PATUXENT RESERVOIRS WATERSHED PROTECTION GROUP

Supplementary Documentation In Support of the Patuxent Reservoirs Technical Advisory Committee's 2010 Annual Report

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List of Acronyms and Abbreviations

Acronym	Definition
BMP	Best Management Practice
CHL-a	Chlorophyll-a
DNR	Maryland Department of Natural Resources
DEP	Montgomery County Department of Environmental Protection
DO	Dissolved Oxygen
ea	Each
EPA	U.S. Environmental Protection Agency
ft	Feet
FY	Fiscal Year
HSCD	Howard Soil Conservation District
MACS	Maryland Agricultural Cost Share
MDA	Maryland Department of Agriculture
MDE	Maryland Department of the Environment
mg/L	Milligrams per Liter
Mg/m3	Milligrams per cubic meter
M-NCPPC	Maryland-National Capital Park and Planning Commission
MSCD	Montgomery Soil Conservation District
PRW	Patuxent Reservoirs Watershed
RG	Rocky Gorge
SCD	Soil Conservation District
TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load
µg/L	Micrograms per Liter
WSSC	Washington Suburban Sanitary Commission

Introduction

This year's Technical Supplement contains more detailed information on efforts discussed in the *2010 Annual Report of the Technical Advisory Committee*. In addition, a summary of 2010 water quality data collected from the Patuxent reservoirs is included as Appendix A of this supplement.

Supplemental information to this year's annual report contains the following information:

- Summary of the WSSC's Supplemental Environmental Project for land and conservation easement acquisitions,
- Photos of the Reddy Branch riparian forest buffer planting,
- Summaries of the Howard and Montgomery Soil Conservation Districts agricultural progress within the Patuxent Reservoirs Watershed (PRW), and the historical use of the PRW Agricultural Cost-Share Program,
- Photos of the public outreach initiatives,
- A summary of 2010 water quality monitoring data from the Patuxent reservoirs,
- Policy Board 2010 annual meeting presentation and summary,
- Policy Board correspondence during 2010,
- Technical Advisory Committee (TAC) meeting agendas and summaries,
- Patuxent Reservoirs Watershed founding documents, and
- List of TAC members and participants.

Reservoir Water Quality Monitoring

A summary of water quality data collected from the Patuxent reservoirs in 2010 is provided in Appendix A. 2010 marks the 18th consecutive year of this monitoring effort, which WSSC began in 1993. This summary includes indicators of water quality such as chlorophyll-a and dissolved oxygen as well as possible influencing factors on water quality such as nutrients and hydrologic conditions. In addition, Carlson's Trophic State Index is used to indicate the nutrient enrichment status of the reservoirs.

WSSC Land Acquisition Program

In late 2005, the WSSC entered into a Consent Decree with regulatory authorities over sanitary sewer overflows (SSOs), one component of which is the acquisition of conservation easements and land in the Patuxent reservoirs watershed to enhance water quality. This program is a Supplemental Environmental Project (SEP) intended to provide environmental benefits in lieu of paying penalties for past Clean Water Act violations due to SSOs. The SEP was completed in 2010 at a total cost of $3,397,881, for which two conservation easements (32.81 acres total) and three properties (39.66 acres total) were acquired by the WSSC (Table 1). As a result of this land acquisition program, a total of 13 building lots were extinguished.

Table 1. Properties and conservation easements acquired from SEP to the Consent Decree

Former Property Owner (County)	Type of Acquisition	Acres
Hussman (Montgomery)	Conservation Easement	17.06
Polisar (Montgomery)	Conservation Easement	15.75
	Total Easements	32.81
Furman (Montgomery)	Fee Simple	21.36
Trivelli (Howard)	Fee Simple	13.83
White (Howard)	Fee simple	4.47
	Total Purchases	39.66
	Grand Total	**72.47**

Stream Corridor Management

Reddy Branch Riparian Forest Buffer Plantings

The Reddy Branch project is continuing to move forward with a series of riparian plantings equaling nearly 4 acres buffering about 1,700 linear feet of this stream (Figures 1 and 2). The greatest challenge to successfully establishing a forest along Reddy Branch has been controlling deer damage and often requires the construction of protective cages surrounding the trees (Figure 3). Many trees have been damaged or lost when deer protection measures failed.

Figure 1. View of Reddy Branch Tree Planting Area

Figure 2. Close-up View of Reddy Branch Tree Planting

Figure 3. Volunteers Placing Deer Protection Fence Around Young Trees.

Agricultural Progress

Annual accomplishments of the Howard (HSCD) and Montgomery (MSCD) Soil Conservation Districts were summarized in Table 3 of the *2010 Annual Report of the Technical Advisory Committee*. Three charts are included to summarize the historical efforts of both SCDs since 1999 (Figures 4-6).

The number of new Soil Conservation and Water Quality plans (conservation plans) developed throughout the watershed increased in 2010 from 2008-2009 levels (Figure 4). Furthermore, planners from the HSCD revised three additional conservation plans.

The agricultural land area within the PRW having a conservation plan also increased from 2009 levels (Figure 5). This total does not include the land area where conservation plans were updated (approximately 361 acres).

The number of agricultural best management practices (BMPs) constructed in 2010 (n = 140 practices) also increased from 2009 levels, which is one indicator of how well the conservation plans are being implemented (Figure 6). It is likely that the large increase during 2000 evident in all three figures below was due in part to the hiring of a Conservation Planner dedicated to implementing practices within the PRW (personal communication, David Plummer, District Manager, MSCD).

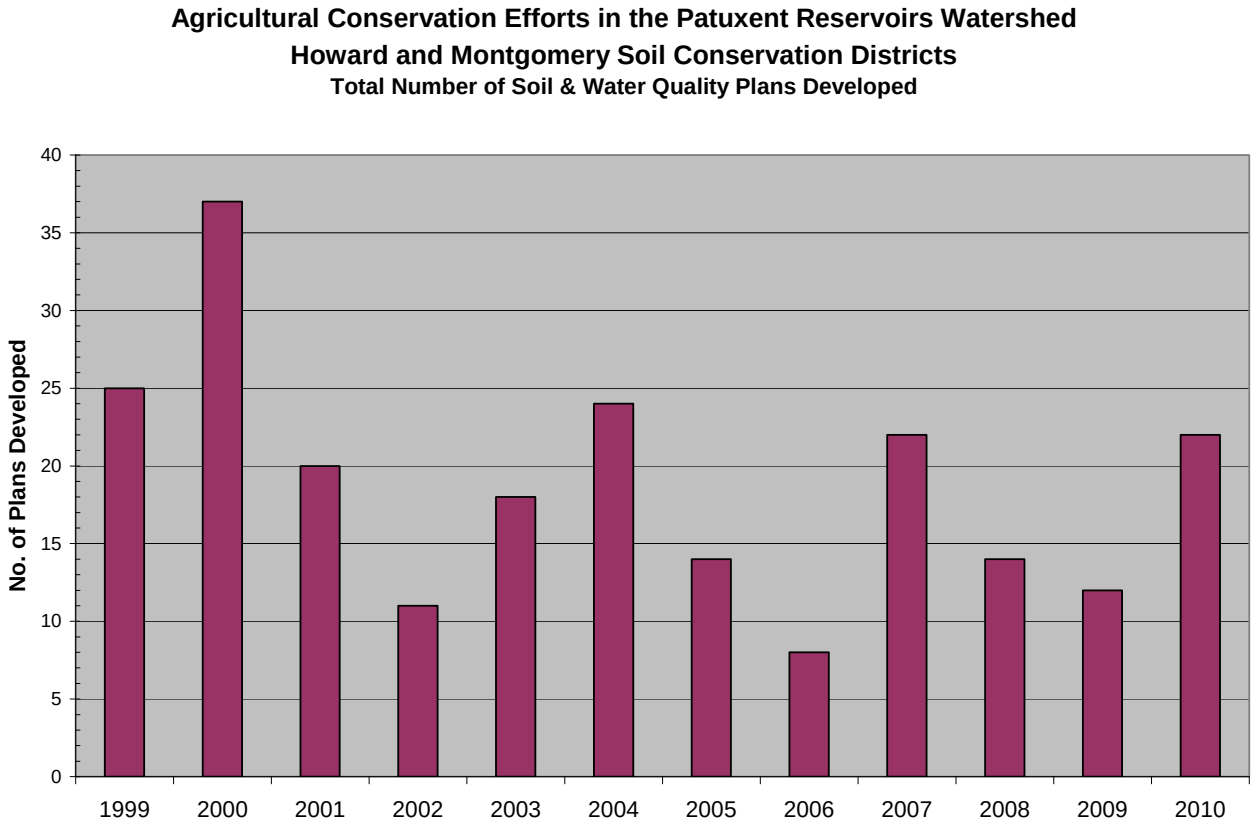

Figure 4. Number of Soil Conservation & Water Quality Plans Developed

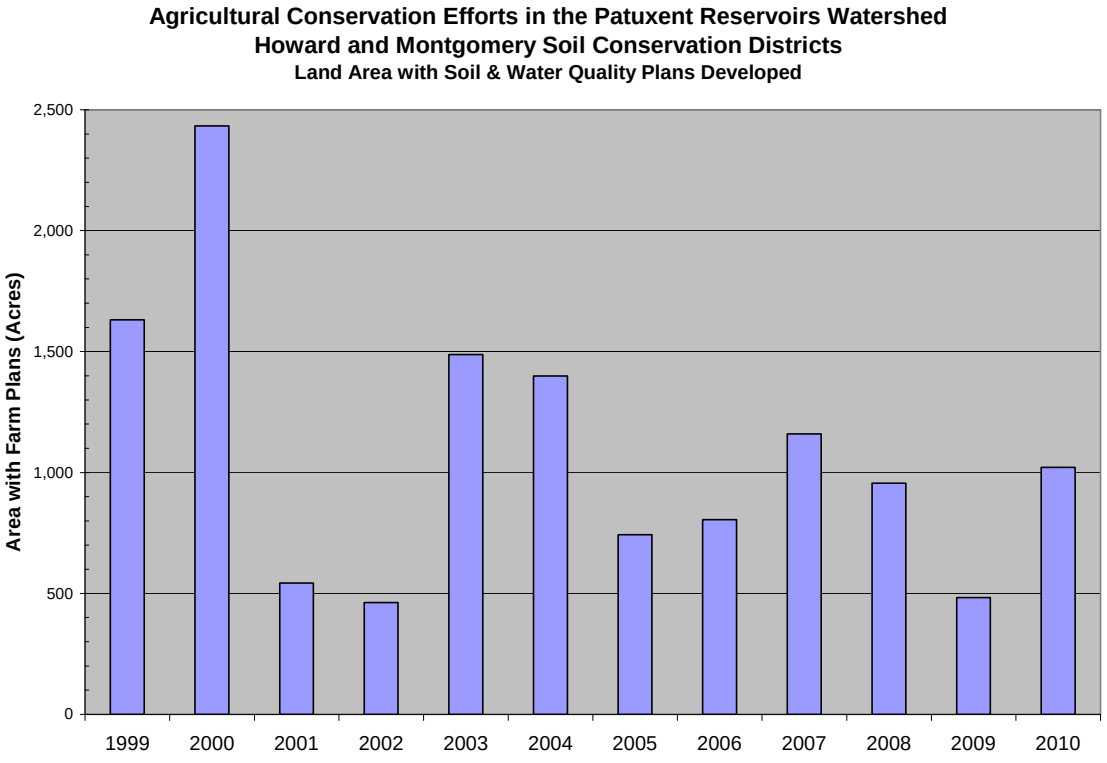

Figure 5. Farm Acres with Soil Conservation & Water Quality Plans

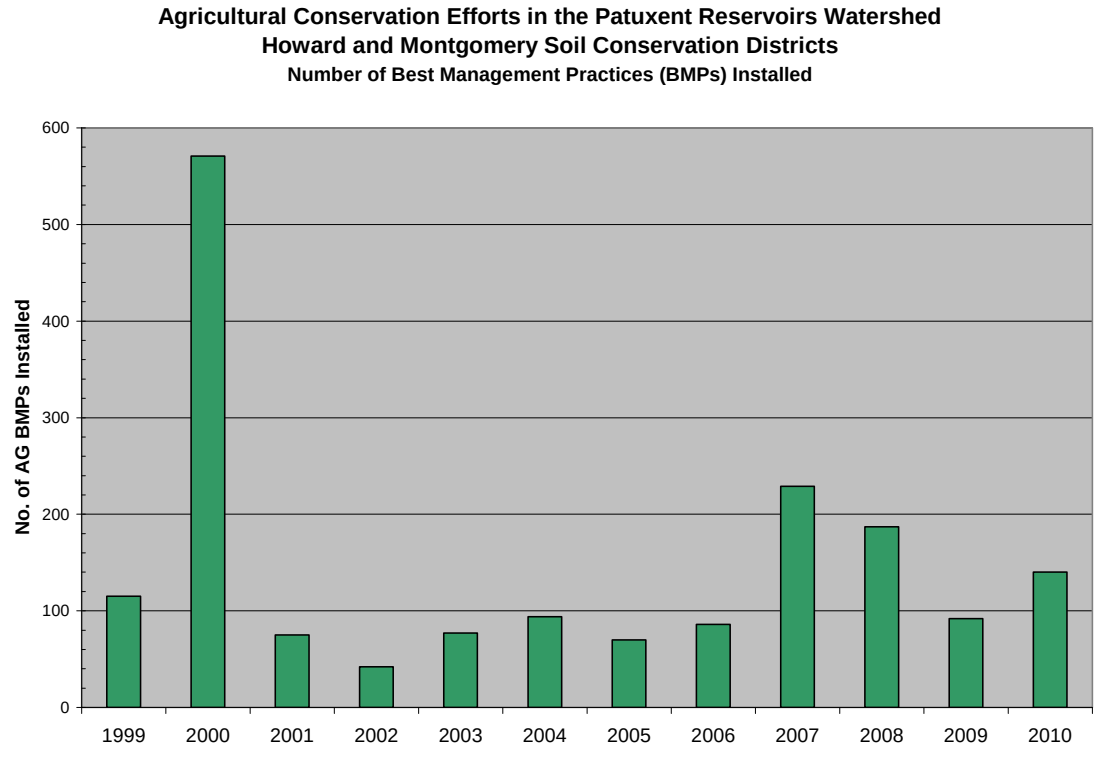

Figure 6. Number of Best Management Practices Installed

Patuxent Reservoirs Watershed Cost Share Program

The Patuxent Reservoirs Protection Strategy Memorandum of Understanding established the Patuxent Reservoirs Watershed Cost-Share Program (Appendix G).

Using this funding source to supplement federal and State of Maryland funding sources, the HSCD assisted one land owner who installed a livestock watering system in FY 2010. Since 2001, the HSCD has distributed more than $30,000 to assist farmers within the PRW for the installation of four types of BMPs designed to, among other goals, improve water quality conditions (Tables 2 and 3).

Table 2. HSCD Historical Use of Patuxent Reservoirs Watershed Cost-Share Funds

Fiscal Year	Best Management Practice Type	Quantity (units)	Cost-Share Funds Spent
2001	Riparian buffer planting	1 acre	$460.00
2002	Livestock watering trough Stream Fencing (2) Stream Crossing Riparian buffer planting	2 (each) 280 (feet) 1 (each) 0.75 (acre)	$3,896.40
2003	Stream Fencing (2) Stream Crossing Livestock watering trough	1,387 (feet) 1 (each) 1 (each)	$5,883.59
2005	Grassed Waterway (2)	0.7 (acre)	$3,129.23
2007	Stream Crossing Stream Fencing	1 (each) 500 (feet)	$6,284.00
2009	Stream Fencing (2) Livestock watering trough	304 (feet) 3 (each)	$6,909.76
2010	Livestock watering trough	2 (each)	$3,627.04
	TOTAL		**$30,190.02**

Table 3. HSCD BMP Totals Using Patuxent Reservoirs Watershed Cost-Share Funds (2001-2010)

Best Management Practice Type	Number Installed (units)
Stream Fencing	7 (2,471 feet or 0.47 miles)
Stream Crossing	3 (each)
Riparian buffer planting	2 (1.75 acres)
Livestock watering trough	8 (each)

Public Outreach Initiatives

Several successful public outreach events occurred in 2010 to raise public awareness (Figure 7 and 8) and to clean up trash within the Patuxent Reservoirs watershed (Figures 9 and 10).

Figure 7. Educational Booth at the H2O Fest

Figure 8. Educational Display at the Annual Family Campfire

Figure 9. Volunteer Hauling Trash During Patuxent River Clean-Up Day

Figure 10. IWLA-Wildlife Achievement Chapter Trash Removal Efforts

Appendix A: Summary of Annual Water Quality Conditions for 2010

Washington Suburban Sanitary Commission

Summary of Water Quality Conditions in the Patuxent Reservoirs (2010)

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Tables and Figures

List of Abbreviations, Acronyms, and Units

Abbreviation Acronym Unit	Definition
Chl-a	Chlorophyll-a
DO	Dissolved Oxygen
IQR	Interquartile Range
L	Liter
MDE	Maryland Department of the Environment
mg/L	Milligram per Liter, equivalent to part per million (ppm), or one minute in 2 years or one cent in $10,000
µg/L	Microgram per Liter, equivalent to part per billion (ppb), or one minute in 2,000 years, or one cent in $10 million
M-NCPPC	Maryland-National Capital Park and Planning Commission
OP	Orthophosphate-phosphorus
RG	Rocky Gorge
TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TP	Total Phosphorus
TR	Triadelphia
TSI	Trophic State Index
WFP	Water Filtration Plant
WSSC	Washington Suburban Sanitary Commission

Summary

2010 marks the 18th consecutive year of this monitoring effort, which began in 1993. For this summary of the 2010 water quality data, the following parameters are examined: precipitation, chlorophyll-a, dissolved oxygen, total phosphorus, various forms of nitrogen, and total organic carbon. In addition, Carlson's Trophic State Index is used to indicate the nutrient enrichment status of the reservoirs.

Precipitation

Similar patterns in rainfall and water level changes occurred in both reservoirs during 2010. In early spring water levels fully recovered from a late winter drawdown and remained at full capacity until June, then steadily declined through mid-November. The decline was briefly interrupted by an increase in runoff caused by a large storm event that occurred at the end of the September (Figures 3-4).

Chlorophyll-a

Chlorophyll-a (Chl-a) is used as a surrogate indicator of algal abundance. It can signify detrimental algal enrichment due to excess nutrient inputs from the reservoirs' watershed. Active Chl-a results in 2010 did not exceed one of two recently promulgated Maryland criteria for public water supply reservoirs (90th percentile Chl-a value < 30 µg/L) (Figure 5).

Dissolved Oxygen

Maryland uses three guidelines for dissolved oxygen (DO) to determine if water bodies are meeting water quality standards. Generally, DO in both reservoirs met these guidelines for most of 2010, given that natural thermal stratification occurs seasonally preventing the DO standard of 5 mg/L from being attained in deep waters.

Contour plots of DO for each reservoir illustrate the degree of hypoxia (low DO) and anoxia throughout the water column over time (Figures 6 and 8). Hypoxic waters persisted for a longer duration and to a greater extent in Triadelphia than in Rocky Gorge.

Total Phosphorus

Reporting limits for total phosphorus (TP) are established at 0.02 mg/L. For 2010 about 90% of the lab results were below the reporting limit, indicating that most available phosphorus is probably being consumed by algal biomass.

Both reservoirs showed a similar pattern of TP results in 2010 (Figures 9 and 10). Annual maximum values were reported during the spring followed by decreasing values during the summer, then by an increase during the autumn. This pattern is consistent with the long-term monthly median values from 1993-2008.

Nitrogen

Total nitrogen (TN) values decreased through the sampling year in both reservoirs. TN results for 2010 and long-term monthly median values are generally greater in Triadelphia than in Rocky Gorge (Figures 11-12).

Seasonality is evident with increasing ammonia levels and decreasing nitrate-nitrogen levels apparent in bottom waters of both Patuxent Reservoirs (Figures 13-14).

Total Organic Carbon

For Rocky Gorge, 2010 annual total organic carbon (TOC) results are among the lowest of any year from 2000-2010. For Triadelphia, median annual TOC values have decreased since 2007 with 2010 results decreasing by 9% from 2009 (Figures 15-16).

Trophic State Assessment using Carlson's Trophic State Index

A common approach to evaluate the trophic state or productivity of a lake or reservoir is to combine related water quality indicators into one index. Carlson's Trophic State Index (1977), a widely accepted index, is used for this report. Three parameters comprise this trophic state index (TSI) including: active chlorophyll-a, water transparency indicated by Secchi disk depth, and total phosphorus. This index defines four trophic state categories from least to most enriched by nutrients: oligotrophic, mesotrophic, eutrophic, and hyper-eutrophic.

A similar seasonal pattern exists among TSI values for both reservoirs. TSI values for Secchi disk depth (SDD) indicate a similar seasonal pattern of mostly eutrophic conditions for both reservoirs. SDD TSI values indicate more eutrophic conditions in early spring and late summer with greater water clarity conditions occurring from mid-May through mid-July (Figures 19-20). TSI values for active Chl-a show a similar seasonal pattern to the TSI values for SDD, but results are mostly in the mesotrophic range. The lack of agreement between SDD and Chl-a results may indicate that another TSI is needed to evaluate trophic conditions for the reservoirs.

Introduction

In 1993 WSSC initiated a water quality monitoring program for the Patuxent Reservoirs. 2010 marks the 18th consecutive year of this monitoring effort.

For this summary of the 2010 water quality data, the following parameters are examined:

1. The effect of precipitation on water levels in the reservoirs
2. A comparison of chlorophyll-a results with a recent Maryland water quality standard for public supply reservoirs.
3. A comparison of dissolved oxygen results with Maryland water quality standards.
4. A comparison of total phosphorus and various nitrogen forms with historic results.
5. A comparison of total organic carbon with historic results.
6. The use of Carlson's Trophic State Index to indicate the nutrient enrichment status of the reservoirs.

Objectives of Patuxent Reservoirs Water Quality Monitoring Program

The objectives of the Patuxent Reservoirs Monitoring Program include the following:

- Describe the water quality in the Patuxent Reservoirs to determine the trophic status and long-term trends (e.g., annual, seasonal, by location),
- Provide information to WSSC's Patuxent Water Filtration Plant operators to optimize treatment and reduce treatment costs,
- Provide data for the calibration of computer models to be used as diagnostic or predictive tools,
- Monitor progress of implementation of best management practices as recommended by the Patuxent Reservoirs Watershed Protection Group's Technical Advisory Committee,
- Monitor progress of TMDL implementation, and
- Help refine watershed management efforts.

Field sampling and Laboratory Methods

During 2010 samples were collected for lab analysis on a monthly basis beginning in March and ending in November, which encompasses the growing season in Maryland's piedmont region. A field crew of two WSSC personnel collected water samples and water quality data from six locations within the Patuxent Reservoirs on 16 separate occasions (Figures 1 and 2). A field crew also collected water quality data from the surface through the water column in between monthly sampling events during times of reservoir stratification.

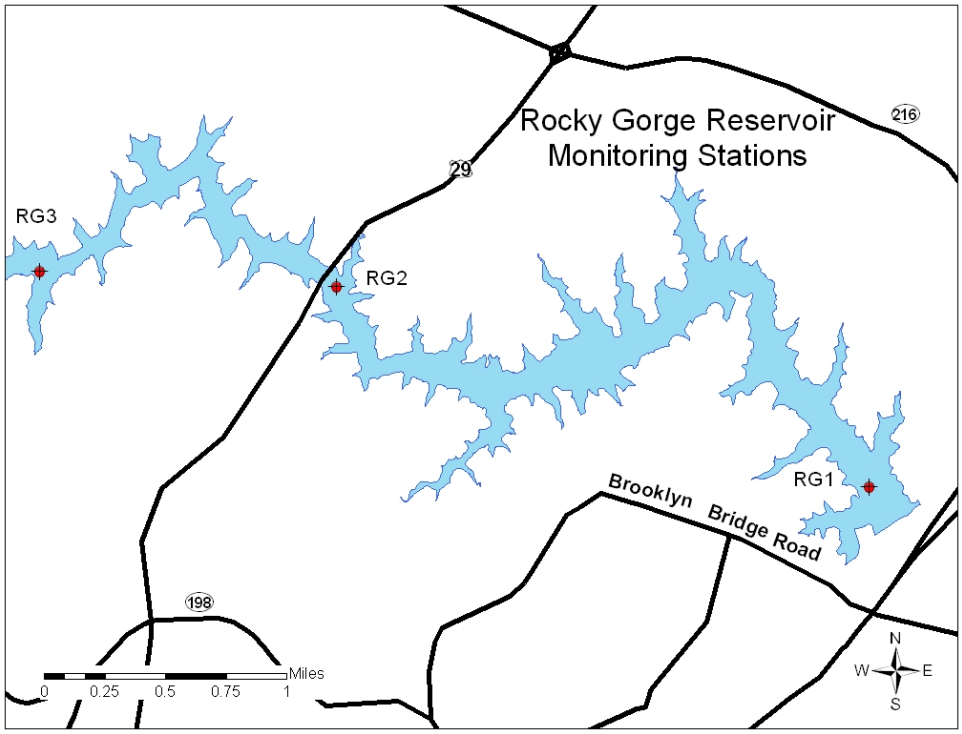

Figure 1. Rocky Gorge Monitoring Station Locations

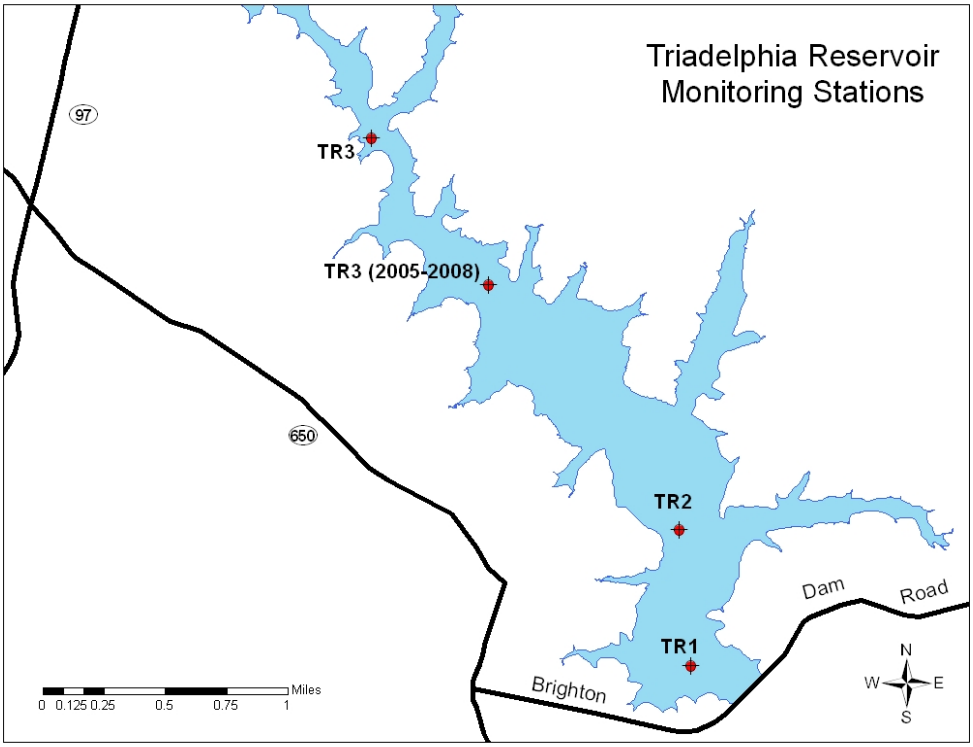

Figure 2. Triadelphia Reservoir Monitoring Station Locations

Field sampling methods

The field crew uses a Minisonde MS5 probe and a Surveyor 4a data recorder manufactured by Hach to sample in-situ properties of reservoir water at one meter increments from water surface to reservoir bottom. The properties of water recorded by the multi-probe include the following: temperature, dissolved oxygen, percent oxygen saturation, pH, specific conductance, total dissolved solids and redox potential. In addition, water transparency is measured using a Secchi disk.

Samples are collected for laboratory analyses by pumping water from specified depths through weighted silicone tubing directly into the sample bottles. Selected samples are field filtered through a 0.45 µm filter. Samples are collected from one meter below the surface and one meter above the bottom. In addition, samples for certain parameters are combined into a single composite sample from surface and bottom waters. After sample collection, all bottles are immediately placed in a cooler filled with ice.

Laboratory methods

Samples are delivered to WSSC's Consolidated Laboratory (the lab) on the same day that they are collected. A list of the parameters analyzed by the lab is included here (Table 1).

Several modifications were made to the reservoir monitoring program beginning in 2010 including the following:

1. Whole water samples collected for the identification and enumeration of algae from all reservoir monitoring locations.
2. Pheophytin-a added to the suite of parameters tested. Test results for pheophytin-a are subtracted from **total** chlorophyll-a to determine to determine **active** chlorophyll-a, which may be a better indicator of the living algal biomass present in the reservoirs.
3. Water color added to the suite of parameters tested. Color may serve as an indicator of organic matter.
4. Chloride added to the suite of parameters tested.
5. Sodium added to the suite of parameters tested.

Table 1. List of parameters analyzed for the Patuxent Reservoirs monitoring program

Parameter	Sampling Locations	Preservative	Container	Lab Method
Alkalinity	Surface/Bottom	4°C	1 Liter HDPE	SM 2320B
Ammonia	Surface/Bottom	4°C	1 Liter HDPE	L10-107-06-1-J
Chloride	Surface/Bottom	4°C	1 Liter HDPE	L10-117-07-1-B
Color	Surface/Bottom	4°C	1 Liter HDPE	SM 2120B
Total Organic Carbon	Composite	4°C	125ml Glass	SM 5310C 20th Ed
Total Chlorophyll-a	Surface	4°C	1 Liter amber HDPE	SM 10200H
Pheophytin-a	Surface	4°C	1 Liter amber HDPE	SM 10200H
Iron	Surface/Bottom	4°C	1 Liter HDPE	EPA 200.8 Rev 5
Manganese	Surface/Bottom	4°C	1 Liter HDPE	EPA 200.8 Rev 5
Total Kjeldahl Nitrogen (TKN)	Surface/Bottom	4°C	1 Liter HDPE	L10-107-06-2-D
Nitrate and Nitrite Nitrogen	Surface/Bottom	4°C	1 Liter HPDE	L10-107-04-1-A
Total Phosphorus (low level)	Surface/Bottom	4°C	1 Liter HPDE	L10-115-01-1-F
Soluble Orthophosphate	Surface/Bottom	4°C, Filtered on collection	125ml HDPE	L10-115-01-1-A and L10-115-01-1-B
Sodium	Surface/Bottom	4°C	1 Liter HPDE	EPA 200.8 Rev 5.
Turbidity	Surface/Bottom	4°C	1 Liter HDPE	EPA 180.1 Rev 2

Results & Discussion

Precipitation and Reservoir Water Levels

Annual precipitation recorded near Rocky Gorge reservoir at the Patuxent Water Filtration Plant was 46.6 inches, which is greater than Maryland's annual precipitation average of 44.64 inches (http://coolweather.net/staterainfall/maryland.htm).

Similar patterns in rainfall occurrence and rising water levels occurred in both reservoirs during 2010. A water drawdown occurred in early to mid-February, but by early spring water levels fully recovered exceeding normal pool elevations. Elevated water levels persisted from mid-March until early June in Rocky Gorge (Figure 1) and persisted until the end of June in Triadelphia (Figure 2). Water levels steadily declined from June through mid-November. Water levels in both reservoirs can increase rapidly to inputs from large storm events. For example, the largest storm event of the year (more than 4 inches at Rocky Gorge) occurred on September 30 and increased water levels in Rocky Gorge by almost 3 feet and water levels in Triadelphia by almost 3½ feet in only two days.

