Montgomery Counties, respectively. This annual $50,000 appropriation will be divided between the two districts as mutually agreed upon by a vote of the two district boards (HSCD and MSCD, majority vote of combined board members). Howard and Montgomery Counties' funding shall be spent within their respective county boundaries.

C. Conservation Planner Position

The need for accelerated volunteer conservation planning assistance to those agricultural operations within the reservoir watersheds will be funded through an annual $50,000 contribution (subject to future appropriations) equally in the amount of $16,666 from WSSC, Howard and Montgomery Counties, respectively.

Article II - Conservation Planner

A. Administration

The $50,000 annual contribution for the planner position will be paid to MSCD. MSCD will in turn hire a contractual conservation planner in consultation with the HSCD. MSCD will administer the position. The position will be limited to serving the agricultural community as defined by the HSCD's and MSCD's respective Agricultural Unit Inventory within the reservoir watersheds. The planner will contact landowners on the importance of soil conservation and water quality plans. The planner will also prepare conservation plans for the landowners in the HSCD and MSCD respectively and assist with the five-year implementation of those plans which are to be based upon volunteer participation and public outreach efforts. The planner will answer administratively to the MSCD Board of Supervisors or their designee, except that when the planner is working within the HSCD, the supervision of the planner's workload priorities will be provided by the HSCD Board of Supervisors or their designee.

B. Work Plans

The accelerated conservation planning assistance will support the respective five-year work plans for the landowners of the two districts. In working with an anticipated customer base that consists of farmettes and horse operations as well as the remaining traditional agricultural operations, extensive public education will be a top priority in selling the importance of conservation plans.

Direct mailings, personal visits, community meetings, tour and brochures are examples of those educational tools that may be used.

Every landowner within the reservoir watersheds that has been identified by the HSCD and MSCD as needing to be educated will be contacted. Over the five years the goal is to contact 471 landowners. These contacts will be opportunities to educate landowners on how practicing conservation will aid in improving water quality within the two reservoirs. It's estimated that this outreach effort will result in the following number of five-year work plans:

Fiscal Year	Landowners Contacted	Plans Prepared	Acreage of Plans Prepared
1999	40	24	1368
2000	90	54	3078
2001	114	68	3876
2002	114	68	3876
2003	113	67	3819
	471	281	16017

Article III - Cost-Share Program

HSCD and MSCD will each develop a local stream-side cost-share program that will supplement the current state and federal agricultural cost-share programs that currently pay up to 87-1/2% of installation costs of stream-side best management practices. The programs to be developed by HSCD and MSCD are intended to reimburse applicants for up to 12-1/2% of their out-of-pocket costs for the installation of stream-side best management practices. The combined cost-share between the current federal and state programs and the program to be developed by HSCD and MSCD are not to exceed 100% of the installation costs. The amount of the applicants' reimbursement will be based upon the HSCD and MSCD respective adopted cost-share flat rates. All eligible applicants will be required to install their best management practices in accordance with USDA Natural Resources Conservation Service standards and specifications.

Article IV - Accomplishments

The HSCD and MSCD shall prepare a joint report of annual accomplishments documenting the progress of the two agricultural initiatives and provide an accounting of appropriations/expenditures

The report will be forwarded to the Patuxent Technical Advisory Committee for inclusion in their Annual Report.

The report will be prepared on a July 1 - June 30 fiscal year cycle. The report shall be submitted to the Technical Advisory Committee by September 1 of each year.

In addition, the HSCD and MSCD will present updates during the periodic Technical Advisory Group meetings. The updates will focus upon landowner contacts, plans prepared and best management practices installed.

Article V - Termination

Each party hereto agrees that participation by any party to this agreement may be terminated by that party upon thirty (30) days written notice to the other parties to this agreement.

In the event of termination all applications received for payment prior to the termination date will be processed for payment subject to eligibility requirement and built according to HSCD and MSCD respective approval. No applications will be accepted on or after the termination date. Any remaining funding after eligibility payments will be disbursed equally to WSSC, Howard and Montgomery Counties.

Charles I. Ecker
County Executive
Howard County

11-20-98
Date

Douglas M. Duncan
County Executive
Montgomery County

11/8/98
Date

AS TO FORM AND LEGALITY
COUNTY ATTORNEY

11/24/98

Wayne K. Curry
County Executive
Prince George's County

11/24/98
Date

210521

Patuxent Reservoir Protection Strategy

Memorandum of Understanding

Amendment #1

This amendment is by and among the following parties: Howard County, Maryland (HC) a body corporate and politic; Montgomery County, Maryland (MC) a body corporate and politic; Prince George's County, Maryland (PGC) a body corporate and politic; the Howard Soil Conservation District (HSCD), the Montgomery Soil Conservation District (MSCD), Maryland-National Capital Park and Planning Commission (M-NCPPC), and the Washington Suburban Sanitary Commission (WSSC), and is effective this 30th day of November, 2000.

The parties entered into a Memorandum of Understanding (MOU) effective October 1, 1998 The purpose of this amendment is: 1) to delete the provisions for the hiring of a Conservation Planner position; 2) to modify the stream-side cost-share program in Article III of the MOU; and 3) to add provisions for amending the MOU.

Under Article III of the MOU, the Howard Soil Conservation District (HSCD) and the Montgomery Soil Conservation District (MSCD) would utilize funding provided via the MOU to reimburse owners of agricultural-zoned property for up to 12-1/2% of their out-of-pocket cost for installation of stream-side best management practices. This reimbursement would supplement state and federal cost-share programs that presently pay up to 87-1/2% of installation costs of stream-side best management practices (BMP's). The Technical Advisory Committee (TAC) decided that cost-share funds from this MOU instead should be spent on implementing stream-side best management practices for non-agricultural zoned property owners (who are not presently eligible for the state and federal cost-share programs). This new incentive program will provide reimbursement payments to non-agricultural zoned property owners for installation of approved stream-side best management practices, such as the creation of riparian buffers, the fencing of streams, and similar approved BMP's.

Changes

1) On page 1, the sixth paragraph is revised to read as follows: "Whereas, the first initiative will focus upon the volunteer agricultural conservation planning outreach efforts of the two soil conservation districts, and the second initiative is the development of a local cost-share program for the installation of stream-side best management practices;"

2) Article I - Funding, A. General is revised as follows:

a. The third sentence is revised to read as follows: "The amounts required by HSCD and MSCD will be approved within their respective districts for the stream-side best management practices initiative."

b. The fourth sentence is revised to delete number 1, and numbers 2 and 3 are respectively renumbered as 1 and 2.

c. Article I - Funding, C. Conservation Planner Position. The entire section is deleted.

3) Article II - Conservation Planner, A. Administration is deleted and the following is inserted instead: "The Howard and Montgomery Soil Conservation Districts will provide existing resource staff toward the development of soil conservation and water quality plans. This staff will be serving the agricultural community as defined by the respective district's Agricultural Unit Inventory within the Patuxent reservoir watersheds. This staff will contact landowners on the importance of soil conservation and water quality plans. Staff will prepare conservation plans for the landowners and assist with the implementation of those plans. Those efforts will be based upon the volunteer participation of landowners and district public outreach efforts."

4) Article II - Conservation Planner, B. Work Plans. The word "accelerated" is deleted from the first sentence.

5) Article III – Cost Share Program, is deleted and the following is inserted instead: "HSCD and MSCD will jointly develop and approve a local stream-side cost-share/incentives program and payment schedule that will encourage landowners of non-agricultural zoned property to install best management practices that protect and improve water quality in the Patuxent Reservoirs Watershed. The program will provide cost share up to 80% of the approved program costs or incentive payment schedule (to be approved and distributed by the two soil conservation districts), not to exceed $5,000 per property owner, regardless of the number of projects to be implemented by the property owner or the number of non-agricultural zoned properties owned. All eligible applicants will be required to install their best management practices in accordance with USDA Natural Resources Conservation Service standards and specifications."

6) A new Article V, is added to read as follows:

Article V – Amendments

This agreement may be amended at any time by written agreement of the parties. The Technical Advisory Committee (TAC) may initiate action to amend this agreement and propose terms for the amendment. The TAC will employ the following process for obtaining consensus regarding review and approval of any proposed amendments:

1) Any amendment pertaining to the appropriation, allocation or expenditure of funds may be adopted by the written agreement of the following three entities providing funds: Montgomery County, Howard County and the WSSC. This adoption will be evidenced by an amendment document executed by the official representatives of the respective three entities.

2) Amendments of a non-funding nature shall require the written approval of all parties.

7) The old Article V – Terminations becomes Article VI

8) All provisions of the Memorandum of Understanding remain in effect unless specifically changed by this amendment.

Signature Page

James N. Robey
County Executive
Howard County, Maryland

7/12/00
Date

Douglas M. Duncan
County Executive
Montgomery County, Maryland

6/6/2000
Date

Wayne K. Curry
County Executive
Prince George's County, Maryland

10/12/00
Date

John R. Griffin
General Manager
Washington Suburban Sanitary Commission

8-21-00
Date

William Barnes
Chairman
Howard Soil Conservation District

7/19/00
Date

George Lechlider
Chairman
Montgomery Soil Conservation District

5/31/2000
Date

Trudye Morgan Johnson
Executive Director
Maryland-National Capital Park & Planning Commission

11/30/00
Date

Attest: Patricia Colihan Barney
Secretary-Treasurer

APPROVED AS TO FORM AND LEGALITY.

APPROVED AS TO LEGAL SUFFICIENCY

11/8/00

Cortez A. White
Cortez A. White
General Manager
Washington Suburban Sanitary Commission

11/13/98
Date

William E Barnes
William Barnes
Chairman
Howard Soil Conservation District

11/14/98
Date

George Lechlider
George Lechlider
Chairman
Montgomery Soil Conservation District

10-1-98
Date

Trudye Morgan Johnson
Trudye Morgan Johnson
Executive Director
Maryland-National Capital Park & Planning Commission

11/9/98
Date

Attest: A. E. Navarro
Secretary-Treasurer

Patuxent Reservoir Protection Strategy

Memorandum of Understanding

Amendment #2

This amendment is by and among the following parties. Howard County, Maryland (HC) a body corporate and politic, Montgomery County, Maryland (MC) a body corporate and politic, the Howard Soil Conservation District (HSCD), the Montgomery Soil Conservation District (MSCD), and the Washington Suburban Sanitary Commission (WSSC) and is effective this 7th day of June 2004

Background

The parties entered into a Memorandum of Understanding (MOU) October 1, 1998 to develop a program for encouraging and supporting streamside best management practices in the Patuxent Reservoir watershed

The Technical Advisory Committee (TAC) during its deliberation in the year 2000 recommended that the cost-share funds from this MOU should be spent on implementing streamside best management practices for non-agricultural zoned property-owners who are not eligible for the state and federal cost-share programs This recommendation was approved on November 30, 2000 via Amendment #1. In light of the fact that no non-agricultural applicants have been interested in this cost share program in Montgomery County, Amendment #2 is developed to modify Art. III regarding the eligible streamside properties for the cost-share program. Modifications include 1) replacing "land owners of non-agricultural zoned properties" in line 3 of Art III with "property owners", and 2) removing "non-agricultural zoned" in the 8th line of Art. III The modifications read as follows:

1) Article III The Howard Soil Conservation District (HSCD) and the Montgomery Soil Conservation District (MSCD) will jointly develop and approve a local stream-side cost-share/incentives program and payment schedule that will encourage property owners to install best management practices that protect and improve water quality in the Patuxent Reservoirs Watershed The program will provide cost share up to 80% of the approved program costs or incentive payment schedule (to be approved and distributed by the two soil conservation districts), not to exceed $5,000 per property owner, regardless of the number of projects to be implemented by the property owner or the number of properties owned. All eligible applicants will be required to install their best management practices in accordance with USDA Natural Resources Conservation Service standards and specifications

2) All provisions of the Memorandum of Understanding and Amendment #1 remain in effect unless specifically changed by this Amendment

Signature Page

James N. Robey
County Executive
Howard County, Maryland

ATTEST:

5/4/04
Date

Raquel Sanudo
Raquel Sanudo
Chief Administrative Officer

5/4/04
Date

Douglas M Duncan
County Executive
Montgomery County, Maryland

5/23/04
Date

APPROVED AS TO FORM AND LEGALITY
OFFICE OF COUNTY ATTORNEY
BY Eileen T. Basenow
DATE 5/21/2004

John R Griffin
General Manager
Washington Suburban Sanitary Commission

6/7/04
Date

William E. Barnes
William Barnes
Chairman
Howard Soil Conservation District

2/26/04
Date

George Lechlider
George Lechlider
Chairman
Montgomery Soil Conservation District

3/12/04
Date

Approved as to Legal Sufficiency
this 4th day of May 2004.

Barbara M. Cook
Barbara M. Cook
Howard County Legal Department

Date

Approved as to Legal Sufficiency

Gilles T. Bissonnet
Montgomery County Legal Department

5/21/2004
Date

Approved as to Legal Sufficiency

Francis Kenney
Washington Suburban Sanitary Commission
General Counsel's Office

5-26-04
Date

APPENDIX B

2007 POLICY BOARD MEETING
AGENDA AND SUMMARY

Washington Suburban Sanitary Commission

Policy Board

Fariba Kassiri (Chair)	*Montgomery County*
William Barnes	*Howard Soil Conservation District*
Andrew Brunhart	*Washington Suburban Sanitary Commission*
R. Bruce Crawford (absent)	*MNCP&PC (absent)*
George Lechlider	*Montgomery Soil Conservation District*
Ken Ulman (represented by Ian Kennedy)	*Howard County*
Charles Wilson (represented by Jerry Maldonado)	*Prince George's County*

Technical Advisory Committee

Mohammad Habibian – Chair	*WSSC*
Meosotis Curtis	*MCDEP*
Jerry Maldonado	*PGDER*
Paul Meyer	*PGHD*
Katherine Nelson	*MNCPPC*
Bert Nixon	*HCHD*
Susan Overstreet	*HCDPZ*
David Plummer	*MSCD*
Howard Saltzman	*HCDPW*
Stan Wong	*MCDPS*

Other Attendees

Carrie Capuco	*Capuco Consulting*
Martin Chandler	*WSSC*
Tobias Kagan	*WSSC*
Lindsey Leiterman	*HCDPZ*
Angela Morales	*HCDPW*
William Richkus	*Versar*
Nancy Roth	*Versar*

Absent

Gul Behsudi	*MDE*
Kristal McCormick	*HSCD*
John McCoy	*DNR*

Welcome, Introductions, and Purpose of Meeting

1. The meeting was called to order at approximately 1:35 p.m. Ms. Kassiri welcomed all present and asked that the participants introduce themselves. Following introductions, she welcomed the TAC Chair (Dr. Habibian) for presentation of the 2007 accomplishments.

2007 Accomplishments and Annual Report

1. Dr. Habibian presented the background information and efforts that preceded the formation of the Watershed Protection Group, summarized the TAC accomplishments over the past 12 months, and described the challenges ahead. The background information included the role of the reservoirs in water supply, the threat they were facing and the need for a partnership to address the threats. The accomplishments included the efforts of the partners for various watershed priority resources. The main future challenge was described as developing a plan and providing funding to meet the requirements that may be set by the TMDL, when/if it is approved by the EPA. (For detail see attached presentation).

Policy Board Discussion

1. **2007 Annual Report**
   - Following Dr. Habibian's presentation, Ms. Kassiri thanked everyone who had contributed to the years' accomplishments. She then opened the floor for comment. There being none, she turned the discussion to 2008.

2. **Proposed 2008 Work Program and Funding**
   - Ms. Kassiri explained that in light of the impending promulgation of Total Maximum Daily Load requirements for the watershed, she felt it would be appropriate to have the Policy Board vote their approval of the proposed budget and work plan for 2008. She called for the vote, and both the budget and work plan, as presented by Dr. Habibian, were unanimously approved.

Administrative Business

1. The Chair then passed to Charles Wilson of Prince Georges County.

All present were thanked again for their attendance and the meeting adjourned at approximately 2:15 p.m.

Patuxent Reservoirs Watershed Protection Group
Annual Policy Board Meeting

November 8, 2007
1:30 p.m.
Washington Suburban Sanitary Commission Auditorium

Policy Board

William Barnes	*Howard Soil Conservation District*
Andrew Brunhart	*Washington Suburban Sanitary Commission*
Fariba Kassiri	*Montgomery County*
George Lechlider	*Montgomery Soil Conservation District*
R. Bruce Crawford	*Maryland National Capital Park and Planning Commission*
Ken Ulman	*Howard County*
Charles Wilson	*Prince George's County*

Welcome, Introductions, and Purpose	F. Kassiri *(Policy Board Chair)*
2007 TAC Annual Report and Accomplishments	M. Habibian *(TAC Chair)*
Policy Board Discussion 1. 2007 Annual Report 2. Proposed 2008 Work Program and Funding	Policy Board
Administrative Business 1. Transfer of Chair to Prince Georges County	Policy Board
Adjournment	Prince Georges County *(Policy Board Chair)*

APPENDIX C

2007 TAC MEETING
AGENDAS AND SUMMARIES

Patuxent Reservoirs Watershed Protection Group

Technical Advisory Committee

Meeting Summary

January 9, 2007

Technical Advisory Committee	
Gul Behsudi (alternate)	*MDE*
Meosotis Curtis	*MCDEP*
Mohammad Habibian	*WSSC*
Jerry Maldonado	*PGDER*
Kristal McCormick	*HCSCD*
Paul Meyer	*PGHD*
Bert Nixon	*HCHD*
Susan Overstreet	*HCDPZ*
Dave Plummer	*MCSD*
Howard Saltzman	*HCDPW*
Mark Symborski	*MNCP&PC*
Stan Wong	*MCDPS*

Other Attendees	
Sandy August	*WSSC*
Jim Benton	*WSSC*
Carrie Capuco	*Capuco Consulting*
Gina Foringer	*Versar*
Tobias Kagan	*WSSC*
Angela Morales	*HCDPW*
Jennifer Shore	*Versar*
Deborah Weller	*PGDER*
Frank Wise	*PGCHD*
Absent	
Sharon Mariaca	*HCSCD*
John McCoy	*DNR*
Katherine Nelson	*MNCPPC*

Administrative Business

1. September 2006 meeting summary approved with 1 correction:
   – The letter "e" will be inserted in Dawn Forsythe's name

2. November 2006 Policy Board meeting summary was approved with 2 corrections:
   – Last names for Jim Neustadt and Joe Zorica were misspelled

3. **Transfer to New Chair**: At this time, Ms. Overstreet transferred the chairmanship of the TAC to Dr. Habibian and the Vice-Chair to Kristal McCormick. Dr. Habibian then introduced two guest attendees from Versar, Inc. – Ms. Gina Foringer and Ms. Jennifer Shore. He added that some funds are available for technical support of any Patuxent watershed related projects that other agencies may want to pursue and encouraged members to contact Versar, Inc for such support via Ms. Capuco and Mr. Kagan. Ms. Foringer explained that she leads the support team from Versar for the contract to support the TAC. She offered a short history of Versar and stated that her expertise lies in project management and Ms. Shores' lies in watershed communications and group facilitation. All members of the TAC then introduced themselves briefly.

4. **Round Table Discussion**: Dr. Habibian then initiated a discussion of the goals for the partnership over the next year. He called upon Mr. Kagan to initiate the discussion and state WSSC goals from his viewpoint. Each member's statements and ensuing discussion are summarized below.

- Mr. Kagan's 2007 goals included – having the grants program working; continuation of water quality monitoring; completion of the sediment oxygen demand studies (SOD); application of an automatic profiler; and integration with the Green Schools.

- Dr. Habibian added goals of keeping the grants contractor and finishing all dragging contracts such as the forestry study and modeling project.

- Ms. August's 2007 goals included – continuing to grow the campfire event; and implementation of a "Green Schools – Green Lawns Program." Discussion then followed on what that project would entail. Ms. August and Ms. Capuco explained that a grant application had been prepared and submitted to the USEPA to fund a demonstration stewardship project with a public utility certifying various properties for watershed-friendly practices. They explained that the first phase of the proposed program would be a study phase. Members of the TAC expressed interest in ensuring that the program is unique and does not replicate existing programs.

- Mr. Benton's 2007 goals included – continued implementation of the management changes implemented in July 2006 which consolidated the reservoir staff into one office. He explained that this management change had made his staff more efficient and more responsive to reservoir maintenance. He also stated that in 2007 he hoped to move the horse trail to the edge of the reservoir property to better protect the drinking water from fecal contamination. In addition, in 2007 he hoped to continue achieving outreach goals with hope of a new building to house staff and a larger nature center.

- Mr. Behsudi's 2007 goals included – continued commitment to support the TAC; continued water quality monitoring; implementation of source water protection assessment recommendations; continued support of the grants contractor; more study of disinfectant byproducts; growth in source water assessment funding; use of available storm water management funding; use (if necessary) of loan funds for riparian buffers. Discussion followed regarding levels of participation and interest rates charged for these loans. Mr. Behsudi confirmed that participation is not high and the interest runs at approximately 4%. Subsequent to the meeting, Mr. Behsudi clarified that the interest rate for the state revolving loan used to acquire land or a conservation easement from a willing seller, and voluntary source water protection measures within the watershed of a drinking water source is zero percent ; the interest rate for the construction projects loans such as storm water managements, water treatment plants will be determined by MDE and may be combination of loan and grants. Check the MDE website for the latest rate.

- Ms Overstreet's and Mr. Saltzman's 2007 goal was to continue work on implementing the riparian buffer project. Mr. Saltzman also expressed interest in continuing implementation projects in the Cherry Creek watershed.

– Mr. Wong stated that he had no ongoing project goals for the TAC for 2007, but that he continued to be interested in looking at new technologies and innovative ways to protect source water. Discussion continued regarding possible source water protection regulations. Mr. Behsudi indicated that MDE reviews source water protection issues in the process of reviewing storm water permits. In addition, he indicated that all counties will incorporate source water protection in their revised comprehensive plans. Mr. Wong indicated that regulations were not under development at this time.

  Discussion then turned to land available for development within the watershed and what the current model and previous models had predicted regarding build out. Mr. Maldonado questioned at what development point it becomes critical for the TAC to take aggressive action to protect the watershed. Dr. Habibian explained that a previous model run by TetraTech showed that full development will not change the reservoir condition. He encouraged the group to wait to see what information the new TMDL model will offer in September. Ms. Overstreet raised concerns that the TMDL model will not provide enough information for resolving non-point-source issues. Ms. Curtis offered the suggestion that the TAC review its past goals to determine whether the TAC has baseline condition information to identify future changes in condition. After further discussion it was agreed that once the new TMDL model is received the TAC should look back at goals set previously to determine whether they are adequate.

– Mr. Maldonado's 2007 goals included – an increase of Green Schools in Prince Georges County; revisions to septic regulations; application of low impact development in the watershed areas of Prince Georges County; and further study of those who recreate on the reservoir and reside in Prince George's County. In addition, Mr. Maldonado commended Howard and Montgomery counties for their efforts to protect the watershed. Mr. Maldonado then posed a question regarding the availability of monitoring data for bio-retention areas. Mr. Wise indicated that data has been collected at the University of Maryland and that it appears bio-retention is effective.

– Ms. Curtis' stated that her 2007 goal was to understand what might happen to the watershed in the future. This would perhaps result in shifting of resources to increase protection in the watershed. Ms. Curtis also commended WSSC on the outreach program successes and expressed interest in continuing the Reddy Branch project.

– Mr. Nixon indicated that for 2007 he does not have many watershed related priorities other than studying pre-treatment scenarios. He did indicate that the policy staff working on changes to well and septic regulations need to be shown that tangible protection progress is being made as a result of policy changes. He was eager to reassess the regulations after the TMDL model is complete.

– Mr. Plummer's 2007 priorities include focusing on use of cover crops. He questioned whether the WSSC Consent Decree would offer any funds to support this activity. Discussion followed regarding how much land the Consent Decree dollars could

purchase and the use of easements as an alternative. Mr. Kagan explained that the Maryland Environmental Trust would soon enter into a contract with WSSC to conduct outreach and identify possible easement participants. Mr. Kagan posed the question to the TAC of whether any members present knew of land owners who might donate or sell easements. Ms. McCormick indicated that in Howard County the impression was that all property owners who were interested in easements had already offered their property. Ms. Overstreet added that in Howard County agricultural easements were recently offered at a considerably higher price than they had been offered in the past. Only four property owners applied to accept an easement. Mr. Plummer then suggested that those property owners and any other agricultural easement holders should be approached to additionally burden their property with environmental preservation easements to protect the watershed.

At that point, Dr. Habibian drew the discussion to a close. He explained that Ms. McCormick and he would offer the ideas back to TAC members in a list that they should prioritize. The list would be used to select issues to be focused in the coming year.

Old Business

1. **Reservoir/Watershed Models:** Mr. Rule could not attend the meeting to present the progress on modeling efforts. He had provided a brief handout that was distributed to TAC members as an interim information item. .

2. **Watershed Staff Reorganization:** Dr. Habibian reviewed what Mr. Benton had offered regarding the reorganization during the Round Table discussion.

3. **Public Outreach Reorganization:** Ms. August reminded the TAC of the new outreach structure within WSSC that Dawn Forsythe had explained at the previous TAC meeting. Ms. August indicated that this reorganization has resulted in additional WSSC staff being assigned to cover TAC-related outreach activities. Ms. August stated that at this time the following outreach activities are underway or have been scheduled:
    a. Speakers Bureau – under development with four programs that can be delivered to community groups
        i. Can the Grease – focusing on kitchen grease
        ii. Water Power – focusing on children drinking water to stay healthy
        iii. Water Winners – focusing on water conservation lessons for High School aged students
        iv. Enviroscape – source water protection
    b. Earth month
        i. Earth Month Fair/Sneak Preview March 21, 2007 at WSSC Auditorium. A viewing of the film "Preacher for the Patuxent" will be offered. All Earth Month event participants will be offered space for tables and displays. The fair will be held on the ground level balcony.
        ii. Library programs will be offered in the evenings for elementary school students and during the daytime for pre schoolers
        iii. Patuxent River Cleanup will occur on April 14, 2007
        iv. Brighton Dam focus programs in the evenings

1. Composting
2. Rain Barrels
3. Integrated Pest Management
4. Native Plants

v. Bike around the Reservoir will be held on the last Sunday in April. This event will be coordinated by a WSSC volunteer.
vi. Weed Warriors Event to tackle kudzu, bittersweet, and wild grape near azaleas at Brighton Dam.

A question was posed regarding the number of staff in the Outreach office. Ms. August responded that there are currently six staff supporting Community Relations activities and that the Communications side is structured to have six staff as well, but is not yet fully staffed. Discussion then turned briefly to the successful outreach activities in promoting WSSC's recent decision to purchase a significant amount of wind-generated energy.

4. **Forest Study:** Dr. Habibian reported that WSSC is still waiting for additional documentation from DNR. At this time Dr. Habibian also informed the TAC that all data had been collected for the sediment study and that the report should be available by the next TAC meeting. He also stated that the sediment oxygen demand study data gathering was complete.

5. **Riparian Buffer Programs:** Ms. Nelson (MNCPPC) was not present, but Ms. Capuco offered a summary sheet describing the plans for Reddy Branch. Ms. Curtis stated that it would be necessary for DEP to be involved in the planning if any structures were to be built that would require maintenance.

   Discussion then turned to Howard County. Ms. Overstreet explained that Howard County did not have much County-owned land, so a prioritization process for privately-owned land had been developed at an October meeting with Ms. Capuco. Based on the new priorities, maps had been created to locate property owners who are already identified as agreeable to easements. Howard County will then focus on contacting agreeable parties to discuss reforestation opportunities. In the discussion concerning this effort, it was stated that Howard County Forest Conservation Fee in Lieu dollars may be made available to plant forest on private land. The focus of those efforts will probably be large properties greater than 5 acres to conserve recordation costs.

New Business

1. **Technical Supplement to 2006 TAC Annual Report:** A discussion was held regarding inclusion of an internal WSSC memorandum which summarizes the outreach restructuring that occurred in 2006. It was agreed that it was not appropriate to include the memorandum in the Technical Supplement since it was internal to WSSC.

   It was also discussed that the urban nutrient management forum information did not belong since it was not an activity the TAC was involved with. Consensus was reached that unless an activity was specific to the TAC it should not be included. However it

was noted that the forum may become relevant to the TAC in the future if measurable reductions in nutrients are noticed in the reservoir as a result of the agreement.

The TAC agreed that comments on the draft Technical Supplement should be submitted directly to Ms. Capuco on or before January 18 for inclusion in the final report.

2. **TAC Membership:** Ms. Curtis requested that the TAC clarify the membership of John McCoy (DNR) and Buddy Loffler (MDA) since neither had attended TAC meetings. It was stated that Royden Powell would replace Mr. Loffler. Ms. Capuco offered to continue to contact DNR regarding its assigned member.

Next Meeting

March 13, 2007 1:30-4:00 p.m. in room LK121 at WSSC offices.

Topics:

1. Report on TAC prioritization activity
2. Update on modeling effort
3. Update on Forestry Study
4. Update on Sediment Study
5. Update on Montgomery County pilot program for riparian buffer planting

Adjournment

Meeting Adjourned at 3:35 pm

Patuxent Reservoirs Watershed Protection Group
Technical Advisory Committee Meeting

January 9, 2007
1:30 p.m. – 4:00 p.m.
Washington Suburban Sanitary Commission Auditorium

AGENDA

Call To Order/Opening Remarks — Chair - Overstreet

Administrative Business — Chair - Overstreet

1. Approval of September 2006 TAC and November 2006 Policy Board meeting summary
2. Transfer to new Chair
3. Round table discussion:
   - What TAC members think about the partnership, our achievements and the challenges to pursue in this year

Old Business

1. Update on Reservoir/Watershed Models — All (15 mins)
   - Mr. Rule will provide a handout for discussion on work to date on the reservoir TMDL model development.
2. Update on Watershed Staff Reorganization — Mr. Benton (15 mins)
   - Mr. Benton will discuss the new organization and duties
3. Update on Public Outreach Reorganization
   - Ms. August will discuss the new organization and responsibilities
4. Update on Forestry Study — Mr. Kagan (15 mins)
   - Mr. Kagan will discuss the latest completed work on the Forestry Study.
5. Update on Montgomery and Howard County Riparian Buffer Planting Project — MNCPPC Rep and Susan Overstreet (15 mins)
   - A representative of MNCPPC and Susan Overstreet will discuss the status of the Riparian Buffer Planting Project in their respective counties.

New Business

1. Technical Supplement to the 2006 Annual Report — All (30 mins)
   - The group will discuss report content and timeline for submittals

Next Meeting - Topics and Date — All

Adjournment — Chair

Patuxent Reservoirs Watershed Protection Group

Technical Advisory Committee

Meeting Summary

March 13, 2007

Technical Advisory Committee	
Meosotis Curtis	*MCDEP*
Mohammad Habibian	*WSSC*
Jerry Maldonado	*PGDER*
Kristal McCormick	*HCSCD*
Paul Meyer	*PGHD*
Katherine Nelson	*MNCPPC*
Bert Nixon	*HCHD*
Susan Overstreet	*HCDPZ*
Howard Saltzman	*HCDPW*
Stan Wong	*MCDPS*

Other Attendees	
Sandy August	*WSSC*
Carrie Capuco	*Capuco Consulting*
Jim Hill	*MGS*
Tobias Kagan	*WSSC*
Angela Morales	*HCDPW*
Tim Rule	*MDE*
Sean Smith	*DNR*
Darlene Wells	*MGS*
Absent	
Gul Behsudi (alternate)	*MDE*
Sharon Mariaca	*HCSCD*
John McCoy	*DNR*
Dave Plummer	*MSCD*

Meeting was called to order at 1:40

Administrative Business

1. Four corrections were offered to the January 2007 meeting minutes. Two had been provided by e-mail directly to Ms. Capuco. Those included:
   - Four farms applied for agricultural preservation grants in Howard County however one subsequently withdrew its application
   - The MDE interest rate for the state-revolving loan used to acquire land or a conservation easement from a willing seller is zero percent; and the interest rate for construction project loans is determined by MDE based on a combination of loans and grants.

2. Two typographical corrections were offered:
   - The 2007 goal of Howard Saltzman was not intended to be posed as a question – the question mark will be removed
   - David Plummer's proper affiliation is MSCD.

Old Business

1. **TAC Survey:** Ms. McCormick reported that 6 responses to the TAC survey were received. Nine projects received four or more votes. She provided a summary list with those receiving over four votes listed in bold. Dr. Habibian suggested that the TAC

review the list and discuss it at the next TAC meeting. Discussion followed regarding the purpose of the survey. Dr. Habibian stated that he wants to be certain the TAC is focused on doable activities with meaningful outcomes.

2. **Reservoir/Watershed Models:** Mr. Rule began his discussion by thanking the TAC for its continued patience and recognizing the thorough work of Ross Mandel. Mr. Rule stated that MDE should receive the modeling report on April 15 from ICPRB. At that time, MDE will perform an internal review. Following incorporation of those comments, MDE will offer the report for interagency review. Mr. Rule offered to include the TAC in the interagency review process. Mr. Rule also offered to discuss the report with the TAC in late May or at the June TAC meeting.

   Dr. Habibian asked Mr. Rule to describe the modeling framework. Mr. Rule stated that it is an HSPF watershed model, which accounts for phosphorous, combined with a CE-QUAL-W2 which models reservoirs water quality. He indicated that on the recent runs of the model, responses to loading are more evident and responses to oxygen and chlorophyll are more sensible than with previous runs which used the model developed by TetraTech. Mr. Maldonara queried whether the model was calibrated; Mr. Rule responded that he believed it was for all parameters. Discussion followed regarding a recent US EPA memorandum concerning the Patuxent Watershed, the group determined that the memorandum was related to nutrient TMDL in the Upper Patuxent River and was not relevant to the reservoir model.

   Ms. Wells raised a question of reliance on the Tetra Tech model in preparation of the sediment oxygen demand (SOD) study. Mr. Rule indicated that the results of the recent SOD study conducted by the MGS seem compatible with the results they are obtaining through the watershed model.

   Dr. Habibian requested that Mr. Rule be sure to provide a copy of the modeling report prior to meeting with the TAC in May or June.

3. **Update on SOD Study:** Ms. Wells began her presentation with a brief explanation of where the Maryland Geologic Survey sits in the state government. Following that, she explained that most of the SOD study was conducted on Rocky Gorge reservoir due to maintenance at Triadelphia. She indicated that 45 samples were taken at Triadelphia and 40 were taken at Rocky Gorge. Of the 40 taken at Rocky Gorge, 20, covering all sediment classes had total chemistry studies run. Ms. Wells explained that due to the long and narrow shape of Rocky Gorge, it was difficult to obtain full representation. However, the sites that were sampled for SOD determination were selected based on clay parameters.

   Preliminary results indicated that nutrient levels are lower in Rocky Gorge. That was attributed to removal of sediment and nutrients in Triadelphia reservoirs..

   Mr. Hill then began a description of the sampling equipment used and the challenges faced in using it. Essentially, sediments were sampled and analyzed in place using a SOD chamber, which sealed the sample and measured oxygen levels for two hours.

Dr. Habibian requested that the TAC review the report and provide comments to Mr. Kagan within two weeks.

Ms. Morales questioned the role of grain size in the analysis. Ms. Wells indicated that variations within Rocky Gorge could be attributed to its geomorphology.

Ms. Curtis then questioned how the SOD study would help with the modeling study. Mr. Rule responded that MDE is in the process of reviewing the SOD study and those significant findings could lead to adjustments in the modeling.

The presentation concluded with a brief discussion concerning the weight of the sampling equipment and how that might affect results. Mr. Hill indicated that MGS had taken that concern into consideration and had done all that was possible to minimize disruption upon lowering the equipment.

4. **Sediment Study Update:** Mr. Smith explained that his office is completing phase 2 of the sediment study and beginning phase 3. Mr. Smith anticipated providing phase 2 for review by the end of May. A brief discussion followed regarding sharing of bathymetric information. Mr. Smith indicated that he has worked to develop a preliminary volume that links to other studies being conducted on the Chesapeake Bay. He indicated that soon there would be a sediment deposition model available for the Chesapeake Bay.

   Dr. Habibian emphasized the importance of receiving the report in May so that WSSC could process DNR invoices.

5. **Forestry Study Update:** Mr. Kagan reported that Ms. Hariston-Strang has been very busy addressing administration questions and that at this time, a re-draft is not available. However, he also reported that Ms. Strang has been analyzing data on the Baltimore reservoirs to compare with the findings in the Patuxent Reservoir watershed in hope that a strong management plan based on actual experience will be developed for the Patuxent Reservoir watershed.

6. **Riparian Buffer Project Updates:** Ms. Nelson reported that grant applications for Reddy Branch were moving forward and that she had received approval at the Director level to proceed. Mr. Smith interjected that John McCoy had asked him to specifically express DNR's excitement to participate in the Reddy Branch Project. Dr. Habibian stated that approximately $400,000 in grants was being sought for the project.

   Ms. Overstreet reported that she and Jim Myers (SCD) had met with Ms. Capuco recently and reviewed their site selection criteria. Upon review, Cattail Subwatershed had been selected for a Riparian Buffer project. She reported that Ms. Capuco had prepared a project summary that is under internal review.

   Dr. Habibian reminded the TAC that the continued funding of the consultant was dependent upon the success of grants in this year.

New Business

1. **Earth Week Activities:** Ms. August reported that there is a lot on the calendar for April and that all TAC members had received information. She then listed some of the workshops:
   - Rain Barrel workshop to be facilitated by Ms. Curtis (who also prepared the rainbarrels)
   - 2 composting workshops—one offered by Montgomery County and the other by Howard County – at these workshops compost bins will be provided to participants.
   - A native plant workshop facilitated by George Ecker of Howard County
   - Integrated Pest Management to be facilitated by a Montgomery County Master Gardenter Amanda Landvine
   - A recycling program facilitated by MDE
   - Organic lawn care facilitated by the cooperative extension service volunteers
   - Charity bike ride whereby participants pay an entry fee ($22.50) equal to the cost to provide drinking water to a family of four for a month.
   - Wastewater plant tours facilitated by WSSC plant managers
   - Watershed day with activities such as canoeing, fishing, games, and cleanup. Hosts include MNCPPC, Bass Pro, Patuxent River Commission, and Isaac Walton League
   - Sneak Preview April 21 5:30 –7:30 at WSSC to include a showing of the Bernie Fowler film.

2. Ms. Morales mentioned that Howard County also has earth day activities on the 21st.

3. Ms. August then introduced Teresa Bond with WSSC communication office that is assisting Ms. August with these activities.

Next Meeting

1. June 12, 2007, 1:30 p.m.

2. Dr. Habibian then called for items for the next meeting. It was agreed that the first agenda item would be a one-hour discussion of the Reservoir/Watershed model. Ms. Overstreet suggested that the TAC also review the RTG comments on the Baltimore reservoir.

3. Mr. Kagan reminded the TAC that he still needs contact information for the newly appointed Policy Board members.

Adjournment

Meeting was adjourned at 3:00 p.m.

Patuxent Reservoirs Watershed Protection Group
Technical Advisory Committee Meeting

March 13, 2007
1:30 p.m. – 4:00 p.m.
Washington Suburban Sanitary Commission
Bid and Training Room (LK121)

AGENDA

Call To Order/Opening Remarks	Chair - Habibian
Administrative Business 1. Approval of January meeting minutes	Chair - Habibian
Old Business	
1. Review of TAC Survey	Vice-Chair- McCormick (15 mins)
2. Update on Reservoir/Watershed Models	Tim Rule and Ross Mandel (15 mins)
3. Update on SOD Study	Darlene Wells and Jim Hill (15 mins)
4. Update on Forestry and Sediment Studies – Mr. Kagan will discuss the latest completed work on the three studies.	Tobias Kagan (10 mins)
5. Update on Montgomery and Howard County Riparian Buffer Planting Project	MNCPPC Rep and Susan Overstreet (15 mins)
6. A representative of MNCPPC and Susan Overstreet will discuss the status of the Riparian Buffer Planting Project in their respective counties.	
7. Grants Status Discussion	All (15 mins)
New Business	
1. Earth Week Activities	Sandy August (15 mins)
Next Meeting - Topics and Date	All
Adjournment	Chair

Patuxent Reservoirs Watershed Protection Group

Technical Advisory Committee

Meeting Summary

July 18, 2007

Technical Advisory Committee	
Gul Behsudi (alternate)	*MDE*
Meosotis Curtis	*MCDEP*
Mohammad Habibian	*WSSC*
Jerry Maldonado	*PGDER*
Kristal McCormick	*HCSCD*
Bert Nixon	*HCHD*
Susan Overstreet	*HCDPZ*
Howard Saltzman	*HCDPW*
Mark Symborski	*MNCPPC*
Stan Wong	*MCDPS*
Absent	
Bob Ensor	*HCSCD*
John McCoy	*DNR*
Paul Meyer	*PGHD*
Katherine Nelson	*MNCPPC*
Dave Plummer	*MSCD*
Royden Powell	*MDA*

Other Attendees	
Bob Buglass	*WSSC*
Carrie Capuco	*Capuco Consulting*
Martin Chandler	*WSSC*
Tobias Kagan	*WSSC*
Lindsay Leiterman	*HCDPZ*
Ross Mandel	*ICPRB*
Angela Morales	*HCDPW*
Nancy Roth	*Versar, Inc.*
Tim Rule	*MDE*
Tom Thornton	*MDE*
Deborah Weller	*PGDER*
Frank Wise	*PGHD*

The meeting was called to order at approximately 1:40 p.m. Dr Habibian informed the TAC that budget to renew the contract with Versar has been renewed by WSSC for a second year of TAC support, although there was no news on two grant applications yet and a denial of one. He then reviewed the agenda with the group.

Discussion of Reservoir/Watershed Draft TMDLs: Mr. Rule began the presentation on the draft TMDLs with a thank you to the TAC for its perseverance in waiting for the distribution. He also acknowledged Mr. Mandel for his excellent work. Mr. Mandel then took the lead for the presentation, thanking Mr. Rule for his leadership and acknowledging Mr. Kagan and the other TAC members who had provided assistance.

Mr. Mandel explained that public comment on the document will begin Friday July 20, 2007 and ends August 20, 2007 (to EPA in September) with a posting of the documents on the MDE website. It was mentioned that the MDE website posting will include an updated version of the TMDL from the one the TAC received in June, although the differences from the interagency version are minor. He then provided a background of including the reservoirs on impaired water listing history and an overview of the criteria and desired endpoints for resolving the impairments.

Next Mr. Mandel offered an overview of the modeling framework. He listed the models used and the simulation period (CE-QUAL-W2, HSPF, 1998 – 2003). The TMDLs are based on average annual total phosphorous loads for the simulation period which include wet and dry years.

Mr. Mandel emphasized the efforts that were made to make the model consistent with Chesapeake Bay Program and Tributary Strategy models. He also explained efforts that were taken to make the model responsive to changes in loading rates.

The next part of the presentation focused on the challenges found when calibrating the models. Calibration involved running a baseline scenario and then continuing multiple adjustments and data runs until the simulated results reasonably matched the observed data. The calibrated model indicates that hypoxia remains as a problem even when the watershed is fully forested. He then presented the TMDL load and allocations table and urged the TAC to review their copies (see attached technical memo).

The schedule for TMDL approval was then discussed. Mr. Thornton requested that comments be provided to him by August 20 (e-mail is acceptable to tthornton@mde.state.md.us. A formal response document will be generated by MDE and released with the final rule. The presentation was then opened for questions.

Ms. Weller queried whether the P release from bottom sediments in the reservoir was accounted for in the models. MDE indicated that because the sediment study was not available at the time the model was run this calculation was not performed. However, Mr. Mandel indicated that he believed the P release would be small and is likely captured in the runs for bottom layers.

Ms. Curtis then asked why the Triadelphia was listed for sediment impairment, especially given that it appears to be in good shape when compared nationally. MDE indicated that the Patuxent Reservoirs 303d listing was older than others and likely not reviewed stringently. He said that unfortunately it is very difficult to de-list a watershed without completing the TMDL process.

Mr. Nixon asked how long the approval process would take once the package was sent to EPA. MDE indicated that it would be 6-9 months. Mr. Rule also emphasized that MDE has had good experience with receiving TMDL approval and that it would likely be viewed as structurally and technically sound.

Discussion then followed on which copy (web or previously distributed) of the TMDL should be reviewed and how comments should be provided to MDE. It was agreed that WSSC would receive all TAC comments, review them, and see if a summary document can be developed, thereby facilitating submission of one set of TAC comments on the proposed TMDL rather than disparate comments by member agencies. All comments were directed to be submitted to Carrie Capuco (ccapuco@capucoconsulting.com) by close of business on August 8, 2007. At that point the MDE presenters departed.

Annual Report Development Schedule: Ms. Capuco and Mr. Kagan distributed the Annual Report development schedule. No objections were raised, consequently it was agreed that section drafts were due to Ms. Capuco close of business on September 28, 2007.

Policy Board Meeting: Mr. Kagan reported that the Policy Board Meeting has been scheduled for Thursday November 8, 2007 at WSSC from 1:30 – 2:30.
County contact names should be supplied to WSSC as soon as possible to ensure invitation letters are distributed in a timely fashion. Mr. Maldonado indicated that the Prince Georges County contact will be Charles W. Wilson, the Acting Director of Environmental Resources. Ms. Curtis indicated that she would identify the Montgomery County representative. Questions were raised as to who was to chair the meeting. After research it has been identified that Montgomery County is currently the Policy Board Chair and will be passed to Prince George's County at the November meeting.

Dr. Habibian then presented the following topics for discussion at the Policy Board meeting:

- Sediment Study
- Sediment Oxygen Demand Study
- Total Maximum Daily Loads
- Outreach
- Grant progress

Ms. Curtis then suggested that the group identify ways to implement the TMDL and present them as recommendations to the Policy Board. She indicated that the existing action plan will likely address the identified weaknesses. Discussion followed on how the Baltimore reservoirs group (RTG) is addressing implementation. Ms. Overstreet is participating on the RTG and noted that they had begun compiling information about how to track elements needed for the implementation plan, e.g. agricultural best management practices. It was agreed that a representative from the Baltimore Reservoirs advisory committee would be invited to the next TAC meeting.

Questions were then posed regarding the forest management study and recreational survey. Mr. Kagan explained that he had never received a final version of the forest management study but had previously distributed the recreational survey results. It was agreed that the survey would be redistributed to the TAC for review.

Next Meeting

September 18, 2007, 1:30 p.m.in the Chesapeake Room 6104 WSSC.

Adjournment

Meeting adjourned at approximately 3:00 p.m.

Patuxent Reservoirs Watershed Protection Group
Technical Advisory Committee Meeting

July 18, 2007
1:30 p.m. – 3:30 p.m.
Washington Suburban Sanitary Commission
Chesapeake Room - Room 6104 (6th floor)

AGENDA

Call To Order/Opening Remarks	Chair - Habibian
Discussion of Reservoir Draft TMDLs	Tim Rule and Ross Mandel (60 mins)
Annual Report Development Schedule	Tobias Kagan (15 mins)
Policy Board Meeting Presentation Discussion	Chair (15 mins)
Next Meeting - Topics and Date	All
Adjournment	Chair

Patuxent Reservoirs Watershed Protection Group

Technical Advisory Committee

Meeting Summary

September 18, 2007

Technical Advisory Committee	
Gul Behsudi (alternate)	*MDE*
Meosotis Curtis	*MCDEP*
Mohammad Habibian	*WSSC*
Kristal McCormick	*HCSCD*
Katherine Nelson	*MNCPPC*
Bert Nixon	*HCHD*
Susan Overstreet	*HCDPZ*
Howard Saltzman	*HCDPW*
Mark Symborski	*MNCPPC*
Stan Wong	*MCDPS*
Absent	
John McCoy	*DNR*
Jerry Maldonado	PGDER
Paul Meyer	*PGHD*
Dave Plummer	*MSCD*
Royden Powell	*MDA*

Other Attendees	
Carrie Capuco	*Capuco Consulting*
Martin Chandler	*WSSC*
Rob Feldt	DNR
Anne Hariston-Strang	DNR
Tobias Kagan	*WSSC*
Lindsay Leiterman	*HCDPZ*
Angela Morales	*HCDPW*
Nancy Roth	*Versar, Inc.*
Deborah Weller	*PGDER*
Frank Wise	*PGHD*

The meeting was called to order at approximately 1:40 p.m. Dr. Habibian explained that the plan for the meeting had intended to include a presentation on TMDL implementation by the Baltimore Reservoirs Technical Group. However, the DNR has completed the forestry study and wanted to share its findings with the TAC and receive its comments. Accordingly, the TMDL implementation discussion was replaced by the DNR presentation. Dr. Habibian offered that discussion with the Baltimore RTG individually can be done via telephone or email.

Dr. Habibian then called for comments on the July 2007 TAC meeting minutes. A brief discussion was held concerning the precision of the statements regarding the Triadelphia Reservoir's listing for sediment impairment. The minutes were modified to reflect concern over the listing of the Triadelphia reservoir specifically. The minutes were then approved as modified.

Because the DNR representatives were not prepared to present immediately, the discussion turned to the 2008 Earth Week Activities.

Earth Week 2008: Mr. Wise reported that the Outreach Committee has met twice and has decided to change Earth Week celebrations from a series of events throughout the month of April to a large comprehensive event on a single day. The tentative date is Saturday April 12, 2008.