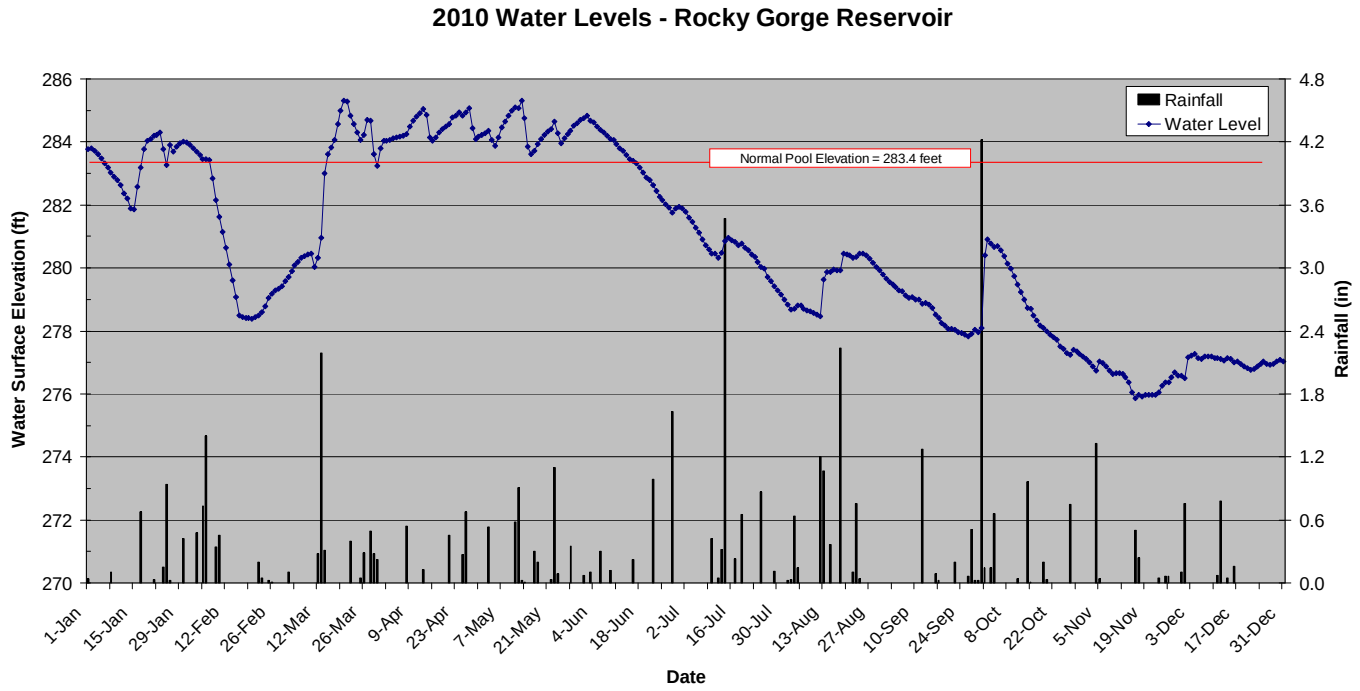

Figure 3. Rocky Gorge Reservoir water levels and rainfall during 2010

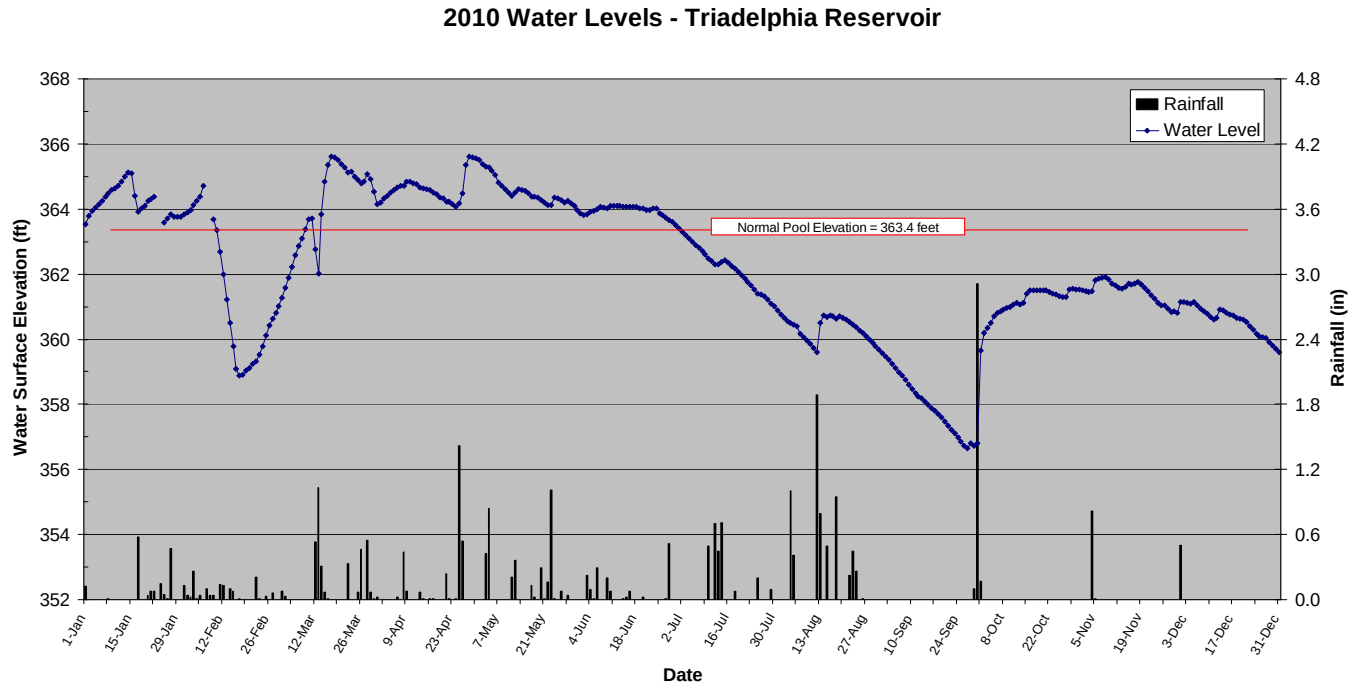

Figure 4. Triadelphia Reservoir water levels and rainfall at during 2010

Chlorophyll-a

Maryland recently amended its water quality standards by adding chlorophyll-a criteria for public water supply reservoirs (COMAR, 2010). Chlorophyll-a (Chl-a) is used as a surrogate indicator of algal abundance in reservoirs.

The two criteria for public water supply reservoirs include:

1. *The arithmetic mean of a representative number of samples of chlorophyll a concentrations, measured during the growing season (May 1 to September 30) as a 30-day moving average may not exceed 10 micrograms per liter; and*
2. *The 90th-percentile of measurements taken during the growing season may not exceed 30 micrograms per liter.*

Field crews collect samples from each reservoir on a monthly basis. Evaluating compliance with the first criterion (30-day moving average) would be based on only one set of samples; therefore, it is not considered in this evaluation. The second criterion is considered in this summary.

For each reservoir, 18 Chl-a samples (six sampling events at three locations) were collected during the 2010 growing season (May-September). Chl-a results were used from all monitoring stations to determine 90th percentile values. Chl-a results may be overestimated by including pigments such as pheophytin-a (Standard Methods, 19th Ed., 1995); therefore, pheophytin-a results are subtracted from total Chl-a results to arrive at active Chl-a to better indicate living algal biomass.

Results

The 90th percentile threshold was not exceeded by either reservoir in 2010. Also, the 90th percentile value for Rocky Gorge Reservoir (about 17 µg/L) was greater than for Triadelphia Reservoir (about 11µg/L) (Figure 5). The top of each box corresponds to the 90th percentile value.

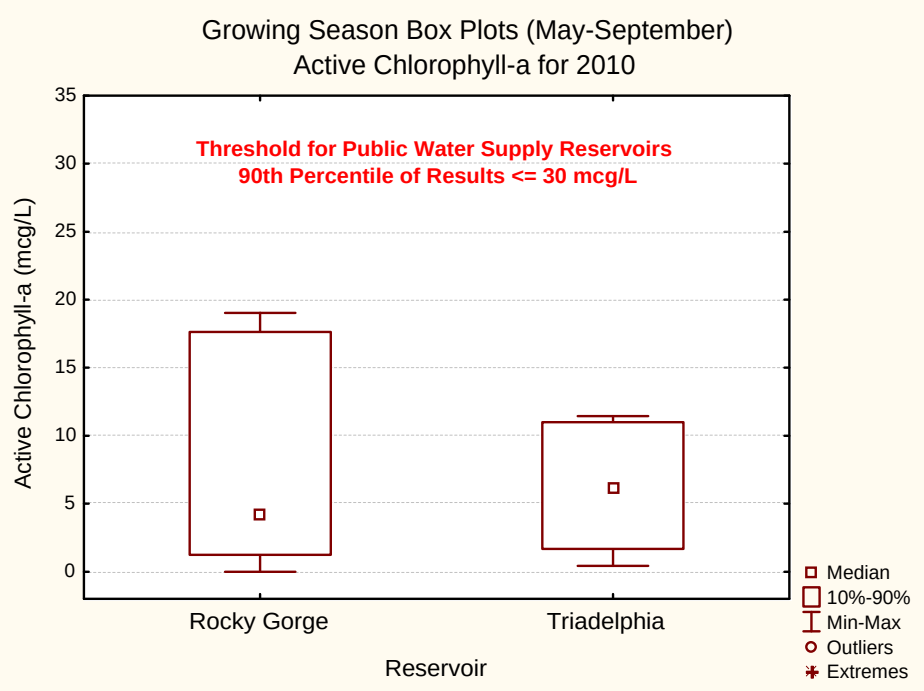

Figure 5. Active Chlorophyll-a Results for 2010 growing season at Patuxent Reservoirs

Dissolved Oxygen

Maryland's water quality standard for dissolved oxygen (DO) of 5 mg/L is the minimum threshold for all state waters, except when natural conditions, such as thermal stratification, cause DO concentrations to fall below this threshold. Bottom (i.e., hypolimnetic) waters of deep portions of reservoirs can become depleted of oxygen during summer months when thermal stratification prevents oxygen from entering into deeper waters and the remaining oxygen is consumed during decomposition of organic matter. Maryland adopted guidelines for interpreting DO and Chlorophyll-a Criteria for water-supply reservoirs when bottom waters become depleted of dissolved oxygen (MDE 2006). Historically, these hypoxic or low DO conditions have occurred seasonally within both Patuxent Reservoirs.

The three guidelines to help determine compliance with water quality standards pertaining to DO include:

1. *A minimum of 5 mg/L of DO to be maintained in surface layers at all times (except during periods of spring and fall overturn);*
2. *A minimum of 5 mg/L of DO to be maintained throughout water column when reservoir is well mixed (non-summer months); and*
3. *Hypoxia (less than 5 mg/L DO) in bottom waters will be addressed by MDE on a case-by-case basis.*

Contour plots of DO for each reservoir illustrate the degree of hypoxia and anoxia throughout the water column over time (Figures 6 & 8). The stoplight color pattern of these figures identifies the areas within each reservoir during 2010 where DO concentrations are above the Maryland water quality standard of 5 mg/L (green), between 2 mg/L and 5 mg/L (yellow), and below 2 mg/L (red). For these plots, data are shown for the monitoring station located nearest the dam of both reservoirs.

When each reservoir is at or near normal water levels, the surface layer extends to an elevation above sea level of approximately 260 feet (depth below surface of 23 feet) for Rocky Gorge and approximately 345 feet above sea level (depth of 18 feet) for Triadelphia.

Rocky Gorge Reservoir

Guideline 1

This guideline was satisfied (Figure 6).

Guideline 2

This guideline was satisfied with one exception. DO levels decreased slightly below 5 mg/L for a portion of the water column in early October (Figure 7).

Guideline 3
Hypoxia occurred in the bottom waters of Rocky Gorge Reservoir beginning in mid-May and persisted until the beginning of October; moreover, anoxic conditions (less than 1 mg/L) also occurred from mid-June through August.

Triadelphia Reservoir

Guideline 1
This guideline was satisfied (Figure 8).

Guideline 2
During the sampling season, DO data were collected on two occasions when the reservoir at this location was completely mixed (March and November). This guideline was met during both sampling events.

Guideline 3
Hypoxic and anoxic conditions occurred more frequently and to a greater extent in Triadelphia compared to Rocky Gorge. Hypoxia occurs in the bottom waters of Triadelphia beginning in late April and persisted until the beginning of November (Figure 8). Anoxic conditions occurred from late May through mid-October.

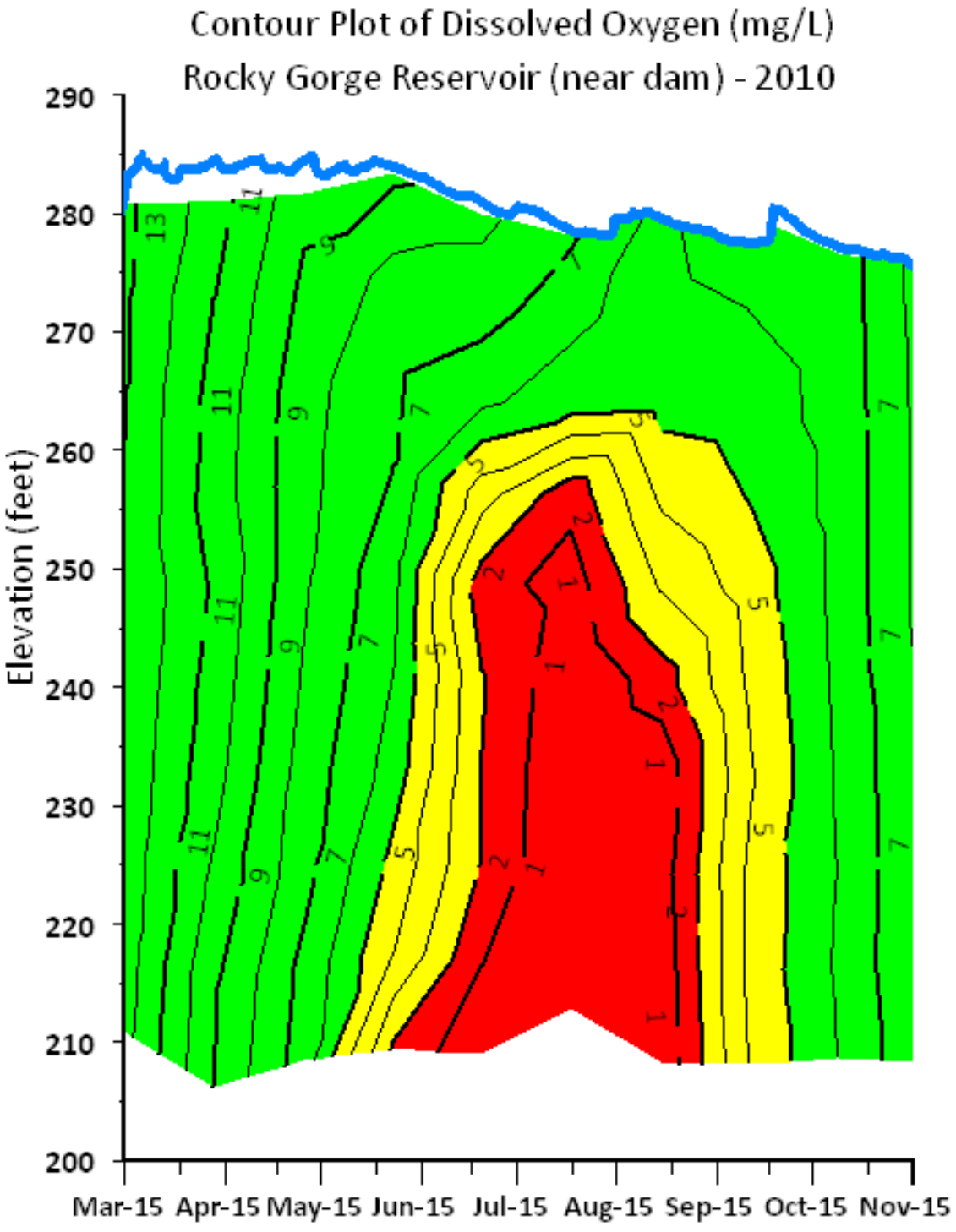

Figure 6. Depth-time plot of dissolved oxygen concentrations (mg/L) in Rocky Gorge Reservoir

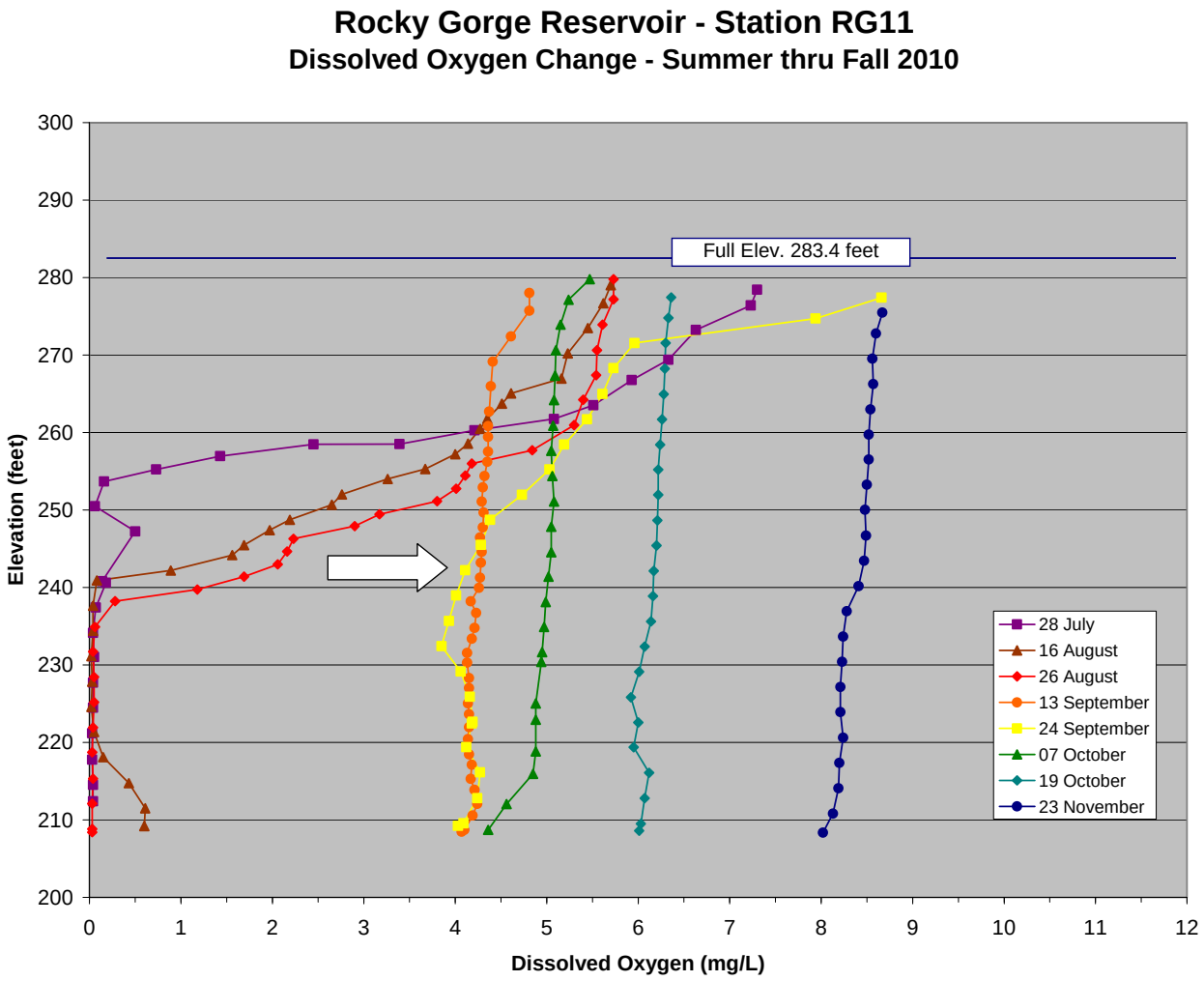

Figure 7. Dissolved oxygen profiles in Rocky Gorge Reservoir (mid-summer through autumn)

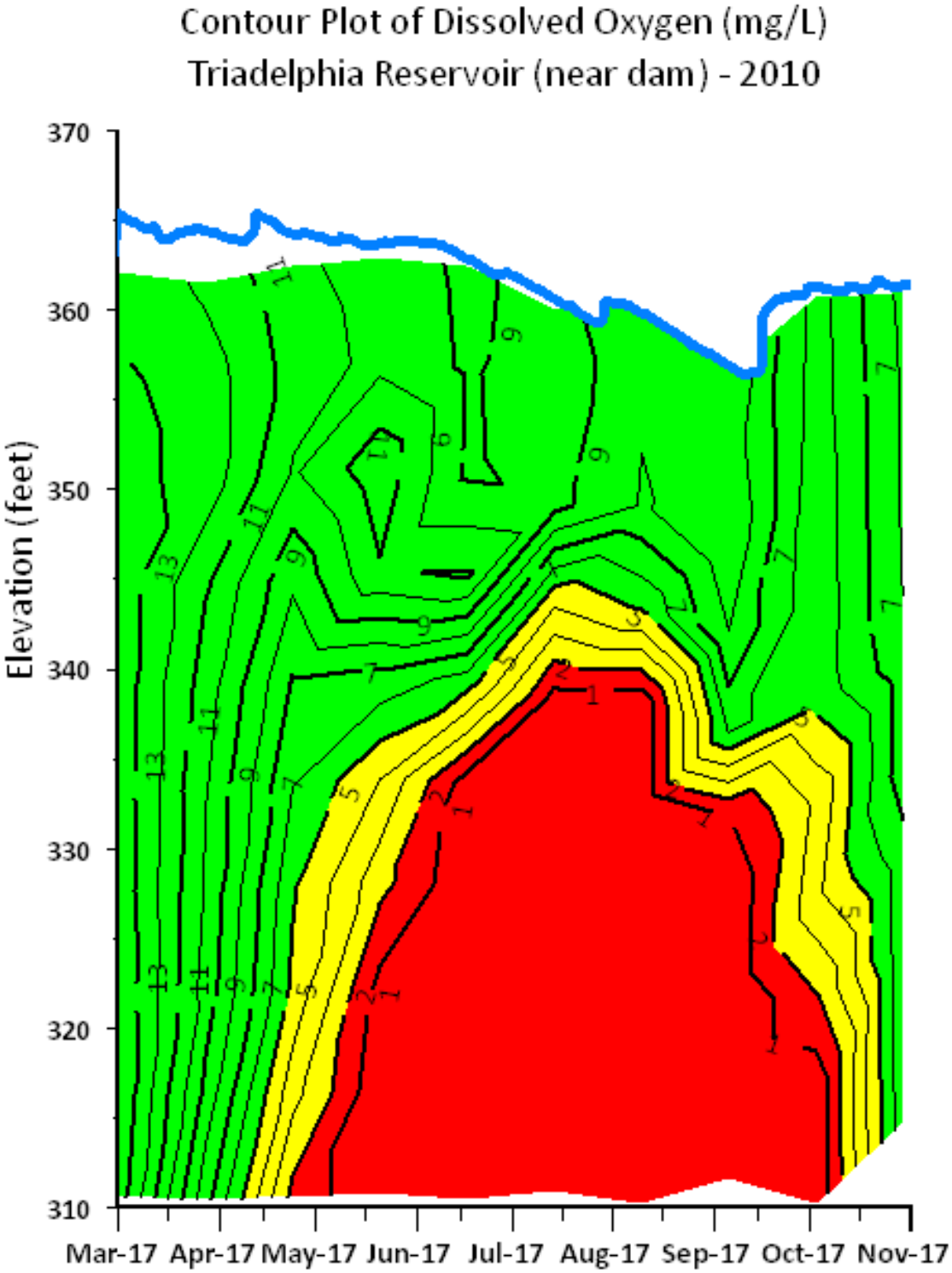

Figure 8. Depth-time plot of dissolved oxygen concentrations (mg/L) in Triadelphia Reservoir

Total Phosphorus

For 2010 about 90% of the lab results for total phosphorus (TP) were below the reporting limit of 0.02 mg/L (Figures 9 and 10).

Both reservoirs show a similar pattern of TP results in 2010 (Figures 9 and 10). Annual maximum values occurred during the spring, followed by decreasing values during the summer (below the lab's reporting limit), then by an increase during the autumn. This pattern is consistent with the long-term monthly median values from 1993-2008.

TP results exceed the corresponding monthly median value only during March in Rocky Gorge Reservoir (at the mid and upper reservoir locations) (Figure 9).

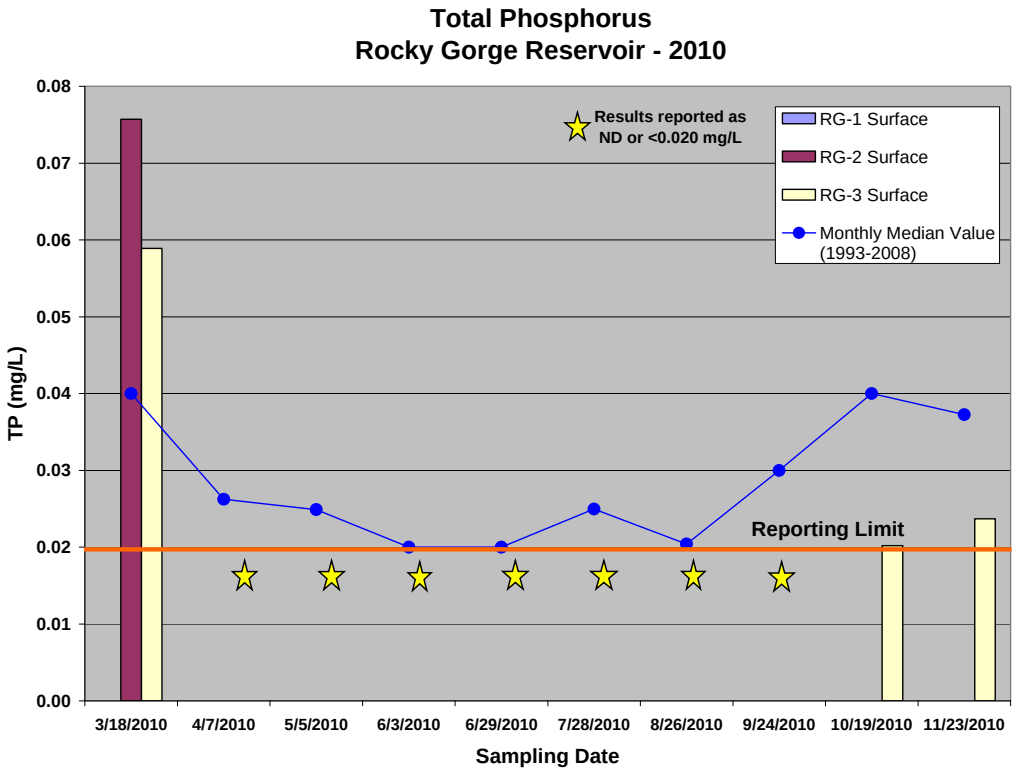

Figure 9. Total Phosphorus Concentrations in Rocky Gorge Reservoir

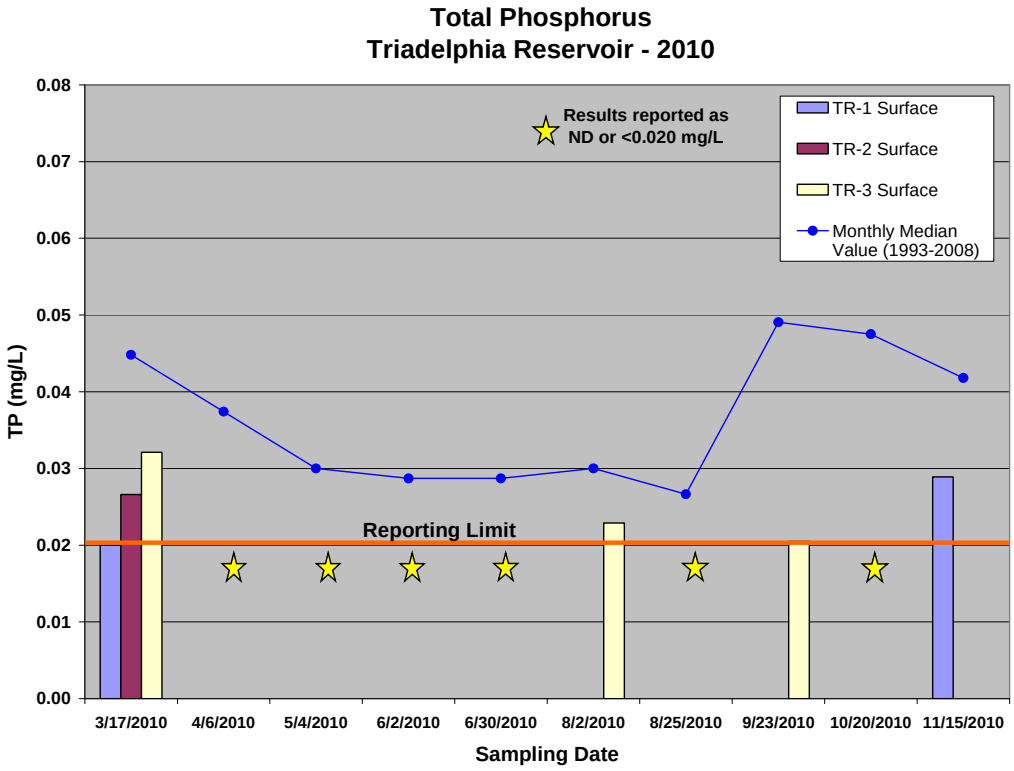

Figure 10. Total Phosphorus Concentrations in Triadelphia Reservoir

Nitrogen

Total Nitrogen in Surface Waters

Total nitrogen (TN) results are calculated by adding organic nitrogen, ammonia, and nitrate-nitrogen + nitrite-nitrogen.

TN results decreased through the sampling year in both reservoirs. In addition, TN results for 2010 and long-term monthly median values are generally greater in Triadelphia than in Rocky Gorge (Figures 11-12). Annual, maximum TN results occurred in April for Rocky Gorge (2.75 mg/L) and Triadelphia (3.25 mg/L).

Nitrogen Forms in Bottom Waters

Figures 13 and 14 display stacked bar charts of the different forms of TN as noted above. Annual maximum nitrate+nitrite nitrogen values (2.5 mg/L) occurred in the spring months for both reservoirs; annual maximum ammonia values occurred in July for Rocky Gorge (0.4 mg/L) and Triadelphia (2.1 mg/L).

Seasonality of the nitrate+nitrite nitrogen and ammonia results in the bottom waters is evident in both reservoirs. Ammonia *increased* through the summer and then decreased in the autumn in both reservoirs, but especially in Triadelphia. Nitrate-N + nitrite-N *decreased* during the summer and then increased in the autumn in both reservoirs (Figures 13-14). According to Wetzel (2001), the vertical distributions of ammonia and nitrate-nitrogen in stratified lakes of high productivity (i.e., nutrient levels sufficient to promote high growth of algal populations) generally show *increasing* levels of ammonia and *decreasing* levels of nitrate nitrogen with depth. These characterizations of highly productive water bodies are apparent in both Patuxent Reservoirs for 2010 (Figures 13-14), and it is consistent with long-term trends from 1993-2008 (WSSC, 2010).