The tentative title is WSSC and Friends Watershed Festival. Mr. Wise indicated that the committee hopes to hold the event in the Supplee Recreational Area. The committee is striving to create a large tented event with multiple presenters. Ms. Capuco then added that all TAC members will be contacted with a request to provide some type of assistance for the event. Ms. Weller indicated that Prince George's County will be supplying an Enviroscape model to bring to the Festival. Mr. Wise then closed by stating that the location is still under review and additional information will be forthcoming.

Forest Conservation Plan: The TAC then turned its attention to the Forest Conservation Plan presentation offered by Dr. Hairston-Strang of DNR. An executive summary was given to all TAC members present. Dr. Hairston-Strang indicated that DNR is still addressing some comments provided by WSSC. She then led the group through an extensive presentation.

Dr. Hairston-Strang explained that the primary goal in conserving the reservoir forests is water quality protection; secondary goals include preservation of biodiversity, habitat, and recreation. She then explained the procedure and began with an inventory of the Patuxent Reservoir watershed forests. Inventory findings included:

- 14% of the watershed forest is owned by WSSC
- Species diversity is good
- Regeneration is better than the Baltimore reservoirs, but still not sufficient for sustainability.
- There is a species shift toward Red Maple which is of concern for habitat and potentially water quality
- Invasives are widespread
- Density is very high in some areas, which can increase risk of insects, fire and disease
- Age diversity is low
- Shrub cover is low
- Species of Concern and a wetland of special state concern are present
- Dead wood habitat is sufficient
- Acreage of roads is not high, there are opportunities to reduce P and sediment at road crossings
- Insect risk exists, but currently is not severe; risk is increasing, especially on dense pine stands.

Management suggestions include:

- Thin dense stands
- Manage for species diversity
- Spot control invasives prior to forest operations in a stand
- Continue deer control
- Continue road maintenance

Discussion then followed regarding methods of thinning suggested. Other questions addressed included:

- How long to treat invasives after thinning

- How slopes were analyzed and considered as a management constraint
- How stilt grass impacts seedlings and light level
- How species diversity affects each insect's preference for a specific tree species
- The definition of a crowded environment (100-200 mature trees per acre)
- Whether DNR intends to provide a Forest Management guidance for all Maryland reservoir forests (Dr. Hairston-Strang indicated that in guidance it would be difficult to adequately address multiple geographic areas.)

The TAC requested copies of the entire study. Mr. Kagan offered to distribute it electronically. Dr. Habibian then thanked Dr. Hairston-Strange for the presentation. In closing, Dr. Hairston-Strang mentioned that natural organic matter is also an issue to consider in the watershed because the preference for Red Maple will result in the release of more organic matter than from other deciduous trees or from pine species. She also suggested that disinfection by products can be impacted by tree selection. Any comments on the forestry study should be sent to Ms. Hairston- Strang with a copy to WSSC.

Annual Report Development Schedule: Mr. Kagan reminded TAC members that all annual report submittals are due the week of September 24, 2007.

Policy Board Meeting: Mr. Kagan reported that the Policy Board Meeting has been scheduled for Thursday November 8, 2007 at WSSC from 1:30 – 2:30. Dr. Habibian then presented the following topics for discussion at the Policy Board meeting:

- Sedimentation Studies
- Sediment Oxygen Demand Study
- Forest Conservation Plan
- Total Maximum Daily Loads
- Outreach
- Grant progress
- Any achievements reported by other members of the TAC

An extensive and pointed discussion followed regarding the future direction of the TAC and the best use of the Policy Board Meeting – particularly the recent successes and failures on the part of the TAC. The main focus was on whether the TAC should continue in an advisory role or be limited to sharing information only. Ms. Curtis proposed this change because the TAC could not meet its advisory responsibility. The TAC had been unable to forward comments concerning the nutrient and sediment TMDL because they had been unable to achieve consensus. Prince George's DER, Howard County Planning and Zoning, MNCPPC, and Montgomery County had all supported the draft set of consensus comments. The other TAC agencies had not commented.

Ms. Curtis stated that she had reviewed WSSC's comments, found them to be excellent technical comments, and could not discern any reason why the proposed comment set on behalf of the TAC was in conflict with the WSSC position. Dr. Habibian stated that while a consensus is the ideal goal, the difference of opinion should be respected. Further discussion focused on who would be responsible and pay for meeting the TMDL requirements. In brief, Ms. Curtis reminded the TAC that the Policy Board at previous meetings had approved the Priority Resources, Action Plans, and priority actions for buffers and outreach. Policy Board discussions

had made it clear that the WSSC reservoirs will have the greatest direct benefit from the priority actions. Dr. Habibian responded that the normal practice is that pollution mitigation is the responsibility of those who contribute to pollution and not those impacted by it. He also added that this is not a technical issue and is more suitable for consideration by the Policy Board.

The discussion was then concluded with a statement by Dr. Habibian that a draft presentation for the Policy Board would be prepared and shared with the TAC for comment. Ms. Nelson offered to prepare slides and text to portray the ongoing nature of the grants project in Reddy Branch. There being no further business, the meeting was adjourned at approximately 3:45 p.m.

Next Meeting

January 8, 2008, 1:30 in the Chesapeake Room 6104 WSSC.

Patuxent Reservoirs Watershed Protection Group
Technical Advisory Committee Meeting

September 18, 2007
1:30 p.m. – 3:30 p.m.
Washington Suburban Sanitary Commission
Chesapeake Room - Room 6104 (6th floor)

AGENDA

Call To Order/Opening Remarks	Chair - Habibian
Administrative Business	Chair - Habibian
1. Approval of July meeting minutes	
Old Business	
1. Presentation of Final Forestry Study	Anne Hairston-Strang (60 mins)
2. Earth Week Activities	Sandy August (10 mins)
3. Annual Report Development Schedule Update	Tobias Kagan (10 mins)
4. Policy Board Meeting Presentation Discussion	Chair (15 mins)
– Presentation Content	
– Due Dates	
– Dry Run	
New Business	
1. Future Direction and Composition of the TAC (Reduction of the TAC from a technical advisory role to an information exchange forum?)	Meo Curtis (15 mins)
Next Meeting - Topics and Date	All
Adjournment	Chair

APPENDIX D

2007 GRANT APPLICATIONS

National Fish and Wildlife Foundation - Pre-Proposal

Please review your Pre-Proposal. If the information is correct click on **Submit**. If not click your browser's back button to edit it.

Project Name:	WSSC Weeders -- We Weed for the Trees		
Organization:	Washington Suburban Sanitary Commission		
Organization Type:	State or local government		
Primary Contact:	Ms. Dawn Forsythe		
Street Address:	WSSC Communications and Outreach Office 14501 Sweitzer Lane		
City, State, Zip and Country:	Laurel, MD 20707-5902		
Phone:	301-642-2209	**Fax:**	401-990-0152
Primary E-mail:	Dforsyt@wsscwater.com		
Secondary E-mail:	ccapuco@capucoconsulting.com		
Organization's Internet Address:	www.wsscwater.com		
Total Funds Requested from the Foundation:	$ 22,500	**Total Matching Funds:**	$ 28,000
Salaries and Benefits:	$ 0	**Matching Salaries and Benefits:**	$ 24,200
Equipment:	$ 8,500	**Matching Equipment:**	$ 800
Other:	$ 14,000	**Matching Other:**	$ 3,000
contractual services for a volunteer coordinator		Postage, refreshements, printing of volunteer materials	

Sources of Matching Funds		
Name of Source(s)	**Amount**	**Status**

D-3

Washington Suburban Sanitary Commission	$ 28,000	Received
Washington Suburban Sanitary Commission	$ 28,000	Received
Washintgon Suburban Sanitary Commission	$ 28,000	Received

PROJECT SUMMARY

Summary:	Remove invasive plants from reservoir forests to preserve diversity, and the ecosystem with teams of volunteers and watershed staff emphasizing education and community involvement.
Project Site:	WSSC was formed in 1918, and acquired about 6,000 acres of land between 1930 and 1955 in Montgomery, Howard, and Prince Georges Counties Maryland to insure control of critical areas immediately adjacent to the reservoirs. Many of the acquired lands were in agriculture. Over 600 acres were planted to pine, primarily in the 1940s and 1950s, with afforestation continuing at slower rates through the 1970s. Some areas were replanted in pine following harvest in the 1980s. Experimental trials of Paulownia were planted at the base of Brighton Dam. Other areas were in mixed hardwoods or naturally regenerated to primarily hardwood species after farming ceased. Early successional species such as yellow-poplar regenerated in old fields after farming ceased. To date, WSSC maintains the site. Recent efforts have begun to reach into the community to establish volunteers to care for the forests and adjacent private land.
Conservation Need:	A forest management plan written in 1986 focused on the portions of the forest in plantations (242 acres around Triadelphia, and 411 acres on Rocky Gorge). The last harvests occurred in 1993 and 1994, covering 62 acres of clearcuts in Virginia and loblolly pine and 19 acres of selective thinning in white pine. Some of the harvest and thinning operations that were recommended in the late 1990s have not occurred, leaving very dense plantations. During the 1990s, deer populations rose, and increased browse was observed on regenerating trees. WSSC began a deer management program in 2000 and has expanded acreage eligible for managed hunts over the ensuing years to limit ecological damage from large deer herds. In May 2003, the Maryland Department of Natural Resources (MD DNR) Forest Service entered into an agreement with the WSSC to develop a comprehensive Forest Resource Conservation Plan for the forested land surrounding the Triadelphia and Rocky Gorge Reservoirs. Funding for data collection and analysis was provided by USDA Forest Service Northeastern Area State and Private Forestry though their Watershed and Clean Water Challenge Grant Program. The project also relied on the NED-1 Decision Support Software developed by the USDA Forest Service, a detailed forest stand level analysis for multiple ecosystem functions, including wildlife habitat composition and

	structure. Stands were delineated based on similarity in soil, species, and forest stand characteristics such as age; acreages varied from 2 to 369 acres. A total of 439 understory and 256 overstory sample plots were taken on the properties. A recreational user survey was conducted in conjunction with researchers at University of New Hampshire to determine the types of active recreation taking place, effective avenues for public education about reservoir protection, and perceived level of impact of recreational activities on water quality. This project will enhance overall forest health and further advance the goals for forest conservation which were developed through collaboration of WSSC and DNR. Those goals were: 1. Protecting and enhancing water quality; 2. Providing security for water supplies; 3. Maintaining and restoring regional biological diversity within the public lands surrounding the reservoirs; and 4. Providing recreational opportunities compatible with the above objectives.
Objectives:	-- Restore native forest communities to maintain a vigorous forest cover. -- Restore natural regeneration to establish 535 acres of natural areas managed for interior forest conditions. - Maintain a vigorous and diverse forest with multiple canopy layers and varied native species to maintain natural areas as source sites for the natural regeneration of all forest plants and as control sites for monitoring programs. -- Maintain a forest that achieves active growth, nutrient assimilation, water infiltration, and the regulation of soil and stream temperatures to control for damaging insects, and to aid native species grownth -- To provide a variety of habitat elements and canopy structure to provide varried vertical structure to meet habitat needs.
Methodology:	In October 2007, a steering committee was convened composed of representatives from Howard and Mongtomery county Master Gardeners, Maryland National Capital Parks and Planning Commission, WSSC outreach and environmental protection divisions, Montgomery County Department of Environmental Protection, Montgomery College, Patuxent Riverkeeper, and several other non-profit groups. The steering committee developed the following methodology for this project: Volunteers will be recruited from the adjacent "volunteer recruitment garden" project which is a part of the azalea garden at Brighton Dam. The azalea garden has been a local destination point since its installation in the 1960s. A group of dedicated donors to the azalea gardens has already been established. During the spring bloom of the azaleas, WSSC outreach staff will conduct sign up for WSSC Weeders. Once a list of volunteers is established, a two-hour training will be held at

	the Brighton Dam Resource Center. The volunteer list will be coordinated by a contractual volunteer coordinator whose sole responsibility will be the scheduling, communicating with, and recruitment of volunteers. Following the training, four volunteer days will be scheduled for targeted areas of the reservoirs. Those dates will be published on WSSC web site and other advertisement capabilities. On each volunteer day, teams of five will be dispersed into targeted areas of the reservoir forests. Each team will be led by a trained individual and accompanied by a trained WSSC employee. Each team will be given a specific task. At the conculsion of the day, celebration will occur and the WSSC maintenance staff will maintain the areas cleared of non-native invasives. Awards will be offered to all volunteers.

Activities	Project Output	Post Project Outcomes
Volunteer Training	Trained personnel capable of leading WSSC Weeder teams	Build volunteer citizen capacity for non-native invasives removal throughout the watershed
Volunteer Days	Non-native invasive removal	Reduction of non-native invasive plants throughout the watershed to promote the above stated goals and objectives.
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Volunteer Days	Non-native invasive removal	Reduction of non-native invasive plants throughout the watershed to promote the above stated goals and objectives.

Organization Qualifications:	The Washington Suburban Sanitary Commission (WSSC) was established on May 1, 1918. But the concept of a bi-county water/sewer agency was first suggested in 1912 following a strong complaint from the neighboring District of Columbia about the streams within the Nation's Capital being fouled by waste from Montgomery and Prince George's Counties. In the late 1930s, as the population continued to grow, more water was needed and the WSSC responded with the construction of its Brighton Dam-Triadelphia Reservoir facilities on the Patuxent River. Brighton Dam was completed in 1943. Our 1,500 employees focus on one main objective every day - providing safe water. We maintain an intricate network of facilities.

	We' re involved with a large number of watershed protection efforts to help reduce pollution from the land before it ever makes it to one of our treatment plants.
Region where your project will occur:	Pulling Together Initiative

Submit

NOTE: Please click the Submit button only once or data may be lost.
Submission may take several minutes, and closing your browser prior to
receiving a confirmation page may result in NFWF not receiving your Pre-Proposal.
If you receive any error messages, please contact us via e-mail.
You will be notified within 30 days of the current cycle's Pre-Proposal
due date if you are invited to submit a full proposal.

Chesapeake Bay Trust
Grant Application Form

Complete the application, attaching additional pages as needed. You can also type directly into the form by downloading the MS Word version from www.chesapeakebaytrust.org.
Submit the application form to 60 West Street, Suite 405, Annapolis, MD 21401.

1. Applicant Information

Date: _____

Name of Organization: Howard Soil Conservation District

Mission of Organization: Soil conservation districts are local agencies that provide landowners with technical expertise to install conservation practices on their land. Although not regulatory, we help farmers and other landowners comply with local, state and federal environmental laws and regulations. Our technical staff includes soil conservation planners, agricultural engineers, soil scientists, urban planners and other natural resource professionals.

Tax Status (i.e., 501c3, local government, public school, etc.): Local Government

Executive Officer of Requesting Organization

Name: Bob Ensor
Title: District Manager
Address: 708 Lisbon Center Drive, Suite E
Woodbine, MD 21797
County: Howard
Daytime Phone: 410-489-7987
Fax: 410-489-9120
Email Address: rensor@howardcountymd.gov

Signature: _____

Original Signature required

Project Officer

Name: Bob Ensor
Title: District Manager
Address: 708 Lisbon Center Drive, Suite E
Woodbine, MD 21797
County: Howard
Daytime Phone: 410-489-7987
Fax: 410-489-9120
Email Address: rensor@howardcountymd.gov

Signature: _____

Original Signature required

2. Grant Information

Grant program: Which grant program are you applying to? __Mini-Grant_____

Amount of Trust funding requested: $4,779.00

Grant period (start date and end date of your project): 11/2007 – 06/2009

In which river, stream, or local watershed will the project be located? Patuxent headwaters Montgomery and Howard Counties. In which county will the project be located? Howard and Montgomery

3. Project Information - Address each question below. Total length of responses not to exceed 5 pages.

A) Project Abstract: To educate property owners with 7 or less horses on existing assistance programs to implement water quality improvement actions. The applicants, in cooperation with multiple county agencies will conduct a mail survey to identify watershed landowners with 7 or less horses, They will then conduct hands-on educational events for the identified landowners, provide assistance to secure planning and financial assistance to implement water quality improvement actions, conduct outreach to encourage other water quality improvements on neighboring residential properties, and encourage effective maintenance for project life spans.

B) Project Deliverables: **T**he deliverables expected from this project include:
Estimated number of volunteers 50
Estimated number of students 20
Number of publications produced and distributed 5,730
Number of presentations/ workshops given 33 (including site visits and follow up visits)

C) Project Description: Address these questions as they apply to your project:

- What are the specific objectives of the project?

To increase community engagement in actions to improve water quality utilizing Best Management Practices in the Patuxent Reservoirs Watershed, focusing on *outreach for horse management.* This is extremely important because these property owners may not be part of the traditional farming community and may be unaware of steps they can take to protect the watershed using the available agricultural assistance programs. Federal, State, and County funding assistance programs exist[1], but these landowners often have low participation in existing programs.

Further, in addition to landowners lacking familiarity with existing assistance programs, elected officials at many levels are also not aware of existing assistance programs. This lack of awareness makes outreach to educate the public a very important activity.

- What are the steps that will be taken to complete the project (methodology)?

A survey will be mailed to owners of parcels over 2, but less than 100 acres in size in phased segments of the watershed querying whether they have horses on the land. Once identified, those landowners will be invited to a series of hands-on educational events (such as 2-hour field walks in evenings and on weekends) throughout the fall and then offered assistance to prepare applications for assistance to implement water quality improvement actions.

- Is this project an extension of an on-going or recently completed project?

Yes , this is one of many efforts underway by the Patuxent Reservoir Watershed Protection Group Technical Advisory Committee to enhance the Reservoir/Water Supply, Stream System, Aquatic Biota, Rural Character and Landscape, and Public Awareness and Stewardship in the watershed.

- How does your project meet the goals and criteria of the grant program to which you are applying? *(Go to the Application Instructions of the grant program to which you are applying for description of goals and criteria.)*

[1] MACS, CREP, WHIP, Patuxent Reservoir Protection BMP Cost Share, Stream ReLeaf, MDA Conservation Innovation Grants

- Raise awareness about the challenges and solutions to restoring the Chesapeake Bay and its rivers; the mailing will reach hundreds of property owners in the watershed, raising their awareness of the issue. Those who respond will benefit from the educational programs and hands on assistance in identifying BMPs on their property.

- Promote collaborative watershed restoration solutions between citizens, businesses, and government; This is a collaborative project between SCDs and DEPs in Howard and Montgomery Counties and the Washington Suburban Sanitary Commission, exemplifying effective multi-governmental approaches to watershed improvement. In addition, by working directly with county residents who either own or board horses, this will embody an exemplary cooperative effort between business, citizens and government.

- Engage citizens in community-based restoration and protection projects that benefit watershed health; Watershed land owners with horses on their property are the target audience for this project. Thus, those property owners and other local citizens will be engaged in a series of restoration and protection projects to benefit watershed health on their own property.

- Describe your organization's experience in completing similar projects.

The members of this project team have been involved in agricultural conservation initiatives for dozens of years. They are the state experts on BMPs and assistance programs.

- List your project partners and describe what specific roles each partner will play in completing the project.

  - Howard Soil Conservation District, Bob Ensor and Jim Myers, will be managing the financial aspects of the project, identifying targeted mailing addresses, compiling survey results for Howard County, conducting educational programs, and assisting in identification of BMPs on individual properties, and assisting in funding request preparation.

  - Montgomery Soil Conservation District, David Plummer, and J.G. Warfield, will be identifying targeted mailing addresses, compiling survey results for Montgomery County, conducting educational programs, and assisting in identification of BMPs on individual properties, and assisting in funding request preparation.

  - Montgomery County Department of Environmental Protection, Howard County Department of Public Works, Howard County Planning Department, will assist in conducting educational programs, and assist in identification of BMPs on individual properties, and will assist with project management through participation in the organizing entity -- the Patuxent Reservoirs Watershed Protection Technical Advisory Committee (TAC).

  - Washington Suburban Sanitary Commission will assist through guidance on the outreach planning, and provide contractor assistance with project planning and technical support.

D) Project Timeline: Outline the project schedule. Include the start date, end date, and major milestones.

- Fall 2007 contact targeted landowners
- Winter 2007-08 educational events
- Spring 2008 application assistance
- Summer 2008 ongoing educational events

- Fall 2008 application assistance
- Winter 2008-09 ongoing educational events
- Spring 2009 implementation of first round of projects

4. Project Budget

A) Itemized Budget: Using the model below, attach a separate page to outline your entire project budget. List the items, quantity, and price per item. Research prices at the place(s) you will purchase the items before completing the budget.

Budget Item	Quantity and Price per Item	Amount Requested from the Trust	Matching Funds, Discounts, or In-Kind Services	Cite the Source	Total Cost	Justification for Budget Item
Landowner survey development 3 hrs @$50	150.00	0	150.00	HSCD	150.00	Outreach and citizen identification tool -- _3_hours x__50_$ = 150
Printing survey and return mailers	5730 @ 0.37	0	2,120.00	HSCD and MSCD	2,120.00	Project team determined that a short printed survey with a stamped addressed return mailer would likely engage the highest response
Mailing to targeted landowner group	5730@ $1.50	4,689.00	0		4,689.00	Print rather than electronic mail was determined to engage the highest response. This is the cost of the mailing and the return postage envelopes
Educational Session facility	3 meetings @ $75.00 per meeting	0	$225.00	HSCD and MSCD	$225.00	Due to the rural nature of this portion of the state, securing a suitable centrally located meeting space is essential for good participation. The project team anticipates paying use fees to a local fire hall or fraternal organization.
Educational Session refreshments	60@ $1.50	$90.00	0		$90.00	The project team determined that offering refreshments would set the appropriate tone for the educational sessions
Private land site visits	10 visits @$200.00 per visit	0	$2,000.00	HSCD and MSCD	2,000.00	Landowners will be offered the opportunity to have an SCD member visit their property to identify BMP opportunities and provide advice on which existing funding source would be most applicable to each BMP (fee is for Jim Myers or J. G. Warfield to spend 4 hours on each site visit.)
Private land application assistance	10 applications @$200.00 per application	0	$2,000.00	HSCD and MSCD	2,000.00	SCD members will provide advice where needed in the funding application process (fee is for Jim Myers or J. G. Warfield to spend 4 hours on each site visit.)
Implementation oversight assistance	10 visits @$200.00 per visit	0	$2,000.00	HSCD and MSCD	2,000.00	SCD members will provide advice where needed in the implementation process (fee is for Jim Myers or J. G. Warfield to spend 4 hours on each site visit.)
Maintenance outreach	10 visits @$200.00 per visit	0	$2,000.00	HSCD and MSCD	2,000.00	SCD members will provide reminders and advice where needed in the maintenance process (fee is for Jim Myers or J. G. Warfield to spend 4 hours on each site visit.)
Project Management	40 hours @ $50.00 per hour	0	$2,000.00	HSCD, WSSC, MSCD	$2,000.00	Project planning meetings, grant administration, coordination with other watershed initiatives by Bob Ensor, Dave Plummer, Jim Myers, Lindsey Leiterman, Susan Overstreet, and WSSC contractors
Total		4,779	12,495		17,274	

B) Staff Costs: Please provide a detailed description of staff responsibilities with approximate hours dedicated to project asks and include the percentage of overall staff time dedicated to this project. Please add this information in the budget's justification column or attach it to the application.

C) Matching Contributions: Total of cash match: $4,345.00
(Excluding volunteer contribution) Estimated value of in-kind donations: $10,150.00
Estimated number of volunteer hours: 180 (landowner time in preparing applications and implementation plans).

5. Attachments

For certain types of projects, such as planting projects, the Trust requires attachments of additional information. Look up your project type on the ***Required Attachments and Guidance for Commonly Funded Projects*** for project specific information located at www.chesapeakebaytrust.org/grantprograms.html.

None Required

Chesapeake Bay Trust
Stewardship Grant Application Form

Complete the application, attaching additional pages as needed. You can also type directly into the form by downloading the MS Word version from www.chesapeakebaytrust.org.
Submit the application form to 60 West Street, Suite 405, Annapolis, MD 21401.

1. Applicant Information

Date: December 7, 2007

Name of Organization: Maryland National Capital Parks and Planning Commission (MNCPPC)

Mission of Organization: The Maryland General Assembly created MNCPPC in 1927 to develop and operate public park systems, coordinate public recreation programs, and provide land-use planning for physical development throughout Montgomery and Prince George's counties.