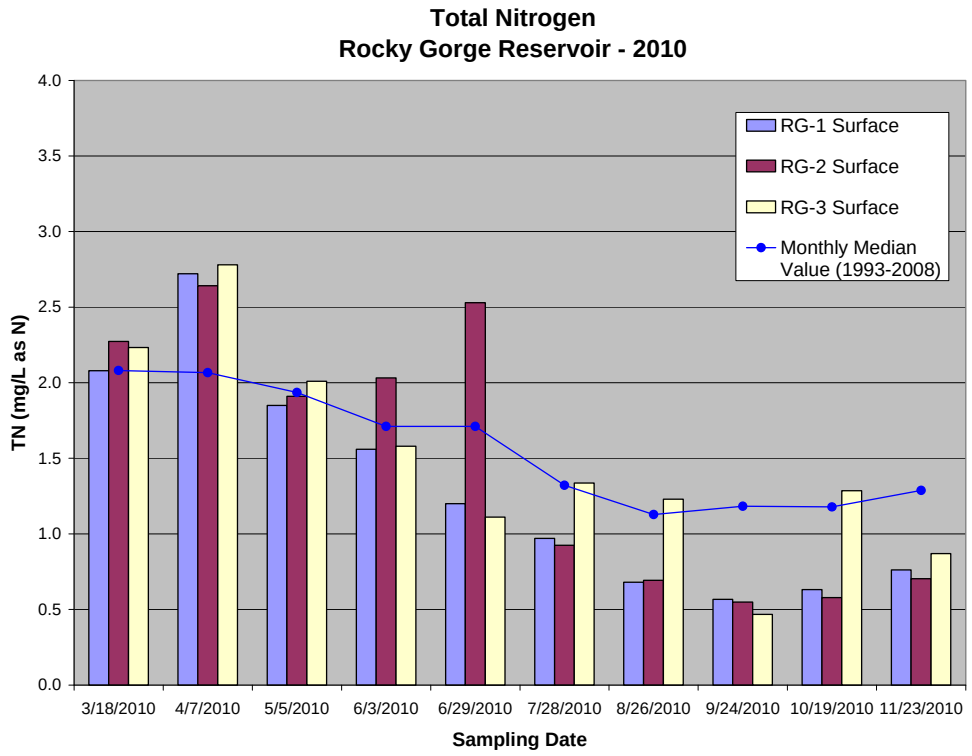

Figure 11. Total Nitrogen in Rocky Gorge Reservoir

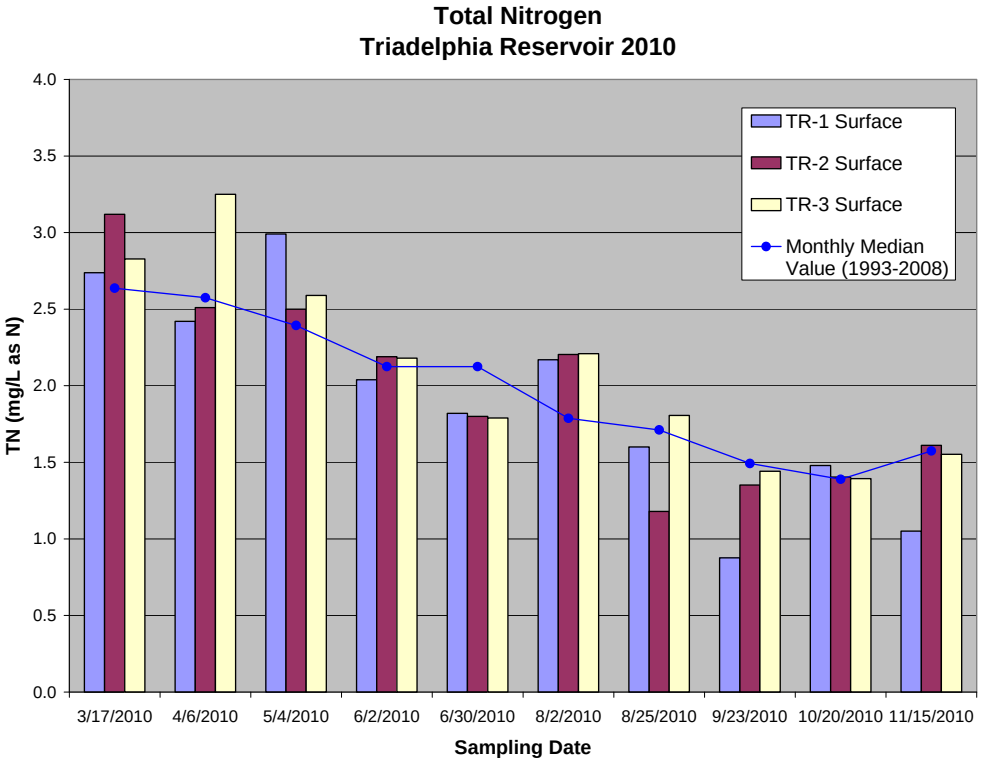

Figure 12. Total Nitrogen in Triadelphia Reservoir

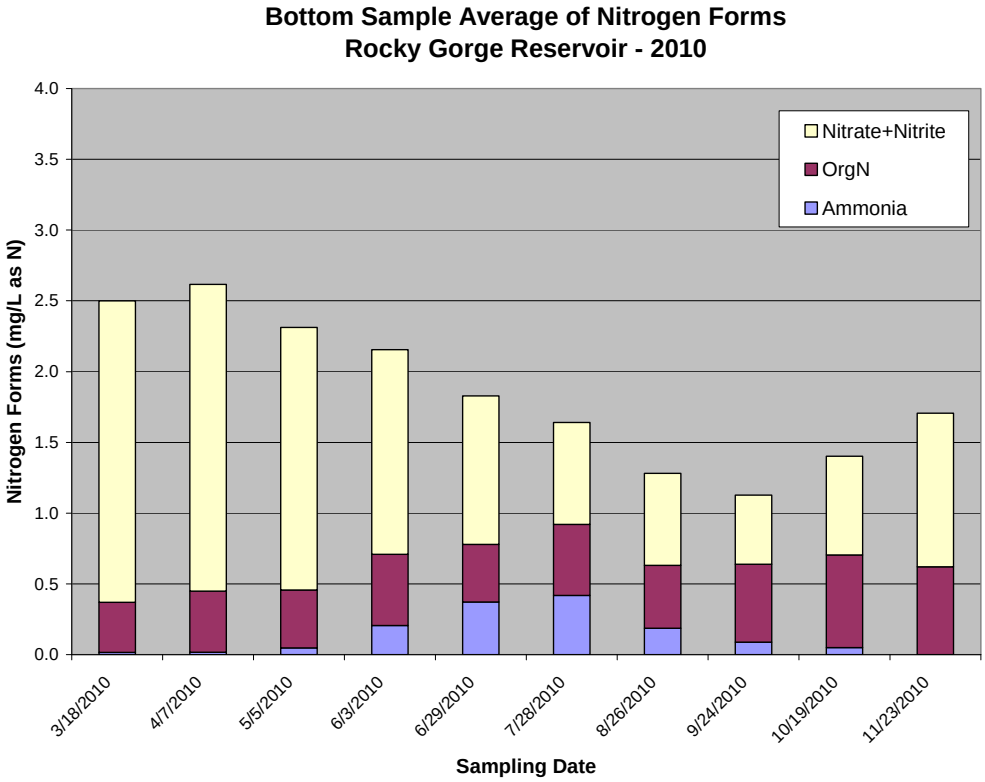

Figure 13. Average of bottom samples from all monitoring stations in Rocky Gorge Reservoir

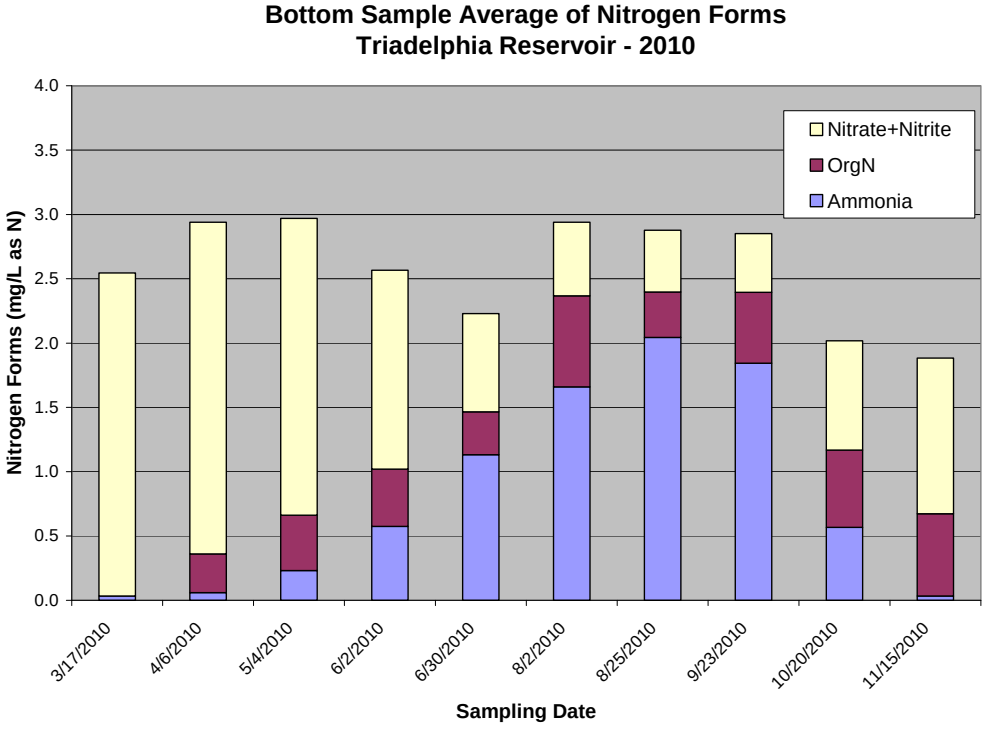

Figure 14. Average of bottom samples from all monitoring stations in Triadelphia Reservoir

Total Organic Carbon

Annual Comparison

For Rocky Gorge, the 2010 results are among the lowest of any year in the decade. The median annual TOC result (2.36 mg/L) was the lowest of any year. TOC values ranged from 2-3 mg/L for 2010.

For Triadelphia, annual median TOC values have decreased from 2007-2010. For 2010, a 9% decrease in annual median TOC values occurred from 2009, which is the largest decrease during this period. Note that 2006 results from Triadelphia were excluded because only one sample was collected that year.

Monthly Comparison

For Rocky Gorge, median monthly TOC results from 2000-2010 increase through the sampling year with minimum values occurring in March (2.42 mg/L) and maximum values occurring in October (3.25 mg/L) (Figure 17). For Triadelphia, median monthly TOC results also increased, but only through the summer months. Minimum values also occurred in March (2.20 mg/L) and maximum values occurred in August (3.70 mg/L) (Figure 18). Monthly median values for 2010 were less than corresponding median values from 2000-2010 with the exception of March results in Rocky Gorge.

For monthly comparisons, data are included for all sampling months; however, samples were collected less than 50% of the time in past years for October and November in Rocky Gorge, mainly due to operational conditions related to dam maintenance and low water levels preventing sample collection.

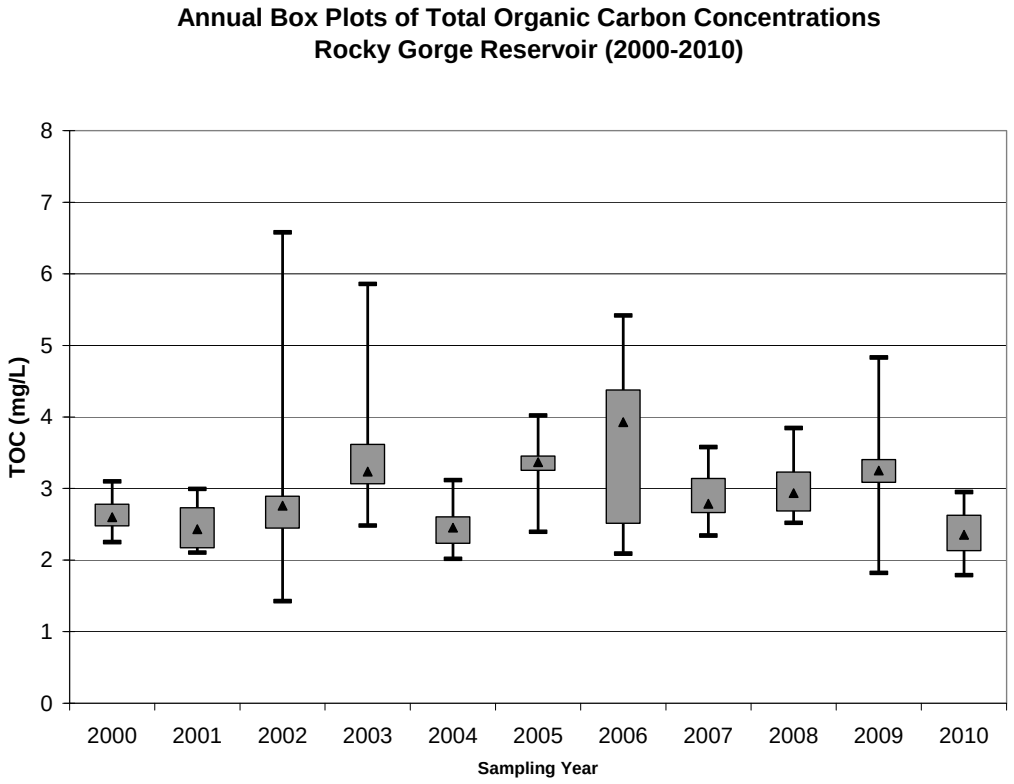

Figure 15. Annual Box Plots of TOC for Rocky Gorge Reservoir

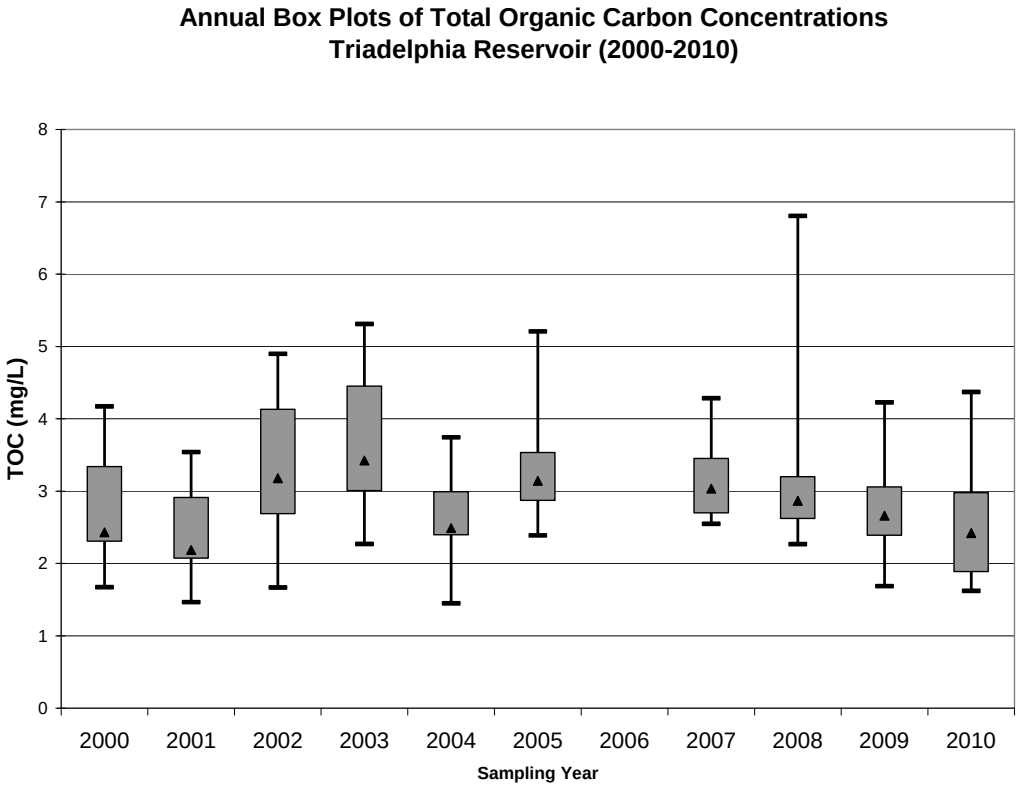

Figure 16. Annual Box Plots of TOC for Triadelphia Reservoir

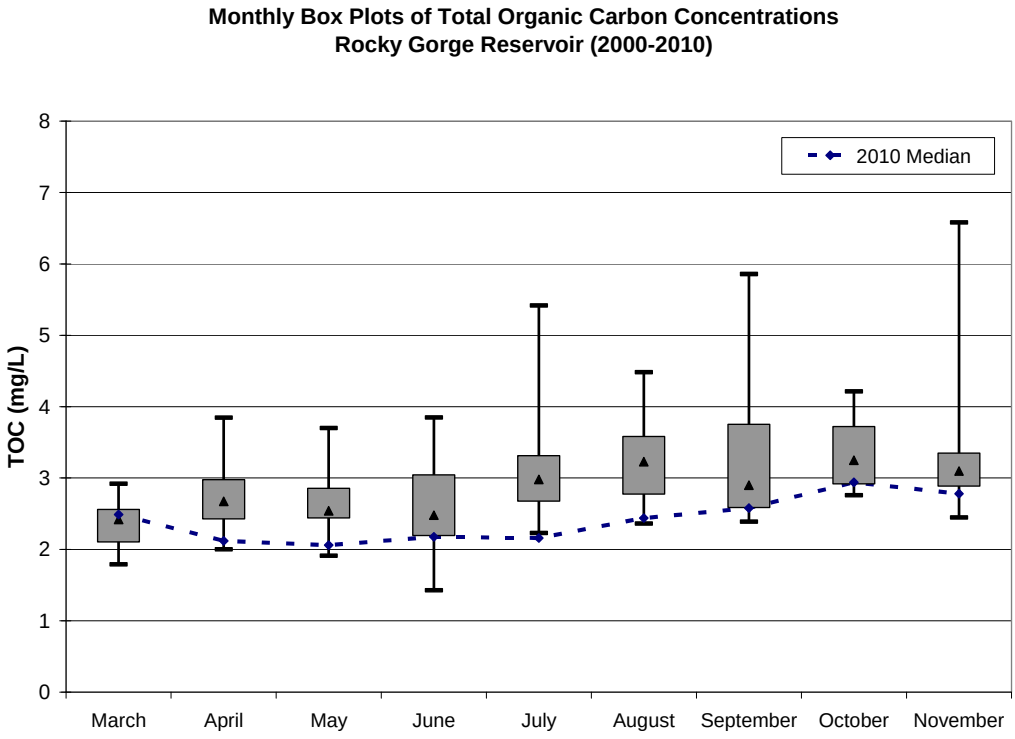

Figure 17. Monthly Box Plots of TOC for Rocky Gorge Reservoir

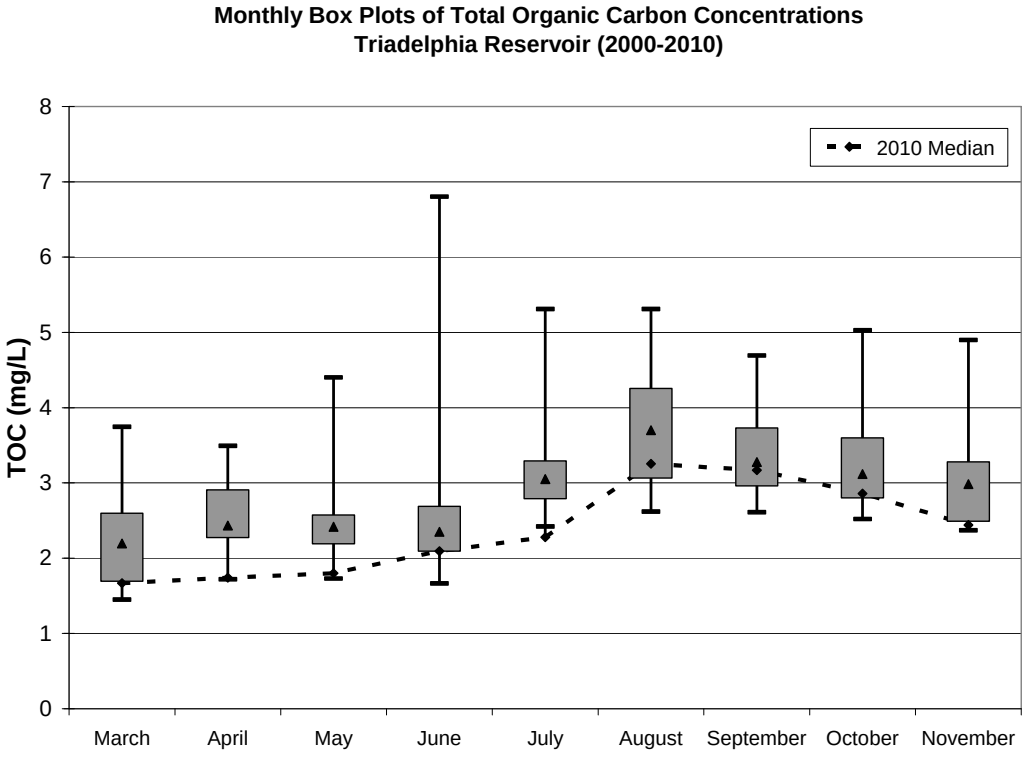

Figure 18. Monthly Box Plots of TOC for Triadelphia Reservoir

Trophic State Assessment

A common approach to evaluate the trophic state or productivity of a lake or reservoir is to combine related water quality indicators into one index. Carlson's Trophic State Index (1977) is used for this report. Three parameters comprise this trophic state index (TSI) including: active chlorophyll-a, water transparency indicated by Secchi disk depth, and total phosphorus. This index defines four trophic state categories from least to most enriched by nutrients: oligotrophic, mesotrophic, eutrophic, and hyper-eutrophic.

Secchi disk depth (SDD) TSI values indicate a similar seasonal pattern of mostly eutrophic conditions for both reservoirs. SDD TSI values indicate more eutrophic conditions in early spring and late summer with greater water clarity conditions occurring from mid-May through mid-July (Figures 19-20). Maximum SDD TSI values occurred in March for both reservoirs; however, the lack of agreement with corresponding Chl-a index values suggests that water transparency was diminished by non-algal turbidity.

Active Chl-a TSI values show a similar seasonal pattern to the SDD TSI values, but results are mostly in the mesotrophic range. Also, note that total phosphorous concentrations of surface waters were only included where results exceeded the method reporting limit of 20 µg/L. The lack of agreement between SDD and Chl-a results may indicate that another TSI is needed to evaluate trophic conditions for the reservoirs.

Rocky Gorge Reservoir

Approximately 80% of SDD and 20% of Chl-a TSI values indicate eutrophic conditions (Figure 19).

Triadelphia Reservoir

Approximately 75% of SDD and 30% of Chl-a TSI values indicate eutrophic conditions (Figure 20).

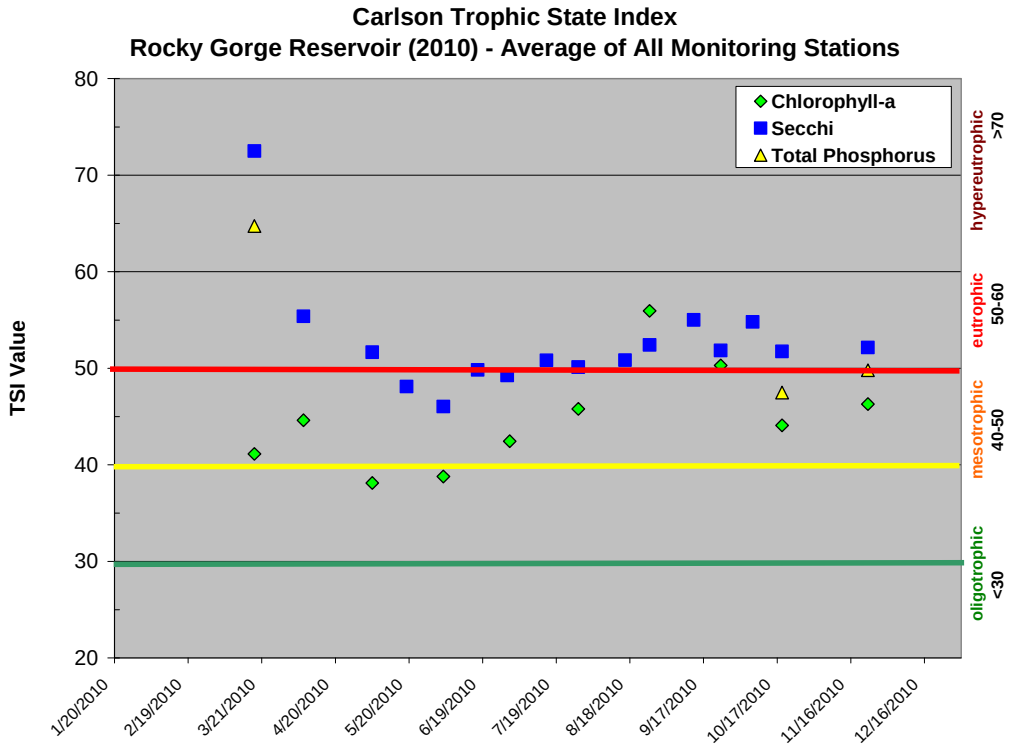

Figure 19. Carlson's Trophic State Index values for Rocky Gorge Reservoir

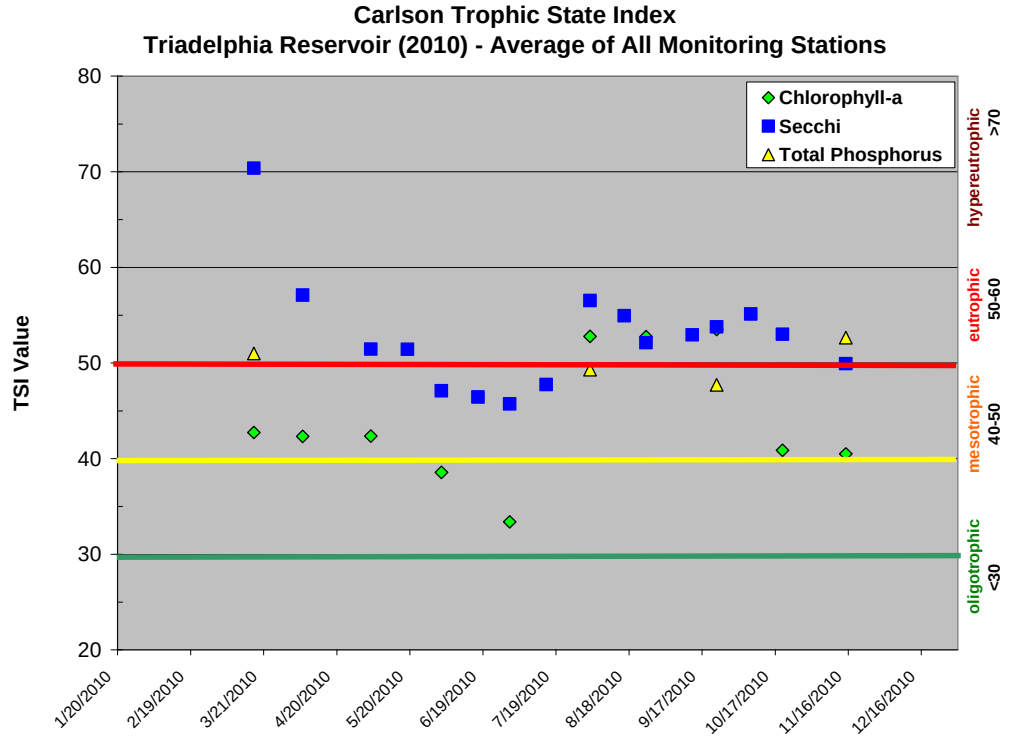

Figure 20. Carlson's Trophic State Index values for Triadelphia Reservoir

References

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Appendix B: Annual Policy Board Meeting Presentation

Patuxent Reservoirs Watershed Protection Group

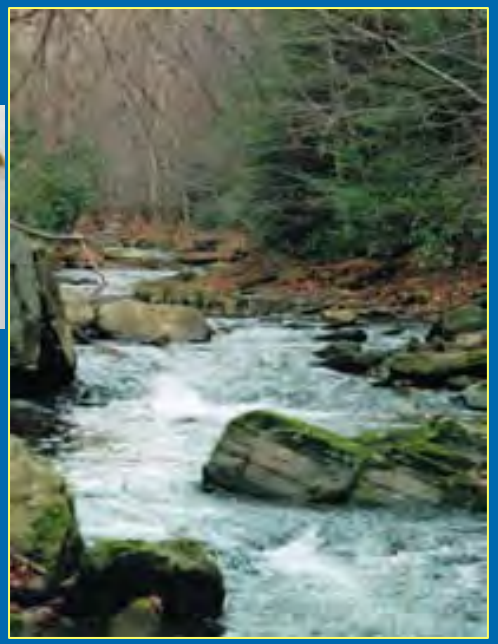
2010 Annual Meeting of the Policy Board

November 9, 2010

History of Patuxent Reservoirs Watershed Protection Group

- 1996 Agreement Ratified
- Purposes for Agreement
- Formed Policy Board and Technical Advisory Committee
  - Policy Board Roles
    - Consider Strategies to Address Challenges
    - Review & Evaluate TAC information
    - Endorse Work Plan
  - TAC Roles
    - Evaluate Technical Issues
    - Advise Policy Board
    - Implement Protection Strategies

Priority Resources



Reservoirs & Water Supply

- **Terrestrial Habitat**
- **Stream System**
- **Aquatic Biota**

Priority Resources

Public Awareness & Stewardship

Rural Character & Landscape

Impediments to Implementing the Priority Resource Goals

- Progress has been made, but--
  - Timelines have not been met
  - Inadequate TAC agency work programs and budgets
- TAC and Policy Board
  - Strictly advisory
  - Goals not sufficiently connected with TAC agency work programs and budgets

Total Maximum Daily Loads (TMDLs) and the Patuxent Reservoirs

- What is a TMDL?
  - Pollution diet for impaired waters
  - Needed to achieve water quality standards

- Patuxent Reservoirs TMDLs
  - Phosphorus and Sediment, 2008
  - Focus shifting to TMDL implementation
  - Nitrogen expected in 2011 (Bay TMDL)

TMDLs as Regulatory Drivers

- Significant reductions needed to meet TMDLs
- Burden falls to non-point sources of pollution (e.g., large lot residential & agricultural lands)

	Triadelphia	Rocky Gorge	Triadelphia
Pollutant	Phosphorus (lbs/yr)	Phosphorus (lbs/yr)	Sediment (tons/yr)
Starting Point	65,593	46,935	32,141
% Reduction Needed to meet TMDL	58%	48%	29%
TMDL Goal	27,700	24,406	22,820
Point Sources	19%	30%	2%
Non-Point Sources	76%	65%	98%

What will be Needed to Implement the TMDLs?

- Stormwater portion covered under MS4
- Non-point sources largest component
  - Not covered under MS4
- Implementation Plan Needed
  - To cover non-point sources
  - Coordination with stormwater portion
- Will require TAC agencies work program changes and/or budget allocations

Draft TMDL Implementation Framework

- Draft Framework
  - Develop SW Implementation Plan for HC
    - Part of MS4 Permit (MC Completed in 2010)
  - Collect Needed Agriculture BMP Data in MC & HC
  - Develop Non-Point Implementation Plans for MC & HC
  - Implement Plan
    - TAC agencies
- Assurance of Implementation
  - TAC agency work programs and budgets
- Budget Estimates for Next Steps

FY2012 Budget Estimates to Support TMDL Implementation

- Montgomery County
  - Non-Point - $40,000 to fund ½ of contract position to collect agriculture data (new request)
- Howard County
  - SW - $40,000 for developing SW Implementation Plan (pending MS4 Permit)
  - Non-Point - $40,000 to fund ½ of contract position to collect agriculture data (new request)

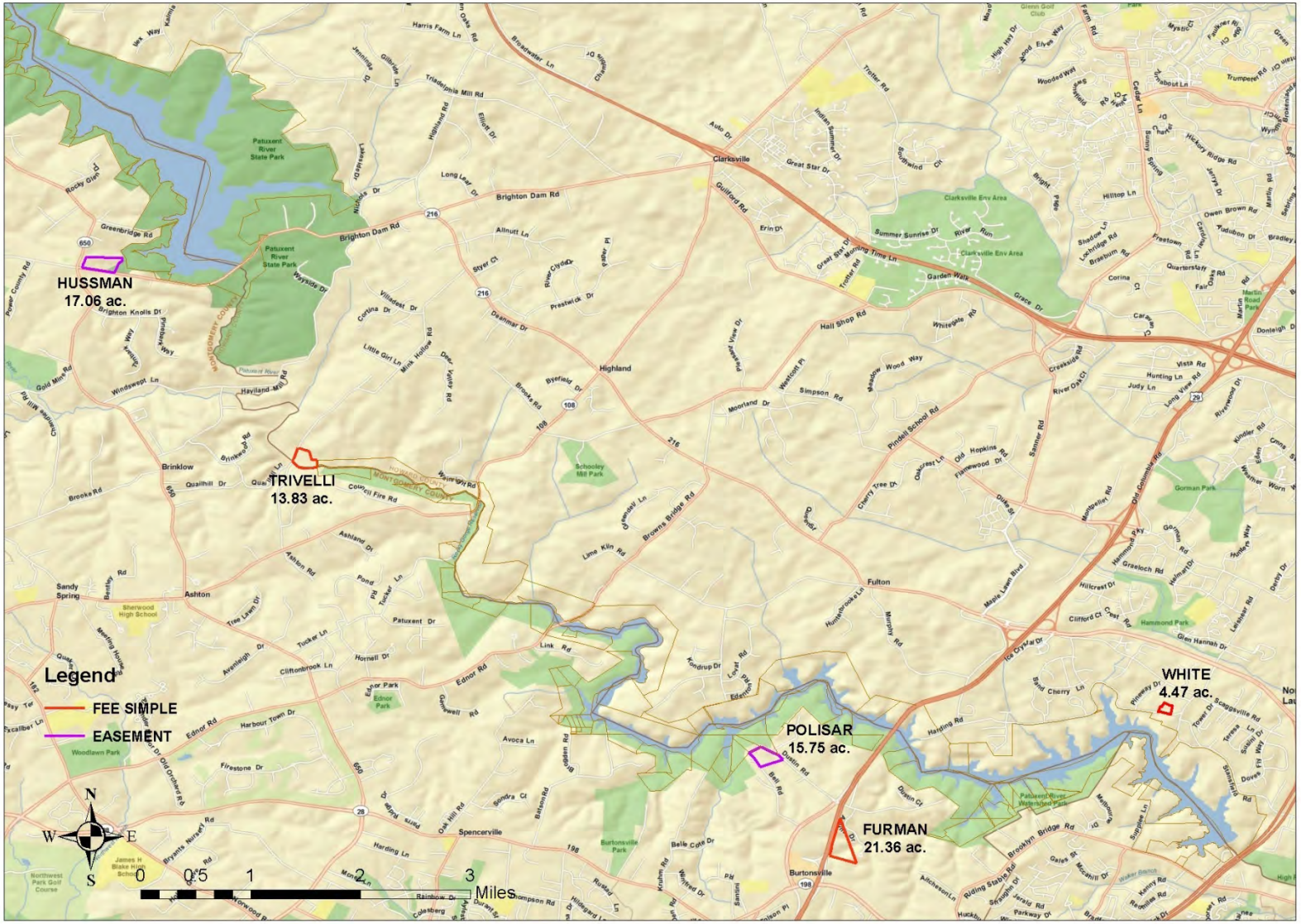
Proposed Contract SCD Position

- Office and Field-based Agricultural BMP Data Collection to Fill Current Gaps
  - Verify existing BMP data in database
  - Capture data on voluntary Ag BMPs
  - Capture data on Ag BMP opportunities
  - Utilize the opportunities in the field for additional outreach

2010 Accomplishments Towards Protecting Priority Resources

Reservoir/Water Supply

PROPERTIES AND EASEMENTS ACQUIRED BY WSSC
FOR PATUXENT RESERVOIRS WATER QUALITY PROTECTION
August 2010



Stream Systems

- Reddy Branch - M-NCPPC, MC, MSCD, DNR
  - Planted 1 ½ acres of trees to buffer stream
  - Recognized by Izaak Walton League with National Award
- Additional Planting Site at Rachel Carson Park
  - 12 acres identified for planting along Hawlings River
  - Invasive plant control efforts prior to tree planting completed Fall, 2010

Reddy Branch Stream Buffer Planting

Rural Character & Landscape

Practices Installed in 2010 with Patuxent Cost-Share Program Funds

➢Contract Signed with Horse Owner for watering system using remaining cost-share funds

Livestock Watering System: alternative water source for animals to drink rather than stream

Agricultural Efforts

- MD Dept of Agriculture Funded New Equine Specialist (Montgomery SCD) to Assist Landowners with Small-Scale Horse Operations
- Soil Conservation & Water Quality Plans
  - 25 Written or Revised (1,382 acres or ~2 sq. miles)
- Nutrient Management Plans (1,488 acres or ~ 2.3 sq. miles)
- 140 BMPs Installed

Public Awareness & Stewardship

- Many outreach events held this year
  - H2O Fest and Annual Campfire
  - Patuxent River Clean-Up
  - Rainscapes Rewards Program – 26 BMPs installed (private homeowners)

Public Awareness & Stewardship

- More outreach events
  - Volunteer Efforts
    - Izaak Walton League of America in Damascus
      - Spring Watershed Clean-Up
      - ‘Make and Take’ Rain Barrels
      - Invasive Plant Management
  - Soil Conservation Districts
    - HSCD – three events (73 attendees)
      - Horse Pasture Walks
      - Mid-Winter Meetings – targeted traditional farming
    - MSCD – one event
      - Horse Pasture Mgmt Workshop held at U of MD Research Farm in Clarksville

Work Plan Budget for 2011 (FY2012) TMDL Related Items

Priority Resource	2010 (FY 2011) Costs	2011 (FY 2012) Planned Costs
TMDL - SW Plan for Patuxent in MC	$8,000	$0
TMDL - SW Plan for Patuxent in HC	$0	**$40,000**
TMDL – Agriculture BMP Data Collection in HC and MC	$0	**$80,000**
Total TMDL Expenditures and Requests	**$8,000**	**$120,000**

Resource Protection Opportunities using Existing Funding Sources

- Forest Conservation Act - Howard
- Stream ReLeaf - Howard
- Leaves 4 Neighborhoods – M-NCPPC
- Patuxent Ag. Cost-Share Program - MSCD
- Conservation Reserve Enhancement Program (CREP) – SCDs
- Rainscapes Rewards - Montgomery
- Green Schools – Counties, WSSC

Our Partnership - Our Challenges Looking Ahead

- Addressing TMDLs for the Reservoirs
  - Funding/Resources
- Exploring Opportunities for Continued Priority Resource Protection with Funding Limitations
- Explore partnerships to plant Forest Conservation Easements in agricultural use
- Prince George's County Watershed Restoration Planning Effort (Rocky Gorge Reservoir)

Our Partnership - Our Challenges Looking Ahead (cont.)

- Oaks Landfill Reforestation Demo Project
  - Potential new project for 2011

TMDL Implementation Planning

Patuxent Reservoirs Watershed Policy Board
November 9, 2010

What is a TMDL?

- **Total Maximum Daily Load**
- **Requirement under the federal Clean Water Act**
- **Maximum amount of a pollutant that a waterbody can receive and still meet water quality standards**
- **TMDL determined through a scientific study**
- **Allocates load among ALL pollution sources:**
  - Waste water treatment plants
  - Agricultural activities
  - Urban stormwater
  - Atmospheric sources…. Natural forest land, etc.

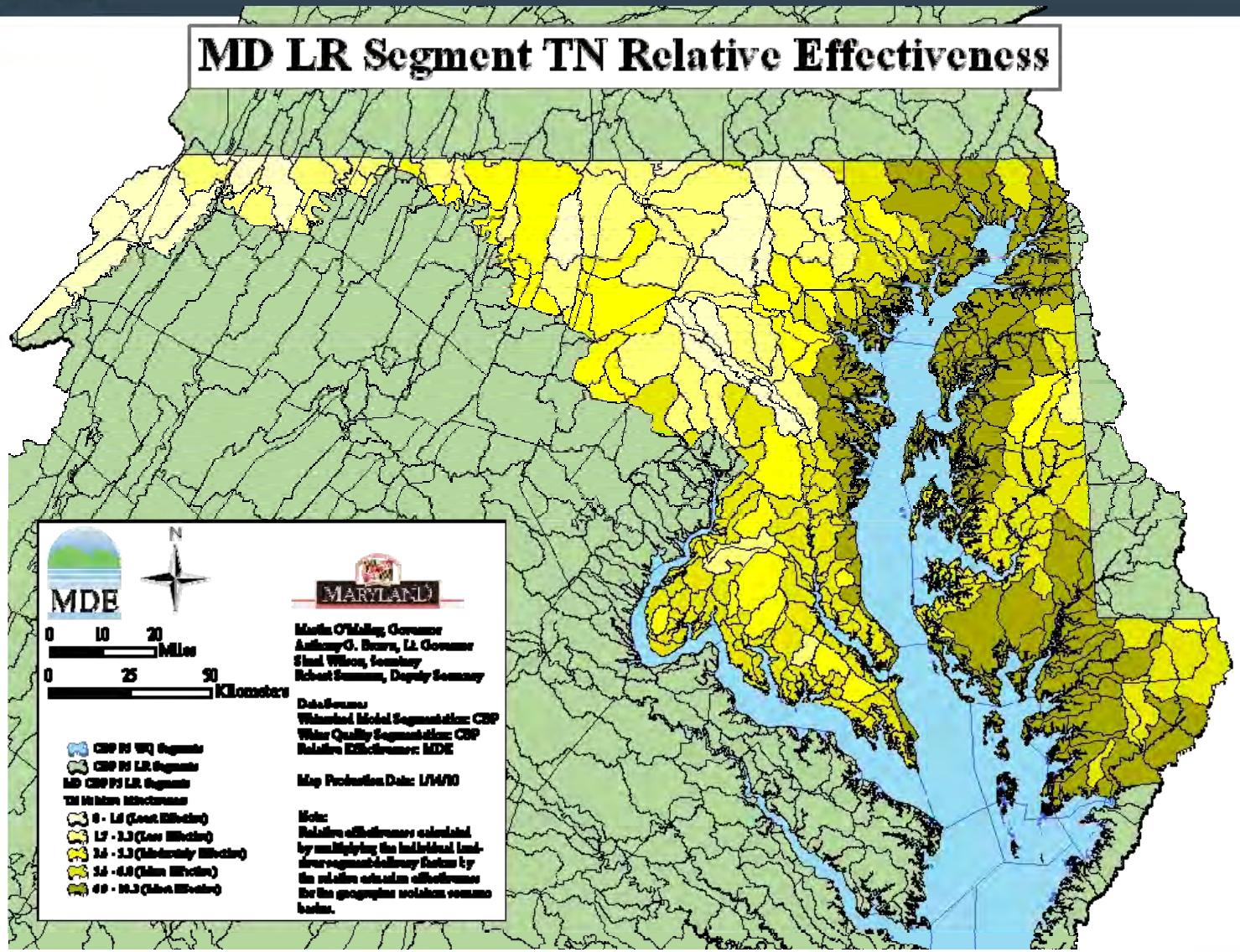
Paradigm Shift

- **TMDLs**
  - **Quantified Water Quality Management**
  - **Link actions on the ground to water quality**
  - **Accountability is Clear**
- **Bay TMDL is Raising the Visibility**

What's New About This?

- Federal "Accountability Framework" for Bay TMDL
  - Bay TMDLs:
    - New pollution reduction targets
    - Federal Requirements under Clean Water Act
  - Watershed Implementation Plans
  - 2-Year Implementation Milestones
  - Tracking & Reporting Progress
  - Federal "Consequences" for Failing to Meet:
    - Watershed Planning Deadlines
    - 2-Year Implementation Milestones

Effectiveness of Actions



TMDL Implementation Planning

Recurring Question:

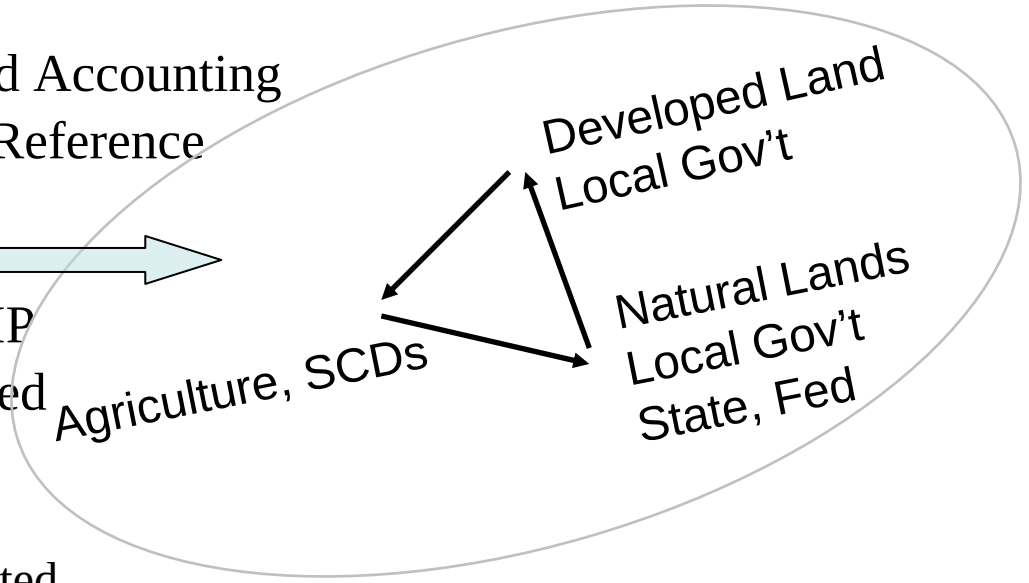
"We Have Many Planning Frameworks. How are the pieces supposed to fit together?"

Strong Local Desire:

"Avoid Another Layer of Planning."

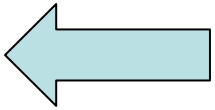
Emerging TMDL Planning Concept

- State WQ Management Plans (MD 6-digit)
  - Incorporate all below by Reference
- WIP Phases, I, II, III
  - Loading Targets by Sector, Segmentshed & Political Jurisdiction
  - BMP Reduction Analyses
  - Set Implementation Goals and Accounting
  - Incorporates all of below by Reference
- Local Watershed Plans
  - More Detail than Phase II WIP
  - In partnership with State & Fed
  - Multiple-linked Plans:
    - MS4, WRE, WRAS, Etc.
    - Linked by what? To be adopted by mutual local/State agreement.



Patuxent Reservoir Case

Patuxent River TMDL Implementation Plan

- State WQM Plan:
  - Part of *Patuxent Basin* 02-13-11
  - References plans below as “Patuxent River TMDL Implementation Plan”
- Phase II WIP:
  - Establishes Accounting & Identifies How Plans Relate
- Water Resource Element (~ 2016)
- Patuxent Reservoir Implementation Plans 
- Maryland MS4 WLA Implementation Plans:
  - Generates capital improvement plan (CIP) requests
  - Responsible for progress in meeting Stormwater WLAs
- Other Plans (SCD, Industrial SW plans, Other County plans, Etc.)

Nested Watershed Plans

Questions?

Appendix C: Annual Policy Board Meeting Summary

December 14, 2010

Dear Policy Board Member:

On behalf of the Patuxent Reservoirs Watershed Protection Group, I would like to thank you for participating in the 2010 Annual Policy Board meeting. I was encouraged to hear that there was continued commitment to protecting and enhancing the natural resources within the reservoirs watershed, especially given the difficult economic climate we all face. The informative presentation and discussion between the Technical Advisory Committee (TAC) and the Policy Board members revealed a number of opportunities and funding challenges for accomplishing our goals. Enclosed is a summary of the meeting and Policy Board actions prepared by Steve Nelson, the TAC Administrative Liaison for WSSC. If you have any comments or questions, please contact Steve at (301) 206-8072.

Since 1996, the Patuxent Reservoirs Watershed Protection Group has worked together to address water quality and resource protection goals. This continued level of cooperation will be necessary to meet the challenges presented by the Total Maximum Daily Loads (TMDLs) for phosphorus and sediment that were established for the reservoirs in 2008. Developing an implementation plan that lays out the implementation activities needed to meet the TMDLs will be an important step in this process.

The TAC leadership will soon meet to select topics for the 2011 TAC meetings. If there are any specific issues that you feel the TAC should be considering, I encourage you to work through your TAC agency representative to ensure they are part of the coming year's workload. The first meeting of the TAC in 2011 will take place on January 11. Policy Board members are also welcome to attend TAC meetings.

Sincerely,

Joshua Feldmark

Joshua Feldmark
Director, Howard County Office of Environmental Sustainability

cc: Patuxent Reservoirs Watershed Technical Advisory Committee
Steve Nelson, TAC Administrative Liaison and WSSC Environmental Scientist

Patuxent Reservoirs Watershed Protection Group

Annual Policy Board Meeting Summary

November 9, 2010

Washington Suburban Sanitary Commission, Auditorium

Policy Board:
William Barnes, Howard Soil Conservation District (represented by Brett Rutley)
Francoise Carrier, M-NCPPC
Joshua Feldmark, Howard County (represented by Ned Cheston)
Robert Hoyt, Montgomery County (represented by Meo Curtis)
Jerry Johnson, Washington Suburban Sanitary Commission
George Lechlider, Montgomery Soil Conservation District (represented by Robert Butz)
Charles Wilson, Prince George's County (represented by Beverly Warfield)

Technical Advisory Committee (TAC) Members Present:
Martin Chandler (WSSC), Meo Curtis (MCDEP), Kristal McCormick (HSCD), Bert Nixon (HCDH), Susan Overstreet (HCDPZ), David Plummer (MSCD), Mark Symborski, Chair (M-NCPPC), Debbie Weller, Vice Chair (PGCDER), Stan Wong (MCDPS)

Other Attendees:
Jim George (MDE), Gary Gumm (WSSC), Mohammad Habibian (WSSC), Kim Knox (WSSC), Jerry Maldonado (PGCDER), Angela Morales (HCDPW), Katherine Nelson (M-NCPPC), Steve Nelson (WSSC)

Welcome and Introductions
There were technical difficulties with the projection system, which caused a delay to the start of the meeting. At about 1:55 p.m., Jerry Johnson, WSSC General Manager, welcomed everyone present. After introductions from the Policy Board and audience, Meo Curtis, acting for Robert Hoyt as the Policy Board Chair turned to the TAC Chair, Mark Symborski, to begin his presentation.

TMDL Implementation Items for 2010 and Beyond
Mark Symborski reviewed the history and scope of the Patuxent Reservoirs Watershed Agreement and the more recent challenges to addressing the Total Maximum Daily Loads (TMDLs). He noted that Montgomery County was completing a TMDL Implementation Plan for the urban/suburban areas of the watershed. However, the TAC had recently identified a need for support to assist the SCDs in TMDL implementation plan development by collecting needed data for agricultural lands in the watershed prior to developing an Implementation Plan. Highlights from Mr. Symborski's presentation include:

- Identifying impediments to implementing the Priority Resource Goals.
- Reviewing the TMDLs established for the Patuxent Reservoirs.

- Emphasizing that the majority of pollutant loads in the Patuxent Reservoirs Watershed come from non-point sources.
- Introducing a draft framework for TMDL implementation to guide the process in the future.
- Estimating costs and describing potential job duties for the proposed SCD support position.

MDE Presentation

Jim George from the Maryland Department of Environment, Science Services Administration, discussed planning for TMDL implementation from MDE's perspective. Highlights from Mr. George's presentation include:

- A recent shift in focus towards addressing the Chesapeake Bay (the Bay) TMDLs.
- U.S. EPA 'Accountability Framework' for the Bay TMDLs, which includes watershed implementation plans and two-year implementation milestones. He noted that the reservoirs could be viewed as very large stormwater management ponds that retain nutrients and sediment, trapping or slowing their delivery to the Bay; consequently, they are considered beneficial for addressing Bay TMDLs.
- It is best and much less costly to protect the source water rather than treating it at the plant especially considering new issues facing drinking water suppliers such as emerging contaminants, where even less is known about the challenges and their solutions.
- The emerging TMDL planning concept, which nests watershed plans at the local, regional and State government levels.
    - For the Patuxent Reservoirs Watershed, different plans could include: State Water Quality Management Plan for the Patuxent River Basin, Phase II Watershed Implementation Plan, Water Resources Elements, NPDES MS4 Permit Implementation Plans addressing urban storm water, and other local watershed plans.

Discussion and questions followed Mr. George's presentation.

- Mr. Plummer asked if MDE would break down the pollutant loads to include State-owned park lands. Mr. George responded that the local government agencies have the most current data (land use, GIS, etc) and that a collaborative effort will work best.
- Ms. Curtis commented that the TAC needs MDE representation especially since a major focus of future TAC efforts will be TMDL implementation. Mr. George responded that this meeting will serve as a "jumping off" point for future cooperation.

2010 Annual Report of Accomplishments

Mr. Symborski continued with his presentation by summarizing the TAC's accomplishments in 2010, noting the following highlights:

- WSSC expended all of its consent decree funding for land acquisition within the Patuxent Reservoirs Watershed in 2010.
- M-NCPPC progress with planting and protecting trees along the Reddy Branch in Montgomery County. This project received a national award in 2010 from the Izaak Walton League of America.

- Agricultural efforts included 140 BMPs installed and several outreach efforts to the agricultural community.
- Community outreach efforts included the H20 Fest, Montgomery County Rainscapes Rewards Program, watershed trash cleanups, and workshops and activities by the Wildlife Achievement Chapter

Mr. Symborski then identified challenges and opportunities for the TAC efforts in the future considering limited TAC agency budgets. Two of the opportunities identified were: 1) Prince George's County efforts to identify locations for storm water management on existing development within the County's drainage to Rocky Gorge; and 2) a tree planting grant proposal by the MSCD at the Oaks Landfill in Montgomery County.

Consideration of the Proposed Work Program by the Policy Board
Ms. Curtis asked the Policy Board to support the request for the proposed position to gather needed agricultural-related data as part of a TMDL Implementation Plan. The funding request was for the FY 2012 budget currently being developed. This request generated much discussion among Policy Board members. Policy Board members noted that budgets were being maintained at level funding or even reduced; consequently, it would be unlikely that a request for a new position would be funded in the next fiscal year. Brett Rutley (HSCD) expressed hesitation endorsing the TAC request for SCD support staff without knowing more details about the position.

At the conclusion of the discussion, the Policy Board agreed that the position was needed to complete the Implementation Plan, but that no TAC agency could request the additional funds necessary. Two motions were made:

1. A motion was made to add a footnote to page 32 of the 2010 Annual Report (last page of the Work Plan Expenditures table) noting that $80,000 had been identified as necessary to fund the position, but no funding source was identified. The Policy Board unanimously approved this motion.

2. A second motion was made to endorse the TAC Work Plan with the clarification to the recent funding request per motion 1. The Policy Board unanimously approved this motion.

Administrative Business
On behalf of MC DEP Director Robert Hoyt, Ms. Curtis transferred the Policy Board Chair to Howard County, which Mr. Cheston accepted on behalf of Joshua Feldmark. Ms. Warfield thanked Howard County for accepting the chair for Prince George's County considering 2011 will be a year of transition to a new administration. Ms. Warfield noted that Prince George's County would accept this responsibility in 2012.

Mr. Cheston adjourned the meeting at approximately 3:00 p.m.

Appendix D: Policy Board Correspondence

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Isiah Leggett
County Executive

Robert Hoyt
Director

August 16, 2010

Mark A. Symborski, Chair
Technical Advisory Committee
Patuxent Reservoirs Watershed Policy Board

Dear Mr. Symborski:

As the Chair of the Policy Board this year, I have appreciated the update letters from the Technical Advisory Committee (TAC) on meeting topics and progress being made on protecting the Patuxent Reservoirs and their watershed. I have noted much discussion on the implications of the established TMDLs on the related activities of the TAC agencies and other stakeholders.

In my capacity as this year's Chair, I am expressing my support for the TAC to work with all stakeholders to develop an implementation plan to meet the TMDLs. A first step would seem to be revisiting the implementation items and timelines established through the Patuxent Reservoirs Watershed Protection Group Action Plan and Priority Resources for the year 2004 (attached). The TAC should evaluate the continued relevance of these items and if the timelines have not been met, revise the timelines for relevant items. I know that TAC members Meo Curtis of Montgomery County and Susan Overstreet of Howard County Planning and Zoning have advocated reconsideration of these items as a key first step in developing the TMDL implementation plan.

In Montgomery County, we are moving forward with an implementation strategy to meet our MS-4 permit requirements for our watersheds. For the Patuxent Reservoirs Watershed, our plan will address the County's wasteload allocations assigned by MDE. This plan will include an inventory of specific projects as well as focus areas for programmatic best management practices. Anticipated completion date is late fall 2010, and when complete, our plan can be incorporated into the overall Patuxent Reservoirs Watershed TMDL implementation Plan.

We anticipate that restoring riparian buffers and increasing resident environmental stewardship will be key components of our plan. Both of these were identified as high priority elements for the Action Plan. I encourage the TAC agencies to evaluate the pollutant loadings reductions that would be associated with meeting the riparian buffer goals in the Action Plan. I hope that my fellow Policy Board members will support this approach along with expecting a briefing on the results of the TAC's analysis at this year's Policy Board meeting.

Office of the Director

255 Rockville Pike, Suite 120 • Rockville, Maryland 20850 • 240-777-7770 • 240-777-7765 FAX
www.montgomerycountymd.gov

I commend you and the other TAC members for your continued dedication to protecting the Patuxent Reservoirs watersheds and their aquatic resources. I look forward to receiving this year's Annual Report and Action Plan for the coming year at our Policy Board Meeting this fall.

Sincerely,

Robert G. Hoyt, Director
Department of Environmental Protection
Chair, Patuxent Reservoirs Watershed
Policy Board

Attachment

cc: Policy Board
Steve Nelson, WSSC, TAC Liaison

TABLE 1. PRIORITY RESOURCES CHART

Resource: Reservoir/Water Supply

Issue: The public need for a sufficient quantity of safe and high quality drinking water calls for adopting a proactive and multi-barrier approach, which starts with utilizing raw water of the highest quality and sustainable quantity, now and in the future. To achieve this for the Patuxent water filtration plant we need to control reservoir eutrification, reduce Disinfectant By-Products (DBPs) precursors, and limit reservoirs capacity loss.

Measures	Goals	Implementation Items	Time Line	Responsible Partner
Chlorophyll-a	• Chl-a not to exceed a 10 ug/l mean during the growing season and not to exceed a 30 ug/l instantaneous concentration	• Perform reservoir monitoring for Chl-a, DO, and TOC during the growing season	Ongoing	WSSC
Dissolved oxygen	• DO not to fall below 5 mg/l at any time in the epilimnion, not to fall below 5 mg/l in the entire water column during completely mixed periods, and not to fall below 10% saturation at any time in the hypolimnion	• Enhance and fine tune model reliability for watershed management.	Ongoing	WSSC/MDE
			2006 - 2008	TAC
		• Develop and begin implementation of a plan to reduce nutrients, based on model/TMDL requirements.		
Suite of water quality parameters in reservoir monitoring protocol	• Five year data trend analysis for other monitored water quality parameters shows no net deterioration	• Update trend analysis for reservoir water quality parameters on a 5-year cycle	2009	WSSC
Total organic carbon (TOC)	• TOC – 20% annual reduction goal, with 40% reduction for peak quarter at the location where water is withdrawn for treatment purposes	• Perform bathymetric survey of reservoirs at 10 year intervals or less	2006	WSSC
Sediment	• Sediment accumulation rate not to exceed previous years			

TABLE 1. PRIORITY RESOURCES CHART

Resource: Terrestrial Habitat

Issue: Preservation of forests provides water quality benefits by reducing sediment and nutrient loading of streams from surrounding land uses.

Measures	Goals	Implementation Items	Time Line	Responsible Partner
Forest Cover	• Maintain and increase forest cover	• Encourage private property owners to participate in tree planting programs.	Ongoing	TAC
Forest Connectivity	• Increase forest interior habitat	• Ensure publicly owned parkland and open space is forested to the maximum extent possible.	2006 - 2023	TAC
Forest Size	• Improve forest connectivity (larger forest tracts are connected by forest corridors	• Target reforestation and forest conservation programs to increase forest connectivity and forest interior habitat.	Ongoing	TAC
Forest Diversity	• Ensure diverse forest communities (communities contain a variety of species and ages)	• Develop a forest management plan to ensure forest diversity and long-term natural regeneration, identifying and addressing potential problems such as excessive deer populations, invasive species and human impacts.	2006 - 2013	TAC
Forest Sustainability	• Ensure forests are self-sustaining and capable of long-term natural regeneration	• Implement deer management programs.	Ongoing	TAC
		• Implement strategies for control of invasive plants.	2006 - 2008	TAC

TABLE 1. PRIORITY RESOURCES CHART

Resource: Stream System

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

Measures	Goals	Implementation Items	Time Line	Responsible Partner
Buffer Corridor width and continuity	• A minimum 35-foot riparian buffer on all streams on properties that were developed prior to current stream buffer requirements	• Establish and maintain minimum 35' riparian buffers on all publicly-owned land	2006 -2013	WSSC, MNCP&PC, HC,MC
		• Accelerate programs to establish and maintain streamside buffers to a minimum of 35' on privately-owned lands to the maximum extent possible	2006 - 2023	WSSC, MNCP&PC, HC, HSCD, MC, MSCD
Stream bank and stream channel stability	• No areas of "severe" or "very severe" stream bank erosion based on the Stream Corridor Assessments and other locally collected data.	• Establish and maintain streamside fencing programs to keep all livestock out of streams to the maximum extent possible	2006 - 2013	HSCD, MSCD
		• Address significant areas of stream bank and channel instability through stream restoration projects and stormwater retrofits to the maximum extent possible	2006 - 2013	HC,HSCD MNCP&PC, MC

TABLE 1. PRIORITY RESOURCES CHART

Resource: Aquatic Biota

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

Measures	Goals	Implementation Items	Time Line	Responsible Partner
IBI - Index of Biological Integrity	• No subwatershed with a benthic IBI indicating "fair" or "poor" condition	• Aggressively pursue cost-share funds to construct agricultural BMPs, stream restoration, and stormwater retrofit projects to address factors contributing to degraded biological integrity	2006 - 2023	HC,HSCD MC,MSCD MNCP&PC
		• Mitigate runoff impacts from land use changes	2006 - 2023	HC,MC MNCPPC
	• Preserve conditions in subwatersheds with "excellent" and "good" benthic IBIs	• Protect existing habitat and water quality of streams in high-quality subwatersheds to the maximum extent possible by pursuing programs to maintain or increase existing land cover	2006 - 2023	HC,HSCD MC,MSCD MNCP&PC

IBI - Index of Biological Integrity, also referred to as Index of Biotic Integrity in MBSS publications

TABLE 1. PRIORITY RESOURCES CHART

Resources: Rural Character and Landscape

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

Measures	Goals	Implementation Items	Time Line	Responsible Partner
Agricultural Preservation Enrollment • Total Acres Enrolled • Number of Farms Enrolled Agricultural Demographics • Acres of Ag Land • Market Value of Ag Production • Size of Farms • Types of Farms Open Space and Parkland Acquisition and Easement Programs • Acres of open space land preserved by non-agricultural easements or acquisition Participation in agricultural conservation programs and percent of conservation plans that are implemented	Preserve the agricultural and rural nature, and open space of the watershed Create a landscape that is protective of water quality	Continue zoning and land use policies in the watershed to maintain rural character	Ongoing	HC/MNCP&PC
		Continue easement acquisition through agricultural land preservation programs	Ongoing	HC/MC
		Encourage participation in other conservation and open space preservation programs	Ongoing	HC/MC MNCP&PC
		Continue agricultural economic development programs	Ongoing	HC/MC
		Encourage enrollment in federal and state nutrient management and stream protection programs	Ongoing	HSCD/MSCD
		Promote greater utilization of funding provided by the Res. Protection Group to supplement federal and state ag programs	Ongoing	HSCD/MSCD
		Utilize effective open space land management practices that are beneficial to water quality	Ongoing	HC/MNCP&PC WSSC
		Create and routinely update an electronic map based system to track BMP implementation	2006 - 2013	HSCD/MSCD

Note: Measures for acres of agriculture and market value of agricultural production were added to agricultural demographics to provide a more complete picture of the agricultural industry. Number of acres tilled is not directly related to agricultural demographics nor is this information readily available information, so this measure was deleted.

TABLE 1. PRIORITY RESOURCES CHART

Resource: **Public Awareness and Stewardship**

Issue: Awareness and support by residents and resource users

Measure	Goals	Implementation Items	Time Line	Responsible Partner
Residents participating in stewardship activities	• Citizen action to improve watershed resources – see evidence of watershed friendly activities and practices • 10 to 15 stewardship offerings per year	• Identify citizen groups throughout watershed and be available for presentations upon request • Organize stewardship events and participate in other community events • Recognize good stewards through annual awards • Form "Friends of the Watershed" group of citizen volunteers that will take on tasks such as newsletter preparation and some Earth Month planning	2006-2008 Ongoing 2006 - 2008 2006 - 2008	WSSC HC,MC,PG MNCP&PC HSCD, MSCD
Schools participating in mentoring	• School and community involvement – 20 participating Green School partners by end of 2003 and 5 additional schools participating each year thereafter until all 43 are attained	• Continue and expand Green Schools Mentoring Partnership	Ongoing	WSSC, HC,MC,PG MNCP&PC HSCD, MSCD
Active support by elected officials	• Routine communication with elected officials	• Routine communication with elected officials	2006 - 2008	MC,PG,HC MNCP&PC
Routine coverage by media	• Expanded media coverage of watershed events – print, radio and TV	• Increase communication with media • Support regional efforts to establish media-savvy campaigns that emphasize water quality protection	2006 - 2008	WSSC HC,MC,PG MNCP&PC

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

TABLE 2. PATUXENT RESERVOIRS WATERSHED FUNDING FY2005 and 2006					
TASK DESCRIPTION	**PRIORITY RESOURCES**	**ITEM REQUIRING RESOURCES**	**AGENCY**	**FY 2005**	**FY 2006 (proposed)**
1. Reservoir and tributary water chemistry monitoring	Reservoir/Water Supply	Reservoir monitoring and lab analysis	WSSC	In-kind services	In-kind services
		5 USGS watershed flow gauge stations	WSSC	$42,000	$44,000
2. Tributary biological and habitat monitoring	Stream System Aquatic Biota	Conduct second round of biomonitoring program in the reservoir watershed	HC	$60,000	$0
		Upper Patuxent and Hawlings River	MC	In-kind services (data analysis and report writing)	In-kind services (data analysis and report writing)
		Lower Patuxent	MC	In-kind services (monitoring)	In-kind services (data analysis and report writing)
		Hawlings River Restoration Monitoring	MC	$5,000	$0
3. Stream corridor management	Stream System Reservoir/Water Supply	Cherry Creek Study and Implementation	HC	$60,000	$150,000
		Hawlings River Project Implementation	MC	$66,000 (local match)	$0
		Hillsborough Low Impact Development Retrofit	PG	$15,000	$0
4. GIS-based planning level model and WSSC watershed studies	Reservoir/Water Supply	Complete reservoir eutrophication model and data trend analysis and support ongoing model enhancement	MDE WSSC	Budget not allocated at this time $30,000	Budget not yet developed
		Enhance preliminary model for watershed	PG	$15,000	$0
5. Agricultural management local cost-share initiative	Stream System Aquatic Biota Rural Character and Landscape Reservoir/Water Supply	Funding for local cost-share program	HC, MC, WSSC	no additional funding	no additional funding
		Program oversight for voluntary implementation of agricultural BMPs	HSCD, MSCD	In-kind services	In-kind services

TABLE 2. PATUXENT RESERVOIRS WATERSHED FUNDING FY2005 and 2006					
TASK DESCRIPTION	**PRIORITY RESOURCES**	**ITEM REQUIRING RESOURCES**	**AGENCY**	**FY 2005**	**FY 2006 (proposed)**
6. Sediment Study	Reservoir/Water Supply	Perform bathymetric survey to assess delta formation at selected tribs and track sediment accumulation in the reservoirs	WSSC	$28,000	$24,000
7. Forestry Management and Recreational Use Study	Reservoir/Water Supply Terrestrial Habitat Stream System Aquatic Biota Rural Character and Landscape Public Awareness and Stewardship	Study on status and threats to sustainable forests on WSSC properties including recreational uses	DNR WSSC	$9,800 (Rec. Use survey, Federal Grant) In kind	$0 $0
8. Public outreach and involvement initiatives	Reservoir/Water Supply Terrestrial Habitat Stream System Aquatic Biota Rural Character and Landscape Public Awareness and Stewardship	Earth Month, Annual Policy Board Meeting and other outreach activities	All TAC agencies	In-kind services $1,900 HC $1,000 WSSC $400 MC	In-kind services $400 HC $400 MC
		Green Schools Mentoring Partnership	WSSC and MC	In-kind services (WSSC and MC)	$1,000 WSSC In-kind services (WSSC and MC)
9. Complete Annual Report	Reservoir/Water Supply Terrestrial Habitat Stream System Aquatic Biota Rural Character and Landscape Public Awareness and Stewardship	Compilation and editing	All TAC Agencies	In-kind services	In-kind services
		Printing and distribution	WSSC	$200	$200
TOTAL FUNDING*				$334,300	$219,000

* Totals do not include $69,000 USFS grant to DNR for WSSC Forestry Study, $5,300 Chesapeake Bay Trust grant, $1,000 Chesapeake Water Environment Association contribution to WSSC for Green School Mentoring Partnership, and $50,000 in funds for FY'06 and '07 for sediment study. MDE contribution for the GIS-based planning level model has not been finalized. For FY2006, there has been an additional request for $500,000 to accelerate implementation and for two dedicated full-time staff in the WSSC budget for reservoir/water supply protection.