Tax Status (i.e., 501c3, local government, public school, etc.): Local government

Executive Officer of Requesting Organization		Project Officer	
Name:	Gwen Wright	Name:	Katherine Nelson
Title:	Acting Planning Director	Title:	Senior Planner
Address:	8787 Georgia Ave. Silver Spring , MD 20910-3716	Address:	8787 Georgia Ave. Silver Spring, MD 20910-3716
County:	Montgomery	County:	Montgomery
	Daytime Phone: 301-495-4622 Fax: 301-495-1303		Daytime Phone: 301-495-4622 Fax: 301-495-1303
Email Address:	Gwen.Wright@mncppc-mc.org	Email Address:	Katherine.Nelson@mncppc-mc.org
Signature:	_____	Signature:	_____
Original Signature required		*Original Signature required*	

2. Grant Information

Select Stewardship category to which you are applying: x Restoration (Up to $35,000) ☐ Outreach (Up to $15,000)

Amount of Trust funding requested: $33,654.00
Check here if this is a multi-year request (Please contact Trust staff prior to applying for a multi-year project): ☐

Grant period (start date and end date of your project): March 2008 – March 2013

In which river, stream, or local watershed will the project be located? Reddy Branch
Basin Code 02131107
Subbasin Code -0944

In which county will the project be located? Montgomery

3. Project Information - Address each question below. Total length of responses not to exceed 5 pages.

A) Project Abstract: MNCPCC proposes to plant native trees and shrubs to restore riparian buffer along approximately 1,300 feet of a 1st order reach of Reddy Branch, which is a tributary of the Hawlings River. MNCPCC owns these 2.8 acres, which are part of Reddy Branch Stream Valley Park. The two sites are in old-field condition. Reforesting these four acres will require approximately 740 trees measuring 1.5 to 2 inches in diameter, 122 shrubs, and deer-protection measures. The sites require preparation that includes stream bank stabilization in small areas, and three to five years of post-planting maintenance to control invasive plants. Community members will be engaged in the project through volunteer participation in planting and maintenance, distribution of informational flyers, and display of signage.

B) Project Deliverables: List the deliverables expected from this project. Please provide a numeric response for the metrics that apply to your project.

Project Participants	#/$	Restoration Outcomes	#	Restoration Outcomes	#
Estimated number of volunteers:	40	Sq. ft. of streamside forest buffers planted:	130,680	# of trees planted:	740
Estimated number of students:	20	Linear ft of bank stabilization:	10	# of native plants planted:	122
Estimated number of teachers:	2	Sq. ft. of raingarden or bioretention created:		# of rain barrels installed/distributed:	
Outreach Outcomes		Sq. ft. of wetlands enhanced/ restored:		# of fish to be raised and/or released:	
# of publications (copies) produced:	500	Sq. ft. of bay grasses (SAV) planted:		# of bay grasses (SAV) planted:	
# of presentations/workshops:	2	Sq. ft. of oyster reef restored:		# of oysters to be raised and/or released:	
Pounds of trash/debris removed:		Sq. ft. of invasive species removed:	16,500	# of wildlife habitat structures:	
# of storm drains stenciled:		Linear feet of living shoreline created:		Other: Educational signs posted	4

C) Project Description:

- **What are the specific objectives of the project?** The primary objective of this project is to implement a collaborative effort to restore riparian buffer along an impaired tributary within the Patuxent watershed. Our specific goals are (1) to educate neighboring residents and students about the importance of healthy riparian buffers for improving and protecting water quality, (2) to improve water quality in Reddy Branch through temperature mitigation and nutrient removal, (3) to stop further degradation of these stream reaches by slowing stormwater runoff from adjacent crop fields where no-till cultivation decreases the permeability of the soil, and (4) to increase terrestrial habitat diversity.

- **What are the steps that will be taken to complete the project (methodology)?** These sites have been assessed by Montgomery County's stream restoration specialists, park managers, and senior planning specialists; an agronomist with the Washington Suburban Sanitary Commission (WSSC); and contracted wetland specialists. Trees that merit saving have been identified and flagged.

Multiple local government agencies have agreed upon a collaborative approach to improve the entire Reddy Branch stream system. The next steps for these particular sites include:

- Developing a planting plan (MNCPPC contractor)
- Preparing the sites and removing invasive plants (Volunteers & MNCPPC contractor)
- Planting (Volunteers and MNCPCC contractor)
- Placing educational signs (Volunteers)
- Maintaining the sites (MNCPPC park staff, contractors, and volunteers)
- Developing and presenting public-education talks and distributing brochures at Sherwood High School and for neighboring community associations (Volunteers & MNCPPC staff)

Please note that MNCPPC is contractually obligated to use Highway and Safety Services, Inc. to install, maintain, and guarantee trees and deer protection on park land; however, for this project we will coordinate with the contractor to enable volunteers to participate constructively in the planting and maintenance efforts.

- **Is this project an extension of an ongoing or recently completed project?** This project is the first in a series of initiatives to be implemented over the next two years to encourage public interest and involvement in a collaborative effort being undertaken by MNCPPC, the Montgomery County Department of Environmental Protection, the WSSC, and others to restore the Reddy Branch stream buffer. MNCPPC selected these sites for initiating this collaborative effort because the land is publicly owned, enabling us to avoid administrative hurdles that could impede implementation. Among the publicly owned parcels, we chose these three acres because they are easily accessible and visible from nearby roads.

Since 1996, the Patuxent Reservoirs Watershed Protection Group has used a Policy Board and Technical Advisory Committee (TAC) to work together to protect watershed resources. Through interagency cooperation, this unique cooperative partnership has developed a strategic goal to protect the Patuxent Reservoirs watershed. In 2005, the Technical Advisory Committee identified the Reddy Branch Stream Valley Park as its top priority for riparian forest buffer restoration.

The Montgomery County Department of Environmental Protection (DEP) first published the Countywide Stream Protection Strategy (CSPS) in 1998. The CSPS provides County stream resource conditions on a sub watershed basis and recommends programs or policies to preserve, protect, and restore County streams and watersheds.

In 2003, a Watershed Restoration Study was conducted to identify opportunities to enhance and protect aquatic and riparian habitat in the Hawlings River watershed and to reduce sediment and associated nutrient loadings to the Rocky Gorge Reservoir. This study was initiated in support of Montgomery County's commitment as a signatory of the *Patuxent Reservoirs Watershed Protection Agreement* to protect the watershed, its tributary streams, and the Rocky Gorge Reservoir. The four part Study used existing biological and physical habitat data and hydrologic analysis to identify priority stream reaches, collected stream bank and channel stability data at 8 monitoring stations, conducted field walks in the priority reaches, developed preliminary designs for 12 stream restoration projects, and identified long-term stream protection needs.

The Hawlings River Watershed Restoration Action Plan is a follow up to the Hawlings River Watershed Restoration Study. The Plan provides a framework of next steps to implement the Study recommendations and for long-term protection of stream resources. The Study analyses showed that ultimately, stream resources protection can only be achieved through a combination of stream restoration, riparian buffer expansion, other

agricultural and urban best management practices (BMPs), and public environmental stewardship. It included identification of a stream restoration activity in the Reddy Branch subwatershed

- **How does your project meet the goals and criteria of the Stewardship grant category (Restoration or Outreach) to which you are applying?** Through the involvement of volunteers coordinated by members of the Izaac Walton League, Our House, Inc., nearby schools, nearby residents, and Patuxent Riverkeeper, this project will engage citizens in a multi-agency collaborative effort to improve the condition of the Patuxent watershed by creating or enhancing riparian buffer along Reddy Branch and providing public education about the functions and importance of healthy riparian buffers. The buffer and educational signage at one site will be visible from Brookeville Road, as well as from many homes in the area.

- **Describe your organization's experience in completing similar projects.** MNCPPC administers a park system of more than 52,000 acres. Its staff of career employees includes planners, park and recreation administrators, and park police. MNCPPC owns and manages many acres of stream valley throughout the watershed, including Reddy Branch Stream Valley Park.

For this project, MNCPPC will lead a group of partners working together to coordinate the restoration of these headwaters as they have in other riparian buffer projects. One good example is a riparian buffer project near Boyds, Maryland. There, volunteers worked side-by-side with MNCPPC to install riparian buffer in Camp Seneca Special Park.

- **List your project partners, including technical partners, and describe what specific roles each partner will play in completing the project.**

In 1996, the Patuxent Reservoirs Watershed Protection Agreement was signed by Howard, Montgomery, and Prince George's Counties, Howard and Montgomery Soil Conservation Districts, Maryland-National Capital Park and Planning Commission (M-NCPPC), and the Washington Suburban Sanitary Commission (WSSC) creating a Policy Board and Technical Advisory Committee (TAC) to work together to protect watershed resources. Through interagency cooperation, this unique cooperative partnership meets quarterly to discuss status of the implementation of many goals set to protect Patuxent Reservoirs watershed.

For community volunteers, it is important to MNCPPC and the TAC that we offer hands on – meaningful and educational experiences. All volunteers will be treated as well coordinated members of a project team. Refreshments and educational material will be available when their services are used. It is envisioned that volunteers will assist with site preparation, planting, and maintenance activities. All volunteer on-site activity will be coordinated by a qualified professional.

County and state partners have offered technical assistance throughout the entire project. Landscape design, engineering, and planning assistance have all been offered. Soil Conservation District staff have offered to work directly with private landowners when needed. DNR and MNCPPC conservationists will provide wetlands restoration-planning assistance. MDE and Montgomery County DEP will provide technical guidance and engineering oversight.

WSSC has been providing direct funding for project management since August 2006. This funding continues through August, 2008 for a total value of approximately $200,000. This funding provided site assessments, coalition building, and project planning services. For the duration of the project, WSSC's Outreach office will provide outreach services.

Secured Organization	Individuals Involved	Area of Expertise	Specific Role
MNCPPC	Katherine Nelson	Planning	Project coordination
MNCPPC	Carol Bergmann	Forest Ecologist	Technical assistance with plans for planting and maintenance
MNCPPC	Doug Redmond	Stream Ecologist	Project planning
Mo. Co. DEP	Meo Curtis	Environmental Planner	Project planning, volunteer coordination
WSSC	Tobias Kagan	Environmental Engineer	Site assessment and planning
WSSC	Sandra August	Outreach Coordinator	Outreach
Patuxent Riverkeeper	Fred Tutman	Grass Roots organization	Volunteer coordination
Versar, Inc.	Nancy Roth	WSSC contractor	Project planning
Capuco Consulting Services, Inc.	Carrie Capuco	WSSC contractor	Project coordination assistance
Highway and Safety Services Inc.		MNCPPC contractor	Site preparation and planting
Belmont Elementary School and Rosa Parks Middle	Sandra August	Green Schools Coordinator with WSSC	Site preparation and planting
Our House, Inc.	Ed Gould	Volunteer	Site preparation and planting
Wildlife Achievement Chapter-Izaak Walton League of America	Jeff Deschamps and Jim Piateski	Co-Chairs, Conservation Committee	Volunteer coordination

D) Project Timeline: Outline the project schedule. Include the start date, end date, and major milestones.

- Planting plan development – February 2008
- Site preparation – March 2008
- Planting – April 2008
- Maintenance – May 2008 – May 2013
- Educational Signage Installation – April 2008

4. Project Budget

Budget item	Quantity and price per item	Amount requested from the Trust	Cash match	In-kind match	Source of match	Total cost	Volun-teer hours (do not include as in-kind match)	Justification for budget item
Trees	740 trees x $20 122 shrubs x $7	$13,154	$2,500	$0	$2,500 National Tree Trust (for MDEP and IWL)	$15,654	N/A	By purchasing plant material with outside funding sources, MNCPPC will be able to stretch its limited pool of restoration money further. This site consumes nearly all of the restoration dollars available in FY07
Site preparation, planting, and deer protection measures	2.8 acres @ $36,000 per acre less the cost of plant material and associated costs	$20,000	$53,596	$0	MNCPPC	$73,596	140 hours	MNCPPC contractor H.S.I. performs this service at $36,000 per acre which includes purchase of plant material, site preparation, installation, deer protection and maintenance. To promote educational elements, and conserve resources, volunteers will work in conjunction with the contractors. Price has been adjusted accordingly.
Maintenance	Portion of per-acre fee attributable to maintenance	$0	$2,310	$0	MNCPPC	$2,310	70 hours	Maintenance will be conducted by volunteers, including weeding. Efforts will be coordinated by Meo Curtis of MDEP. Mowing will be conducted by MNCPPC contractors on the regular park maintenance schedule.
Educational signage	10 hours of design @ $50 per hour; educational sign manufacture @ $500 per sign. Forest conservation signage at $50 per sign.	$500	$150	$500	WSSC staff – design; MNCPPC – vendors manufacture	$1,150	N/A	1 sign 24”x36” discussing benefits of riparian forest buffers to be developed by Sandy August and Tobias Kagan of WSSC and manufactured by MNCPPC. 3 signs at regulatory-established locations per linear foot of forest
Project Management	80 hours @ $50 per hour	$0	$0	$4,000	MNCPPC, MDEP, WSSC	$4,000	N/A	Project planning meetings, grant administration, coordination with other watershed initiatives by Katherine Nelson, Meo Curtis, and WSSC contractors.
Total		$33,654	$58,556	$4,500		$96,710	210	

5. Attachments

- site plan and
- project design
- site photos
- maintenance plan, including protection statement " Deer protection will be provided and maintained for all new plantings. "
- list of any native plants used

Documentation of Commitment

- Patuxent Reservoirs Watershed Protection Agreement
  - Pertinent Meeting Minutes
- Gold Leaf Group Letter
- Mary Bradford Letter
- IWL letter
- Pax Riverkeeper communication
- Montgomery Co DEP Letter
- Elementary School communication
- Our House communication

Chesapeake Bay Trust
Grant Application Form

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Submit the application form to 60 West Street, Suite 405, Annapolis, MD 21401.

1. Applicant Information

Date:

Name of Organization: Maryland National Capital Parks and Planning Commission

Mission of Organization: M-NCPPC was created by the Maryland General Assembly in 1927 to develop and operate public park systems and provide land use planning for the physical development of the great majority of Montgomery and Prince George's Counties

Tax Status (i.e., 501c3, local government, public school, etc.): local government

Executive Officer of Requesting Organization

Name: Gwen Wright
Title: Acting Planning Director
Address:8787 Georgia Avenue
Silver Spring, MD
County: Montgomery
Daytime Phone:301-495-4622
Fax:301-495-1303
Email Address: Gwen.Wright@mncppc-mc.org
mc.org

Signature: _____

Original Signature required

Project Officer

Name: Katherine Nelson
Title: Planner Coordinator
Address: 8787 Georgia Avenue
Silver Spring, MD
County: Montgomery
Daytime Phone:301-495-4622
Fax: 301-495-1303
Email Address: Katherine.Nelson@mncppc-

Signature: _____

Original Signature required

2. Grant Information

Grant program: Which grant program are you applying to? ___Mini-Grant_____

Amount of Trust funding requested: $4,962.00

Grant period (start date and end date of your project): November, 2007

In which river, stream, or local watershed will the project be located? Reddy Branch – Basin Code 02131107

Sub basin code 021311070944

In which county will the project be located? Montgomery

3. Project Information - Address each question below. Total length of responses not to exceed 5 pages.

A) Project Abstract: In 2 or 3 sentences, provide a brief description of the project. MNCPPC proposes to plant approximately 850 feet of a 1st and 2nd order stream reach of Reddy Branch, a tributary of the Hawlings River. These two acres of land are part of Reddy Branch Stream Valley Park and are owned by MNCPPC. These two acres have recently been abandoned and are in an old-field condition. The reforestation method for these two acres will require approximately 400 1 to1.5-inch caliper trees, 66 shrubs and deer protection measures. In addition site preparation and three to five years of maintenance for control of invasive plant species will be necessary.

B) Project Deliverables: List the deliverables expected from this project. Please provide a numeric response for the metrics that apply to your project.

Estimated number of volunteers 20
Estimated number of students 20
Estimated number of teachers 2
Square feet of streamside forest buffers planted =850*100
Number of trees planted __400_____

Number of publications produced and distributed -- web site listing
Number of presentations/ workshops given --1 planting event
Number of native plants planted -- 66
Number of educational signs posted --1 sign
Square feet of invasive species removed -- approximately 400
Other:

C) Project Description: Address these questions as they apply to your project:

- What are the specific objectives of the project? The primary objective is to implement a collaborative watershed solution to restore riparian buffers to an impaired tributary on the Patuxent. Our goals are three fold. First, to improve stream resource condition in Reddy Branch from its current 'fair' rating. Second, to educate nearby residents and students through demonstration. Third, to increase terrestrial habitat diversity.

- What are the steps that will be taken to complete the project (methodology)? The site has already been assessed by county stream restoration specialists, park managers, senior planning specialists; a WSSC agronomist; and contract wetlands specialists. A collaborative approach to improve the entire Reddy Branch has been developed and agreed upon by multiple county offices. The next steps include:
  - Development of a planting plan by MNCPPC contractor
  - Site preparation by volunteers and MNCPPC contractor (invasives removal)
  - Planting by volunteers and MNCPPC contractor
  - Educational signage placement
  - Maintenance by volunteers

- Is this project an extension of an on-going or recently completed project? This is the first of what is to be a series of ten or more collaborative initiatives that will be implemented over the next two years to improve the Reddy Branch stream system. Installation of this riparian buffer was selected as the initial action due to the ease of implementation caused by public land ownership and freedom from administrative burdens.

- How does your project meet the goals and criteria of the grant program to which you are applying? *(Go to the Application Instructions of the grant program to which you are applying for description of goals and criteria.)* This project will:

- Raise awareness about the challenges and solutions to restoring the tributaries to the Chesapeake Bay. The proposed buffer and associated signage will be visible from nearby Brookeville Road as well as from the many homes in the area.
- Promote collaborative watershed restoration solutions between citizens, businesses, and government by implementation under the guidance of multiple government agencies and citizen volunteers.
- Engage citizens in community-based restoration and protection projects through involvement in planning, site preparation, planting, and maintenance to improve water quality and habitat.

- Describe your organization's experience in completing similar projects. MNCPPC was created by the Maryland General Assembly in 1927 to develop and operate public park systems and provide land use planning for the physical development of Montgomery and Prince George's Counties, and to operate the public recreation programs. State of the art facilities and award winning programs have been the result. The Commission administers a park system of more than 52,000 acres. Its staff of career employees includes planners, park and recreation administrators, park police and administration staff. MNCPPC owns and manages many acres of stream valley throughout the watershed – including Reddy Branch Stream Valley Park. MNCPPC will lead a series of partners working together to coordinate restoration of this headwaters area.

- List your project partners and describe what specific roles each partner will play in completing the project.

Secured Organization	Individuals Involved	Area of Expertise	Specific Role
MNCPPC	Katherine Nelson	Planning	Project coordination
MNCPPC	Carol Bergmann	Forest Ecologist	Technical Assistance with planting and maintenance plans
MNCPPC	Doug Redmond	Stream Ecologist	Project Planning
MNCPPC			
Mo. Co. DEP	Meo Curtis	Environmental Planner	Project Planning, volunteer coordination
WSSC	Tobias Kagan	Environmental Engineer	Site Assessment and planning
WSSC	Sandra August	Outreach Coordinator	Outreach
Patuxent Riverkeeper	Fred Tutman	Grass Roots organization	Volunteer coordination
Versar, Inc.	Nancy Roth	WSSC contractor	Project Planning
Capuco Consulting Services, Inc.	Carrie Capuco	WSSC contractor	Project coordination assistance
Highway and Safety Services Inc.		MNCPPC contractor	Site preparation and planting
Wildlife Achievement Chapter-Izaak Walton League of America	Jeff Deschamps and Jim Piateski	Co-Chairs, Conservation Committee	Volunteer Coordination

D) Project Timeline: Outline the project schedule. Include the start date, end date, and major milestones.

- Planting plan development – October 2007
- Site preparation – October 2007
- Planting* – November 2007
- Maintenance – December 2007 – December 2012
- Educational Signage installation – May 2008

*Due to recent drought conditions, planting will depend on rainfall within the next several weeks. If drought conditions persist into the winter, planting will be postponed until the spring of 2008.

4. Project Budget

A) Itemized Budget: Using the model below, attach a separate page to outline your entire project budget. List the items, quantity, and price per item. Research prices at the place(s) you will purchase the items before completing the budget.

Budget Item	Quantity and Price per Item	Amount Requested from the Trust	Matching Funds, Discounts, or In-Kind Services	Cite the Source	Total Cost	Justification for Budget Item
Trees	400 trees X $20 66 shrubs x $7	$4,462.00	$4,000.00	$2,500 National Tree Trust (per MDEP And IWL) & $1,500 MNCPPC	$8,462.00	By purchasing plant material with outside funding sources, MNCPPC will be able to stretch its limited pool of restoration money further. This site consumes nearly half of the available restoration dollars.
Site Preparation, plant material and planting	2 acres @$36,000 per acre less the cost of plant material ($8,462.00)	$0	$63,538.00	MNCPPC ($61,778.00)& volunteers ($1,760.00 - 80 volunteer hours @ $22 per hour)	$63,538.00	MNCPPC contractor (HSI) performs this service at $36,000 per acre which includes purchase of plant material, site preparation, and installation. To promote educational elements, and conserve resources, volunteers from IWL will work in conjunction with the contractors. Price has been adjusted by the cost of plant material at $8,462.
Maintenance	100 hours at $22 per hour	$0	$2,200.00	MNCPPC& volunteers	$2,200.00	Maintenance will be conducted by Issak Walton League volunteers in to include weeding. Efforts will be coordinated by Meo Curtis of MDEP. Mowing will be conducted by MNCPPC contractors on the regular park maintenance schedule.
Educational Signage	10 hours of design @$50/hr sign manufacture @ $500	$500.00	$500.00	WSSC staff design MNCPPC vendor manufacture	$1,000.00	1 sign 24"x36" discussing benefits of riparian forest buffers to be developed by Sandy August and Tobias Kagan of WSSC and manufactured by MNCPPC contractors
Project Management	40 hours @ $50.00 per hour	$0	$2,000.00	MNCPPC MDEP, WSSC	$2,000.00	Project planning meetings, grant administration, coordination with other watershed initiatives by Katherine Nelson, Meo Curtis, and WSSC contractors
Total		$4,962.00	$72,238.00		$77,200.00	

B) Staff Costs: Please provide a detailed description of staff responsibilities with approximate hours dedicated to project tasks and include the percentage of overall staff time dedicated to this project. Please add this information in the budget's justification column or attach it to the application.

C) Matching Contributions: Total of cash match: $ **65,778.00**
(Excluding volunteer contribution) Estimated value of in-kind donations: $ **6,460.00**
Estimated number of volunteer hours: 230

5. Attachments

For certain types of projects, such as planting projects, the Trust requires attachments of additional information. Look up your project type on the *Required Attachments and Guidance for Commonly Funded Projects* for project specific information located at www.chesapeakebaytrust.org/grantprograms.html.

- ☐ **Required Attachment:** Include a simple site plan, project design, and/or photo of the planting/restoration site.
- ☐ **Required Attachment:** List native plants that will be used in the planting/restoration project in the proposal. Funds may be requested for native plant species only.
- ☐ **Required Attachment:** Attach a plan that describes how the project will be maintained (watering, weeding) over time.

2007 Chesapeake Bay Small Watershed Grants Program Application
Postmark Deadline: April 2, 2007

Incomplete applications will be returned to the applicant. Please review proposal checklist on last page carefully.

APPLICANT INFORMATION

Organization (to be named as Grantee): Maryland National Capital Parks and Planning Commission
Street: 8787 Georgia Avenue
City, State, Zip: Silver Spring, MD 20910
U.S. Congressional District: 4th
Web Page: www.mncppc.org

Project Contacts:

Project Officer: Katherine Nelson
Tele: 301-495-4622
Fax: 301-495-1303
E-mail: Katherine.Nelson@mncppc-mc.org

Financial Officer: Faroll Hamer
Tele: 301-495-4505
Fax: 301-495-1303
e-mail: Faroll.Hamer@mncppc-mc.org

Tax Status: local government (e.g., local government, 501(c)(3) etc.) Tax ID#: _____ (assigned by IRS) Fiscal Year: 07/01/ to 06/30 (month/day) (month/day)

PROJECT INFORMATION

Project Name: Coordination Restoration of Headwaters in the Reddy Branch Subwatershed of the Patuxent

Location(s) of Project:
City: Olney
State: Maryland
County: Montgomery
Watershed: Reddy Branch – Basin Code 02131107
Sub basin Code 021311070944
U.S. Congressional District(s): 4th
Latitude: 39.180433 Longitude: 77.0701309 *(in decimal degrees; if there is more than one project site, please add additional lines for each site.)*

Dates: Project Start Date: 08/10/07 Project End Date: 12/31/08
Application Submission Date: 03/30/07

Grant Category (*check one*):

□ Project Planning and Design Grant ($10,000-$30,000)
XX Implementation Grant ($20,000-$200,000)

Program Goal (*check those goals that your project addresses*):

xx Watershed Restoration
xx Watershed Conservation
xx Watershed Planning

GRANT REQUEST

Use U.S. dollars (*rounded to the nearest hundred*) for all amounts listed below:

Small Watershed Grant Funds requested:	$ 198,800.00
Total Contributions from Partners:	$ 1,011,133.00 (cash)
	$ 297,000.00 (in-kind)
Total:	$ 1,506,933.00

Project Partner Contributions:

Please list the names of all organizations contributing funds, goods or services to this project and value of the contribution. We are interested in all contributions to your project, federal or non-federal. You are welcome to add additional rows as necessary.

Organization name; designate as (F)ederal or (N)on-Federal	Dollar value of contribution	Indicate nature of contribution (e.g., cash or specific goods and services)	Indicate whether contribution is (A)pplied for, (P)ledged, or (I)n hand
Washington Suburban Sanitary Commission	$99,299	Contract project planning and site assessment, outreach assistance	In Hand
MNCPPC	$77,388	In-kind technical guidance, project management and plant material	In Hand
Patuxent Reservoir Protection Group	$9,000	In-kind assistance with project planning and project management	In Hand
Gold Leaf Group, Inc.	$3,500	In-Kind assistance with labor	In-Hand
Maryland DNR	$148,000	In-kind assistance with wetland assessment and planning	Pledged
Our House, Inc. and Patuxent Riverkeeper	$91,000	In-Kind supply of heavy equipment and labor	Pledged
Montgomery County Soil Conservation District	$35,000	In-Kind assistance with planting and plant material	Pledged
Montgomery County DEP	$7,500	Project planning assistance	Pledged
MDE	$639,796	Grant for Stormwater aspects of project	Applying for
Chesapeake Bay Trust	$194,650	Riparian Buffers in Areas A and B	Applying for
Patuxent River Tributary Team	$3,000	Trees	Pledged

PROJECT BUDGET AND PHASING

A) Budget Form

Budget Category	Funds Requested from Small Watershed Grant	Anticipated Partner Contributions	Total	Justification
Salaries	--0--	$77,388-MNCPPC	$77,388	
Benefits	--0--			
Travel	--0--			
Equipment	--0--			
Supplies and Materials	$29,300	$241,644	$276,400	A portion of the expenses for plant material and educational signage for all phases
Printing	--0--			
Other	--0--			
Contractual Services	$30,000	$5,000 – Our House, Inc.	$35,000	Site preparation for Meadow Restoration in Area C – based on similar experience with similar projects
Contractual Services	$20,000	--0--	$20,000	Maintenance of Area C for 18 months to include: Hand weeding; removal of invasives; herbicide application, deer exclosure
Contractual Services	$10,000	--0--	$10,000	Management Plan Development for Area C meadow restoration
Contractual Services	$ 5,000	$55,000	$60,000	Planting Plan development areas C, D, and E
Contractual Services	$ 3,000	$67,000	$70,000	Site Preparation and Construction areas C and D
Contractual Services	$1,500	$58,500	$60,000	Maintenance of Areas C and D
Contractual Services	$50,000	--0--	$50,000	Management Plan for areas D, E, F, G and H
Contractual Services	$10,000	--0--	$10,00	Pre-project sampling and assessment
Contractual Services	$10,000	--0--	$10,000	Continued collection of monitoring data
Contractual Services	$5,000	--0--	$10,000	Computation and assessment of outreach measures of success
Contractual Services	$ 5,000	$ 5,000	$10,000	Assessment of newly collected data
Contractual Services	$10,000	--0--	$10,000	Quality Control plan development
Contractual Services	$10,000	--0--	$10,000	Comparative Assessment Report
TOTAL	198,800			

C) Project Phasing

Project Phase : Implementation Coordination	In this phase, planting designs, management approaches, quality control, and educational materials will be fully developed. Continuing project management and technical guidance will occur. Outreach will be conducted to the nearly 2000 households in Olney, and baseline environmental monitoring data will be assessed.		**Budget Category**	**NFWF Funds**
			Salaries & Benefits:	
			Equipment:	
			Other:	$79,800
	Anticipated Partner Contributions for Phase:	$436,173.00	**TOTAL**	$79,800

Project Phase: Installation	In the installation phase plant materials will be purchased as will signage and educational displays. Sites will be prepared for planting, plant material installed and maintenance begun. Monitoring samples will be collected from Reddy Branch. Ongoing project management and technical direction will continue through this phase.		**Budget Category**	**NFWF Funds**
			Salaries & Benefits:	
			Equipment:	$24,500.00
			Other:	$74,500.00
	Anticipated Partner Contributions for Phase:	$904,963.00	**TOTAL**	$89,000.00

Final Project Phase: Measurement and Reporting of Outputs	During this phase, newly collected monitoring data will be assessed, outreach measures of success will be collected and computed, and a comparative assessment report will be prepared. In addition, ongoing project management and technical direction will continue through this phase.		**Budget Category**	**NFWF Funds**
			Salaries & Benefits:	
			Equipment:	
			Other:	$30,000.00
	Anticipated Partner Contributions for Final Phase:	$75,963.00	**TOTAL**	$30,000.00
			NFWF PROJECT TOTAL	198,800.00

SIGNATURE OF APPLICANT

(*An original signature page must be received with this application)*

I certify that the above information is true and accurate.

_____ _____

Signature of Executive Director or Project Officer *Date*

Name, Title

2007 Chesapeake Bay Small Watershed Grants Program
Coordinated Restoration of Headwaters in the Reddy Branch Sub Watershed of the Patuxent Reservoirs Watershed -- Proposal Narrative

I. PROJECT ABSTRACT:

A. Project Description: In the Reddy Branch subwatershed of the Patuxent Reservoirs Watershed of the Chesapeake Bay watershed, Maryland National Capital Parks and Planning Commission (MNCPPC)proposes to lead a series of partners working together to coordinate headwaters restoration. The purpose of the project is to improve water quality through a series of restoration demonstration areas that enhance the aquatic and terrestrial conditions of a historically significant Chesapeake Bay tributary which also serves as source water for the Washington Suburban area's drinking water system.

B. Final Product(s): Upon completion of this project, water quality in Reddy Branch will improve through the reduction of non-point source pollution by:

- Filtering agricultural nitrogen through multi-species riparian forested buffers
- Capture, retention, and filtering of agricultural runoff in a wetland area reducing total suspended solids (TSS), total nitrogen concentrations, and total phosphorous concentrations to receiving waters
- Reduction of highway runoff
- Reduction of fertilizer runoff by enhancing existing storm water management, implementing bio-retention areas, and wetland restoration
- Providing shade by increasing forest canopy, thus cooling areas of the existing stream for enhanced aquatic habitat, better nutrient cycling, reduction of algae, and increasing dissolved oxygen concentrations
- Reducing soil and stream bank erosion thus reducing sedimentation to Reddy Branch

The phase of the project for which National Fish and Wildlife Foundation (NFWF) support is sought will produce:

- An open-meadow habitat by eliminating invasive non-native shrub and herbaceous species within a 1.13 acre field to encourage growth of a diverse mix of existing native grasses and shrubs to provide habitat for birds, small mammals, and other native fauna (see attached draft concept plans).
- Conversion of existing drainage swales in cropland at the headwaters of this tributary into a 1000 foot long and 10 foot wide raingarden (see attached draft concept plans).
- Creation of a 125-foot wide, forested riparian buffer along a large section of the main stem Reddy Branch, on the south side of Brookville Road (concept plans attached).

II. PROPOSAL:

A. Project Priority: Immediately following an initial scoping visit to the stream, the project team was motivated by a quote from architect Daniel Burnham -- *Make no little plans. They have no power to stir men's blood and probably in themselves will not be realized. Make BIG plans in the hope that they will live through the ages and become a thing of living, burning intensity.* Rather than a small forest buffer demonstration, Reddy Branch has the potential to incorporate a myriad of exemplary partnerships and best management practices that will *live through the ages.*

Coordinated restoration in Reddy Branch is both a watershed restoration project as well as a watershed conservation project. Reddy Branch comprises a portion of over 250 stream miles in the Patuxent Reservoirs watershed. Over the course of the past 100 years, the stream has been degraded by agricultural activity and residential development.

The funding requested in this application would enable MNCPPC to execute a portion of the work that is planned. It will restore the natural habitat; also it will improve water quality by filtering sediment, fertilizers, and highway pollutants. In this project, MNCPPC will:

- Restore a natural wetland-area with hydric soils from use as drainage swales to rain garden
- Reduce agricultural sources of nutrients to the Reddy Branch through use of rain gardens and a native plant meadow
- Restore natural habitat through establishment of a native plant meadow
- Restore riparian buffer.

The funding requested would also enable MNCPPC to implement a portion of the watershed conservation that is planned. In this project, MNCPPC will:

- Implement a motivational campaign to encourage landowners immediately adjacent to Reddy Branch and within the sub watershed to protect and increase riparian buffers
- Expand that campaign to all Patuxent Reservoir watershed residents through extensive outreach
- Attempt to work directly with agricultural landowners to develop economic incentives associated with riparian buffers and runoff reduction.

B. Objectives: Coordinated restoration of the Reddy Branch subwatershed seeks to:

- Improve wildlife habitat and water quality through the establishment and enhancement of riparian forest
- Improve the capacity of the Olney community to implement forest restoration and stewardship
  - Engage landowners on a new level about the importance of protecting their riparian forest buffer
  - Foster and strengthen relationships with the Patuxent River protection groups
- Provide outreach and assistance to landowners in the Reddy Branch sub watershed
  - Reach out to farmers and developers
  - Implement best management practices in two areas of a single farm through establishment of riparian forest buffer and rain gardens
- Develop education programs to broaden public understanding of the value of riparian forest buffers and their role is sustaining and restoring watershed health
  - Demonstrate and showcase landowner initiative to establish riparian forest buffers

C. Overall Context: Relevance to Small Watershed Grant Program Goals: Reddy Branch sub basin has been identified as having a biological impairment. Site assessments have found the following:

- The meadow provides inadequate riparian buffer protection and invasive species (i.e., multiflora rose) are becoming established in the eastern end. Heavy deer browsing in the area, in addition to mowing, prevent the adjacent forest from expanding along the stream. Minor streambank erosion was also evident in localized areas.

- Croplands, grass meadow, and lawns extend down to the edge of the streambank, offering

little to no riparian buffer protection. Horse manure from the neighboring farm has recently (fall 2006) been spread in the meadow adjacent to the stream.

- An abandoned farm field is located next to the unnamed tributary that flows northward toward Brookville Road. The field possesses a dense cover of herbaceous, shrub, and woody vine species, and is surrounded by a narrow band of woods on all three sides. Invasive species are becoming well established in large areas.
- The headwaters receive drainage from cropland on both sides of the stream. Drainage is currently through low-lying swales that are not actively farmed. Uncontrolled runoff from the fields is causing minor to moderate downstream streambank erosion and other stream channel adjustments.
- A large section of mainstem Reddy Branch, on the south side of Brookville Road, passes through an agricultural and residential area. This part of the stream is bordered in various locations by croplands, grass meadow, residential lawns, offering little to no riparian buffer protection. Invasive species have also become established along portions of the stream.
- A park, built in the late 1990s, uses conventional stormwater management techniques. Water discharging from a stormwater pond overtops a gravel access road crossing the drainage path below the pond. The intermittently flowing drainage path enters the woods below this pond, where it has become severely eroded, forming a six-foot deep drop that is eroding headward. The receiving stream has also become severely eroded and downcut.

The portions of the coordinated restoration for which NFWF funds are sought would: (1) reduce sediment and nutrient loads; (2) improve water quality, and (3) restore native animal and plan habitat within the Chesapeake Bay watershed. The projects also protect the quality of Reddy Branch -- a tributary to the Rocky Gorge Reservoir, one of two drinking water supply reservoirs in the Upper Patuxent the Washington Suburban Sanitary Commission (WSSC) owns, which provide water to approximately 1.6 million people. Further, through education and outreach activities, the projects for which NFWF funding is sought strive to increase individual conservation actions.

Relationship to Regional Watershed Initiatives and Plans: The Coordinated restoration of Reddy Branch is directly related to a number of regional watershed initiatives including the Patuxent River Tributary Strategy. 14 studies have been conducted on the Patuxent Reservoirs Watershed and Hawlings River over the past twenty years. At this time, TMDLs are being developed for the Reservoir Watershed, which will impact Reddy Branch.

In 1996, the Patuxent Reservoirs Watershed Protection Agreement was signed by Howard, Montgomery, and Prince George's Counties, Howard and Montgomery Soil Conservation Districts, MNCPPC, and the WSSC creating a Policy Board and Technical Advisory Committee (TAC) to work together to protect watershed resources. Many of the studies described above were prepared through the TAC. In 2005, the TAC identified the Reddy Branch Stream Valley Park as its top priority for riparian forest buffer restoration (see attached work plan and bibliography).

Continuity and Coordination of Reddy Branch Restoration: In 2006, WSSC engaged contract support for project planning and design for the Reddy Branch subwatershed. Upon initial examination, it was discovered that a forest conservation easement was established on a parcel of private farmland when subdivisions were made. Restoration of this forest area is a portion of the project for which NFWF funding is sought. Additional funding is being sought from another source for creating a 125-foot wide, forested riparian buffer along the western side of the stream for approximately 2,530 linear feet and for creating forested riparian buffer along 515 feet of the stream on both sides. (See proposed plans in the attachment).

Simultaneous with the restoration activities being coordinated by the TAC, Our House, Inc., (www.our-house.org) a non-profit corporation is working with MNCPPC to establish a forest conservation bank on

its portion of the Reddy Branch banks. It is anticipated that in the future, Our House will also initiate a significant wetland restoration project where a portion of the Reddy Branch is currently dammed on their property.

D. Methodology and Work Plan:

Description of Each Major Activity to Be Undertaken: The Hawlings River is located in the eastern part of Montgomery County. The Hawlings River passes through three distinct land use areas. The upper watershed is in rolling agricultural lands. The middle section passes through a narrow, rocky valley. The lower section, contains tributaries from Lower Olney Mill and Reddy Branch. Here, the soils change to a highly erodible type.

The mainstem of Reddy Branch (HUC # 021311070944, sub-basin name – Reddy Branch) parallels the south side of Brookville Road. The stream passes through a grass meadow immediately upstream and adjacent to Reddy Branch Stream Valley Park and a large contiguous forest. An unnamed tributary to Reddy Branch flows northward toward Brookville Road. The west side of the stream is bordered by croplands, grass meadow, and residential lawns; the eastern side of the stream is forested and part of Reddy Branch Stream Valley Park. A large section of mainstem Reddy Branch, on the south side of Brookville Road, passes through an agricultural and residential area. It is bordered on the west side by Zion Road. Half of a community park drains northward away from Olney Laytonsville Road (MD Route 108) into a small tributary to Reddy Branch (see attached map). As referenced above, planning for this project has been underway since 2003. Both the Patuxent River Functional Master Plan and the Olney Master Plan support this type of land use and restoration. WSSC has sent a team of wetlands and stream experts into the field to develop initial site plans. Those planning documents are included in the attachment.

Historical stream monitoring data exists. That data will serve as a baseline for measuring success. Assessment of that existing data is planned for the summer of 2007. At that time, sampling and quality control plans will be developed for measuring project success. In fall of 2008, additional samples will be collected, analyzed, and results reported.

Significant community outreach and education is planned for this implementation phase of Reddy Branch restoration. Educational signs will be prepared and installed at each demonstration area. Educational-hands on sessions will be conducted during site preparation, planting and maintenance days. In addition, interactive educational displays will be prepared for posting on the WSSC and MNCPPC websites as well as at the Brighton Dam Nature Center.

Meadow Restoration *(Area C):* An abandoned farm field adjacent to Reddy Branch Stream Valley Park is located next to an unnamed tributary to Reddy Branch that flows northward toward Brookville Road. The land is owned by MNCPPC. The roughly triangular shaped area possesses a dense cover of herbaceous, shrub, and woody vine species, and is surrounded by a narrow band of woods on all three sides. Invasive species are becoming well established in large areas of the field. This project would maintain an open-meadow habitat by eliminating invasive non-native shrub and herbaceous species within the 1.13-acre field. The project would encourage growth of the diverse mix of existing native grasses, herbaceous species, and shrubs to provide habitat for birds, small mammals, and other native fauna.

Prior to the project, a detailed planting plan will be developed by MNCPPC botanists and Montgomery County DEP engineers with guidance from MD DNR Wetlands program staff. Invasive and undesirable vegetation must be removed by a combination of mowing, selective herbicide application, and hand-pulling. Our House Inc. and a qualified landscape contractor will prepare the site. In early 2008,

volunteers assisted by qualified professionals will participate in a demonstration project to plant a mix of native grasses, herbaceous species and shrubs and to install a fenced deer exclosure around the project and install plastic tree tubes (where practicable) to protect the plantings from deer browsing.

Contractors would be hired to maintain the meadow using integrated vegetation management practices, including periodic mowing, selective application of herbicides, and other techniques to control invasive plant species from becoming established. Outreach activity will include long-term land use protection using signs.

Linear Rain Garden and Streamside Buffer Restoration *(Area D):* South of Brookville Road, the headwaters of the tributary receive drainage from cropland on both sides of the stream. Drainage is currently through low-lying swales that are not actively farmed. Uncontrolled runoff from the fields is causing minor to moderate downstream streambank erosion and other stream channel adjustments. A forested wetland exists along the stream. A portion of *Area D i*s owned by MNCPPC, a portion is owned by an individual. Montgomery County Soil Conservation District staff knows the private land owner will work directly with the private landowner. It is not anticipated that this project would take any land out of productive use; consequently, obstacles to implementation are not foreseen.

This project would convert the existing drainage swales in the two fields to a linear rain garden. The proposed rain garden would be approximately 10-feet wide and extend 1,000 linear feet. The rain garden bioretention area would promote infiltration and evapotranspiration, thereby slowing or eliminating excess runoff and nutrients from the cropland. Maryland Department of Natural Resources staff has offered to develop planting and grading plans for Area D. This project would also expand the existing forested area with a mixture of the existing shrub and tree species to provide additional forested buffer around an existing wetland area. Maryland DNR staff will also assist with planning for this project.

In early 2008, a qualified contractor assisted by volunteers from Our House, Inc. and members of the community would prepare the site. They would remove invasive and undesirable vegetation by mowing, selective herbicide application, and hand pulling.

After site preparation in early 2008, volunteers assisted by qualified professionals will participate in a demonstration project to install a fenced deer exclosure around the project areas, plant a mixture of shrub and tree species to provide additional forested buffer, and work with a qualified contractor to install the rain garden and associated steps. They would also install plastic tree tubes to protect the plantings from deer browsing.

Management would be performed by Our House, Inc. and members of Patuxent Riverkeeper. It would likely use integrated vegetation management practices, including periodic mowing and/or selective basal application of herbicides, and hand pulling to control invasive plant species from becoming established. While working on this area MCSCD would work with private landowners to develop nutrient management plans and other agricultural best management practices for this area as well as others. A comprehensive management approach would be prepared to cover the entire sub-watershed.

Schedule for Completion of Each Activity

2003 --June 2007 – Initial project planning and site assessments
September 2007 – Existing monitoring data assessment; quality assurance plan development pre-project sampling and assessment
October – November 2007 – Planting, monitoring, and management plan development
December 2007 – educational display development
January 2008 – coordination with community members on sites C, D, and E

February – April 2008 – community mailing, purchase plant material, prepare site, install plant material and deer exclosure
May – October 2008 – continued collection of monitoring data
November – December 2008 – assessment of newly collected data and preparation of comparative assessment report and outreach success documentation.

Permits That May Be Required: It is anticipated that MNCPPC will coordinate the execution of needed permits and authorizations through the regulatory agencies – all of which have been involved with the planning of this projects since its inception. There is no concern that the stream buffer restoration will fail to receive clearances to comply with any Federal, state, or local ordinances.

E. Community-based Collaboration/Partnership: In 1996, when the Patuxent Reservoirs Watershed Protection Agreement was signed by representatives from 6 government agencies, they began to work together to protect watershed resources. Through interagency cooperation, this unique cooperative partnership has developed a strategic goal reaching beyond meeting the Clean Water Act provisions for fishable and swim able waters, to protecting the Patuxent Reservoirs as envisioned in the Safe Drinking Water Act. In 2005, the Technical Advisory Committee identified the Reddy Branch Stream Valley Park as its top priority for riparian forest buffer restoration.

Multi-Agency coordination for planning, organization, implementation and outreach for the Reddy Branch Restoration project is governed by the Patuxent Reservoirs Protection Group Policy Board, which meets annually. In November 2006, it directed the TAC to make this project an example of successful coordinated activity among the signatories to the protection agreement. To that end, broad project oversight will be coordinated by the TAC, which meets quarterly. Project progress has been a regular item on the TAC agenda for a year and will continue to be throughout project implementation (see attachments).

MNCCP staff will coordinate the restoration activities with contractor assistance. A contract project manager will assist her. Project communication will flow on a regular basis, with routine project meetings bi-monthly. Ms. Nelson will report to the TAC the progress of the project at each quarterly TAC meeting. WSSC coordinates outreach for the TAC and so the WSSC Outreach Office will retain responsibility to assist with community outreach in conjunction with the Patuxent Riverkeeper and nearby Belmont Elementary School, a participant in WSSC's Green Schools Partnership Program. Attachments to this proposal include a list of partner organizations. In some way, all of those listed have agreed to assist with getting work done. Formal agreements are in different stages depending on the timing of a partner's needed involvement.

For community volunteers, Patuxent Riverkeeper members, Our House, Inc., and Gold Leaf Group, (a local business) it is important to MNCPPC and the TAC that Reddy Branch offer hands on – meaningful and educational experiences. All volunteers will be treated as well coordinated members of a project team. Refreshments and educational material will be available when their services are used. It is envisioned that volunteers will assist with site preparation, planting, and maintenance activities. All volunteer on-site activity will be coordinated by a qualified professional. Both Our House, Inc., and Gold Leaf Group have the capability to provide heavy machinery and qualified laborers to assist with the site preparation, planting, and maintenance.

County and state partners have offered technical assistance throughout the entire project. Landscape design, engineering, and planning assistance have all been offered to the phase of this project that the Targeted Watershed Initiative would fund as well as other phases of the project. Soil Conservation District staff have offered to work directly with private landowners when needed. DNR and MNCPPC conservationists will provide wetlands restoration-planning assistance. MDE and Montgomery County DEP will provide technical guidance and engineering oversight. WSSC has been providing direct funding for

project management since August 2006. This funding continues through June 30, 2006 for a total value of approximately $100,000. This funding provided site assessments, coalition building, and project planning services. For the duration of the project, WSSC's Outreach office will provide outreach services.

G. Dissemination: The coordinated restoration of headwaters in Reddy Branch has been planned not only to improve the subwatershed but also to serve as a replicable demonstration for the Patuxent Reservoirs watershed. First, the project is the first of this kind to be planned, coordinated and implemented by the TAC. TAC members are already planning duplicative projects for implementation. Second, the project is the first-known in the reservoir watershed where so many government agencies are offering resources and working together. Lessons learned through its implementation will be shared with the Potomac watershed protection group and other WSSC operational departments. Third, the general public will have access to information on the riparian buffer planting implementation steps and successes through signage on site and an exhibit at the Brighton Dam nature center.

III. Evaluation

A. Adaptive Management: The coordinated restoration is well suited to adapt to changes under the guidance of the integrated, multidisciplinary management team that guides the project (the TAC). The partners will monitor the project's effectiveness by assigning teams to visually monitor the reforestation, post-planting sampling, and ongoing water quality monitoring at the Rocky Gorge reservoir. This information will be used to adjust the management of the restoration areas and the planning for the next phases of restoration.

Mid- course corrections will be discussed in the quarterly TAC meetings – with partners such as Patuxent Riverkeeper and Our House, Inc. invited to attend. The decision to make a mid-course change will be in the control of MNCPPC as coordinators, however it is anticipated that MNCPPC will consult with all partners prior to significant changes in approach.

B. Potential Negative Impacts: In this particular topography it is difficult to imaging negative impacts of the restoration. The most likely problems will result from installation of the deer exclosures. Neighbors could be unhappy with deer exclosures because it will increase the deer browsing in other areas. The existing forest could be impacted by the installation of deer exclosures as well. Additionally, removal of invasive plants might leave exposed soil, however, mulch is intended to address that risk.

C. External Effects: The most likely factor that may affect the coordinated restoration would be extreme weather following installation of the raingardens and buffer planting. Extreme weather could necessitate replanting if a significant portion of the plants are destroyed. In addition, if there is a dry summer following the spring planting, watering could be an issue.

D. Transferability: The coordinated restoration of headwaters in Reddy Branch has been planned not only to improve the subwatershed but also to serve as a replicable demonstration for the Patuxent Reservoirs watershed. First, the project is the first of this kind to be planned, coordinated and implemented by the TAC. TAC members are already planning duplicative projects for implementation. Second, the project is the first-known in the reservoir watershed where so many government agencies are offering resources and working together. Lessons learned through its implementation will be shared with the Potomac watershed protection group and other WSSC operational departments. Third, the general public will have access to information on the riparian buffer planting implementation steps and successes through signage on site and an exhibit at the Brighton Dam nature center.