MONTGOMERY COUNTY PLANNING DEPARTMENT
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

September 28, 2010

Mr. Robert G. Hoyt
Department of Environmental Protection
Chair, Patuxent Reservoirs Watershed Policy Board
255 Rockville Pike, Suite 120
Rockville, Maryland 20850

Dear Mr. Hoyt:

Thank you for your recent letter of support for the Patuxent Reservoirs Watershed Technical Advisory Committee (TAC). As you noted, the TAC has devoted much attention to TMDL implementation issues over the current year. This principal focus was chosen late last year in view of the existing TMDLs for the Patuxent Reservoirs.

Your letter addressed some of the ideas and directions that were discussed at the TAC's July meeting, and the following outlines that discussion and our general timeframe for handling the issues you raised in your letter.

At the TAC's meeting in July:

- Personnel from Baltimore County's Department of Environmental Protection and Resource Management (DEPRM) presented their comprehensive framework for TMDL implementation through Small Watershed Action Plans (SWAPs). DEPRM is the lead agency and coordinator of this framework which, through oversight and stakeholder committees for each SWAP, covers all components of TMDL implementation, including both point sources, or Waste Load Allocations (WLAs), and non-point sources, or Load Allocations (LAs). As a result, DEPRM is the lead agency for coordinating Baltimore County's reservoir TMDL implementation plans, not the reservoir technical committees.
- TAC members decided to revisit the Priority Resources Charts developed some years ago, and assess them in light of important developments and needs including implementing the reservoir TMDLs, the Patuxent Interim Watershed Management Report completed by Versar, Inc., and the ongoing impediments to TMDL implementation.

(See attachment for the July Meeting Update.)

At the September TAC meeting we:

- Planned for the Annual Report and the Policy Board meeting including:
  - An assessment of TMDL implementation needs, including a review of the Priority Resources Charts in light of TMDL issues, for incorporation into the Annual Report, and to be presented at the Policy Board meeting.

TMDL Implementation Issues:

Baltimore County seems to be exceptional in having one agency (DEPRM) that is able to take the lead in coordinating all components of TMDL implementation, even though DEPRM itself is only responsible (through its MS4 Permit) for actions to address the stormwater WLA.

Most jurisdictions, however, do *not* have a similar comprehensive framework for coordinating TMDL implementation. These jurisdictions have or will soon have MS4 permits that will cover the stormwater WLA, but implementing the LA and coordinating it with the WLA actions and outreach are still open questions.

Because the Patuxent Reservoirs Watershed has a large agricultural component, the TAC agreed in July that a framework is needed for coordinating and integrating LA and WLA implementation actions into a comprehensive implementation plan to address the reservoir TMDLs. It seems unlikely, however, that a single TAC agency will have the resources needed to take the lead in creating and coordinating such a framework, as in Baltimore County. Nevertheless, the TAC believes that it has the local agency stakeholders needed for it to function as an oversight committee for TMDL implementation, although increased State participation will also be important. Developing and implementing the plan, however, will depend on changes to participating agency work programs and the allocation of additional resources. Until a TMDL Implementation Plan is developed, the Priority Resources goals will continue to guide the TAC, but the continuing problem of insufficient agency resources to realize these goals will also need to be addressed.

Early this year, the TAC recognized the need for a TMDL Implementation Committee to review the Priority Resource Charts, with a focus on the issues and needs in developing a TMDL Implementation Plan. The TAC, however, voted to wait until the Montgomery County MS4 implementation plan was ready, as recommended by DEP. Due to unforeseen delays that plan is not expected until later this fall. As a result, the formation of a TMDL Implementation Workgroup will need to be taken up again in the coming year.

Riparian Buffers:

- An evaluation of pollution loading reductions that would be associated with meeting the riparian buffer goals for the Patuxent Reservoirs Watershed, mentioned in your letter, will indeed be an important part of an overall TMDL implementation plan for the Patuxent Reservoirs. However, with the limited time before the upcoming Policy Board meeting and the work on the Priority Resources Charts already planned, the TAC will not be able to consider such a load reduction analysis before next year. An evaluation of riparian buffers will probably be best handled, along with other potential WLA and LA actions, by a TMDL Implementation Workgroup, when it is formed.

Although unexpected delays prevented the formation of the TMDL Implementation Committee as planned, the TAC believes that groundwork has been laid this year that will provide a more firm foundation in the coming year for making substantive progress toward a reservoirs TMDL implementation plan. We look forward to working with the State and other stakeholders in crafting a suitable framework and process for accomplishing that goal.

Thank you for your continued support and encouragement of the TAC and its work. The members of the TAC are looking forward to presenting the TAC's findings to the Policy Board in November.

Sincerely,

Mark A. Symborski

Mark Symborski
Chair, Patuxent Reservoirs Watershed
Technical Advisory Committee

MS:ss
Attachment

cc: Patuxent Reservoirs Watershed Protection Group Policy Board
Steve Nelson, WSSC, TAC Administrative Liaison ✓

March 3, 2010

Dear Policy Board Member:

On January 13, 2010 the Patuxent Reservoirs Watershed Protection Group, Technical Advisory Committee (TAC) held its initial meeting of the year. Here are a few items from this meeting that I would like to bring to your attention.

- TMDL implementation was the main topic chosen by the leadership for this meeting. The TAC discussed forming a TMDL implementation workgroup, but it was decided not to form this workgroup until Montgomery County DEP receives a draft report in April, 2010, which will address TMDLs as required in their MS4 permit.
  - Mark Symborski noted that the TMDLs for the Patuxent Reservoirs would be a good case study to address TMDLs, including non-point sources, from an inter-jurisdictional approach.
  - Debbie Weller added that Prince George's County's DER will begin to assess potential restoration options in the County's portion of Rocky Gorge Reservoir Watershed early in 2010.

- Meo Curtis (MC DEP) provided the TAC with an update to Montgomery County's MS4 permit requirements that address TMDL implementation relevant to the Patuxent Reservoirs Watershed. Highlights from the presentation include:
  1. The County's strategy to satisfy permit requirements is to emphasize a watershed approach. There are 8 watersheds, one of which is the Patuxent Reservoirs Watershed (PRW),
  2. Goals of this effort include: protect good watersheds, restore poor watersheds; watershed ratings all based on results from biological data collected county-wide,
  3. New permit requirement: an additional 20% of uncontrolled impervious surface to manage in the next 5 year permit cycle (in addition to the 10% under the previous permit),
  4. New permit requirement: The County must meet the stormwater portion of approved TMDLs, including the PRW, with timelines and estimated costs associated with decreasing pollutant loads, and
  5. Timeline: a final report on the watershed restoration plan strategy is expected by end of October, 2010.

- Martin Chandler (WSSC) informed the TAC that Versar, Inc. completed their report titled *Patuxent Reservoirs Interim Watershed Management Report*. Dr. Chandler commented that a specific watershed management plan, which addresses the reservoir TMDLs, will require a larger funding source than what was available for this report.

- Katherine Nelson (M-NCPPC) reported that the next tree planting at the Reddy Branch Stream Valley Park in Montgomery County will occur during the winter of 2010.

- Ms. Nelson discussed a new funding source by the MD Department of Natural Resources called the *Natural Filters Strategy on Public Lands.*
  - There are two parts to this program. The first part of this program is to establish natural filters (e.g., forest, grass, and wetland types) on state owned land, and the second part is to establish filters on land owned (or under easement) by local government agencies to reach DNR's goal of 6,100 acres by the end of 2011.
  - Ms. Nelson noted that this program may provide the funding needed to reforest land within the largest unforested forest conservation easement in the county, which is located in the Reddy Branch watershed.
  - Ms. Nelson will draft a letter to State DNR for the Policy Board Chair to sign, stating the Board's support to proceed with submitting a grant proposal to reforest this land within Reddy Branch via the Natural Filters Program.

- Sandy August of WSSC's Communications and Community Relations Office provided a summary of last year's Fall Campfire at Brighton Dam as well as upcoming activities.
  - The Fall Campfire was well attended in spite of weather conditions. Ms. August estimated that 400-500 people attended. Informational posters on stewardship and water resource protection were well used by the attendees.
  - This year's H_2O Fest, *Thinking Green to Protect Blue* has been scheduled for Saturday, April 24, 2010. Planning is well underway for this community outreach event, which will also include the Charity Bike Ride as a lead-in activity for the festival.

The next TAC meeting is scheduled for Tuesday, April 13, 2010 at 1:30 pm. WSSC's Sweitzer Lane location in Laurel will once again serve as our meeting location. **The theme of this meeting will be agriculture and its crucial role in addressing TMDLs for the Patuxent Reservoirs.** We have invited a representative from the MD Department of Agriculture. We invite the Policy Board to attend the upcoming meeting in April.

Thank you for your continued support of the TAC.

Sincerely,

Mark A. Symborski

Mark A. Symborski, Chair
Technical Advisory Committee

Technical Advisory Committee

Gul Behsudi, MDE ..... *Meosotis Curtis, MCDEP* ..... *Martin Chandler, WSSC*
Jerry Maldonado, PGDER ..... *Kristal McCormick, HSCD* ..... *John McCoy, MD-DNR*
Kenneth Clare, PGDH ..... *Bert Nixon, HCHD* ..... *Susan Overstreet, HCP&Z*
David Plummer, MSCD ..... *Dwight Dotterer, MDA* ..... *Howard Saltzman, HCDPW*
Katherine Nelson, M-NCPPC ..... *Stan Wong, MCDPS* .....

June 16, 2010

Dear Policy Board Member:

On April 13, 2010 the Patuxent Reservoirs Watershed Protection Group's, Technical Advisory Committee (TAC) held its second meeting of the year, which focused on agriculture and its important role in Total Maximum Daily Load (TMDL) implementation. Here are a few items from the meeting that I would like to bring to your attention.

- The Maryland Department of the Environment (MDE) issued Montgomery County's Municipal Stormwater (MS-4) Permit on February 16, 2010, which has started the one-year deadline for completing the Implementation Plan components of this permit, including the waste load (point-source) portions of the sediment and phosphorus TMDLs for Triadelphia Reservoir and the phosphorus TMDL for Rocky Gorge Reservoir.
- Howard County's Water Resources Element was approved in April and will be effective in June 2010; Montgomery County's Water Resources Functional Plan is targeted for approval in July, and for adoption in September, 2010.
- David Plummer (MSCD) and Bob Ensor (HSCD) updated the TAC on Soil Conservation District (SCD) activities:
  - There is a trend towards horse operations and horticulture and away from traditional farming in the Patuxent Reservoirs Watershed (PRW).
  - HSCD recognizes that few horse operations on properties of 5-15 acres are currently cooperating with HSCD; consequently, this portion of the equine community should be targeted.
  - A recent HSCD survey of horse owners revealed: 1) one-third of responders do not have enough land to support their horses, which leads to pasture degradation and soil erosion, and 2) one of their greatest needs is manure management. Both of these issues are significant problems in the watershed.
  - The Patuxent Reservoirs Nutrient Reduction Initiative grant proposal (submitted in 2009 to the Chesapeake and Atlantic Coastal Bays 2010 Trust Fund but not funded) would significantly reduce nitrogen loads for a relatively low cost/pound of nitrogen removed (about $6/pound).
- John Rhoderick from the Maryland Department of Agriculture (MDA) provided the TAC with a brief overview of MDA's role in assisting MDE with the agricultural portion of non-point source load allocations associated with TMDLs:
  - MDA currently funds five equine specialists and has placed two in central MD including Howard and Montgomery counties.
  - The upcoming Chesapeake Bay TMDLs may have an impact on the PRW because of required nitrogen reductions, in addition to existing reservoir TMDLs for phosphorus and sediment.

- More than 50% of phosphorus load reductions goals for agriculture have been met for the Patuxent Reservoirs, but addressing the remaining portion of the goals will be difficult because much of the watershed is in non-traditional agriculture, where it is more difficult to implement Best Management Practices (BMPs).
- Reduction in MDA employees has been and will continue to be a real challenge to maintain current programs.
- It is unclear how the non-point source component of TMDLs will be addressed by MDA.

- The TAC discussed the future of the PRW Agricultural Cost Share Program:
  - For MSCD, the lack of staff available to reach out to the public has been the real challenge with using this funding source. Both amendments to the original MOU that limited its scope remain an impediment to its use. Removing some restrictions would improve this funding source to make it more useful.
  - For HSCD, the PRW Cost-Share Program is almost depleted partly because adequate staffing has enabled its use.

The next TAC meeting is scheduled for Thursday, July 22, 2010 at 1:30 pm. WSSC's headquarters on Sweitzer Lane in Laurel will once again serve as our meeting location. **The theme of this meeting will be how to more effectively manage the watershed in addressing TMDLs for the Patuxent Reservoirs.** We invite the Policy Board to attend the upcoming meeting in July.

Thank you for your continued support of the TAC.

Sincerely,

Mark A. Symborski

Mark A. Symborski, Chair
Technical Advisory Committee

September 28, 2010

Dear Policy Board Member:

On July 22, 2010 the Patuxent Reservoirs Watershed Protection Group's Technical Advisory Committee (TAC) held its third meeting of the year, which focused on addressing nutrient and sediment Total Maximum Daily Loads (TMDLs). Here are a few items from the meeting as well as an update from recent outreach events held earlier this year that I would like to bring to your attention.

- Ms. Francoise Carrier will be the new Policy Board member from M-NCPPC replacing Dr. Royce Hanson.
- The Montgomery County Council approved the Water Resources Functional Plan; formal adoption is pending.
- Prince George's County Department of Environmental Resources began its assessment of its portion of the Rocky Gorge Reservoir watershed to identify opportunities for watershed restoration of urban land areas near West Laurel. The goal is to provide a draft document of the plan by late autumn or early winter of 2010.
- Meo Curtis briefed the TAC on progress with creating plans to address TMDLs as required by the Municipal Stormwater Permit issued to Montgomery County:
  - Large land areas (e.g., land zoned for agriculture, and WSSC & M-NCPPC lands) are *not* covered by this permit, but County public school properties are covered by the permit.
  - Increasing management of runoff from impervious areas is the main driver for this permit.
  - Montgomery County Executive and Council have approved a Capital Improvement Program budget for stormwater retrofit projects to meet impervious area runoff management requirement ($86M over five years).
- Baltimore County Government personnel informed the TAC of their comprehensive approach to creating and implementing watershed management plans, which incorporate TMDLs and other priorities (e.g., stormwater permit conditions).
  - The Department of Environmental Protection and Resource Management (DEPRM) is the lead agency and coordinator of this framework which, through oversight and stakeholder committees for each watershed plan, covers all components of TMDL implementation, including both point sources, or Waste Load Allocations (WLAs), and non-point sources, or Load Allocations (LAs). As a result, DEPRM is the lead agency for coordinating Baltimore County's reservoir TMDL implementation plans, not the reservoir technical committee.

- TMDL Implementation Issues
  - TAC members discussed the need for a comprehensive framework for TMDL implementation and decided to revisit the Priority Resources Charts developed some years ago. TAC members are planning to reassess the charts in light of important developments and needs including implementing the reservoir TMDLs, the Patuxent Interim Watershed Management Report completed by Versar, Inc., and the ongoing impediments to TMDL implementation.
- Public Outreach and Stewardship Events:
  - WSSC held its annual H2O Fest on April 24, 2010 with a focus on public outreach and education. It was attended by about 300 people including 29 presenters (several from TAC agencies).
  - Public schools within the watershed with Green School Certification assisted with a wetland planting project, deployed oyster reef balls in the Bay, and toured the Brighton Dam area.

Thank you for your continued support of the TAC.

Sincerely,

Mark A. Symborski, Chair
Technical Advisory Committee

Appendix E: Technical Advisory Committee Meeting Agendas and Summaries

Patuxent Reservoirs Watershed Protection Group
Technical Advisory Committee

Meeting Summary

January 12, 2010

TAC Members Present
Martin Chandler (WSSC), Meo Curtis (MCDEP), Dwight Dotterer (MDA), Kristal McCormick (HSCD), Jerry Maldonado (PGCDER), Katherine Nelson (M-NCPPC), Susan Overstreet (HCDPZ), David Plummer (MSCD), Howard Saltzman (HCDPW), Mark Symborski (M-NCPPC)

TAC Members Absent
Gul Behsudi (MDE), Ken Clare (PGHD), John McCoy (DNR), Bert Nixon (HCHD)

Other Attendees
Sandy August (WSSC), Tom Devlin (PGHD), Mohammad Habibian (WSSC), Kim Knox (WSSC), Angela Morales (HCDPW), Steve Nelson (WSSC), Debbie Weller (PGCDER)

Administrative Business

- The meeting was called to order at 1:45 pm by 2010 Chair Mark Symborski for Chair David Plummer.
- There were no comments or corrections regarding the meeting summary for the September 2009 TAC meeting; the minutes from that meeting were then approved unanimously.

Work Program Updates

Public Outreach Update
Ms. Sandy August provided a summary of last year's Fall Campfire at Brighton Dam as well as upcoming activities.

2009 Fall Campfire at Brighton Dam

- The Fall Campfire was well attended in spite of weather conditions. Ms. August estimated that 400-500 people attended. Kristal McCormick and WSSC's Director of Communications and Community Relations Jim Neustadt spoke at this event.
- Members of a local Boy Scout Troop from Brookeville were enthusiastic helpers for this event.
- Informational posters on stewardship and water resource protection were well used by the attendees.
- Ms. August also noted that this event has become somewhat of a tradition among people in the local community. Ms. August commented that most of the attendees lived close to the Brighton Dam area likely within the Patuxent Reservoirs Watershed.

2010 H2O fest

Planning for the 2010 H2O fest planning has begun, which has been scheduled for Saturday 24 April 2010.

- Twelve presenters have been confirmed to date.
- WSSC's Production team will again host a tour of Duckett Dam
- Another method of advertising this event may include street signs
- A large 30x60 tent has been secured for the event (in addition to 12 small tents)
- It is yet to be determined if food sales will be allowed at this event.

ACTION ITEMS:

1. **Ms. August asked the TAC to ask for volunteer from their agencies to attend the H2OFest, and to send her notification via email.**
2. **Ms. August also needs sponsors for the event as IKEA will not participate this year; Whole Foods is one possible sponsor.**

Other 2010 Planned Activities

- Ms. August and Kim Knox are working to plant trees (about 10-12 trees/school) at a few schools in the area. To date, three schools have responded including High Point High School and Bonds Mill and Calverton Elementary Schools.
- Ms. Knox added that funding for this effort will be provided by the Prince George's County Forestry board.

Green School Certification

- Ms. Knox showed the TAC a map of the Green School locations within the Reservoirs Watershed and beyond. Ms. Knox asked for locations of schools in the area. Ms. Curtis responded that the recently completed report by Versar, Inc. included a map of school locations. Katherine Nelson will also help locate potential Green Schools both in and just outside the watershed.
- Mr. Symborski asked Steve Nelson to provide Ms. Knox with the requested information.

Scotts Cove erosion control project idea

- Ms. Knox also reported on a proposal to implement erosion control measures in the Scotts Cove area. She commented that University of Maryland graduate students will provide conceptual designs for this project during the fall semester, and a meeting is planned to develop concepts for solutions. She added that this project still needs to be funded. Residents of the local community, some of whom belong to the ILWA, will be invited to provide their input.

Reddy Branch Planting Project Update

- Katherine Nelson provided an aerial photo of the planting plan along Reddy Branch. The next planting is planned for winter 2010.
- Angela Morales asked why this location is a priority area. Ms. Nelson responded that it was a priority because: 1) it is public land, 2) a Forest Conservation easement exists on this land, and 3) there is likely stream channel degradation, based on as seen stream monitoring results from the Hawlings River Watershed study (e.g., fair benthic macroinvertebrate and fish scores).
- Jerry Maldonado asked if M-NCPPC maintains this area. Ms. Nelson said yes, but sparingly with annual mowing being performed as well as spraying for invasives.

Watershed Management Report by Versar
Martin Chandler informed the TAC that the final report has been completed.

- Dr. Chandler asked how we can disseminate to TAC. There was discussion about using WSSC's FTP site as one option to distribute the document or simply sending a CD. Discussion followed about adding this document to WSSC's public web site.

ACTION ITEM: Distribute final report to TAC members.

- Dr. Chandler then commented on his disappointment over Versar's responsiveness to the planned delivery schedule for this report. Mr. Symborski asked about the quality of the product. Dr. Chandler responded that it was adequate given the available funds.
- Dr. Chandler added that the GIS analysis performed was useful, although it was not fully formatted with metadata. He added that hopefully the TAC agencies will keep this information current. It is useful information to target and prioritize future restoration actions.
- Dr. Chandler suggested that we explore other organizations if/when a watershed management plan/TMDL implementation plan is warranted, which will require larger funding than the ~$40k available for this report.

Other Work Program Updates

Montgomery County MS4 NPDES Permit, which will include TMDL Implementation Plans
Meo Curtis provided the TAC with an update to MS4 permit requirements that address TMDL implementation (that pertain to the Patuxent Reservoirs Watershed) via a Power Point presentation.

- Ms. Curtis discussed the background prior to showing her presentation. The impetus for this effort began in 2006 when the County's Clean Water Task Force established recommendations to improve ESD, LID, and water resource protection through the County's revised stormwater management (SWM) regulations.
- Susan Overstreet asked if Montgomery County's MS4 NPDES Permit has been finalized. Ms. Curtis responded that it was not finalized yet due to legal disputes related to including Montgomery County Public Schools as a co-permittee.
- Highlights from the presentation include:
  1. County's strategy to satisfy permit requirement is to emphasize a watershed approach. There are 8 watersheds, one of which is the Patuxent Reservoirs Watershed (PRW).
  2. Goals: protect good watersheds, restore poor watersheds; watershed ratings all based on results from biological data collected county-wide.
  3. Fair/Poor biological scores are associated with human population density, and the PRW scores are good to excellent.
  4. New permit requirement: significant increase from 10 to 20% of impervious surface to manage in next 5 year permit cycle.
  5. New permit requirement: must meet approved TMDLs, including PRW with included timelines and estimated costs assoc with decreasing pollutant loads
  6. Initially, establish a baseline condition using consultant team to develop watershed based plans. A team of five consultants are under contract to accomplish this task and others (with Biohabitats as the project lead). A public outreach/stewardship component is also required led by Carrie Capuco of Capuco Consulting, Inc.
  7. General approach taken: develop implementation plans to include watershed inventory, preliminary actions needed, public involvement, and creating a website.

8. For Patuxent Reservoirs Watershed
   - Even at build- out scenario still about 10% imperviousness
   - MDE Tier 2 waters (n = 2)
   - 97 urban BMPs currently
   - Since low density residential dominates, it provides limited opportunities, so KEY QUESTION: How to focus on AG given urban contribution?
   - For the Montgomery County portions of the PRW, there appears to be limited SWM opportunities
9. Next steps
   - Outreach will be a focus;
   - Public meetings - Saturday March 6 from 1-5pm at Brookside Gardens, Wheaton with facilitated breakout sessions for eastern region watersheds then reconvene

- Cost Estimate for developing a plan to address all 8 watersheds = $434,000; some of the 8 watersheds haven't been studied like the PRW
- Timelines/Deadlines: Final report expected by end of October, 2010
- Ms. Curtis noted that this slide presentation was taken from larger county-wide presentation given recently and is available on the County's DEP web site.

TAC discussion followed Ms. Curtis' presentation

Discussed how to account for required pollutant load reductions

- Mr. Maldonado commented that much effort will be needed for the difficult task of accounting for progress. Ms. Curtis added that a standardized accounting system is needed for their efforts and that the consultant team will provide an accounting database that must meet MS4 requirements
- Ms. Curtis commented that their portion of the PRW will be a low priority for SWM retrofit due to limited opportunities.

Discussed Waste Load Allocations (WLA) for County TMDLs

- MDE has provided the WLA for each TMDL, but the WLA has not changed for the PRW
- Ms. Curtis added that Montgomery County would consider paying to address WLA portion of load allocation if non-MS4 land is not available

<u>Water Resources Element (WRE) Updates</u>

Susan Overstreet provided an update to Howard County's WRE.

- It has been approved by the Planning Board. The County Council will next review this document. Comments from MDE were received recently, and County staff are working on addressing those comments in the next draft.

Mr. Symborski provided an update to Montgomery County's WRE.

- The Planning Board Public Hearing on the draft WRE was held on 12/17/09. Staff are working to address comments received at the Public Hearing and afterwards. A Planning Board Work session is scheduled for 2/11/10 to review the comments and staff recommendations. After the draft plan is approved by the Planning Board, it will be transmitted to the County Executive and County Council to begin their review process.

New Business

TMDL Implementation was the main topic chosen by the leadership for this TAC meeting.

- Mr. Symborski introduced the topic and mentioned that MDE was invited, but was unable to attend. He also introduced the idea of forming a TMDL workgroup, which could pursue a separate dialog with MDE and report back to the full TAC.
- Both Mr. Maldonado and Ms. Curtis agreed that forming a workgroup was a good idea, although Ms. Curtis added that Montgomery County will not add much substance until the TMDL implementation plans are developed (draft plans due in April 2010). In light of the expected draft plans, the TAC agreed *not* to form a TMDL Workgroup until at least April, 2010.
- Debbie Weller added that Prince George's County's DER will begin to assess potential restoration options in the County's portion of Rocky Gorge Reservoir Watershed early in 2010.
- Dr. Chandler then presented (via Power Point) several different aspects (e.g., by county land area, source of pollutant, etc.) of the TMDL current loading for phosphorus for the Patuxent Reservoirs. He noted that Appendix E of the TMDL document for the Reservoirs presented one scenario for the WLA and LA among counties.
- Mr. Symborski commented that the TMDLs for the Patuxent Reservoirs would be a good case study to address the TMDLs from an inter-jurisdictional approach, as well as for dealing with issues associated with addressing the non-point source LA.
- Ms. Curtis passed along a comment from one agricultural official at a recent meeting where the official estimated that about 90% of agricultural BMPs have already been implemented, which brings up the question of how to meet the TMDL load reductions. Dwight Dotterer confirmed the difficulty to find farms to implement BMPs, and noted that dairy farming may disappear from the PRW in the next few years considering the small number of dairy farms in the watershed and the current economic situation facing the dairy farmer.
- TAC members noted that 2003 was last year of data used to develop the TMDLs and discussed the possibility of taking credit for BMPs installed from 2003 to 2008 when TMDL was approved.

DNR's Natural Filters program

Katherine Nelson presented an aerial photo of the land within the Reddy Branch watershed encumbered by a Forest Conservation Easement (FCE). Ms. Nelson noted that this parcel is the largest FCE in Montgomery County *not* currently forested (34 of 50 acres within easement not forested), and she noted that competing county policies (agriculture and development) have contributed to the difficulty reforesting land within this easement. She added that one way to reforest land within the FCE was through a grant from MD DNR's *Natural Filters Strategy on Public Lands*.

- There are two parts to this program. The first part of this program is to establish natural filters (e.g., forest, grass, and wetland types) on state owned land and the second part is to establish filters on land owned by local government agencies to reach DNR's goal of 6,100 acres by the end of 2011.

The TAC considered two items related to this recently created funding program.

1. Seek endorsement from TAC to apply for DNR funding to plant riparian areas on private land within publicly held forest conservation easements
2. Consider letter from TAC to DNR recommending riparian forest plantings within Patuxent River State Park.

Discussion related to item 1 (endorsement to proceed)

- Ms. Curtis asked about the application deadline. Ms. Nelson commented that although the official deadline has passed it is still not too late to apply.
- Mr. Nelson asked if planting on private lands would be eligible under this grant. Ms. Nelson replied that the project location would be eligible.
- Ms. Nelson commented that the goal is to reforest land within the FCE in the next planting season of 2010.
- Ms. Curtis supported the idea of applying for the grant, asked if SCD has coordinated with the landowners, and asked if SCD considers this land as viable agricultural land. Ms. Nelson responded that she wished to move in the direction that best serves all of the policies from different TAC agencies.
- Ms. Overstreet asked what the long-range plan was for rest of the FCE. Ms. Nelson responded this still needs to be discussed while meeting the FCE legal requirements.

Ms. Nelson asked for and received the TAC's endorsement to apply for this grant.

- A comment was made to include the TMDL link in their request letter.

ACTION ITEM: Ms. Nelson will draft a letter to the Policy Board representatives for their approval to proceed with submitting a grant proposal to reforest this land within Reddy Branch via the Natural Filters Program.

Discussion related to item 2 (letter supporting DNR planting within Patuxent River State Park)

- Mr. Plummer stated that endorsement from SCD will depend on whether proposed planting areas within the State Park are currently in agricultural use.
- Mr. Nelson clarified that MD DNR has already selected the Patuxent River State Park for future tree planting via the Natural Filters Program.
- After more discussion the TAC decided to table the second item.

<u>2010 TAC Meeting Topics</u>

- Mr. Symborski added that the TAC pursues a dual track by taking advantage of existing opportunities with proactive planning steps to implement TMDLs for the reservoirs.
- Mr. Symborski commented that the following topics were proposed by the TAC leadership during the recent planning meeting in December, 2009.
    - **Proposed** Meeting Topics include:
        - **April**: TMDL implementation/watershed management planning; TMDL workgroup; Versar's Interim Watershed Management Report
        - **June**: Agriculture including presentation by MDE personnel, the PRW Agricultural Cost-Share Program, and an update on funding the Horse Manure Management Proposal
        - **September**: Prepare for Annual Policy Board Meeting
- Ms. Curtis suggested that the topic of agriculture be discussed in April rather than June since the TMDL workgroup will not form until April, 2010. The TAC agreed that agriculture will be the main topic discussed during the next TAC meeting.

Administrative Business

Mr. Plummer transferred his role as TAC Chair to Mark Symborski.

Adjournment

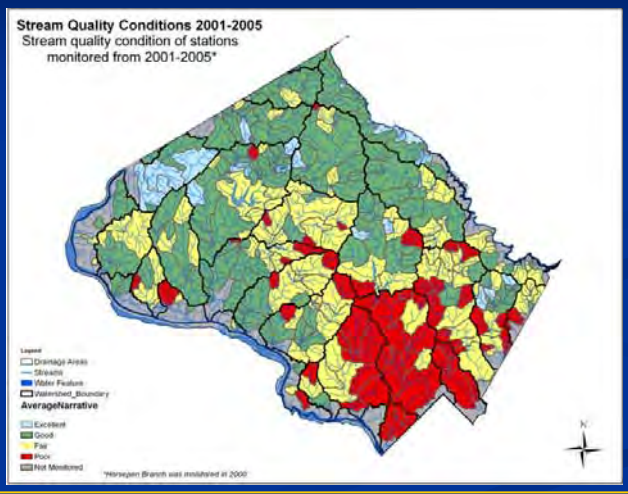
The meeting adjourned at 4:10 pm. The TAC will next convene on April 13th at 1:30 pm to discuss the important role of agriculture in the Patuxent Reservoirs Watershed.

This summary was prepared by Steve Nelson.