EVALUATION LOGIC FRAMEWORK

Project Name: Coordinated Restoration of headwaters in the Reddy Branch Sub Watershed of the Patuxent Reservoirs Watershed

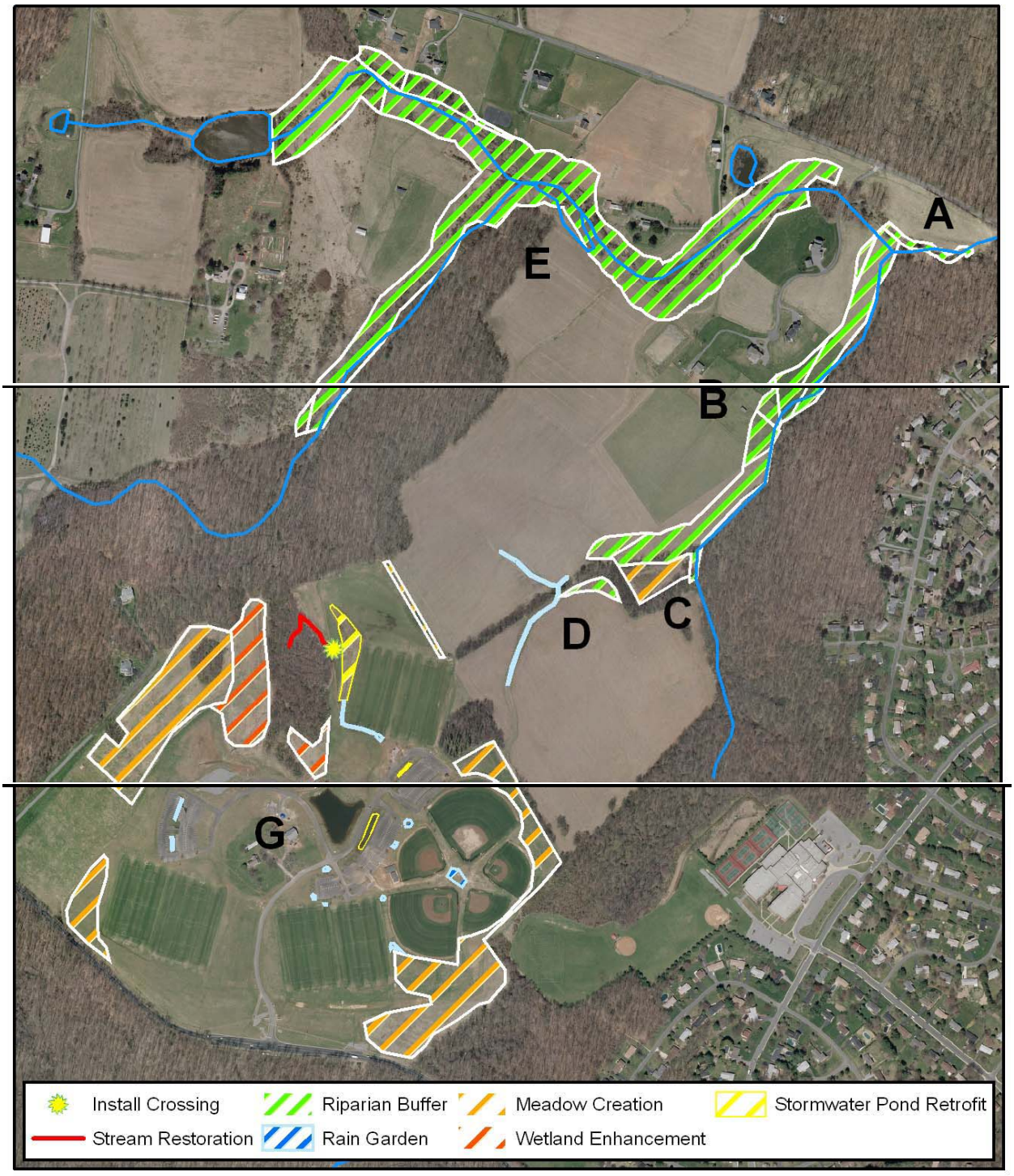
Organization: Maryland National Capital Parks and Planning Commission

Activities →	Project Outputs →	Post-Project Outcome →	Indicator →	Baseline →	Projected Project Output →	Projected Post-Project Outcome
Restore and Manage Meadow in Reddy Branch Area C	Increased variety of native herbaceous plants protected hydric soils	Increased plant and wildlife diversity	Acres with observed invasive plants	1.3 acres of invasives	1.3 acres of native herbaceous plants	1.3 acres of native herbaceous plants
Restore and Manage Meadow in Reddy Branch Area C	Enhanced nutrient absorption through protection of hydric soils	Increase groundwater filtering and recharge – reducing flow	Linear feet of stream bank erosion	2,530 feet of streambank with intermittent erosion	2,530 feet of stream bank with no erosion	3000 feet of stream bank with no erosion
Enhance and Maintain a Riparian Forest Buffer in Reddy Branch Area D	Continuous forest buffer along east fork of Reddy Branch	Improved water quality	Linear feet buffered	500 linear feet buffered	1000 linear feet buffered	9,500 linear feet buffered
Enhance and Maintain a Riparian Forest Buffer in Reddy Branch Area D	Continuous forest buffer along east fork of Reddy Branch	Improved water quality	Measurable change from 2000 MBSS data	Improvement from Fair	Data to indicate stream as Good	Stream designated Good
Install and Maintain a Rain Garden in Reddy Branch Area D	Slowing or elimination of excess nutrients from cropland	Improved water quality	Linear feet with observable drainage swales	1000 linear feet of observable drainage swales	1000 linear feet of raingarden	10,500 linear feet of Reddy Branch without agricultural drainage access
Install and Maintain a Rain Garden in Reddy Branch Area D	Slowing or elimination of excess nutrients from cropland	Improved water quality	Measurable change from 2000 MBSS data	Improvement from Fair	Data to indicate stream as Good	Stream designated Good
Coordinated Restoration Outreach and Education	Watershed residents and landowners aware of the	Increased public awareness of source water	Number of participants in the project	16 participants	50 participants	1000 households

Activities →	Project Outputs →	Post-Project Outcome →	Indicator →	Baseline →	Projected Project Output →	Projected Post-Project Outcome
	importance of and types of activities protecting the source water.	protection actions				
Direct education for property owners in Reddy Branch areas D, E, F, and G	Understanding of planting and management plans for their properties	Increased public awareness of source water protection actions	Number of property owners participating	1 participant	9 participants	10 participants

Supporting Documents

MAP – Coordinated Restoration of headwaters in the Reddy Branch Sub Watershed



F. Partner Justification: M-NCPPC was created by the Maryland General Assembly in 1927 to develop and operate public park systems and provide land use planning for the physical development of the great majority of Montgomery and Prince George's Counties, and to operate the public recreation programs. State of the art facilities and award winning programs have been the result. The Commission administers a park system of more than 52,000 acres. It is composed of stream valley parks, large regional parks, neighborhood parks and park-school recreation areas. Its staff of career employees includes planners, park and recreation administrators, park police and administration staff. MNCPPC owns and manages many acres of stream valley throughout the watershed – including Reddy Branch Stream Valley Park. No one agency alone can address the whole subwatershed with using its dedicated resources. Consequently, coordinated effort is needed to successfully create the restoration demonstration areas. MNCPPC will lead a series of partners working together to coordinate restoration of this headwaters area.

A number of assessments and plans have been conducted on the Patuxent Reservoirs Watershed and Hawlings River over the past twenty years. At this time, TMDLs are being developed for the Reservoir Watershed, which will impact Reddy Branch. A short bibliography of completed assessments is provided in the attachment. Among those listed are the Montgomery County Department of Environmental Protection (DEP) Countywide Stream Protection Strategy (CSPS), the Hawlings River Watershed Restoration Study, and The Hawlings River Watershed Restoration Action Plan.

In 2003, twelve reaches of the Hawlings were identified as priority reaches for stream bank stabilization and riparian buffer enhancement projects. To date, only one restoration project has been completed in the Hawlings watershed. To track project progress, look under Watershed Restoration on the DEP web site *http://www.montgomerycountymd.gov/siteHead.asp?page=/mc/services/dep/index.html*. No restoration projects are known to be ongoing in the Reddy Branch sub basin. A forest conservation easement was established on a parcel of private farmland when subdivisions were made. Our House, Inc., a non-profit corporation is working with MNCPPC to establish a forest conservation bank on its portion of the Reddy Branch banks.

In 1996, the Patuxent Reservoirs Watershed Protection Agreement was signed by Howard, Montgomery, and Prince George's Counties, Howard and Montgomery Soil Conservation Districts, Maryland-National Capital Park and Planning Commission (M-NCPPC), and the Washington Suburban Sanitary Commission (WSSC) creating a Policy Board and Technical Advisory Committee (TAC) to work together to protect watershed resources. Through interagency cooperation, this unique cooperative partnership has developed a strategic goal reaching beyond meeting the Clean Water Act provisions for fishable and swim able waters, to protecting the Patuxent Reservoirs as envisioned in the Safe Drinking Water Act.

Ms. Katherine Nelson will represent MNCPPC and ensure effective coordination of all parties to the project. Through June 30, 2007, that activity will be provided by Carrie Capuco of Capuco Consulting Services, following the conclusion of Ms. Capuco's existing contract, MNCPPC will contract with a qualified project manager.

Multi-Agency coordination for planning, organization, implementation and outreach for the Reddy Branch Restoration project is governed by the Patuxent Reservoirs Protection Group Policy Board, which meets annually. In November 2006, it directed the Patuxent Reservoirs Protection Group Technical Advisory Committee (TAC) to make this project an example of successful coordinated activity among the signatories to the protection agreement. To that end, broad project oversight will be coordinated by the TAC, which meets quarterly. Project progress has been a regular item on the TAC agenda for a year and will continue to be throughout project implementation (see attachments).

Secured Organization	Individuals Involved	Area of Expertise	Specific Role
MNCPPC	Katherine Nelson	Planning	Project coordination
MNCPPC	Carol Bergmann	Forest Ecologist	Technical Assistance with planting and maintenance plans
MNCPPC	Doug Redmond	Stream Ecologist	Monitoring data assessment
MNCPPC	Tina	Wetlands Specialist	Planting plans
Mo. Co. DEP	Meo Curtis	Environmental Planner	Project Planning
Mo. SCD	David Plummer	Agricultural Planning	Project Planning and Outreach
Md DNR	John McCoy	Watershed Management	Site Assessment and Project Planning
WSSC	Tobias Kagan	Environmental Engineer	Site Assessment, project planning
WSSC	Sandra August	Outreach Coordinator	Outreach
Howard County	Susan Overstreet	Planning	Project planning
Our House, Inc.	Richard Benvineto	Management	Volunteer coordination
Patuxent Riverkeeper	Fred Tutman	Grass Roots organization	Volunteer coordination
Gold-Leaf Group	Paul Saiz	Erosion control	Installation assistance
O'Doherty Group LA	Shelley Rentsch	Landscape Architect	Cost estimating
Approached Organization	**Possible Individuals to be Involved**	**Area of Expertise**	**Specific Role**
Belmont ES	Elizabeth Trott	Teacher	Volunteer coordination
Olney Boys and Girls Club	Elizabeth Deal	Management	Volunteer coordination

Organizations we would like to bring into our partnership include: The Harry R. Hughes Center for Agro-Ecology, Maryland Department of Environment, Chesapeake Bay Foundation and Center for Watershed Protection.

Letters of Support

Coordinated Restoration of headwaters in the Reddy Branch Sub Watershed of the Patuxent Reservoirs Watershed

- Patuxent Reservoirs Watershed Protection Agreement
- Pertinent Meeting Minutes
- List of Partners
- Gold Leaf Group Letter
- MNCPPC Parks Department Letter

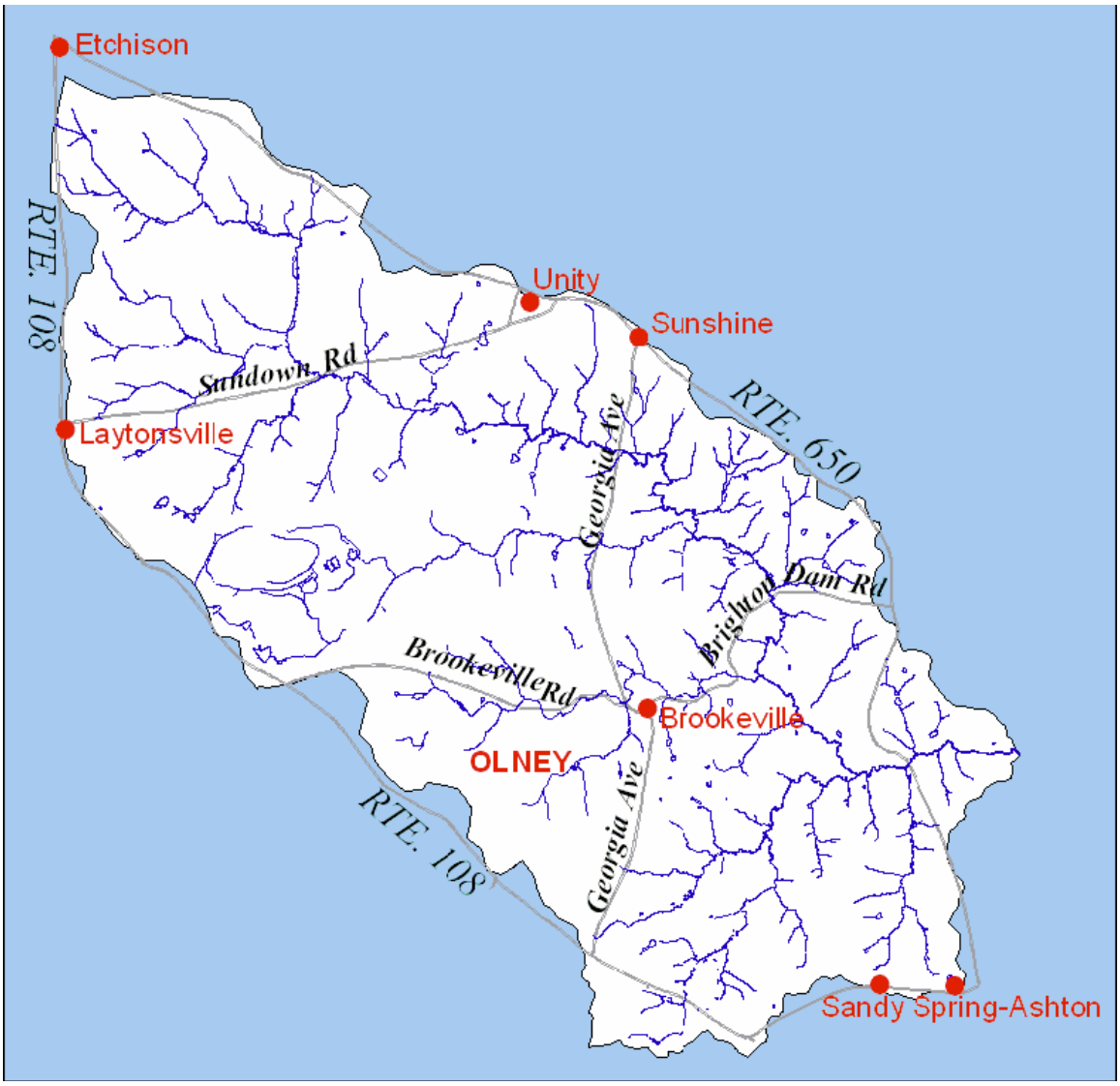
Attachments

H. Technical Assistance Needs for Coordinated Restoration of Headwaters in the Reddy Branch Sub Watershed

Because of the intense government agency involvement in this project through the Patuxent Reservoirs Protection Group Technical Advisory Committee, it is anticipated that this project has direct access to many qualified technical assistance providers. Likely theirs and other's assistance will be needed for the following activities:

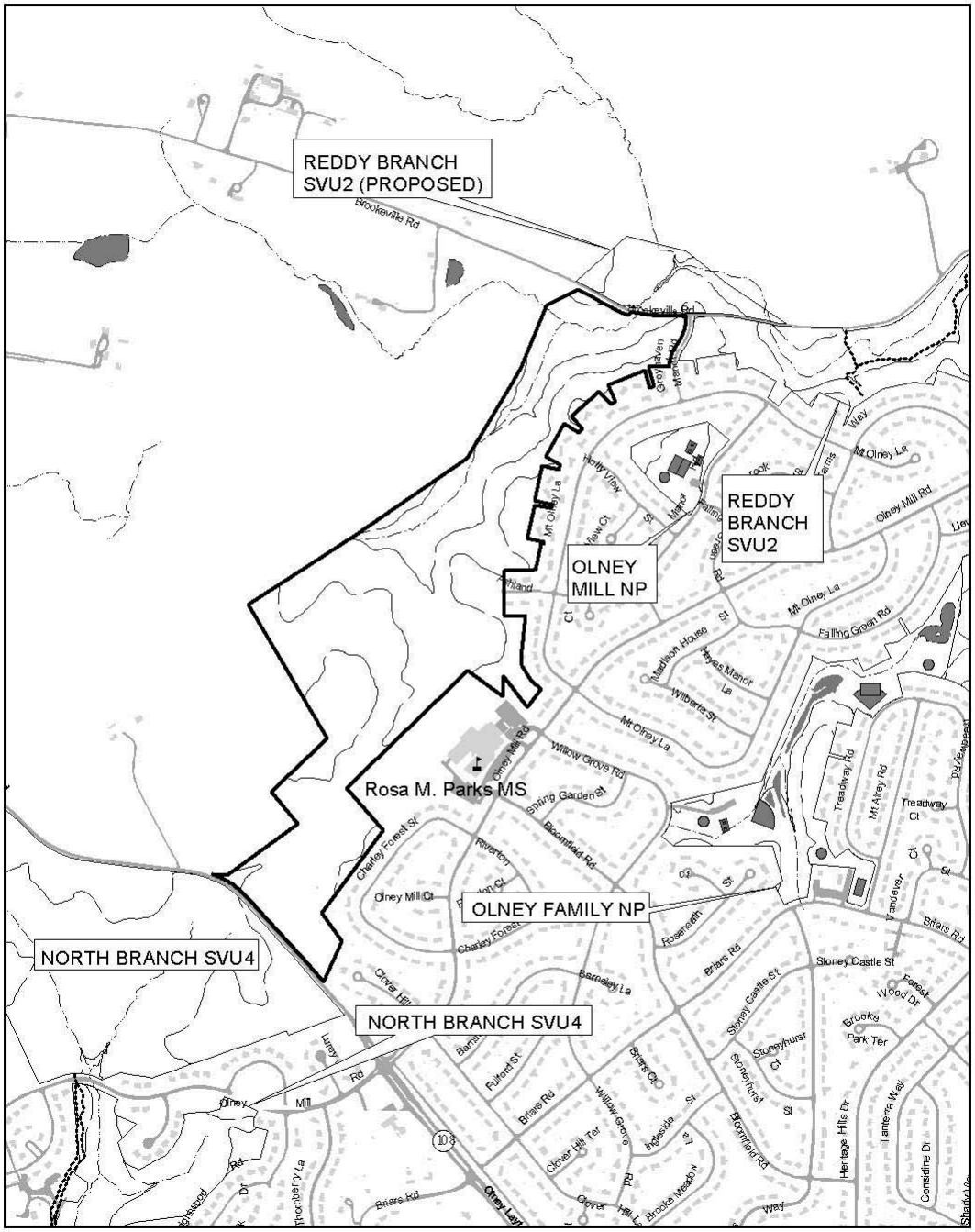
- Direct contact with agricultural land owners
- Planting plan and deer protection measure planning
- Riparian buffer forest management planning
- Wetland restoration planning assistance (DNR has already offered)
- Community outreach assistance through the Patuxent River Tributary Team (DNR has already offered)

Additional Maps



Hawlings River Watershed Map

Reddy Branch Sub-Basin Map



M-NCPPC

Acreage 114 Region N

Facility Code P44 Area RC Date 6/27/2002

N

Research & Technology Center

1" = 1000'

Reddy Branch Stream Valley Unit #3
From Rt. 108, NE of Grayheaven Manor Road, Olney

Reddy Branch Contours

Map depicting Overview of Reddy Branch Restoration Areas

Bibliography of Patuxent Reservoir Watershed Studies

- *Maryland's Tributary Strategies for Nutrient Reduction: A Statewide Summary, March 1995*
- *Patuxent River reservoirs Water Quality Assessment,* JTC Environmental Consultants, Inc., March 1984
- *Comprehensive Management Planning Study for the Patuxent Reservoir Watershed,* Tetra Tech, Inc., July 1997
- *Patuxent River Reservoirs Watershed Protection Program,* Ecological Analysts, Inc... 1981
- *Sedimentation Survey Final Report, Triadelphia Reservoir, Rocky Gorge and Little Seneca Lake Reservoirs, Howard and Montgomery Counties, Patuxent River, Maryland,* Ocean Surveys, Inc., June 1997.
- *Tributary Strategy for Nutrient Reduction in Maryland's Patuxent Watershed,* May 1995
- *Patuxent River Tributary Team Water Quality and Habitat Summary Report,* April 1998
- *Washington Suburban Sanitary Commission Patuxent Reservoir Watershed Tributary Monitoring and Sediment Nutrient Flux Testing Program Final Report,* Versar, Inc., March 2001
- *Developing a Patuxent Reservoir Protection Strategy,* Montgomery County Department of Environmental Protection, April 1995
- *Patuxent Reservoirs Triadelphia and Rocky Gorge Source Water Assessment,* Maryland Department of the Environment, June 2004
- *From the Mountains to the Sea, The State of Maryland's Freshwater Streams,* Maryland Department of the Environment, December 1999
- *Maryland Biological Stream Survey, 2000-2004, Riparian Zone Conditions,* Maryland Department of Natural Resources, July 2005
- *Hawlings River Watershed Restoration Action Plan,* Montgomery County Department of Environmental Protection, December, 2003
- *Countywide Stream Protection Strategy (CSPS)*, Montgomery County Department of Environmental Protection, 1998, and 2003

Coordinated Restoration of Headwaters in Reddy Branch

Proposed Restoration Plans

(copies of the documents were provided in the hard copy grant submission)

Coordinated Restoration of Headwaters

in Reddy Branch Project Budget

Budget Item	Total Cost	Amount Requested from the Trust	Cash Match	Source of Cash Match	In-kind Match	Source of In-kind Match	Volunteer Hours
Area A	Open Field riparian Buffer Reforestation						
Project Management	$ 15,000.00	$ 11,625.00	$ 1,875.00	WSSC	$ 1,500.00	Patuxent Reservoirs Protection Group	
Technical Coordination	$ 4,472.00	$ -			$ 4,472.00	MNCPPC	
Site Assessment	$ 7,000.00	$ -	$ 7,000.00	WSSC			
Planting plan development	$ 15,000.00	$ 10,000.00			$ 5,000.00	MNCPPC	
Site preparation and construction to include: Invasive removal, herbicide application, bush hog, augering	$ 46,500.00	$ 23,500.00			$ 23,000.00	Our House (providing heavy equipment and man-power) and community	50
Plant material to include trees, hydrophytic shrubs, mulch, deer exclosure, and plastic tree tubes	$ 32,500.00	$ 1,500.00	$ 1, 6000	MNCPPC	$ 5,000.00	DNR/Patuxent River Tributary Team (Trees) Gold Leaf Group (mulch and installation assistance)	16
Maintenance to include Periodic mowing and selective herbicide application	$ 40,000.00	$ 20,000.00			$ 20,000.00	Our House and community	100
Signage	$ 800.00	$ 800.00					
Management plan development	$ 10,000.00	$ 10,000.00					
Coordination with community members	$ 5,456	$ -	$ 5,456	WSSC			

Budget Item	Total Cost	Amount Requested from the Trust	Cash Match	Source of Cash Match	In-kind Match	Source of In-kind Match	Volunteer Hours
Educational display development	$ 4,000.00	$ 3,000.00			$1,000	Capuco Consulting Services, Inc.	
Mailing	$ 2,200.00	$ -	$2,200	WSSC			
Refreshment	$ 1,600.00	$ 300.00	$ 1,300	WSSC	$ 300.00	local businesses	
Area B	Riparian Buffer Reforestation						
Project Management	$ 15,000.00	$ 11,625.00	$ 1,875.00	WSSC	$ 1,500.00	Patuxent Reservoirs Protection Group	
Technical Coordination	$ 4,472.00	$ -			$ 4,472.00	MNCPPC	
Site Assessment	$ 7,000.00	$ -	$ 7,000.00	WSSC			
Planting plan development	$ 15,000.00	$ 10,000.00			$ 5,000.00	MNCPPC	
Site preparation and construction to include: Invasive removal, herbicide application, bush hog, augering	$ 46,500.00	$ 23,500.00			$ 23,000.00	Our House and community members	
plant material to include trees, hydrophytic shrubs, mulch, deer exclosure, and plastic tree tubes	$ 32,500.00	$ 15,000.00	$1,6000	MNCPPC	$ 1,500.00	Gold Leaf Group	
Maintenance to include Periodic mowing and selective herbicide application	$ 40,000.00	$ 20,000.00			$ 20,000.00	Our House and community	
Signage	$ 800.00	$ 800.00					
Management plan development	$ 10,000.00	$ 10,000.00					
Coordination with community members	$5,456	$ -	$ 5,456	WSSC			

Budget Item	Total Cost	Amount Requested from the Trust	Cash Match	Source of Cash Match	In-kind Match	Source of In-kind Match	Volunteer Hours
Educational display development	$ 4,000.00	$ 3,000.00			$ 1,000.00	Capuco Consulting Services, Inc.	
Refreshment	$ 1,600.00	$ -	$1,300	WSSC	$ 300.00	local businesses	
Area C	Meadow Restoration						
Project Management	$ 15,000.00		$ 1,875.00	WSSC	$ 1,000.00	Patuxent Reservoirs Protection Group	
Technical Coordination	$ 4,472.00				$ 4,472.00	MNCPPC	
Site Assessment	$ 7,000.00	0	$ 7,000.00	WSSC			
Planting plan development	$ 15,000.00				$ 15,000.00	MNCPPC and Montgomery Co. DEP	
Site Preparation and Construction	$ 35,000.00		$ 30,000.00	NFWF (requesting)	$ 5,000.00	Our House and community members	50
Plant material to include: Native grasses; herbaceous plants; shrubs	$ 20,000.00		$ 20,000.00	NFWF (requesting)			
Maintenance to include: Hand weeding; removal of invasives; herbicide application, deer exclosure	$ 20,000.00		$ 20,000.00	NFWF (requesting)			
Signage	$ 800.00		$ 800.00	NFWF (requesting)			
Management plan development	$ 10,000.00		$ 10,000.00	NFWF (requesting)			
Coordination with community members	$ 5,456		$ 5,456	WSSC			

Budget Item	Total Cost	Amount Requested from the Trust	Cash Match	Source of Cash Match	In-kind Match	Source of In-kind Match	Volunteer Hours
Educational display development	$ 3,000.00		$ 3,000.00	NFWF (requesting)			
Refreshment	$ 1,600.00		$ 1,300.00	WSSC	$ 300.00	local businesses	
Areas D-H							
Project Management	$ 75,000.00		$ 18,750.00	WSSC	$ 5,000.00	Patuxent Reservoirs Protection Group	
Technical Coordination	$ 4,472.00				$ 4,472.00	MNCPPC	
Site Assessment	$ 28,000.00	0	$ 21,000.00	WSSC	$ 7,000.00	MD DNR	
Planting plan development	$ 210,000.00		$ 210,000.00	MD DNR, MDE, Montgomery Co. SCD, and NFWF (requesting)			
Site Preparation and Construction	$ 290,000.00		$ 290,000.00	MD DNR, MDE, Montgomery Co. SCD, and NFWF (requesting)			
Plant material	$ 150,000.00		$ 150,000.00	MD DNR, MDE, Montgomery Co. SCD, and NFWF, Corporate Wetlands Restoration Partnership (requesting)			

Budget Item	Total Cost	Amount Requested from the Trust	Cash Match	Source of Cash Match	In-kind Match	Source of In-kind Match	Volunteer Hours
Maintenance to include: removal of invasives; herbicide application, deer exclosure	$ 150,000.00		$ 150,000.00	MD DNR, MDE, Montgomery Co. SCD, and NFWF (requesting)			
Signage	$ 4,000.00		$ 4,000.00	NFWF (requesting)			
Management plan development	$ 50,000.00		$ 50,000.00	NFWF (requesting)			
Coordination with community members	$ 27,280		$ 5,456	WSSC			
Educational display development	$ 15,000.00						
Project Wide							
Existing monitoring data assessment	$ 10,000				$ 10,000.00	NMCPPC	
Development of monitoring plan	$ 10,000	$ 10,000					
Preproject sampling and assessment	$ 10,000		$ 10,000.00	NFWF (requesting)			
Continued collection of monitoring data	$ 10,000		$ 10,000.00	NFWF (requesting)			
Computation and assessment of outreach measures of success	$ 10,000.00		$ 10,000.00	NFWF (requesting), WSSC			
Replacement of monitoring equipment	$ 2,000.00		$ 2,000.00	MNCPPC			
Assessment of newly collected data	$ 10,000		$ 10,000.00	NFWF (requesting), MDE			

Budget Item	Total Cost	Amount Requested from the Trust	Cash Match	Source of Cash Match	In-kind Match	Source of In-kind Match	Volunteer Hours
Quality Control	$ 10,000		$ 10,000.00	NFWF (requesting)			
Prepare comparative assessment report	$ 10,000		$10,000.00	NFWF (requesting)			
Travel Reimbursement Allowance			$ -	NFWF (requesting)			
TOTALS	**$ 1,589,936.00**	**$ 194,650.00**	**$ 1,126,099.00**	**-**	**$ 169,288.00**	**-**	**216.00**

Chesapeake Bay Trust
Grant Application Form

Complete the application, attaching additional pages as needed. You can also type directly into the form by downloading the MS Word version from www.chesapeakebaytrust.org.

1. Applicant Information

Date: March 9, 2007

Name of Organization: Maryland National Capital Parks and Planning Commission

Mission of Organization: M-NCPPC was created by the Maryland General Assembly in 1927 to develop and operate public park systems and provide land use planning for the physical development of the great majority of Montgomery and Prince George's Counties

Tax Status (i.e., 501c3, local government, public school, etc.): Local Government

Executive Officer of Requesting Organization

Name: Faroll Hamer
Title: Acting Planning Director
Address:8787 Georgia Avenue
Silver Spring, MD
County: Montgomery
Daytime Phone:301-495-4622
Fax:301-495-1303
Email Address: hamer.f@mncppc.state.md.us

Signature: _____

Original Signature required

Project Officer

Name: Katherine Nelson
Title: Senior Planner
Address: 8787 Georgia Avenue
Silver Spring, MD
County: Montgomery
Daytime Phone:301-495-4622
Fax: 301-495-1303
Email Address: nelson.k@mncppc.state.md.us

Signature: _____

Original Signature required

2. Grant Information

Grant program: Targeted Watershed Grant Program

Amount of Trust funding requested: $ 194,650.00

Grant period (start date and end date of your project): 08/01/07 – 12/31/08

River or sub-watershed in which the project will be completed: Reddy Branch – Basin Code 02131107
Sub basin code 021311070944

County in which the project will be completed: Montgomery

Targeted Watershed Initiative Grant Application
Coordinated Restoration of Headwaters in the Reddy Branch Sub Watershed of the Patuxent Reservoirs Watershed

A. Description of Requesting Organization: In 1996, the Patuxent Reservoirs Watershed Protection Agreement was signed by Howard, Montgomery, and Prince George's Counties, Howard and Montgomery Soil Conservation Districts, Maryland-National Capital Park and Planning Commission (M-NCPPC), and the Washington Suburban Sanitary Commission (WSSC) creating a Policy Board and Technical Advisory Committee (TAC) to work together to protect watershed resources. Through interagency cooperation, this unique cooperative partnership has developed a strategic goal to protect the Patuxent Reservoirs. In 2005, the Technical Advisory Committee identified the Reddy Branch Stream Valley Park as its top priority for riparian forest buffer restoration.

MNCPPC was created by the Maryland General Assembly in 1927 to develop and operate public park systems and provide land use planning for the physical development of the great majority of Montgomery and Prince George's Counties, and to operate the public recreation programs. State of the art facilities and award winning programs have been the result. The Commission administers a park system of more than 52,000 acres. It is composed of stream valley parks, large regional parks, neighborhood parks and park-school recreation areas. Its staff of career employees includes planners, park and recreation administrators, park police and administration staff. MNCPPC owns and manages many acres of stream valley throughout the watershed – including Reddy Branch Stream Valley Park. No one agency alone can address the whole subwatershed. Consequently, MNCPPC will lead a series of partners working together to coordinate restoration of this headwaters area.

B. Description of Project

1. Project Summary: The Patuxent Reservoirs Watershed is in the northern Piedmont region of Maryland along the main stem of the Patuxent River. Reddy Branch comprises a portion of over 250 stream miles in the watershed. Over the course of the past 100 years, the stream has been degraded by agricultural activity and residential development. The funding requested from the Chesapeake Bay Trust would enable MNCPPC to execute a portion of the subwatershed restoration that is planned. MNCPPC proposes to plant approximately 3000 feet of a 1st and 2nd order stream reach of Reddy Branch, a tributary of the Hawlings River. These ten acres of land are part of Reddy Branch Stream Valley Park and are owned by MNCPPC.

Although this stream valley is publicly owned, one side of the stream used to be part of a farm that is still in active agriculture. Approximately half of the area that requires reforestation is still being cropped. The other five acres has recently been abandoned and is in an old-field condition. This area includes some moderately steep (15-25%) slopes and over an acre of wetlands. Because of the type of use and the fact that there are no mitigating buffers along one stream bank, the channel is highly eroded along its entire length. This degradation contributes to the fact that the water quality of this subshed of Reddy Branch has only a fair rating. The other side of the stream is completely forested with a mature, 50-acre, high quality forest that is entirely within public ownership.

The reforestation method for these ten acres will require approximately 2000 1.5-2-inch caliper trees and deer protection measures. In addition site preparation and three to five years of maintenance for control of invasive plant species will be necessary.

2. Geographic Boundaries of the Targeted Watershed: The Hawlings River is located in the eastern part of Montgomery County, draining an area of about 28 square miles and containing about 98 miles of streams. It is a major tributary to the Rocky Gorge Reservoir, one of two drinking

water supply reservoirs in the Upper Patuxent the WSSC owns, which provide water to approximately 1.6 million people.

The Hawlings River passes through three distinct land use areas. The upper watershed is in rolling agricultural lands east of Laytonsville. The middle section passes through a narrow, rocky valley. The lower section, below Georgia Avenue, contains tributaries from Lower Olney Mill and Reddy Branch. Here, the soils change to a highly erodible type.

The mainstem of Reddy Branch (HUC # 021311070944, sub-basin name – Reddy Branch) parallels the south side of Brookville Road. The stream passes through a grass meadow immediately upstream and adjacent to Reddy Branch Stream Valley Park and a large contiguous forest. An unnamed tributary to Reddy Branch flows northward toward Brookville Road. The west side of the stream is bordered by croplands, grass meadow, and residential lawns; the eastern side of the stream is forested and part of Reddy Branch Stream Valley Park. A large section of mainstem Reddy Branch, on the south side of Brookville Road, passes through an agricultural and residential area. This part of the stream is bordered in various locations by croplands, grass meadow, residential lawns, and in some places forest. It is bordered on the west side by Zion Road. Half of a community park drains northward away from Olney Laytonsville Road (MD Route 108) into a small tributary to Reddy Branch. The intermittently flowing drainage path enters the woods below this pond,. The receiving stream is located in the strip of woods extending into the center of the property (see attached map).

3. Watershed Planning, Assessments, and On-Going Projects

a. Completed Plans and Assessments: A number of assessments and plans have been conducted on the Patuxent Reservoirs Watershed and Hawlings River over the past twenty years. At this time, TMDLs are being developed for the Reservoir Watershed, which will impact Reddy Branch. A short bibliography of completed assessments is provided in the attachment. Among those listed are the Montgomery County Department of Environmental Protection (DEP) Countywide Stream Protection Strategy (CSPS), the Hawlings River Watershed Restoration Study, and The Hawlings River Watershed Restoration Action Plan.

b. Description of non-point source and habitat impairments: The Watershed Restoration Study determined that the primary factors affecting instream habitat in the watershed are: (1) Uncontrolled runoff that in some intensely developed areas has increased post development storm water peak discharges by more than 2000%; (2) Lack of or inadequate riparian buffers and unstable stream banks and channels throughout the watershed; and (3) Need to improve water quality and quantity control benefits of some existing SWM ponds.

Sub watershed/ Stream Condition	Habitat Condition	Primary Factors Affecting Stream Condition	Unique Characteristics and Management Designation
DEP Baseline Monitoring of Hawlings River was conducted in 1997. The current assessment is based on DEP reference stations and reconnaissance efforts to locate reference stations; M-NCPPC data; land use characteristics; and DNR monitoring in 1993.			
Reddy Branch - FAIR (preliminary)	FAIR (preliminary)	Fish samples conducted in lower watershed indicate fair conditions. Land uses are predominately agricultural in most of Reddy Branch, although runoff from the Olney Mill tributary has had an impact on Reddy Branch below its confluence. High sediment deposition	Agricultural Watershed Management Area
Upper Olney Mill Trib. - POOR	POOR	Above regional pond uncontrolled runoff from residential areas has led to channel erosion and habitat degradation. M-NCPPC has implemented a storm water retrofit and restoration project to treat storm water and restore stream channels.	Watershed Restoration Area
Lower Olney Mill Trib. - FAIR	FAIR	Habitat conditions improve to fair downstream of Olney Mill SWM pond.	Watershed Restoration Area

Reddy Branch sub basin has been identified as having a Biological impairment based on 2000 MBSS data. Site assessments have identified the following conditions:

- The meadow provides inadequate riparian buffer protection and invasive species (i.e., multiflora rose) are becoming established in the eastern end. Heavy deer browsing in the area, in addition to mowing, prevent the adjacent forest from expanding along the stream. Minor streambank erosion was also evident in localized areas.
- Croplands, grass meadow, and lawns extend down to the edge of the streambank, offering little to no riparian buffer protection. Horse manure from the neighboring farm has recently (fall 2006) been spread in the meadow adjacent to the stream.
- An abandoned farm field is located next to the unnamed tributary to Reddy Branch that flows northward toward Brookville Road. The roughly triangular shaped area possesses a dense cover of herbaceous, shrub, and woody vine species, and is surrounded by a narrow band of woods on all three sides. Invasive species, such as wineberry, multiflora rose, Asiatic bittersweet, and mile-a-minute, are becoming well established in large areas.
- The headwaters receive drainage from cropland on both sides of the stream. Drainage is currently through low-lying swales that are not actively farmed. Uncontrolled runoff from the fields is causing minor to moderate downstream streambank erosion and other stream channel adjustments.
- A large section of mainstem Reddy Branch, on the south side of Brookville Road, passes through an agricultural and residential area. This part of the stream is bordered in various locations by croplands, grass meadow, residential lawns, and in some places forest. The croplands, grass meadow, and lawns extend down to the edge of the streambank, offering

little to no riparian buffer protection. Invasive species (i.e., multiflora rose, Asiatic bittersweet, garlic mustard) have also become established along portions of the stream.

- A park, built in the late 1990s, utilizes conventional stormwater management techniques to control stormwater runoff. Water discharging from a large, dry stormwater pond located next to the northern playing field overtops a gravel access road crossing the drainage path below the pond. The intermittently flowing drainage path enters the woods below this pond, where it has become severely eroded, forming a six-foot deep drop that is eroding headward. The receiving stream, located in the strip of woods extending southward into the center of the property, has also become severely eroded and downcut. This stream channel erosion appears to have been caused by excessive stormwater runoff. Two large wetland meadow areas, containing numerous invasive species, were observed adjacent to the central strip of woods. Drainage from the baseball complex and parking areas flows into grassy swales prior to entering stormwater management (SWM) facilities.

c. Projects On-Going Or Completed In The Watershed: In 2003, twelve reaches of the Hawlings were identified as priority reaches for stream bank stabilization and riparian buffer enhancement projects. To date, only one restoration project has been completed in the Hawlings watershed. To track project progress, look under Watershed Restoration on the DEP web site *http://www.montgomerycountymd.gov/siteHead.asp?page=/mc/services/dep/index.html*. No restoration projects are known to be ongoing in the Reddy Branch sub basin. A forest conservation easement was established on a parcel of private farmland when subdivisions were made. Our House, Inc., a non-profit corporation is working with MNCPPC to establish a forest conservation bank on its portion of the Reddy Branch banks.

4. Project Description: The purpose of the project is to improve water quality through a series of restoration demonstration areas that enhance the aquatic and terrestrial conditions of a historically significant Chesapeake Bay tributary which also serves as source water for the Washington Suburban area's drinking water system. Immediately following an initial scoping visit to the stream, the project team was motivated by a quote from Daniel Burnham -- *Make no little plans. They have no power to stir men's blood and probably in themselves will not be realized. Make BIG plans in the hope that they will live through the ages and become a thing of living, burning intensity.* (Daniel Burnham). Rather than a small forest buffer demonstration, Reddy Branch has the potential to incorporate a myriad of exemplary partnerships and best management practices.

a. Planning, Organization, Implementation And Outreach Solutions Proposed

Multi-Agency coordination for planning, organization, implementation and outreach for the Reddy Branch Restoration project is governed by the Patuxent Reservoirs Protection Group Policy Board, which meets Annually. In November 2006, it directed the Patuxent Reservoirs Protection Group Technical Advisory Committee (TAC) to make this project an example of successful coordinated activity among the signatories to the protection agreement. To that end, broad project oversight will be coordinated by the TAC, which meets quarterly. Project progress has been a regular item on the TAC agenda for a year and will continue to be throughout project implementation (see attachments).

MNCCP staff will coordinate the restoration activities with contractor assistance. Ms. Katherine Nelson will represent MNCPPC and ensure effective coordination of all parties to the project. A contract project manager will assist her. Through June 30, 2007, that activity will be provided by Carrie Capuco of Capuco Consulting Services, following the conclusion of Ms. Capuco's existing contract, MNCPPC will contract with a qualified project manager. Project communication will flow on a regular basis, with routine project meetings bi-monthly. Ms. Nelson will report to the TAC the progress of the project at each quarterly TAC meeting.

WSSC coordinates outreach for the TAC and so the WSSC Outreach Office will retain responsibility to assist with community outreach in conjunction with the Patuxent Riverkeeper and nearby Belmont Elementary School, a participant in WSSC's Green Schools Partnership Program.

Specific implementation solutions to be funded by the Targeted Watershed Initiative will include:

- Creating forested riparian buffer along both sides of the stream for approximately 515 feet, extending 100 feet from each bank of the stream.
- Creating a 125-foot wide, forested riparian buffer along the western side of the stream for approximately 2,530 linear feet.

The project will utilize a diverse mix of native upland (and hydrophytic, where needed) shrub and tree species to create a corridor along the stream that connects with the adjacent woodlands along the east side of the stream. Prior to the project, mowing, selective herbicide application, and hand pulling will remove invasive and undesirable vegetation. A fenced deer exclosure and plastic tree tubes will be installed to protect the plantings from deer browsing. Integrated vegetation management practices, including periodic mowing and/or selective basal application of herbicides, will be used to control invasive plant species from becoming established. Private landowners will be educated to develop nutrient management plans and other agricultural best management practices. Long-term land use protections using signs, and updated management plans will also be used.

To capture the demonstrative nature of this project, signage will be developed and installed both at the Reddy Branch Stream valley Park and the Brighton Dam nature center depicting the project in a replicable fashion. The goal being to encourage neighboring landowners throughout the Patuxent Reservoir watershed to implement similar restoration measures.

b. Comparison Of Proposed Solutions To Those In Plans: The proposed solutions to control invasives and install a riparian buffer are complimentary to other activities called for in the Hawlings River Restoration Plan. They have been well coordinated with appropriate members of the TAC to ensure consistency with projects of Montgomery County, Howard County, WSSC, Soil Conservation District, Maryland DNR, MDE, and our private partners at Our House, Inc., Gold Leaf Group, and Patuxent Riverkeeper. These riparian buffers are a part of the overall larger sub watershed restoration project.

c. Role Of Volunteers And Partners: Attachments to this proposal include a list of partner organizations. In some way, all of those listed have agreed to assist with getting work done. Formal agreements are in different stages depending on the timing of a partner's needed involvement.

For community volunteers, Patuxent Riverkeeper members, Our House, Inc., and Gold Leaf Group, it is important to MNCPPC and the TAC that we offer hands on – meaningful and educational experiences. All volunteers will be treated as well coordinated members of a project team. Refreshments and educational material will be available when their services are used. It is envisioned that volunteers will assist with site preparation, planting, and maintenance activities. All volunteer on-site activity will be coordinated by a qualified professional.

Both Our House, Inc., and Gold Leaf Group have the capability to provide heavy machinery and qualified laborers to assist with the site preparation, planting, and maintenance.

County and state partners have offered technical assistance throughout the entire project. Landscape design, engineering, and planning assistance have all been offered to the phase of this project that the Targeted Watershed Initiative would fund as well as other phases of the project. Soil Conservation District staff have offered to work directly with private landowners when needed. DNR and

MNCPPC conservationists will provide wetlands restoration-planning assistance. MDE and Montgomery County DEP will provide technical guidance and engineering oversight.

WSSC has been providing direct funding for project management since August 2006. This funding continues through June 30, 2006 for a total value of approximately $100,000. This funding provided site assessments, coalition building, and project planning services. For the duration of the project, WSSC's Outreach office will provide outreach services.

d. How Proposed Solutions Complement Activities Underway: This reforestation project is the first of several implementation steps in response to the Patuxent Reservoirs Protection Group's multi-year strategic planning. The reforestation for which Targeted Watershed Initiative funds are sought is consistent with planned activities throughout the Patuxent Reservoirs watershed. This project encompasses re-application of tested techniques – just in a new location to demonstrate multi-purpose capability. Further, restoration activities are planned through out the remainder of the watershed and are listed in the attached Action Plan (see attachment).

5. Project Timeline

2005-June 2007 – initial project planning
February 2007 – Site Assessments
September 2007 – Existing monitoring data assessment; quality assurance plan development pre-project sampling and assessment
October – November 2007 – Planting plan development; monitoring plan development; management plan development
December 2007 – educational display planning and development
January 2008 – coordination with community members on sites A and B
February – April 2008 – community mailing, purchase plant material, prepare site, install plant material and deer exclosure
May – October 2008 – continued collection of monitoring data
November 2008 – assessment of newly collected data
December 2008 – preparation of comparative assessment report and outreach success documentation.

6. Defining Outcomes and Measuring Success and Environmental Improvement Indicators

The Reddy Branch restoration project will provide the best multi-barrier approach based on known research of proven field methods for long term source water protection (Carlton 1990; Dunne and Leopold 1978) – addressing a complete sub watershed of the Hawlings River which ultimately flows through the Patuxent and into the Chesapeake Bay. Upon completion of this project, water quality in Reddy Branch will improve through the reduction of non-point source pollution by:

- Filtering agricultural nitrogen through multi-species riparian forested buffers
- Capture, retention, and filtering of agricultural runoff in a wetland area reducing total suspended solids (TSS), total nitrogen concentrations, and total phosphorous concentrations to receiving waters
- Reduction of highway runoff through the establishment of vegetative meadow filtering area
- Reduction of fertilizer runoff from multi-use sports complex by enhancing existing storm water management by implementing bio-retention areas and wetland restoration
- Providing shade by increasing forest canopy, thus cooling areas of the existing stream for enhanced aquatic habitat, better nutrient cycling, reduction of algae, and increasing dissolved oxygen concentrations
- Reducing soil and stream bank erosion thus reducing sedimentation to Reddy Branch

Activity	Project output	Indicator(s) (what you will measure. Include units)	Baseline (current condition of targeted watershed)	Project goal (achieved value at end of project)
Riparian Forest Buffers	Install 100 foot wide Riparian Forest Buffer with deer protection in open field	Linear feet buffered	0 feet	515 linear feet
Riparian Forest Buffer Outreach	Community information on forest buffers Forest buffer installation by community members	Number of people exposed to information Number of community participants	0 receiving information 0	50 15
Riparian Forest Buffers	Install 100 foot wide Riparian Forest Buffer with deer protection	Linear feet buffered	0 feet	2,350 linear feet
Riparian Forest Buffer Outreach	Community information on forest buffers Forest buffer installation by community members	Number of people exposed to information Number of community participants	0 receiving information 0	50 15

7. Maintenance: The riparian forest buffer will have a management plan which will be coordinated among park staff and volunteers. At this time it is anticipated that periodic mowing, weeding, and herbicide application will be needed to control invasives. Regular checking that the deer protection remains in tact will also be required. The Patuxent Riverkeeper and Belmont Elementary School are anticipated to be involved with the maintenance as well as the WSSC outreach staff. It is anticipated that during Earth Month each April a clean up event will be coordinated as a part of that month's activities.