Watershed Restoration Implementation Strategy

Meosotis Curtis
Montgomery County Department of Environmental Protection

Goals: Restore impaired streams, protect good streams



Goal: Meet Stormwater Permit requirements

- National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, aka Stormwater Permit
- Issued by Maryland Department of the Environment to control pollution from storm drain system
- Permit term of five years
- Applies to entire County, including Public Schools, except areas covered under other MS4 permits
  - Cities of Gaithersburg, Rockville, and Takoma Park
  - Lands under the control of State (including M-NCPPC, WSSC, and SHA) or Federal agencies

New Requirements

- Accelerate watershed restoration
  - From 10% to 20% of MS4 impervious cover by end of permit cycle
- Achieve reductions for Total Maximum Daily Loads (TMDLs)
  - TMDLs are pollutant load budgets
  - Must include timeline and estimated costs
- Meet commitments in Potomac Trash Free Treaty
  - Achieve Anacostia Trash TMDL
- Increase use of environmentally sensitive design/low impact development (ESD/LID)
- Develop an Implementation Strategy

First step: Current Conditions

- Develop inventory of baseline conditions in Montgomery County's watersheds
- Public meeting on November 18, 2009 for opportunity to:
  - Suggest information based on local knowledge
  - Identify problems from local experiences
- Meet the Watershed Restoration Implementation Strategy Consultant Team

The Consultant Team

Biohabitats
www.biohabitats.com

Chesapeake Stormwater Network
www.chesapeakestormwater.net

Horsley Witten Group
Sustainable Environmental Solutions
http://www.horsleywitten.com

Connecting You with the Environment
Capuco Consulting Services, Inc.
www.capucoconsulting.com

VERSAR
Building The Future Through Innovative Solutions
www.versar.net

RESOLVE
Home
30 Years of Results Through Consensus
www.resolv.org

Implementation Plans

- Seven Watershed Groups
  - Baseline inventories
  - Preliminary action inventories
  - Public involvement
  - Website

www.montgomerycountymd.gov/stormwaterpermit

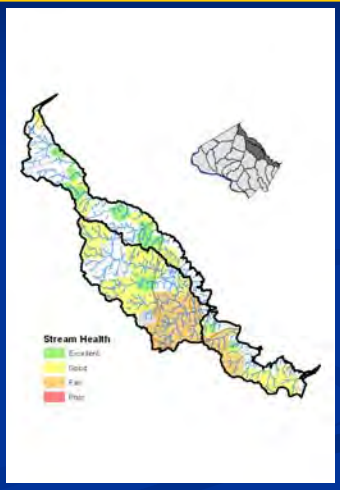
Public Outreach and Stewardship Work Plan

- Effective outreach tools
- Key messages for diverse audiences
- Extension beyond County agencies

Tree Planting in the Patuxent
Photo Source: Bob Cumberland, WAC-IWLA

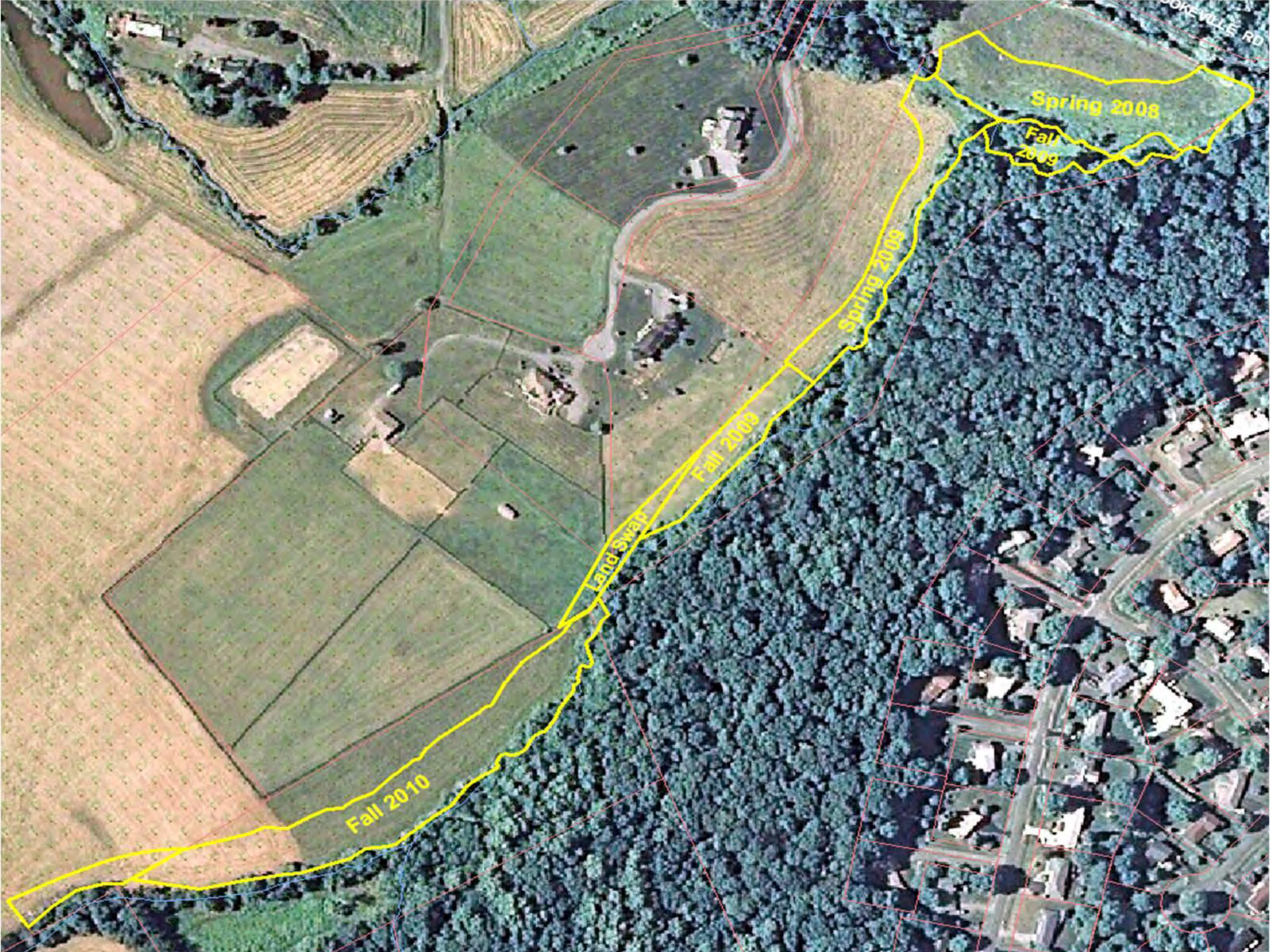
Watershed Profiles: Patuxent

- 5% Overall Impervious Cover
- High Quality (Tier II) stream segment in Triadelphia
- 97 BMPs meeting WQ targets
- 1 stream restoration project



Next Steps

- Learn about approaches for watershed restoration
- Identify public stakeholders to engage in plan development
- Get input on background, problems, and stewardship
- Website - www.montgomerycountymd.gov/stormwaterpermit
- 2010 watershed specific meetings
  - Patuxent, Anacostia, Rock Creek, Cabin John Creek
  - Saturday, March 6 from 1 to 5 p.m.
  - Brookside Gardens


Spring 2008
Fall 2009
Spring 2009
Fall 2009
Land Swap
Fall 2010


Agricultural Areas with no planting requirements
BROOKEVILLE RD
HOLLY VIEW ST
265 ft
ESRI
Source: USGS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Patuxent Reservoirs Watershed Protection Group
Technical Advisory Committee

Meeting Summary

April 13, 2010

TAC Members Present
Martin Chandler (WSSC), Ken Clare (PGHD), Meo Curtis (MCDEP), Dwight Dotterer (MDA), Kristal McCormick (HSCD), Katherine Nelson (M-NCPPC), Bert Nixon (HCHD), Susan Overstreet (HCDPZ), David Plummer (MSCD), Mark Symborski (M-NCPPC)

TAC Members Absent
Gul Behsudi (MDE), Jerry Maldonado (PGCDER), John McCoy (DNR), Howard Saltzman (HCDPW), Stan Wong (MCDPS)

Other Attendees
Sandy August (WSSC), Bob Ensor (HSCD), Mohammad Habibian (WSSC), Angela Morales (HCDPW), Steve Nelson (WSSC), John Rhoderick (MDA)

Administrative Business

- The meeting was called to order at 1:45 pm by Chair Mark Symborski.
- The TAC reviewed the January 2010 meeting summary including three revisions that were made close to the April meeting date. There were no comments or corrections to the revised meeting summary; consequently, the summary from the previous meeting was approved unanimously.
- Steve Nelson mentioned that the 2009 Technical Supplement had been completed. It was posted on WSSC's FTP site for distribution to TAC members due to its size, and it will be posted on WSSC 's Internet site for public access.

On-Going Business

Work Program Updates

Public Awareness and Stewardship Priority Resource
2010 H2O Fest
Sandy August distributed brochures and provided an update to the upcoming H2O Fest Watershed Festival "Thinking Green to Protect Blue" scheduled for Saturday 24 April 2010. Ms. August presented a video from the 2009 H2O Fest.

- 30 organizations have confirmed plans to attend with space for more.
- Two charity bike rides (16 and 32 miles in length) will occur to raise money for the WSSC Water Fund.
- Tours of two WSSC WWTPs will also occur on 24 April.
- Other activities associated with Earth Month include: Patuxent River Clean-Up Days, and a Bird Walk (Warbler Day) occurring at the Pig Tail recreation area.
- Several schools will be present at the H2O Fest including High Point High School (a Green School).

Other Activities
Meo Curtis assisted with a clean-up effort in the Upper Patuxent including MD State park lands within the Patuxent Reservoirs Watershed where trash and many tires were removed. Angela Morales asked if anything could be done to prevent trash dumping. Ms. Curtis added that DNR will add bollards at strategic locations to reduce likelihood of future dumping.

Stream System Priority Resource
Reddy Branch Planting Project Update

Katherine Nelson discussed two recent issues relating to the riparian forest buffer planting along Reddy Branch (see attachment).

1. The stream fencing has been changed to allow access to the entire planting site, although the proposed land swap has not occurred yet.
2. The Wildlife Achievement Chapter of IWLA has agreed to perform necessary tree maintenance on Saturday May 15th.

Ms. Curtis provided copies of an article in the December 2009 issue of *Maryland Waltonian*, a quarterly newsletter of the MD Division of IWLA, where the most recent planting along Reddy Branch was featured. She noted that there are4,500 IWLA members living in MD, of which 2,300 are members in Montgomery County.

DNR'S Natural Filters Program

Ms. Nelson provided an update to applying for DNR funds for reforestation.

- The site selected for this program is just upstream of Reddy Branch planting area, and it is the largest non-forested Forest Conservation Easement (FCE) in Montgomery County.
- The land within the easement is currently in agricultural production (e.g., hay and row crops, but adjacent to Reddy Branch Stream Valley Park). The FCE was originally established through the development process because of the extensive wetlands on-site.
- Since agriculture is also a county priority, it provides a challenge to remove land from agricultural production for reforestation required by the FCE.
- A third party is needed to apply for this grant. Originally, Ms. Nelson was seeking to have the PRWPG function as the third party, but that was not agreed upon by the TAC (and subsequently no letter was generated by the Policy Board of the group). Ms. Nelson and Chair Symborski approached Mr. Royce Hanson, Executive Director of M-NCCPC, for advice on how to proceed. Mr. Hanson recommended that a non-profit agency could function as the third party. The non-profit group Patuxent Riverkeeper was then contacted. Mr. Fred Tutman from this group is reportedly very interested in assisting with this idea.

Montgomery County MS4 NPDES Permit

Ms. Curtis provided the TAC with an update to the County's MS4 permit requirements that address TMDL implementation.

- MDE officially issued the County's MS4 Permit on 16 February 2010, which has started the one year deadline for completing the Implementation Plan components of this permit during 2009.
- Environmental advocacy groups that challenged the Final Determination have filed another lawsuit challenging permit issuance, although Ms. Curtis surmised that this lawsuit would not delay the permit any further.
- MCDEP sponsored two public meetings on MS4 permit implementation, one of which included the Patuxent Reservoirs Watershed. Unfortunately, there were no attendees from the Patuxent watershed at either meeting. Ms. Curtis noted that this lack of public participation in watershed meetings was also evident when Versar, Inc. held two public meetings prior to the completion of their Interim Watershed Management Plan for WSSC. Ms. Curtis noted that the TAC has been doing Patuxent outreach for 10 years, but that the turnout at their recent public meetings indicates that we are not getting to the folks who most need to change. She submitted that the TAC should consider this apparent lack of public interest as it moves forward with TMDL implementation.
    - Ms. Morales asked about specific types of outreach conducted by TAC. Ms. Curtis responded that historically the TAC has made significant efforts to reach out to the public. Ms. Curtis added that the large lot residential land use will be the target audience in the MS4 Permit [in the Patuxent Reservoirs Watershed].
    - Susan Overstreet and Ms. Morales discussed Howard County's programs for tree planting on residential properties. This includes Stream ReLeaf, which provides trees for stream buffer plantings, and the 2010 Trees in 2010 Program, a recent, successful effort to give trees to residential lot owners. The funding source for these programs is was Forest Conservation Act funds.
- Ms. Curtis recommended that the TAC evaluate the old action plan [prior to current Priority Resources Chart] and consider if the TAC is meeting these goals, and also consider if these are the goals we should be focusing on now.

WSSC Land Acquisition Component of Consent Decree

Martin Chandler briefly reviewed the history of the EPA/MDE Consent Decree associated with the Sanitary Sewer Overflows experienced by WSSC in the past. One of smaller components of this decree was acquiring land within the Patuxent Reservoirs Watershed for the purpose of protecting water quality.

- WSSC has been searching for properties for the last four years targeting land adjoining WSSC-owned lands, but remaining flexible when necessary.
- Dr. Chandler referred to a map showing two parcels purchased plus one additional property where a conservation easement has been purchased. The conservation easement for this 15.8 acre parcel extinguished 3-4 potential development lots.
- Total funds spent to date are approximately $2.2M with $1M dollars left to spend before the end of 2010 or else fines will be assessed.
- Dr. Habibian mentioned that he requested to use the funds to implement BMPs rather than purchasing land, but negotiators of the Consent Decree did not take up this proposal.
- Ms. Nelson asked what WSSC is planning to do with purchased property. Dr. Chandler responded that WSSC is considering among other ideas to reforest the land.

- David Plummer inquired about the remaining funds. Dr. Chandler responded that ongoing negotiations for additional property may consume much of the funds and that the Consent Decree provides for maintenance and monitoring on the purchased land (e.g., reforestation, gates, fencing etc. to maintain land) as eligible expenses. Mr. Plummer further inquired if other possibilities would be available for remaining funds such as BMP implementation. Dr. Habibian offered that the Consent Decree negotiation was a long process, so the parties would be reluctant to reopen and such a change in the program scope may not be feasible in the remaining time.

Water Resources Element (WRE) Updates

Montgomery County

- Mr. Symborski commented that the Planning Board recently approved a set of changes needed to create the Planning Board Draft Water Resources Functional Plan. This draft plan will be transmitted to the County Executive and County Council for consideration. A County Council Public hearing on the draft plan is tentatively scheduled for June 15th. Following the public hearing, Council work sessions will take place with plan approval targeted for July and plan adoption in September 2010 by the full Park and Planning Commission.

Howard County

- The WRE was signed in April and will be effective in June 2010.
- It is currently not available on the County's web page.

New Business

Role of Agriculture in Addressing TMDLs

Mr. Plummer addressed the TAC about the state of agriculture in Patuxent Reservoirs Watershed and qualified his presentation by stating that SCD cannot provide a complete agricultural summary, rather SCDs in general respond to interested farmers; therefore, the SCD perspective represents a subset of the total picture or agricultural census.

- The following is a summary of Mr. Plummer's presentation:
  - There is a trend towards horticulture and horse farms, and away from traditional farming in the Patuxent Reservoirs Watershed.
  - SCD still maintains good working relationships with traditional farmers in MC based on prior working relationships. Working relationships have not yet been established with the equine community.
  - Most traditional farmers in MC are doing a good job, and are subject to the nutrient management requirements, but there are people who do not ask SCD for help.
  - SCDs are once again trying to promote the Conservation Reserve Enhancement Program (CREP), which has been revamped and improved. Through CREP, landowners can implement BMPs including establishing grassed or wooded stream-side buffers or establishing animal exclusion fencing along streams.

- Mr. Plummer discussed several options to manage horse manure including hauling it away, composting on the farm, or spreading manure without composting (which is possible if handled correctly). Ms. Morales commented that there is a lot of pressure to maximize the number of horses boarded at an establishment because people are looking for cheap and convenient horse boarding. This increased density can lead to eroding pastures and manure management problems without careful attention to pasture management.

- There was a discussion of appropriate acreage to support horses. Bob Ensor replied that two acres/horse was the year-round recommendation to maintain the horse and the pastures, but it depends on a number of factors including economics of having to board many horses to stay in business.
- Mr. Plummer added that the SCD may not work with most of the equine community since most horse owners do not seek assistance from SCD. Mr. Plummer added that his presentation shows many challenges that horse owners face in light of other costs (e.g., transportation, feed, etc. in addition to conservation measures). Ms. Morales agreed, stating that costs are very high to board horses.
- Dwight Dotterer added that extra efforts are needed to minimize damage to the land when the density of horses increases.
- Mr. Plummer added that CREP has recently been improved to appeal to more landowners.

Bob Ensor then provided a review of trends towards equine operations in Howard County's portion of the Patuxent Reservoirs Watershed. Mr. Ensor's presentation included several slides showing that

HSCD is working with a majority of large horse operations (see attachment); however, numerous tracts of land shown representing small parcels (5-15 acres) are not currently cooperating with HSCD. Mr. Ensor contended that this portion of the equine community is the group that should be targeted.

- Survey results from 1,025 horse owners in Howard County revealed:
  - Fully 1/3 responders realized they do NOT have enough land to support their horses
  - One of the greatest needs is manure management
- Mr. Ensor also mentioned that the Patuxent Reservoirs Nutrient Reduction Initiative grant proposal would significantly reduce nitrogen loads for a relatively low cost/pound of nitrogen removed (about $6).

Discussion of MDA Role in TMDL Implementation

John Rhoderick of MDA provided a brief overview of MDA's role in assisting MDE with agricultural portion of load allocations associated with TMDLs then proceeded to address the questions he received from the TAC.

- MDA currently funds five equine specialists and has placed two in central MD including Howard and Montgomery Counties.
- Mr. Rhoderick explained the complexities of the upcoming Chesapeake Bay TMDL and its possible effects on the Patuxent Reservoirs Watershed.
- Mr. Rhoderick noted that from a graphic (see attached presentation) that the load allocations attributed to agriculture have been addressed for several of the approximately 300 TMDLs across MD. For the Patuxent Reservoirs it is estimated that more than 50% of phosphorus load reductions goals have been met. Addressing the remaining portion of the goals will be difficult because a lot of the watershed is in non-traditional agriculture (e.g. horse farms and horticulture) where it is harder to implement effective BMPs.
- Mr. Rhoderick commented that the reduction in MDA employees has been and will continue to be a real challenge to maintain current programs.
- Agriculture in the Patuxent Reservoirs Watershed—where do we go from here?
  - One issue is that the Bay TMDLs are considered a higher priority and the Upper Patuxent is considered to be pretty clean because of the reservoirs.
  - Under the Obama Executive Order, EPA has a high priority to clean the Bay by 2025.

Questions Posed by TAC Members

Q: When will the Nutrient Trading Tool (USDA, NRCS approved version) be ready to use in Maryland?
A: The Nutrient Trading Tool (USDA, NRCS approved version) recently passed the MD State Legislature and by June 2010 should be ready to implement. The goal is to enroll 100 farmers into the credit market. He noted that if a TMDL exists for the waterbody/watershed that a business/farm/etc. must first assist with meeting the baseline established by TMDL. In other words you cannot trade what you need to meet water quality goals.

Q: Will MDE use these estimated load reductions as MDE leads the watershed implementation plan development for the Bay TMDL?
A: MDE will use the estimated load reductions for agricultural BMPs in the watershed implementation plan development process for the Bay TMDL.

Q: From a footnote within the spreadsheet analysis for the PRW, the nutrient load reductions for agricultural BMPs were derived from the Bay model and Tributary Strategies. Were those model numbers based on actual monitoring studies of BMP effectiveness?
A: The Bay model numbers are based upon monitoring data from field research.

Q: From the spreadsheet analysis for the PRW, the two BMPs with the largest phosphorus reductions in the Patuxent Reservoirs Watershed are: 1) Nutrient Management Plans, and 2) SCWQ plans. Is the phosphorus load reduction credit given for plans written or is there an assumption for percent implementation?
A: Farmers implement non-structural practices and are credited with conservative load reductions assigned by the Bay Model. Inspections of Nutrient Management Plans to date indicate an approximate 80% compliance rate. Of the 20% not in compliance, about half are in noncompliance because of administrative reasons not because of poor nutrient management practices.

Q: What other types of businesses are subject to the WQIA? Do the Nutrient Management Plan P load reduction estimates include these additional regulated businesses? If so, do you know how many exist in the Patuxent Reservoirs Watershed?
A: About 50% of urban turf is covered by lawn care operations. Lawn care companies (managing > 10 acres), golf courses, sod farms are all required to implement a NMP. Each lawn care company is required to attend training, but not all employees of each company may receive such training.

- Mr. Plummer asked what is involved in establishing a Watershed Implementation Plan (WIP) and how could the TAC implement a WIP? Mr. Rhoderick briefly explained the process of Bay TMDL implementation. MD has 52 bay segments with the Patuxent River Watershed shared with 7 counties (7 different plans). There will be two phases required for implementation:
  1) MDE establishes allocation for EPA based on state-wide allocations (without local involvement). The Draft Phase I WIP is due shortly (June, 2010). The final TMDL and Phase I WIP will be approved and published in December 2010.
  2) Establish WIPs given allocations (254 bay segments). The draft Phase II WIPs are due in June 2011, with final Phase II WIPs due to EPA in November, 2011.
- Ms. Curtis questioned how a County- level jurisdiction can establish its own allocation and subsequent WIP given multiple smaller local governments within most MD counties. She contended that MDE is needed to bring all jurisdictions together.

- Dr. Habibian asked how the Bay TMDL and Bay Model will influence the TMDLs for the Patuxent Reservoirs Watershed. Mr. Rhoderick replied that it could be affected and he noted that the first milestone for the Bay TMDL is a 60% reduction from baseline loads by 2017.
- Chair Symborski contended that the Bay Model has many assumptions that may result in errors at the scale of Bay segments. He pointed out that such errors will likely not become apparent until the detailed TMDL implementation phase Dr. Habibian countered that it's likely the best available tool to use in spite of the many problems.

Future of PRW Agricultural Cost Share Program

- Mr. Plummer stated that the real challenge with using this funding source in MSCD has been the lack of staff available to reach out to public.
- Mr. Plummer said that the amendments added to the original MOU have not been effective.
- Mr. Plummer suggested (and Mr. Ensor agreed) that removing some restrictions would improve this funding source and make it more useful:
    - Remove restriction that a stream must reside on your property to qualify
    - Improve marketing
- Mr. Plummer will focus on the equine community for this funding source
- Mr. Ensor commented that the HSCD portion of the Patuxent Reservoirs Watershed Cost-Share Program is almost depleted, and that adequate staffing has enabled its use. He noted that advertising has been difficult.
- Ms. Overstreet led a discussion about the total funds allocated to and remaining in this Cost-Share Program, using a March 2000 memo concerning this funding source. No definite numbers were agreed upon and further research will be required.
- Mr. Plummer asked if there would be a need to formally amend the MOU and have it ratified by the PRWPG or simply agreed upon by the two SCDs to improve it for more effective use. Ms. Curtis responded that according to the original agreement any amendments related to funding would require PRWPG approval.

Meeting Topics for next TAC meeting

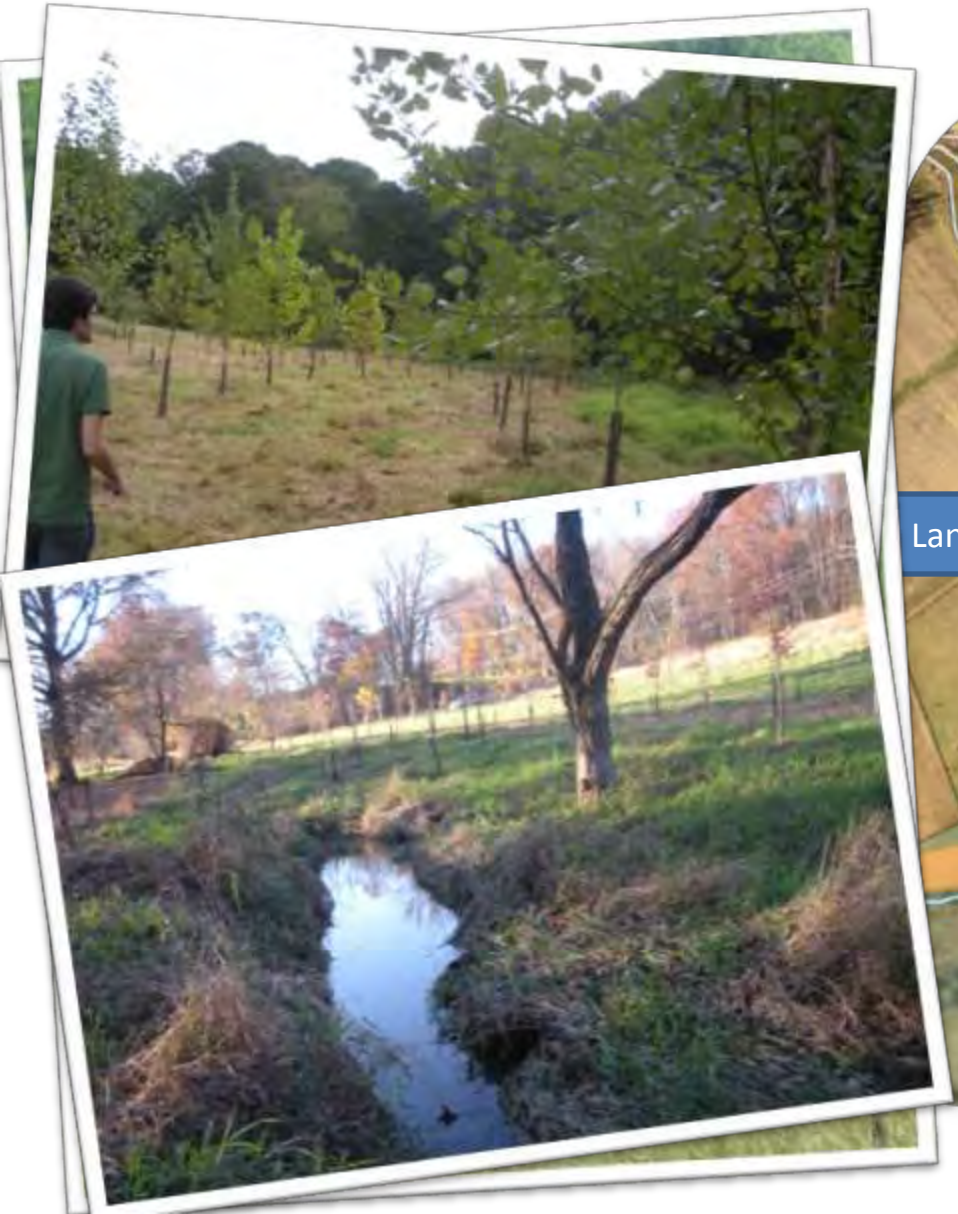
- Chair Symborski asked if the idea of forming TMDL workgroup (discussed during the January TAC meeting) was timely given pending Bay TMDL. Mr. Rhoderick responded that our next meeting will occur after the June 1 cutoff for allocating Bay TMDL loads for the Patuxent River Watershed.
- Chair Symborski suggested that at least three items mentioned during this meeting are important to address during the next TAC meeting and include: 1) reviewing the current Action Plan to evaluate progress on meeting goals and decide if they are the goals we should focus on now, 2) addressing the challenges mentioned with reaching the public who most need to change, and 3) gap-closing measures for agricultural TMDL implementation.
- Mr. Rhoderick added that the PRW may have nitrogen added to the list of nutrients via the Bay TMDL.

Adjournment

The meeting adjourned at 4:10 pm. The TAC will next convene on July 22nd at 1:30 pm.

This summary was prepared by Steve Nelson.

Reddy Branch Stream Valley Park Planting Areas



Patuxent Watershed Conservation Opportunities

…and the role of the Montgomery Soil Conservation District

Why Conservation Planning is Important

Uncontained Manure Pile

Pasture with no vegetation

Bare Pasture w/ gully forming

Manure Management

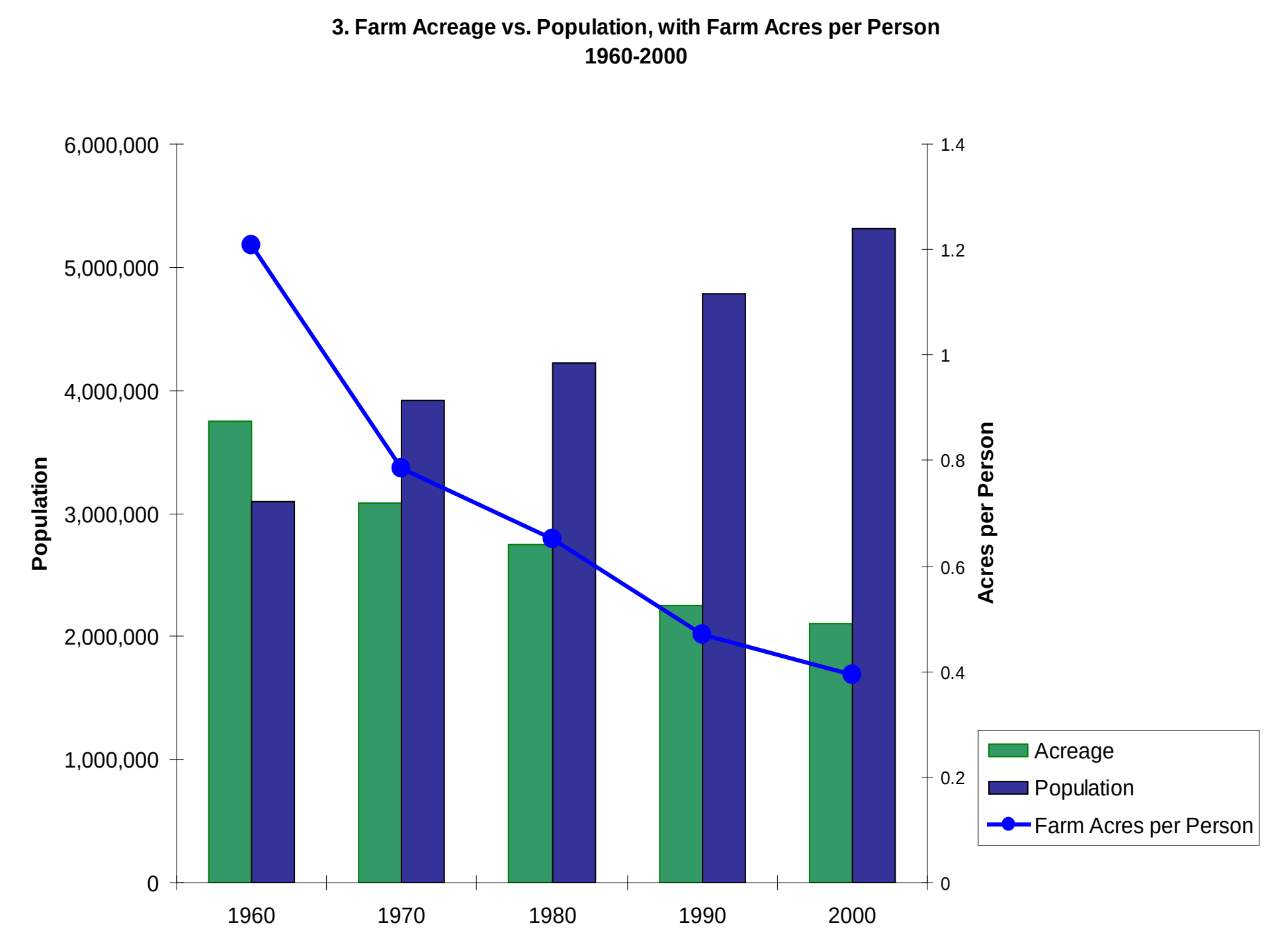
Watering Tough


The MSCD can provide technical assistance, cost share help, and construction advice for a variety of practices

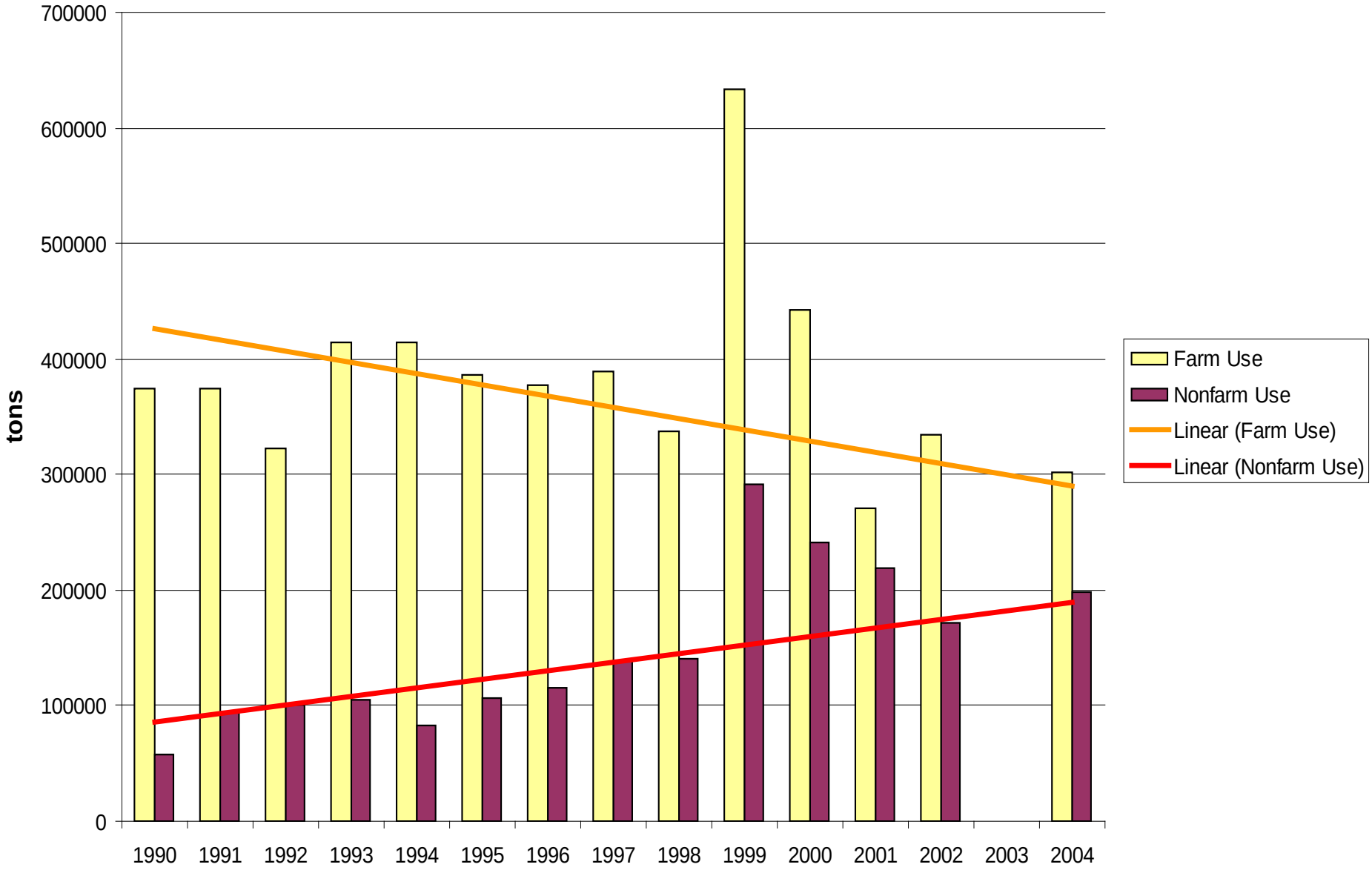
Pasture Management

CREP- Riparian Forest Buffer and Stream Fencing

MSCD supports the MDA Cover Crop Program. This year sign-up was outstanding.