8. Promoting Transferability: The coordinated restoration of headwaters in Reddy Branch has been planned not only to improve the subwatershed but also to serve as a replicable demonstration for the Patuxent Reservoirs watershed. First, the project is the first of this kind to be planned, coordinated and implemented by the TAC. TAC members are already planning duplicative projects for implementation. Second, the project is the first-known in the reservoir watershed where so many government agencies are offering resources and working together. Lessons learned through its implementation will be shared with the Potomac watershed protection group and other WSSC operational departments. Third, the general public will have access to information on the riparian buffer planting implementation steps and successes through signage on site and an exhibit at the Brighton Dam nature center.

9. Partner Organizations and Qualification:s "Community involvement in neighborhood parks is correlated with an increase in *social capital*."[2] This project is supported by a strong team, which is intended to continue to grow as other areas of the subwatershed are improved. Because they are the owners of the land, MNCPPC will take the lead for the Patuxent Reservoirs Watershed Protection Group,

[2] Gies, Erica, "The Health Benefits of Parks," The *Trust of Public Land* (2006).

TAC, to implement a multi-barrier approach to water quality restoration. Katherine Nelson is a Senior Planner with MNCPPC who has served as the agency's representative to the TAC for several years. She identified the Reddy Branch site for forest buffer installation in 2005. She has been working with the development of the project since that time – coordinating partnerships and facilitating site assessments.

Technical leadership has been provided by WSSC senior Environmental Engineer, Tobias Kagan, since August 2006. Mr. Kagan has conducted several site visits, facilitated and reviewed site assessment information, and has mapped the site extensively. Technical leadership will be provided in the implementation phases of this project by several county and state professionals that include engineers, foresters, and biologists. Below is a list of our secured partner organizations. In addition, we have identified organizations that we would like to bring into our partnership to ensure the widest demonstrative capability possible.

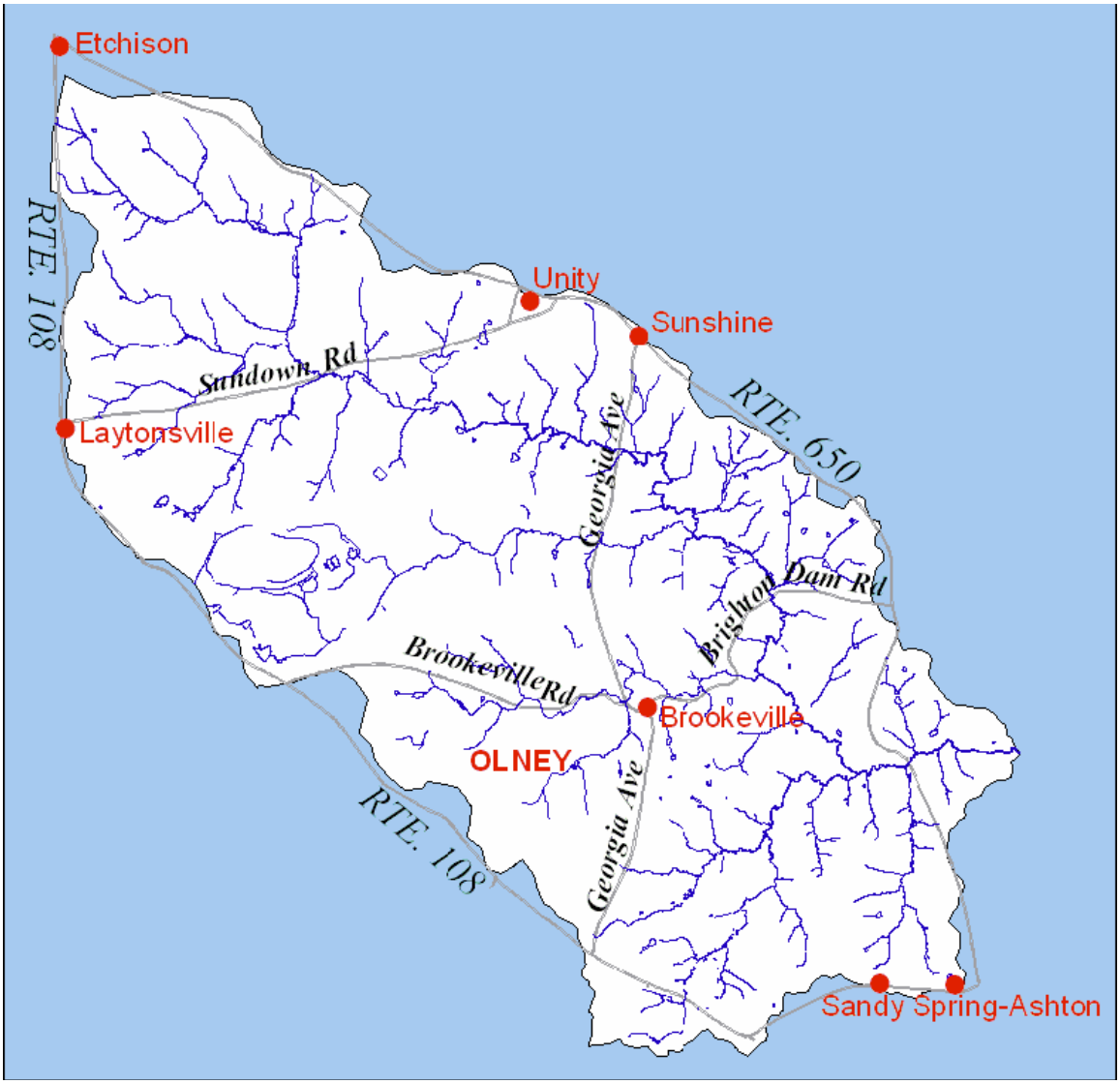
Secured Organization	Individuals Involved	Area of Expertise	Specific Role
MNCPPC	Katherine Nelson	Planning	Project coordination
MNCPPC	Carol Bergmann	Forest Ecologist	Technical Assistance with planting and maintenance plans
MNCPPC	Doug Redmond	Stream Ecologist	Monitoring data assessment
MNCPPC	Tina	Wetlands Specialist	Planting plans
Mo. Co. DEP	Meo Curtis	Environmental Planner	Project Planning
Mo. SCD	David Plummer	Agricultural Planning	Project Planning and Outreach
Md DNR	John McCoy	Watershed Management	Site Assessment and Planning
WSSC	Tobias Kagan	Environmental Engineer	Site Assessment and planning
WSSC	Sandra August	Outreach Coordinator	Outreach
Howard County	Susan Overstreet	Planning	Project planning
Our House, Inc.	Richard Benvineto	Management	Volunteer coordination
Patuxent Riverkeeper	Fred Tutman	Grass Roots organization	Volunteer coordination
Gold-Leaf Group	Paul Saiz	Erosion control	Installation assistance
O'Doherty Group LA	Shelley Rentsch	Landscape Architect	Cost estimating
Approached Organization	**Possible Individuals to be Involved**	**Area of Expertise**	**Specific Role**
Belmont ES	Elizabeth Trott	Teacher	Volunteer coordination
Olney Boys and Girls Club	Elizabeth Deal	Management	Volunteer coordination

Organizations we would like to bring into our partnership include: The Harry R. Hughes Center for Agro-Ecology, Maryland Department of Environment, Chesapeake Bay Foundation and Center for Watershed Protection.

10. Site Plans And Permits: The coordinated restoration of headwaters in Reddy Branch project has begun initial planning. Both the Patuxent River Functional Master Plan and the Olney Master Plan support this type of land use and restoration. In addition to two-years of planning discussion between TAC member agencies, under contract with WSSC, Versar, Inc. has sent a team of wetlands and stream experts into the field to perform initial site plans. Those planning documents are included in the addendum. It is anticipated that MNCPPC will coordinate the execution of needed permits and authorizations through the regulatory agencies – all of which have been involved with the planning of this projects since its inception. There is no concern that the stream buffer restoration will fail to receive clearances to comply with any Federal, state, or local ordinances.

ATTACHMENTS

Chesapeake Bay Trust
Targeted Watershed Initiative Grant Application
Coordinated Restoration of Headwaters
In the Reddy Branch Sub Watershed
Of the Patuxent Reservoirs Watershed

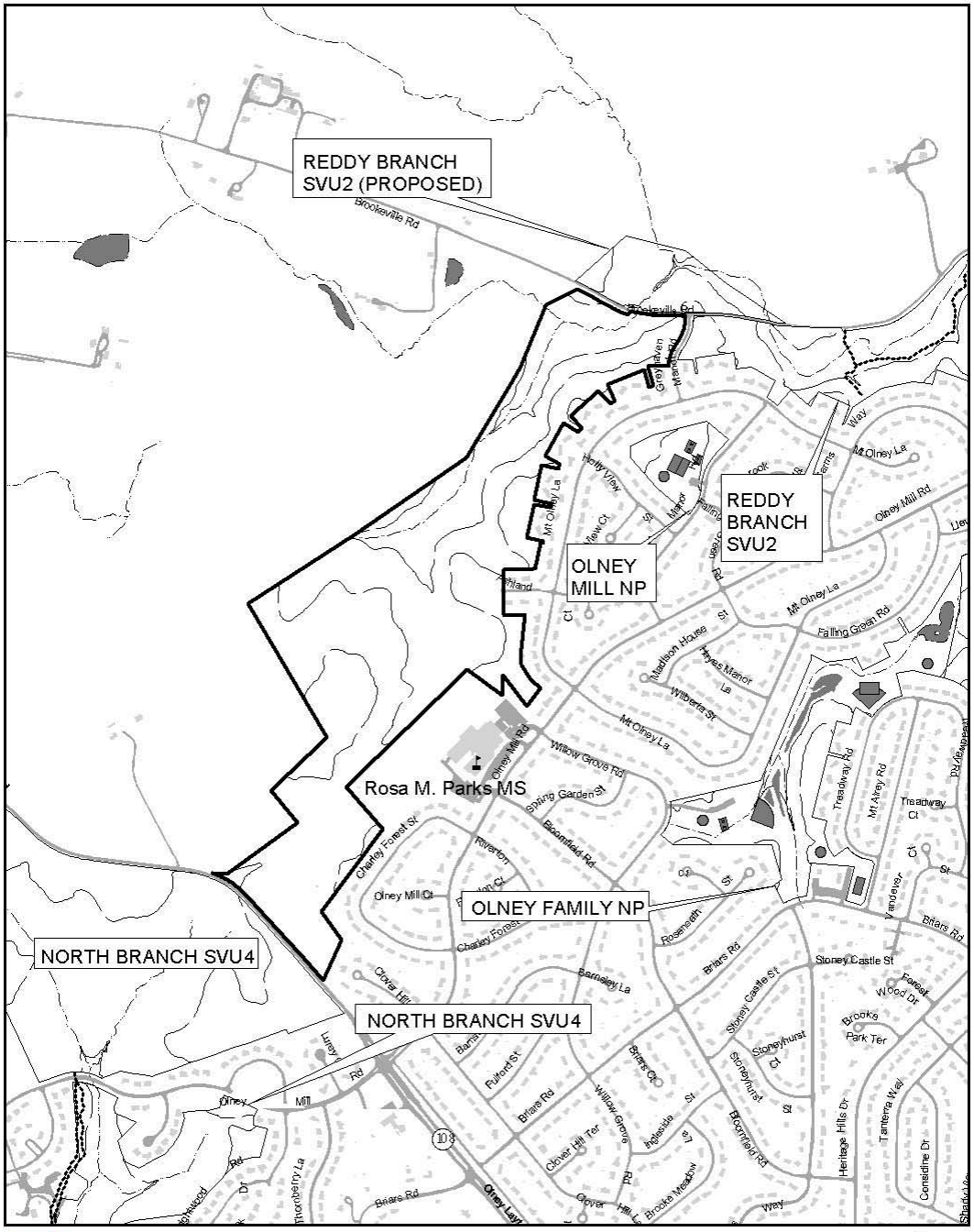


Hawlings River Watershed Map

Reddy Branch Sub-Basin Map

Reddy Branch Stream Valley Unit # 3

From Rt. 108, NE of Grayheaven Manor Road, Olney



Acreage 114 Region N

Facility Code P44 Area RC Date 6/27/2002

M-NCPPC

N

Research & Technology Center

1" = 1000'

Reddy Branch Contours

Map depicting Overview of Reddy Branch Restoration Areas

Watershed Planning, Assessments, and On-Going Projects

The Montgomery County Department of Environmental Protection (DEP) first published the Countywide Stream Protection Strategy (CSPS) in 1998. The CSPS provides County stream resource conditions on a sub watershed basis and recommends programs or policies to preserve, protect, and restore County streams and watersheds.

In 2003, a Watershed Restoration Study was conducted to identify opportunities to enhance and protect aquatic and riparian habitat in the Hawlings River watershed and to reduce sediment and associated nutrient loadings to the Rocky Gorge Reservoir. This study was initiated in support of Montgomery County's commitment as a signatory of the *Patuxent Reservoirs Watershed Protection Agreement* to protect the watershed, its tributary streams, and the Rocky Gorge Reservoir. The four part Study used existing biological and physical habitat data and hydrologic analysis to identify priority stream reaches, collected stream bank and channel stability data at 8 monitoring stations, conducted field walks in the priority reaches, developed preliminary designs for 12 stream restoration projects, and identified long-term stream protection needs.

The Hawlings River Watershed Restoration Action Plan is a follow up to the Hawlings River Watershed Restoration Study. The Plan provides a framework of next steps to implement the Study recommendations and for long-term protection of stream resources. The Study analyses showed that ultimately, stream resources protection can only be achieved through a combination of stream restoration, riparian buffer expansion, other agricultural and urban best management practices (BMPs), and public environmental stewardship. It included identification of a stream restoration activity in the Reddy Branch subwatershed.

Bibliography of Patuxent Reservoir Watershed Studies

- *Maryland's Tributary Strategies for Nutrient Reduction: A Statewide Summary, March 1995*
- *Patuxent River reservoirs Water Quality Assessment,* JTC Environmental Consultants, Inc., March 1984
- *Comprehensive Management Planning Study for the Patuxent Reservoir Watershed,* Tetra Tech, Inc., July 1997
- *Patuxent River Reservoirs Watershed Protection Program,* Ecological Analysts, Inc... 1981
- *Sedimentation Survey Final Report, Triadelphia Reservoir, Rocky Gorge and Little Seneca Lake Reservoirs, Howard and Montgomery Counties, Patuxent River, Maryland,* Ocean Surveys, Inc., June 1997.
- *Tributary Strategy for Nutrient Reduction in Maryland's Patuxent Watershed,* May 1995
- *Patuxent River Tributary Team Water Quality and Habitat Summary Report,* April 1998
- *Washington Suburban Sanitary Commission Patuxent Reservoir Watershed Tributary Monitoring and Sediment Nutrient Flux Testing Program Final Report,* Versar, Inc., March 2001
- *Developing a Patuxent Reservoir Protection Strategy,* Montgomery County Department of Environmental Protection, April 1995
- *Patuxent Reservoirs Triadelphia and Rocky Gorge Source Water Assessment,* Maryland Department of the Environment, June 2004
- *From the Mountains to the Sea, The State of Maryland's Freshwater Streams,* Maryland Department of the Environment, December 1999
- *Maryland Biological Stream Survey, 2000-2004, Riparian Zone Conditions,* Maryland Department of Natural Resources, July 2005
- *Hawlings River Watershed Restoration Action Plan,* Montgomery County Department of Environmental Protection, December, 2003
- *Countywide Stream Protection Strategy (CSPS)*, Montgomery County Department of Environmental Protection, 1998, and 2003

Hawlings River Watershed Restoration Action Plan

(copies of the documents were provided in the hard copy grant submission)

Maryland Biological Stream Survey

Classification and Monitoring Station Locations

(copies of the documents were provided in the hard copy grant submission)

Coordinated Restoration of Headwaters

in Reddy Branch Proposed Restoration Plans

(copies of the documents were provided in the hard copy grant submission)

Current Reddy Branch Project Team Members – as of March 15, 2007

MNCP&PC
Environmental Planning Division

Maryland Department
of the Environment

Montgomery County
Dept of Environmental
Protection

Montgomery County
Soil Conservation District

Wash. Suburban San. Comm.
Environmental Group

Maryland Department
of Natural Resources

Howard County
Soil Conservation District

Prince George's County
Health Department

Howard County
Dept Public Works

Stormwater Management
Division
Howard County
Health Department

Prince George's County

Dept of Environmental Resources

Montgomery County
Dept of Permitting Services

Howard County
Dept of Planning & Zoning

Wash. Suburban San. Comm.
Outreach Group

Howard County
Soil Conservation District

Maryland Department
of the Environment

Gold Leaf Group

Our House, Inc

Belmont Elementary School

1. Budget Justification and Explanation

This project budget has been developed in reliance on actual contractual costs from similar past projects, as well as cost data gathered by Montgomery and Howard Counties, and Maryland DNR. Specifically:

- Project Management and Site Assessment costs were based on the actual costs for these tasks currently being expended by WSSC for the Reddy Branch project under a contract with Versar, Inc.
- Planting plan costs were estimated by O'Doherty Group, LA based on their 25 years experience with similar development activities
- Site preparation, planting and maintenance costs were developed in reliance on per foot costs experienced by Howard County Planning and Zoning and Montgomery County Department of Environmental Protection.
- Signage, educational display, and outreach costs were estimated by WSSC's contractor based on professional experience at Back Creek Nature Park in Annapolis, MD.
- Monitoring, sampling, quality, and assessment costs were estimated in reliance on over ten years of similar cost data from contractors to WSSC.

Documentation of Commitment

- Patuxent Reservoirs Watershed Protection Agreement
  - Pertinent Meeting Minutes
- Gold Leaf Group Letter
- Mary Bradford Letter

Budget Item	Total Cost	Amount Requested from the Trust	Cash Match	Source of Cash Match	In-kind Match	Source of In-kind Match	Volunteer Hours
Area A	Open Field riparian Buffer Reforestation						
Project Management	$ 15,000.00	$ 11,625.00	$ 1,875.00	WSSC	$ 1,500.00	Patuxent Reservoirs Protection Group	
Technical Coordination	$ 4,472.00	$ -			$ 4,472.00	MNCPPC	
Site Assessment	$ 7,000.00	$ -	$ 7,000.00	WSSC			
Planting plan development	$ 15,000.00	$ 10,000.00			$ 5,000.00	MNCPPC	
Site preparation and construction to include: Invasive removal, herbicide application, bush hog, augering	$ 46,500.00	$ 23,500.00			$ 23,000.00	Our House (providing heavy equipment and man-power) and community	50
Plant material to include trees, hydrophytic shrubs, mulch, deer exclosure, and plastic tree tubes	$ 32,500.00	$ 1,500.00	$ 1, 6000	MNCPPC	$ 5,000.00	DNR/Patuxent River Tributary Team (Trees) Gold Leaf Group (mulch and installation assistance)	16
Maintenance to include Periodic mowing and selective herbicide application	$ 40,000.00	$ 20,000.00			$ 20,000.00	Our House and community	100
Signage	$ 800.00	$ 800.00					
Management plan development	$ 10,000.00	$ 10,000.00					
Coordination with community members	$ 5,456	$ -	$ 5,456	WSSC			
Educational display development	$ 4,000.00	$ 3,000.00			$1,000	Capuco Consulting Services, Inc.	

Budget Item	Total Cost	Amount Requested from the Trust	Cash Match	Source of Cash Match	In-kind Match	Source of In-kind Match	Volunteer Hours
Mailing	$ 2,200.00	$ -	$2,200	WSSC			
Refreshment	$ 1,600.00	$ 300.00	$ 1,300	WSSC	$ 300.00	local businesses	
Area B	Riparian Buffer Reforestation						
Project Management	$ 15,000.00	$ 11,625.00	$ 1,875.00	WSSC	$ 1,500.00	Patuxent Reservoirs Protection Group	
Technical Coordination	$ 4,472.00	$ -			$ 4,472.00	MNCPPC	
Site Assessment	$ 7,000.00	$ -	$ 7,000.00	WSSC			
Planting plan development	$ 15,000.00	$ 10,000.00			$ 5,000.00	MNCPPC	
Site preparation and construction to include: Invasive removal, herbicide application, bush hog, augering	$ 46,500.00	$ 23,500.00			$ 23,000.00	Our House and community members	
Plant material to include trees, hydrophytic shrubs, mulch, deer exclosure, and plastic tree tubes	$ 32,500.00	$ 15,000.00	$1,6000	MNCPPC	$ 1,500.00	Gold Leaf Group	
Maintenance to include Periodic mowing and selective herbicide application	$ 40,000.00	$ 20,000.00			$ 20,000.00	Our House and community	
Signage	$ 800.00	$ 800.00					
Management plan development	$ 10,000.00	$ 10,000.00					
Coordination with community members	$5,456	$ -	$ 5,456	WSSC			
Educational display development	$ 4,000.00	$ 3,000.00			$ 1,000.00	Capuco Consulting Services, Inc.	
Refreshment	$ 1,600.00	$ -	$1,300	WSSC	$ 300.00	local businesses	

Budget Item	Total Cost	Amount Requested from the Trust	Cash Match	Source of Cash Match	In-kind Match	Source of In-kind Match	Volunteer Hours
Area C	Meadow Restoration						
Project Management	$ 15,000.00		$ 1,875.00	WSSC	$ 1,000.00	Patuxent Reservoirs Protection Group	
Technical Coordination	$ 4,472.00				$ 4,472.00	MNCPPC	
Site Assessment	$ 7,000.00	0	$ 7,000.00	WSSC			
Planting plan development	$ 15,000.00				$ 15,000.00	MNCPPC and Montgomery Co. DEP	
Site Preparation and Construction	$ 35,000.00		$ 30,000.00	NFWF (requesting)	$ 5,000.00	Our House and community members	50
Plant material to include: Native grasses; herbaceous plants; shrubs	$ 20,000.00		$ 20,000.00	NFWF (requesting)			
Maintenance to include: Hand weeding; removal of invasives; herbicide application, deer exclosure	$ 20,000.00		$ 20,000.00	NFWF (requesting)			
Signage	$ 800.00		$ 800.00	NFWF (requesting)			
Management plan development	$ 10,000.00		$ 10,000.00	NFWF (requesting)			
Coordination with community members	$ 5,456		$ 5,456	WSSC			
Educational display development	$ 3,000.00		$ 3,000.00	NFWF (requesting)			
Refreshment	$ 1,600.00		$ 1,300.00	WSSC	$ 300.00	local businesses	

Budget Item	Total Cost	Amount Requested from the Trust	Cash Match	Source of Cash Match	In-kind Match	Source of In-kind Match	Volunteer Hours
Areas D-H							
Project Management	$ 75,000.00		$ 18,750.00	WSSC	$ 5,000.00	Patuxent Reservoirs Protection Group	
Technical Coordination	$ 4,472.00				$ 4,472.00	MNCPPC	
Site Assessment	$ 28,000.00	0	$ 21,000.00	WSSC	$ 7,000.00	MD DNR	
Planting plan development	$ 210,000.00		$ 210,000.00	MD DNR, MDE, Montgomery Co. SCD, and NFWF (requesting)			
Site Preparation and Construction	$ 290,000.00		$ 290,000.00	MD DNR, MDE, Montgomery Co. SCD, and NFWF (requesting)			
Plant material	$ 150,000.00		$ 150,000.00	MD DNR, MDE, Montgomery Co. SCD, and NFWF, Corporate Wetlands Restoration Partnership (requesting)			
Maintenance to include: removal of invasives; herbicide application, deer exclosure	$ 150,000.00		$ 150,000.00	MD DNR, MDE, Montgomery Co. SCD, and NFWF (requesting)			

Budget Item	Total Cost	Amount Requested from the Trust	Cash Match	Source of Cash Match	In-kind Match	Source of In-kind Match	Volunteer Hours
Signage	$ 4,000.00		$ 4,000.00	NFWF (requesting)			
Management plan development	$ 50,000.00		$ 50,000.00	NFWF (requesting)			
Coordination with community members	$ 27,280		$ 5,456	WSSC			
Educational display development	$ 15,000.00						
Project Wide							
Existing monitoring data assessment	$ 10,000				$ 10,000.00	NMCPPC	
Development of monitoring plan	$ 10,000	$ 10,000					
Preproject sampling and assessment	$ 10,000		$ 10,000.00	NFWF (requesting)			
Continued collection of monitoring data	$ 10,000		$ 10,000.00	NFWF (requesting)			
Computation and assessment of outreach measures of success	$ 10,000.00		$ 10,000.00	NFWF (requesting), WSSC			
Replacement of monitoring equipment	$ 2,000.00		$ 2,000.00	MNCPPC			
Assessment of newly collected data	$ 10,000		$ 10,000.00	NFWF (requesting), MDE			
Quality Control	$ 10,000		$ 10,000.00	NFWF (requesting)			
Prepare comparative assessment report	$ 10,000		$10,000.00	NFWF (requesting)			
Travel Reimbursement Allowance			$ -	NFWF (requesting)			
TOTALS	$ 1,589,936.00	$ 194,650.00	$ 1,126,099.00	-	$ 169,288.00	-	216.00