3. Farm Acreage vs. Population, with Farm Acres per Person
1960-2000
Population
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Acres per Person
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1960
1970
1980
1990
2000
Acreage
Population
Farm Acres per Person

8. Total Maryland Fertilizer Tonnage
FY1990 to FY2004, by Use



Conservation Planning in Montgomery County

Patuxent Reservoirs Nutrient Reduction Initiative

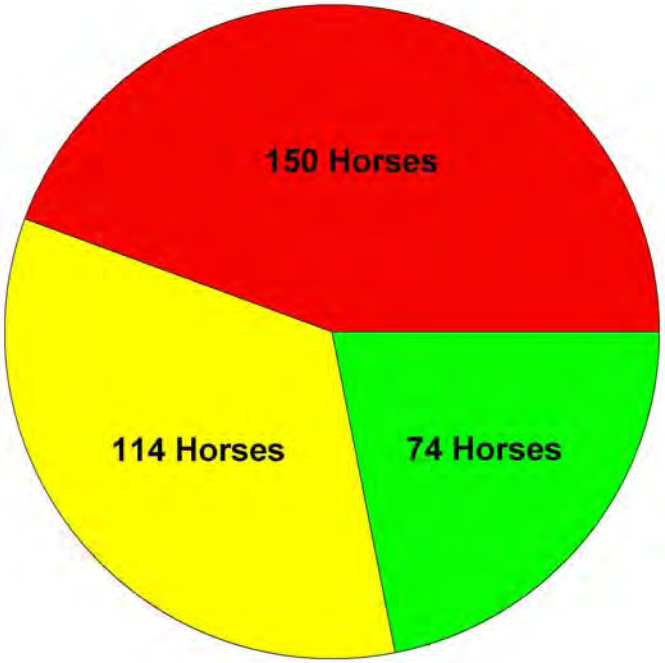
Manure Management Assistance for Un-regulated Equine Operations

- **1025 Horses in Watershed**

- **Producing 18,700,000 pounds of manure per year (9,350 Tons per year)**

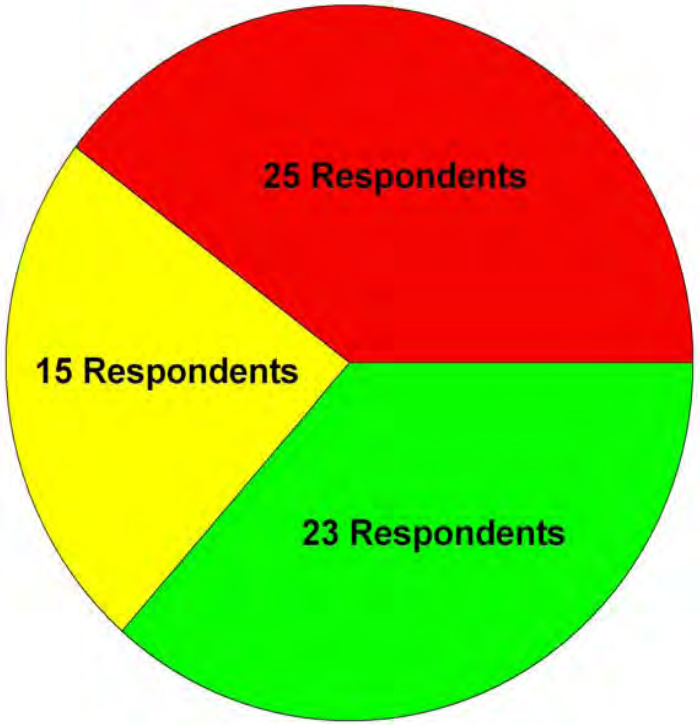
Howard County Horse Survey Data

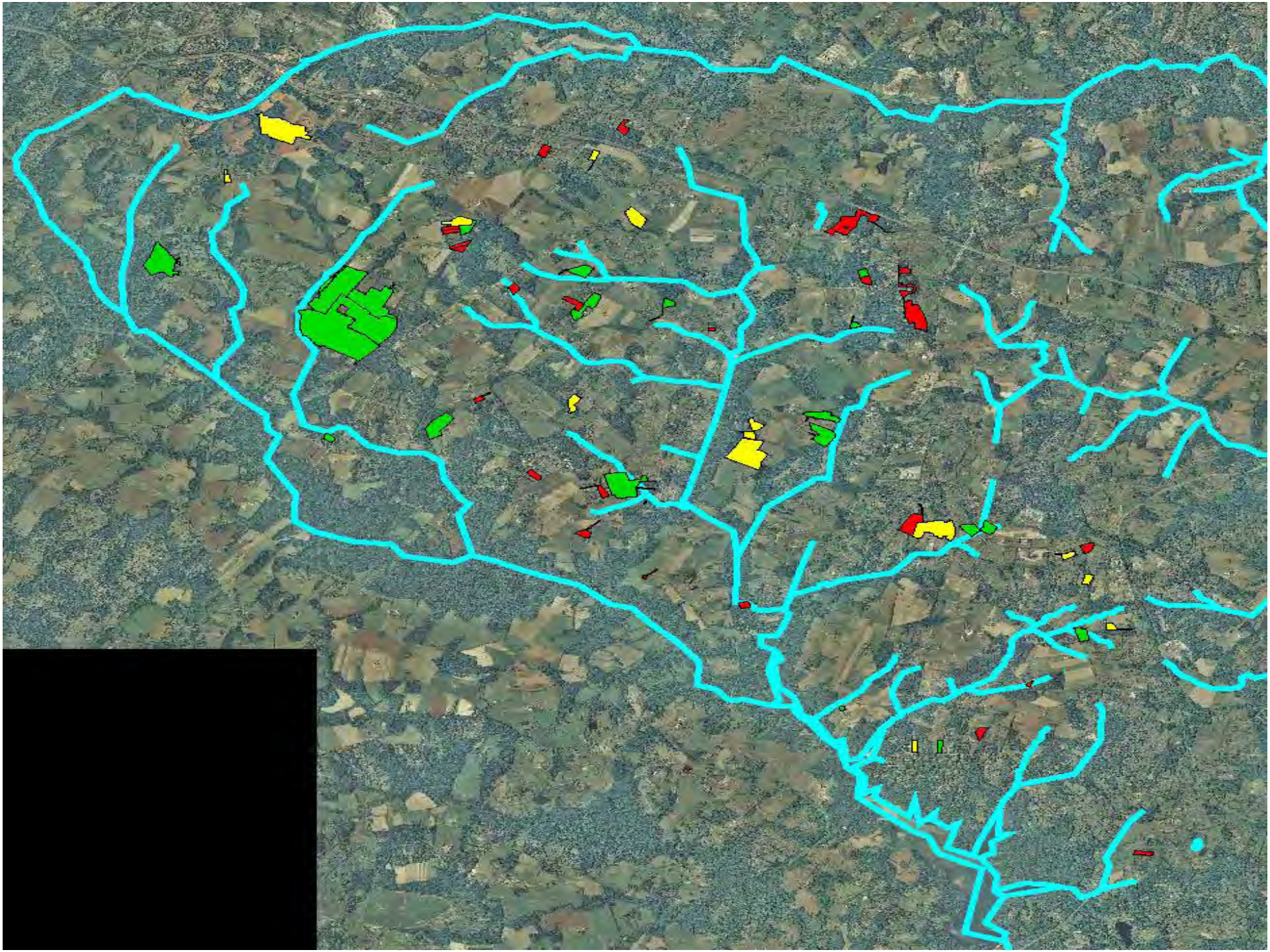
Total Number of Horses
sorted by
Horses per Available Acre (HPAA)

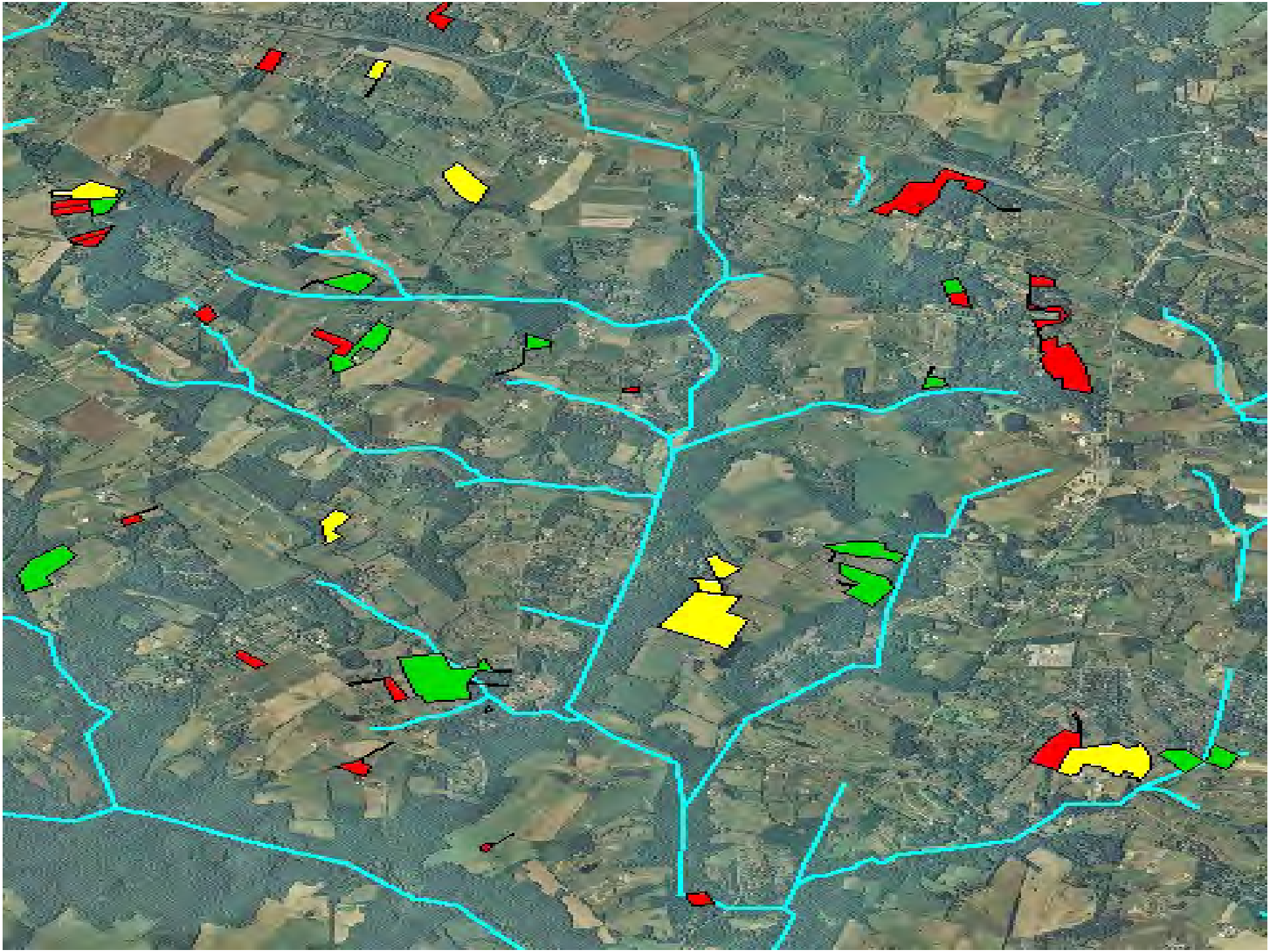


Howard County Horse Survey Data

Total Number of Respondents with Horses
sorted by
Horses per Available Acre (HPAA)







Patuxent Reservoirs Nutrient Reduction Initiative

Conservation Practices needed:

- **Animal Waste Holding Facility/Composter,**
- **Watering Systems for livestock,**
- **Stream Fencing,**
- **Stream Crossings,**
- **Heavy Use Area Protection**

Patuxent Reservoirs Nutrient Reduction Initiative

Benefits:

- **20,250 pounds of N controlled per year**
- **304,000 pounds over the life of the practices**
- **Cost per pound of N over lifespan: $6.31**

Patuxent Reservoirs Nutrient Reduction Initiative

- **Total project costs: $1,900,000**

Rocky Gorge Reservoir/Duckett Dam 02-13-11-07 Howard County

P source Lbs/yr Baseline	100%	46935	
FOREST	6%	2816	HO%
SCOUR,	8%	3755	Lbs P/yr
CROP	24%	11264	2253
PASTURE	6%	2816	563
ANIMAL WASTE	4%	1877	375
DEVELOPED	18%	8448	
TRIADELPHIA	34%	15958	
POINT SOURCE	0%	0	

HO County Portion 20%	Percent	Lbs P/yr
Ag baseline		3192
Reduction Goal Ag	48%	1532
Ag Implementation	47%	722
Ag Remaining to do	53%	810

BMPs Installed since 1/1/2004

				Lbs N/unit	Lbs P/unit	Lbs N/yr	Lbs P/yr
606	Subsurface Drain	300	FT				
590	Nutrient Management Plan acres	2122	AC	3.11	0.3	6599	637
	SCWQ Plan acres[8]	520	AC	0.93	0.14	484	73
340	Cover Crop Acres[9]	95.6	AC	9.48	0.13	906	12
			Rocky Gorge Reservoir/Duckett Dam Totals			7989	722

Notes

1 Land use comess from the TMDL.

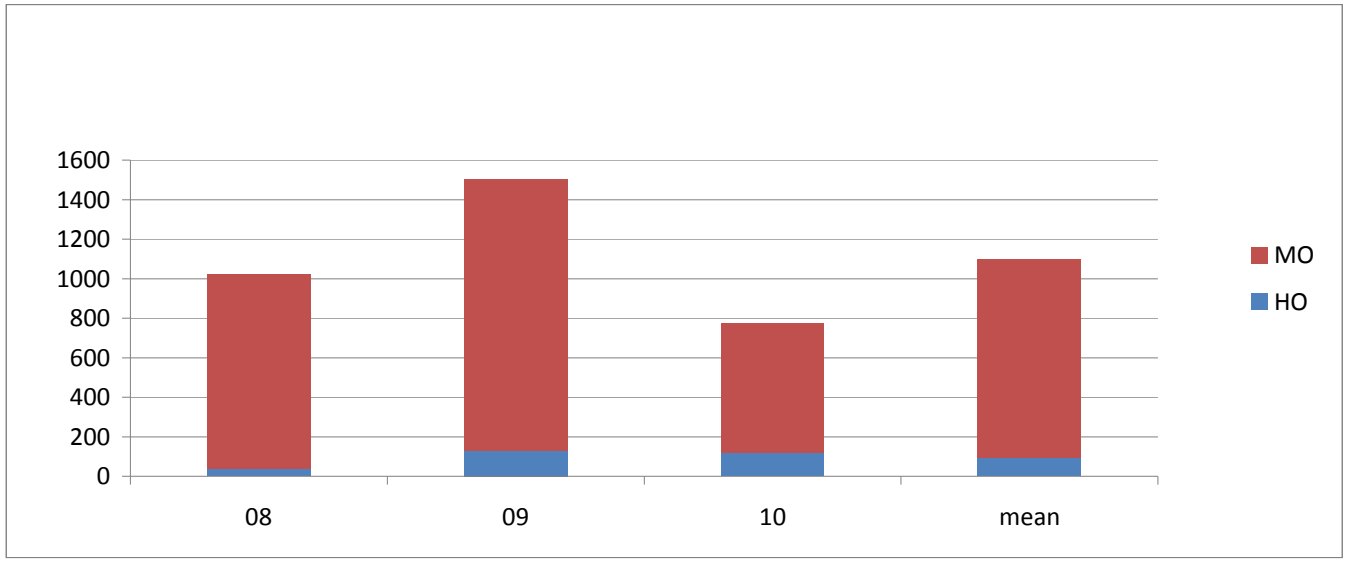
2 TMDL lbs/yr is the Total Maximum Daily Load expressed in pounds per year.

3 Reduction % comes from the TMDL.

4 BMP #s are from the comprehensive database that includes those funded by MDA and NRCS

5 Some practices are measured in units that are converted to acres treated.

6 Reductions are based on the Bay Model 4.3 and Tributary strategies; Reductions have not been established for all practices.
7 Nutrient Mangement Acres are based on county implementation percentages.
8 Soil Conservation district (SCD) provides data for Soil Conservation Water Quality plans (SCWQP)
9 Cover crop acres come from MACS only, in order to capture one year, not cumulative since 1999 & are average of 2008, 2009, 2010 ac



Rocky Gorge Dam	08	09	10	mean
HO	39.6	128.1	119.2	95.6
MO	983.7	1373.3	655	1004

Rocky Gorge Reservoir/Duckett Dam 02-13-11-07 Montgomery County

P source Lbs/yr Baseline	100%	46935	
FOREST	6%	2816	MO%
SCOUR,	8%	3755	Lbs P/yr
CROP	24%	11264	9012
PASTURE	6%	2816	2253
ANIMAL WASTE	4%	1877	1502
DEVELOPED	18%	8448	
TRIADELPHIA	34%	15958	
POINT SOURCE	0%	0	

MO County Portion 80%	Percent	Lbs P/yr
Ag baseline		12766
Reduction Goal Ag	48%	6128
Ag Implementation	82%	5028
Ag Remaining to do	18%	1100

BMPs Installed since 1/1/2004

				Lbs N/unit	Lbs P/unit	Lbs N/yr	Lbs P/yr
313	Waste Storage Structure	2	ST	531	101	1062	202
314	Brush Management	12.9	AC				
328	Conservation Crop Rotation	551.6	AC	12.48	0.6	6884	331
329	No-Till	365.8	AC	4.61	1.13	1686	413
382	Fencing # 8696'	97.7	AC	6.79	0.91	663	89
386	Field Border 25 lf	0.3	Ac				
409	Prescribed Forestry	5.5					
412	Grassed Waterway	3	AC	9.55	0.25	29	1
468	Lined Waterway or Outlet	15	FT				
472	Access Control	11.6	AC				
512	Pasture & Hay Planting	7.4					

528	Prescribed Grazing	69.9	AC	9.71	1.43	679	100
595	Pest Management	1258.8	AC				
614	Watering Facility #1	15	Ac	3.4	0.46	51	6.9
666	Forest Stand Improvement	5.5					
590	Nutrient Management Plans[7]	8620	AC	3.11	0.3	26808	2586
	SCWQ Plans[8]	8347	AC	0.93	0.14	7763	1169
340	Cover Crop Acres[9]	1004	AC	9.48	0.13	9518	131
				Rocky Gorge Reservoir/Duckett Dam Totals		55143	5028

Notes

1 Land use comess from the TMDL.

2 TMDL lbs/yr is the Total Maximum Daily Load expressed in pounds per year.

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4 BMP #s are from the comprehensive database that includes those funded by MDA and NRCS

5 Some practices are measured in units that are converted to acres treated.

6 Reductions are based on the Bay Model 4.3 and Tributary strategies; Reductions have not been established for all practices.

7 Nutrient Mangement Acres are based on county implementation percentages.

8 Soil Conservation district (SCD) provides data for Soil Conservation Water Quality plans (SCWQP)

9 Cover crop acres come from MACS only, in order to capture one year, not cumulative since 1999 & are average of 2008, 2009, 2010 ac

Rocky Gorge	Farm Acres	% of Total
HO	2224	20%
MO	9033	80%
Total	11257	100%

BMPs Installed Since 1/1/2004
02-13-11-07 Rocky Gorge Dam
Howard
BMP EXTENT_DONE SCS_UNIT
606-Subsurface Drain 300.00 FT
Montgomery
BMP EXTENT_DONE SCS_UNIT
100-Comprehensive Nutrient Mgt Plan 24.10 AC
313-Waste Storage Structure 2.00 ST
314-Brush Management 12.90 AC
328-Conservation Crop Rotation 551.60 AC
329-No Till 365.80 AC
340-Winter Cover Crop 186.70 AC
382-Fencing 8,696.00 FT
386-Field Border 25.00 FT
409-Prescribed Forestry 5.50 AC
412-Grassed Waterway 3.00 AC
468-Lined Waterway or Outlet 15.00 FT
472-Access Control 11.60 AC
512-Pasture & Hay Planting 7.40 AC
528-Prescribed Grazing 69.90 AC
561-Heavy Use Area Protection 0.50 AC
590-Nutrient Management 1,592.20 AC
595-Pest Management 1,258.80 AC
614-Watering Facility 1.00 NO
666-Forest Stand Improvement 5.50 AC
Prince George's
BMP EXTENT_DONE SCS_UNIT
590-Nutrient Management 2.20 AC

Triadelphia Reservoir/Brighton Dam 02-13- Howard County

	Percent	Lbs P/yr	HO County Portion 67%
P source Lbs/yr Baseline	100%	65953	
FOREST	4%	2637	
SCOUR,	28%	18462	
CROP	50%	32968	22088
PASTURE	6%	3956	2651
ANIMAL WASTE	3%	1978	1325
DEVELOPED	9%	5934	

HO County Portion 67%	Percent	Lbs P/yr
Ag baseline	100%	26064
Reduction Goal Ag	58%	15117
Ag Implementation	53%	8055
Ag Remaining to do	47%	7062

BMPs Installed since 1/1/2004

				Lbs N/unit	Lbs P/unit	Lbs N/yr	Lbs P/yr
313	Waste Storage Structure	3	ST	531	101	1593	303
314	Brush Management	52.8	AC				
328	Conservation Crop Rotation	115	AC	12.48	0.6	1435	69
329	No-Till	51.3	AC	4.61	1.13	236	58
342	Critical Area Planting	1.7	AC	9.55	0.25	16	0
350	Sediment Basin	1	ST				
362	Diversion	1590	FT				
378	Sediment Control Pond	4	ST				
382	Fencing # 20,124'	226	AC	6.79	0.91	1535	206
390	Riparian Herbaceous Cover	105.5	AC	9.55	0.25	1008	26
391	Riparian Forest Buffer	7	AC	27.28	2.15	191	15
393	Filter Strip	3.4	AC	16.92	1.08	58	4
410	Grade Stabilization Structure	6	ST				

Triadelphia Reservoir/Brighton Dam 02-13- Howard County

412	Grassed Waterway	6.13	AC	9.55	0.25	59	2
512	Pasture & Hay Planting	92.2	AC	9.55	0.25	881	23
516	Pipeline	1597	FT				
521	D-Pond Sealing or Lining, Compacted	1	NO				
528	Prescribed Grazing	257	AC	9.71	1.43	2495	368
558	Roof Runoff Structure	3	NO	69	13	207	39
561	Heavy Use Area Protection	0.3	FT				
574	Spring Development #6	90	AC	1.3	0.1	117	9
595	Pest Management	627.7	AC				
606	Subsurface Drain	2670	FT				
620	Underground Outlet	1369	FT				
633	Waste Utilization	51.3	AC				
642	Water Well	1	NO				
644	Wetland Wildlife Habitat Management	1	AC	27.28	2.15	27	2
646	Shallow Water Development & Mangemen	1	AC	27.28	2.15	27	2
666	Forest Stand improvement	7	AC	9.55	0.25	67	2
728	Stream Crossing #8	120	AC	3.4	0.46	408	55
590	Nutrient Management Plans7	16832	AC	3.11	0.3	52348	5050
	SCWQ Plans8	12556	AC	0.93	0.14	11677	1758
340	Cover Crop Acres9	499.3	AC	9.48	0.13	4733	65
		Triadelphia Reservoir/Brighton Dam Howard County Total				79118	8055

Notes

1 Land use comess from the TMDL.

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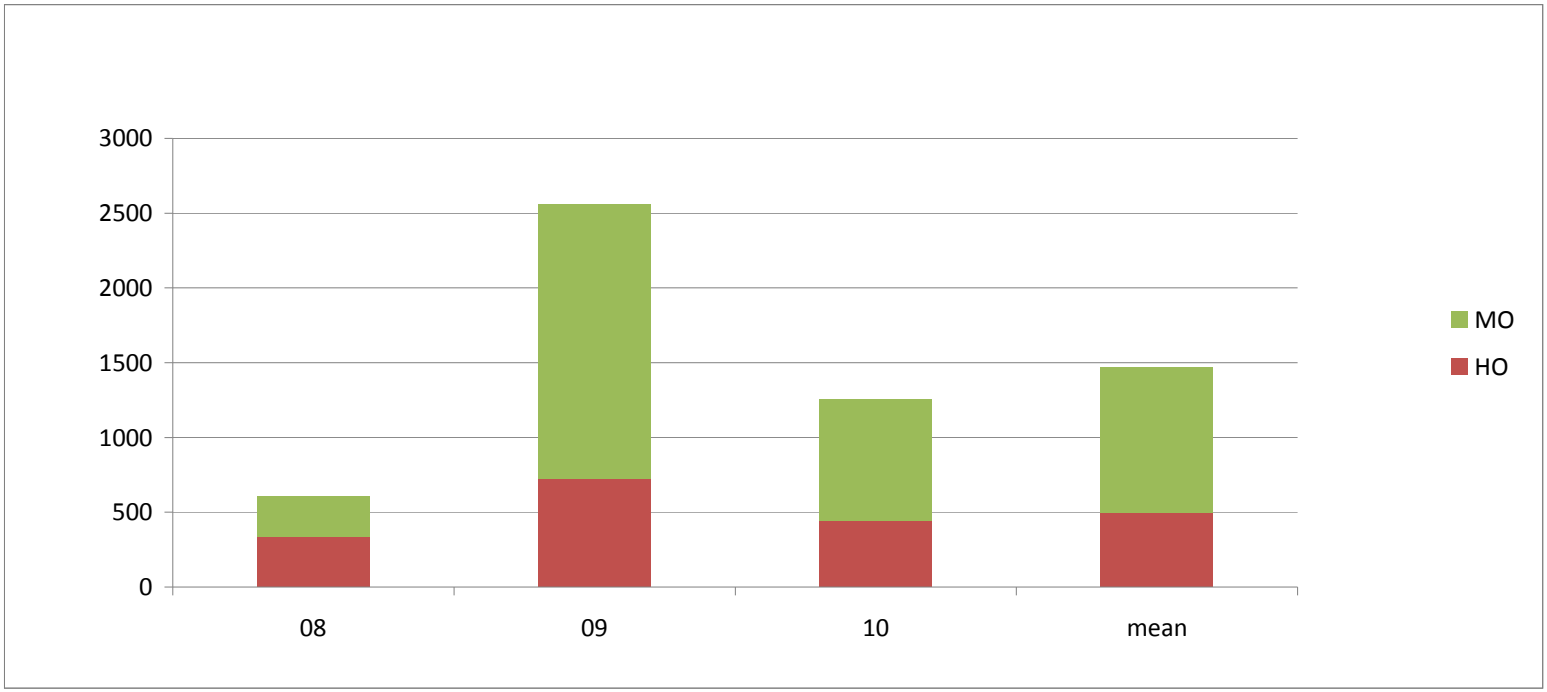
7 Nutrient Mangement Acres are based on county implementation percentages.

8 Soil Conservation district (SCD) provides data for Soil Conservation Water Quality plans (SCWQP)

9 Cover crop acres come from MACS only, in order to capture one year, not cumulative since 1999 & are average of 2008, '09, & '10 acres

Triadelphia Reservoir/Brighton Dam 02-13- Howard County



Cover Crop Summary				
Brighton	2008	2009	2010	mean
HO	333.4	724.5	439.9	499.3
MO	273.3	1836.7	815	975

Triadelphia Reservoir/Brighton Dam 02-13- Montgomery County

	Percent	Lbs P/yr	
P source Lbs/yr Baseline	100%	65953	MO County Portion 33%
FOREST	4%	2637	
SCOUR,	28%	18462	
CROP	50%	32968	10879
PASTURE	6%	3956	1306
ANIMAL WASTE	3%	1978	653
DEVELOPED	9%	5934	

MO County Portion 33%	Percent	Lbs P/yr
Ag baseline		12838
Reduction Goal Ag	58%	7446
Ag Implementation	90%	6710
Ag Remaining to do	10%	736

BMPs Installed since 1/1/2004

				Lbs N/unit	Lbs P/unit	Lbs N/yr	Lbs P/yr
309	Agrichemical Handling Facility	1	NO				
313	Waste Storage Structure	1	ST	531	101	531	101
328	Conservation Crop Rotation	1703.6	AC	12.48	0.6	21261	1022
329	No-Till	1469.6	AC	4.61	1.13	6775	1661
342	Critical Area Planting	9.9	AC	9.55	0.25	95	2
362	Diversion	1550	FT				
382	Fencing # 472	5.3033448	AC	6.79	0.91	36	5
390	Riparian Herbaceous Cover	30.3	AC	9.55	0.25	289	8
393	Filter Strip	3.2	AC	16.92	1.08	54	3
412	Grassed Waterway	0.7	AC	9.55	0.25	7	0
511	Forage Harvest Management	97.7	AC	7.15	0.48	699	47
528	Prescribed Grazing	102.2	AC	9.71	1.43	992	146
558	Roof Runoff Structure	2	NO	69	13	138	26
561	Heavy Use Area Protection	0.6	FT				

Triadelphia Reservoir/Brighton Dam 02-13- Montgomery County

574	Spring Development #1	15	AC	1.3	0.1	20	2
595	Pest Management	2366.2	AC				
614	Watering Facility #4	60	AC	3.4	0.46	204	28
620	Underground Outlet	900	FT				
633	Waste Utilization	140.4	AC				
642	Water Well	1	NO				
590	Nutrient Management Plans7	8161	AC	3.11	0.3	25381	2448
	SCWQ Plans8	7744	AC	0.93	0.14	7202	1084
340	Cover Crop Acres9	975	AC	9.48	0.13	9243	127
		Triadelphia Reservoir/Brighton Dam Totals				72926	6710

Notes

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9 Cover crop acres come from MACS only, in order to capture one year, not cumulative since 1999 & are average of 2008, '09, & '10 acre

Triadelphia	Farm Acres	% of Total
HO	18764	67%
MO	9098	33%
Total	27862	100%

BMPs Installed Since 1/1/2004
02-13-11-08 Brighton Dam

Howard

BMP	EXTENT_DONE	SCS_UNIT
313-Waste Storage Structure	3.00	ST
314-Brush Management	52.80	AC
328-Conservation Crop Rotation	115.00	AC
329-No Till	51.30	AC
340-Winter Cover Crop	178.60	AC
342-Critical Area Planting	1.70	AC
350-Sediment Basin	1.00	ST
362-Diversion	1,590.00	FT
378-Sediment Control Pond	4.00	ST
382-Fencing	20,124.00	FT
390-Riparian Herbaceous Cover	105.50	AC
391-Riparian Forest Buffer	7.00	AC
410-Grade Stabilization Structure	6.00	ST
412-Grassed Waterway	6.13	AC
512-Pasture & Hay Planting	92.20	AC
516-Pipeline	1,597.00	FT
521D-Pond Sealing or Lining, Compacted Cl	1.00	N
528-Prescribed Grazing	257.00	AC
558-Roof Runoff Structure	3.00	NO
561-Heavy Use Area Protection	0.30	AC
574-Spring Development	6.00	NO
590-Nutrient Management	1,762.50	AC
595-Pest Management	627.70	AC
606-Subsurface Drain	2,670.00	FT
614-Watering Facility	19.00	NO
620-Underground Outlet	1,369.00	FT
633-Waste Utilization	51.30	AC
642-Water Well	1.00	NO
644-Wetland Wildlife Habitat Management	1.00	AC

Montgomery

BMP	EXTENT_DONE	SCS_UNIT
309-Agrichemical Handling Facility	1.00	NO
313-Waste Storage Structure	1.00	ST
328-Conservation Crop Rotation	1,703.60	AC
329-No Till	1,469.60	AC
340-Winter Cover Crop	229.40	AC
342-Critical Area Planting	9.90	AC
362-Diversion	1,550.00	FT
382-Fencing	472.00	FT
390-Riparian Herbaceous Cover	30.30	AC
393-Filter Strip	3.20	AC
412-Grassed Waterway	0.70	AC
511-Forage Harvest Management	97.70	AC
528-Prescribed Grazing	102.20	AC
558-Roof Runoff Structure	2.00	NO
561-Heavy Use Area Protection	0.60	AC
	5	
574-Spring Development	1.00	NO
590-Nutrient Management	2,109.20	AC
595-Pest Management	2,366.20	AC
614-Watering Facility	4.00	NO
620-Underground Outlet	900.00	FT
633-Waste Utilization	140.40	AC
642-Water Well	1.00	NO
	6	

BMPs Installed Since 1/1/2004
646-Shallow Water Development and Manage 1.00 AC
666-Forest Stand Improvement 7.00 AC
728-Stream Crossing 8.00 ST

Patuxent Reservoirs Watershed Protection Group
Technical Advisory Committee

Meeting Summary

July 22, 2010

TAC Members Present
Martin Chandler (WSSC), Meo Curtis (MCDEP), Kristal McCormick (HSCD), Bert Nixon (HCHD), Susan Overstreet (HCDPZ), Mark Symborski (M-NCPPC)

Other Attendees
Carol Ann Barth (PG DER), Angela Morales (HCDPW), Steve Nelson (WSSC), Steve Stewart (Baltimore County Department of Environmental Protection and Resource Management, DEPRM)

Administrative Business

- The meeting was called to order at 1:50 pm by Chair Mark Symborski.
- TAC members reviewed the April 2010 meeting summary. There was one comment to add a note stating the meeting originally scheduled for June 15 actually occurred July 22nd. The summary was approved unanimously with this clarification.
- Ms. Francoise Carrier will be the new Policy Board Member from M-NCPPC taking the place of Mr. Royce Hanson.
- TAC members discussed whether to replace the TAC representative from MDDNR vacated by John McCoy. Steve Nelson suggested that a representative from Patuxent River State Park system be invited. As an alternative to continuing DNR membership, Meo Curtis suggested that the TAC invite DNR staff to TAC meetings as needed. She pointed out that the DNR had not sent a representative to the TAC meetings in a number of years.

  ACTION ITEM: Steve Nelson will send a letter to DNR Park Management with an invitation to nominate a staff member to serve as DNR's representative on the TAC.

On-Going Business

Mark Symborski noted that MC Council approved the **Water Resource Element**, and that the formal adoption was pending.

Work Program Updates

PG DER Watershed Assessment of PG County portion of Rocky Gorge Reservoir watershed
Carol Ann Barth informed the TAC of recent initial efforts to identify opportunities for watershed restoration of urban land areas in the Prince George's County portion of the Rocky Gorge Reservoir watershed.

- Initial field reconnaissance occurred earlier in the summer.
- Next steps include a follow up visit in late August to revisit sites identified initially to gather more information.

- The goal is to provide a draft document of the plan by the autumn of 2010.
- This effort is mostly opportunistic without a specific SWM retrofit acreage goal. From initial investigations, limited public outreach opportunities do exist.
- The focus of this effort will be on publicly owned land; any project on public land will likely involve inter-agency efforts.

Reservoir Monitoring - Trends Analysis Report Summary

- Steve Nelson commented that this report was not completely finalized and that it would not be a true trend analysis since WSSC lacked the needed statistical software to evaluate trends during the preparation of the report. He added that this report should be finalized before the Policy Board meeting.
- Martin Chandler added that WSSC recently purchased two software products that will aid in the storage, retrieval and analysis of reservoir and other types of water quality data (DASLER, Statistica). Dr. Chandler commented that appropriate statistical techniques will help to de-seasonalize data prior to trend detection.

Funding PRW Agricultural Cost Share Program – not discussed

Montgomery County MS4 NPDES Permit – TMDL Implementation
Meo Curtis updated the TAC (via PowerPoint presentation) on progress made to establish a plan to address WLA portion in the Montgomery County portion of Patuxent Reservoirs Watershed.

Highlights of Ms. Curtis's presentation include:

- County strategy will be to **restore** watersheds with impaired streams and **protect** watersheds with unimpaired streams (as indicated by stream biological indices). For Patuxent Reservoirs Watershed, the focus will be on protection since stream biological indices scores do not indicate impairment.
- Increasing management of runoff from impervious areas is the main driver for this permit.
- Land areas not served by the County storm drain systems (e.g., ag-zoned land, WSSC & M-NCPPC lands) are not covered by the MC DEP MS4 permit, but MCPS schools properties are covered by the permit.
- Center for Watershed Protection Watershed Treatment Model will be used to estimate pollutant reductions and track implementation progress.
- County Executive and Council have approved CIP budget for stormwater retrofit projects to meet impervious area runoff management requirement ($86M over five years).

New Business

Steve Stewart presented (via PowerPoint presentation and several handouts) Baltimore County DEPRM's approach and experiences used to incorporate TMDL implementation planning with development of watershed management plans.

Highlights of Mr. Stewart's presentation and discussion that followed include:

- DEPRM has established and coordinates a comprehensive framework to create and implement watershed plans called Small Watershed Action Plans (SWAPs) (at 8-digit MD DNR basin code scale) to address all components of TMDLs (including point and non-point sources), among others priorities (e.g., MS4 permit conditions, MD Tributary Strategy goals).

- In addition to restoring degraded streams/watersheds, their plans also focus on protecting streams that are not degraded (i.e., Tier 2 waters).
- A Steering Committee is established for each SWAP to oversee the development and writing of the SWAPs. The Steering Committees are composed of representatives from local and State agencies, environmental and watershed groups, business interests, and others.
- Stakeholders play key roles in the SWAP development via three meetings of three separate groups of stakeholders. Each of these groups provides input on issues related to one of three different land use types (urban, suburban, and rural). These meetings have number of goals which include establishing vision statements, goals, and known problems; evaluating various restoration opportunities (focused on citizen-based ones); and reviewing and providing feedback on the finished draft plans. DEPRM realized that the burden of implementing the entire plan could not be done alone; therefore, they look to members of the stakeholder groups as well as members of the Steering Committee for assistance.
- DEPRM incorporated EPA's CWA Section 319 a-i criteria into SWAPs to increase likelihood of future funding.
- The equivalent interagency group to the TAC for the Baltimore Reservoir system concluded that it was *not the appropriate committee to implement reservoir TMDLs*. Instead, the Baltimore reservoirs TMDL implementation plans will be developed (as with all other watershed plans) through the existing comprehensive framework established and coordinated by DEPRM.
- So far, a TMDL implementation plan for the Prettyboy Reservoir, which has a watershed that has a large agricultural land use (non-point source) component, was coordinated and developed using the DEPRM SWAP framework. SCD will have the primary responsibility for implementing the prescribed plan actions for the agricultural area, and DEPRM will have the responsibility for implementing actions for the stormwater point-sources.
- Since reservoirs are viewed as nutrient sinks and are further away from the Chesapeake Bay, they may be considered a low priority for funding in the near future with the focus on meeting Bay TMDLs. Because of this, the importance of protecting sources of drinking water, especially reservoirs, needs to be continually made to policy makers, so that protection and regulatory compliance efforts for these critical resources do not end up under funded.
- DEPRM's focus is now primarily on watersheds which do not have a significant agricultural component, and will later return to watersheds that also have a significant non-source pollutant contribution.

Patuxent Reservoirs Interim Watershed Management Report – recommendations & next steps

Mark Symborski introduced several related issues including: 1) the need to review recommendations from Versar's report to determine which would be priorities for action by the TAC, 2) the potential formation of a TMDL Working Group, and 3) the need to update the Performance Measures & Goals for Priority Resources (Priority Resource Charts) [created in October, 2003], especially their relationship to TMDL goals.

- The TAC revisited the formation of a TAC TMDL implementation Work Group that had been deferred from earlier this year. The general consensus was that an overall TMDL implementation framework is needed that includes and coordinates the non-point source components of TMDLs. In the absence of a lead agency, as in Baltimore County, to coordinate the creation of the plan, it is not yet clear what that framework should be. It was generally felt, however, that as group which has the various key local agency stakeholders, the TAC should take a primary role in helping to develop the framework and overseeing its implementation. Formation of a TMDL Implementation Work Group to help with this process will be an important consideration for next year.

- TAC members discussed a need for MDE and other State agency leadership and guidance to help develop the needed framework.
- It was noted that the State will be turning to the task of developing Phase II WIPS for the Bay TMDLs later this fall, and that MDE has indicated that it should then have time to begin a dialogue with the TAC on addressing the remaining gaps in comprehensive TMDL implementation including the non-point source component, and coordination issues at the local government level.
- TAC members discussed the Priority Resources Charts that were to be revisited by the TMDL Implementation Workgroup. It seems clear that the Priority Resources Charts have not been sufficient to affect agency work programs enough to effectively implement the Priority Resources Goals and timetables. The continuing problem of insufficient resources to achieve these goals and timetables will need to be addressed. For now it was agreed that the TAC should go ahead and begin the process of reviewing and updating the Priority Resources Charts, including the establishment of reasonable timelines.
- TAC members agreed with Susan Overstreet's suggestion to combine the Priority Resources tables with related recommendations from Versar's report, and other TMDL implementation-related issues and needs, and then distribute to the TAC to determine which recommendations are significant and could be incorporated with related action items for each Priority Resource.

  ACTION ITEM: Steve Nelson will integrate Priority Resources tables with Versar's recommendations and distribute to the TAC, soliciting comments prior to the September meeting.

Meeting Topics for next TAC meeting in September 2010

- The 2010 annual meeting of the Policy Board (PB) will be a primary focus.
- Susan Overstreet suggested that the TAC could present the revised and updated Priority Resources Tables to the PB at this year's annual meeting.
- Similar to past annual meetings of the PB, TAC member agencies could communicate how well they have implemented the current work plan and how the TMDLs will affect these action items.
- In addition, the TAC should emphasize recommendations for action, not only reporting results.

Next TAC Meeting Date

TAC meeting was originally scheduled for September 14 but it was agreed that a different date be selected because of the gubernatorial primary election. Alternative dates were offered, but none was decided upon.

ACTION ITEM: Steve Nelson will email the TAC with meeting date options for September.

Adjournment

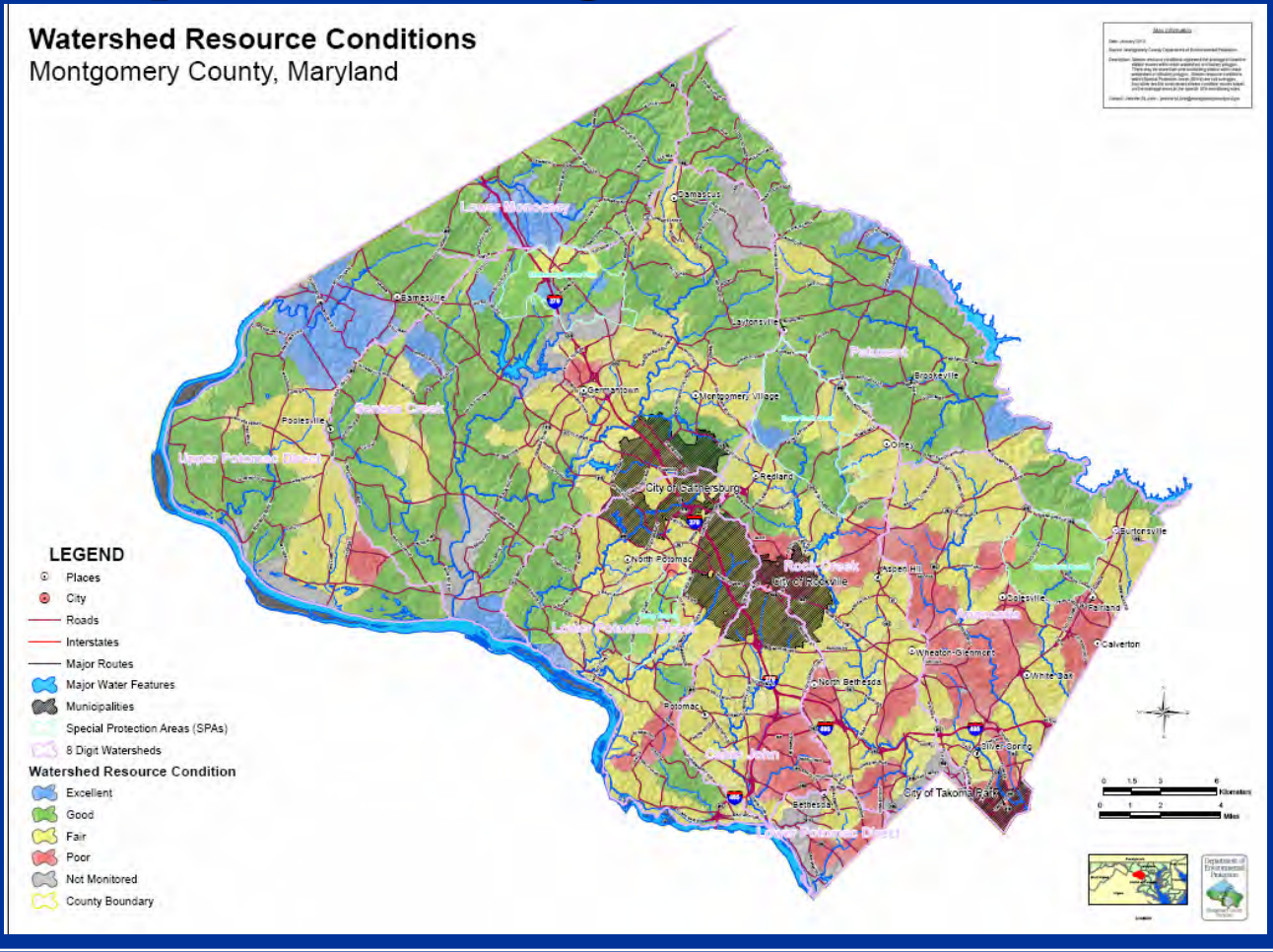
The meeting adjourned at 4:15 pm.

This summary was prepared by Steve Nelson.

State of Our Streams: Restoration and Protection

Department of Environmental Protection
Montgomery County Maryland

Restore impaired streams, protect good streams



Watershed Profiles: Patuxent

- 61 square mile drainage area in Mo Co.
- Shares Triadelphia and Rocky Gorge Reservoirs with Howard County
- County's required reductions for TMDL
  - Sedimentation (Triadelphia) 0%
  - Phosphorus (Triadelphia and Rocky Gorge) 15%
- 5% Overall Impervious Cover
- High Quality (Tier II) stream segment in Triadelphia
- 163 Well Performing BMPs
- 1 stream restoration project

TMDL Approach

- Map and evaluate Best Management Practices (BMPs)
  - Existing BMPs
  - County's planned stormwater management and stream restoration projects
- Look for additional opportunities
  - Low Impact Development (LID) retrofits
- Involve stakeholders and increase public Stewardship
- Develop Countywide Strategy using all watersheds

Baseline Conditions

- Develop baseline GIS coverage for County lands and stormwater management facilities
  - Included vs Excluded areas
  - Stormwater facility drainage
  - Baseline of controlled areas
- BMP era based on design
  - pre-1986 (priority for retrofit)
  - post-1986 (considered MEP for retrofit potential)
- Run WTM for baseline conditions

What is the WTM?

- A simple, spreadsheet model for the rapid assessment of watershed treatment options
- Annual output
  - Pollutant loads (lbs/acre)
  - Bacteria Loads (MPN/yr)
  - Runoff Volume (acre-ft/yr)

Center for Watershed Protection

Watershed & Stormwater Management · Webcast Series

WTM Terminology

- Primary Sources
- Secondary Sources
- Management Practices
- Discount Factors

WTM: Sources

- Primary sources are land use based
  - Residential (low, medium, high)
  - Commercial, Industrial
  - Forest, Rural
- Secondary sources cannot be calculated only on land use
  - SSOs
  - Septic systems
  - Channel Erosion

WTM: Management Practices

- Structural
- Non-Structural
  - streetsweeping
  - downspout disconnections
  - vegetated buffers
- Programmatic
  - lawn care
  - pet waste

WTM: Discount Factors

- No BMP is 100% effective
- Limited space
- Operation and maintenance
- Imperfect knowledge

Calculate Reductions from Planned BMPs

- Compare baseline load to TMDL load
- Calculate reductions from any BMPs with “approved” dates after the TMDL adoption date
- Calculate reductions from planned stormwater ponds and LID retrofits on CIP inventory through FY15 (High Priority)
- Compare to reductions needed to meet TMDL wasteload allocation

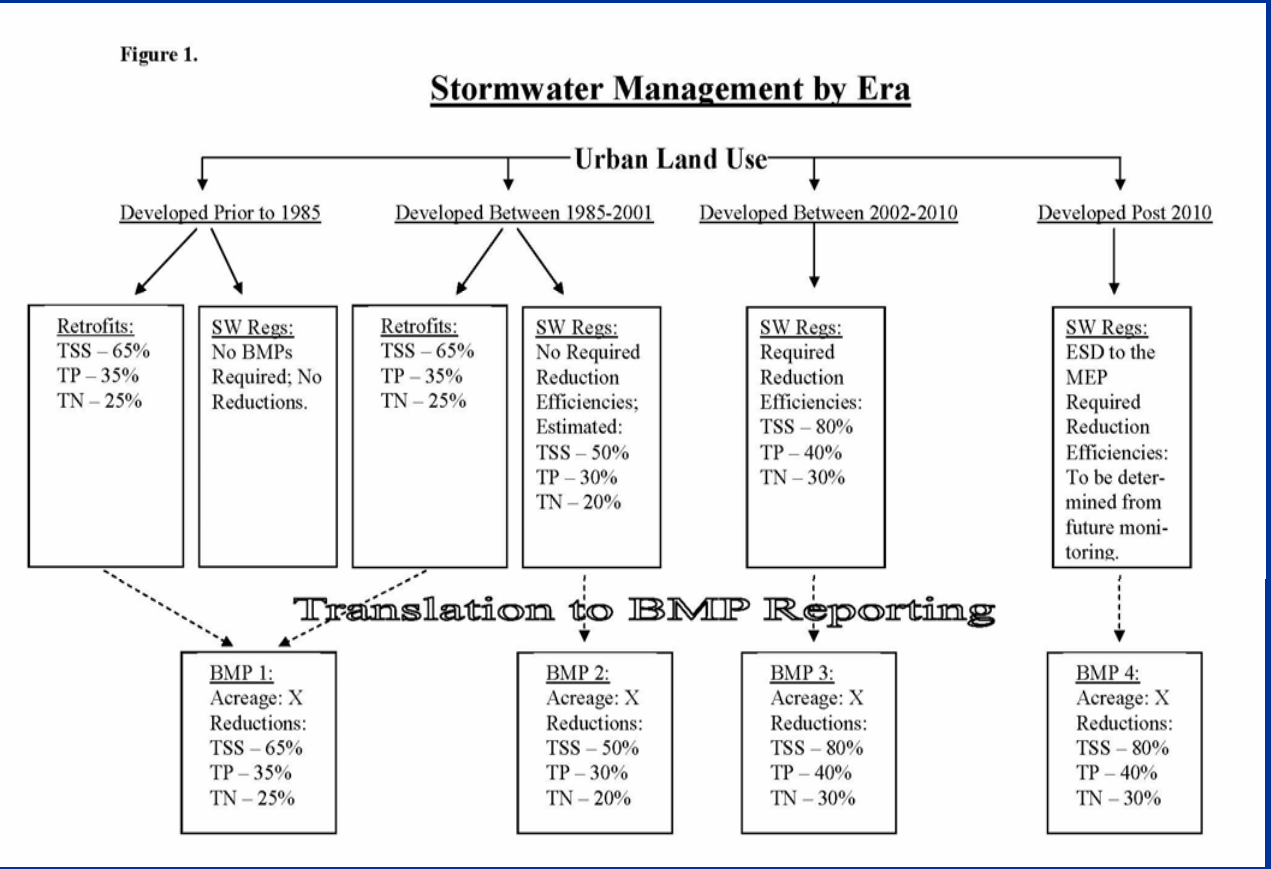
Calculate Reductions Beyond Planned CIP projects

- Calculate possible reductions from projects on other public sites not on CIP inventory (Future/Low Priority)
- Calculate possible reductions from LID practices on private land (RainScapes)
- Calculate possible reductions from other BMPs (reforestation, streetsweeping, e.g.)
  - public
  - private lands
- Compare with reductions needed to meet TMDL wasteload allocation

Issues for TMDLs

- Differences in base year for land cover and BMPs
  - Anacostia, 2002
  - Patuxent, 1997
- MDE only included residential and commercial land for County's wasteload allocation
- WTM land use categories differ from those used by MDE for TMDL development
- BMP types and percent removal must be compatible with MDE assumptions for tracking for Bay TMDL reductions

MDE proposal for Bay Program



QUESTIONS?

- Visit our website and send us an e-mail
  www.montgomerycountymd.gov/stormwaterpermit

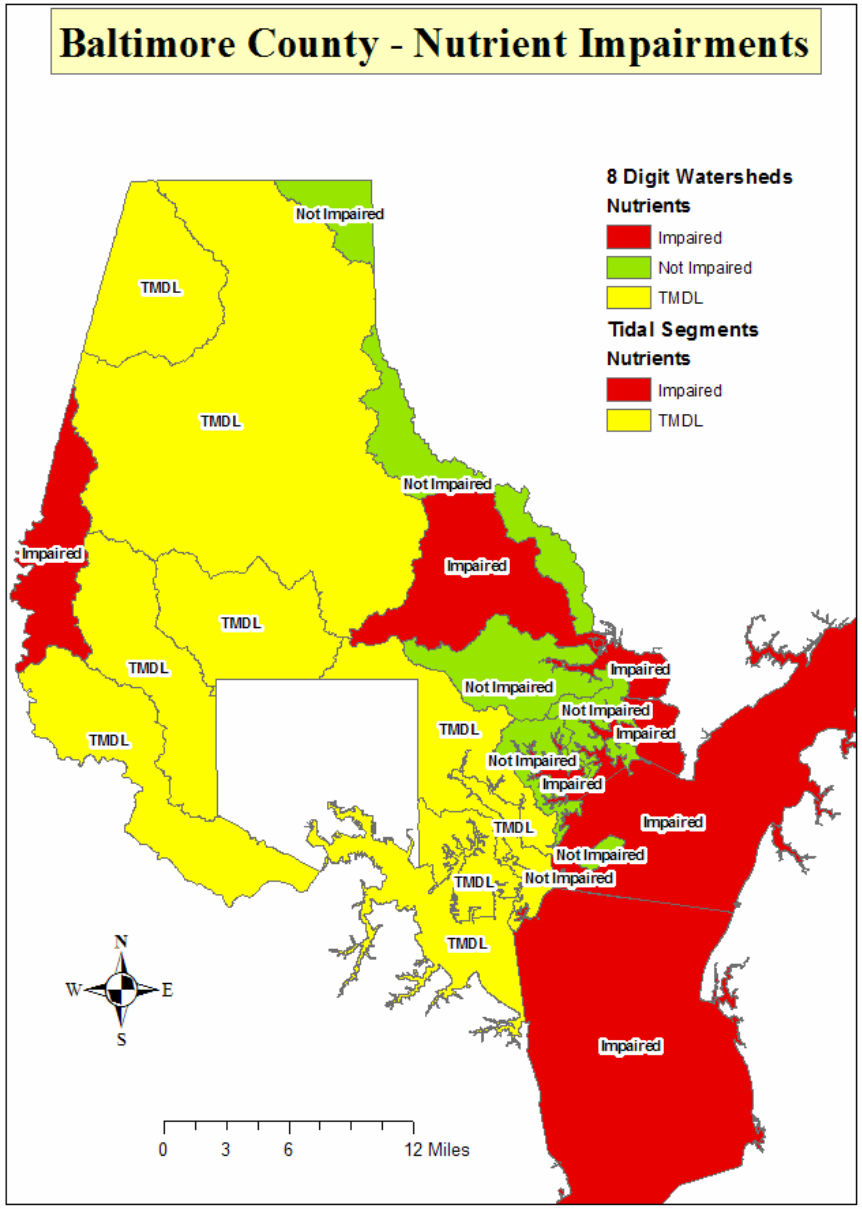
Baltimore County

TMDL Implementation Planning

Patuxent TAC Meeting
July 22, 2010

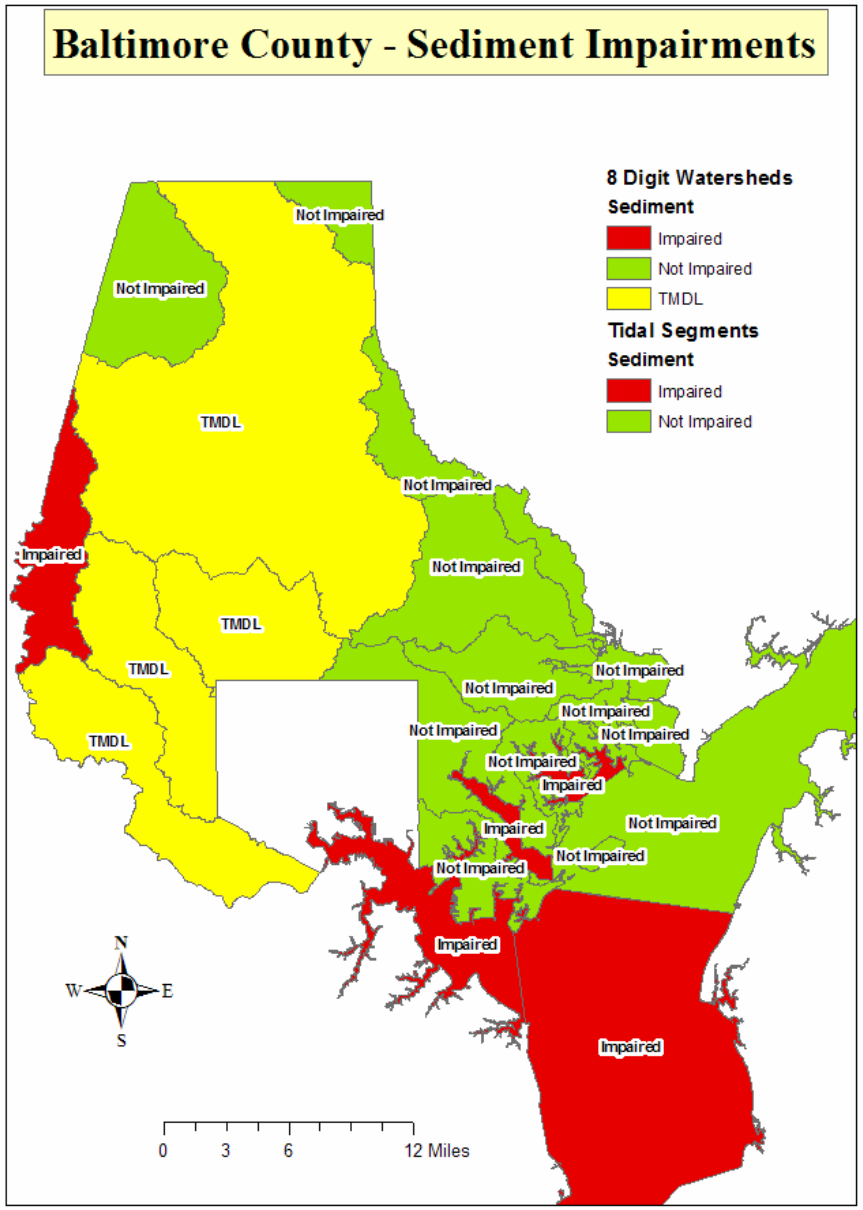
Impaired Waters, TMDLs, and Tier II Waters Status

- 21 Existing TMDLs
  - Nutrients 4
  - Bacteria 7
  - Sediment 4
  - Chlordane 3
  - Mercury 3
- 30 Additional Impairment Listings not counting biological community impairment listings
- Tier II Waters
  - 33 miles listed
  - 90,000 acres of drainage to Tier II waters



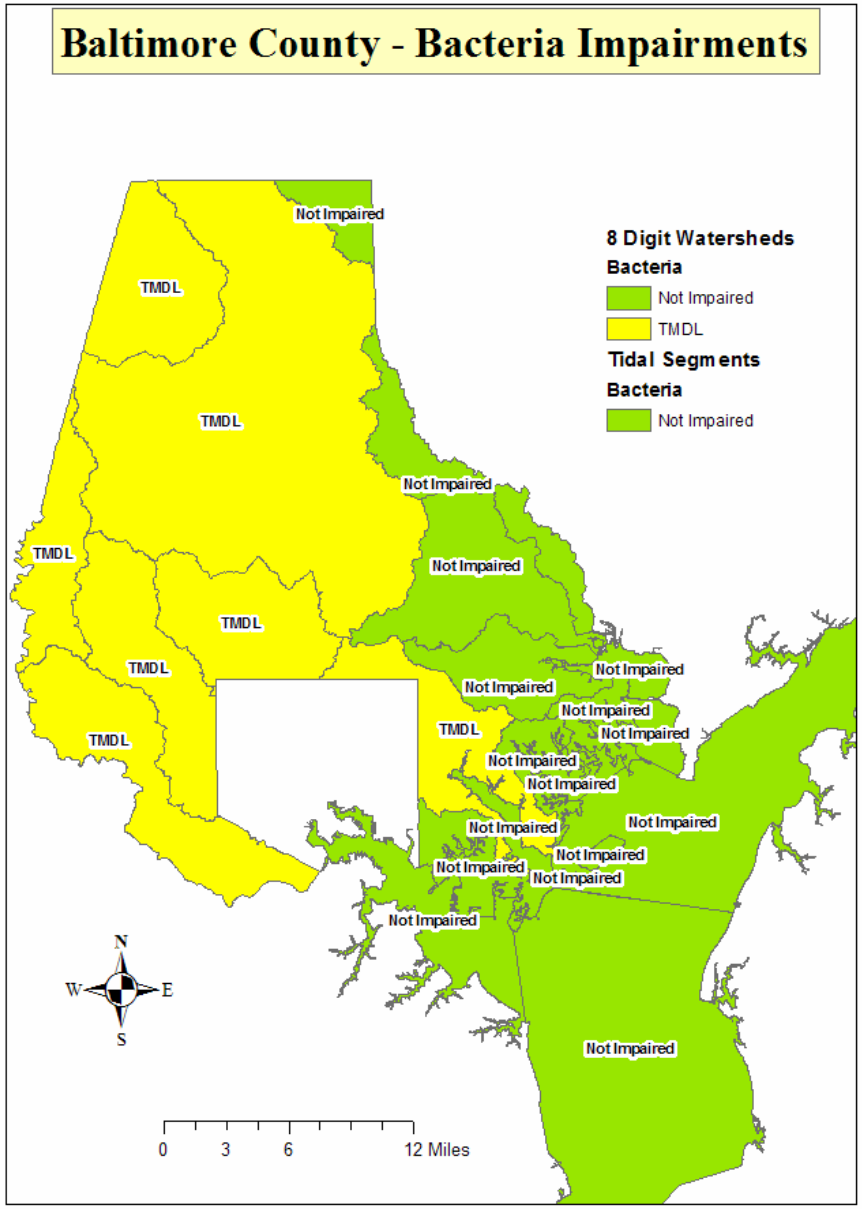
Nutrient TMDLs

- Based on receiving waters
  - Reservoirs
  - Tidal Water Segments
- Reductions Required
  - Reservoirs 50-54% Phosphorus Reduction
  - Tidal Waters 15% N and P Reduction
- Chesapeake Bay TMDL
  - Urban Stormwater ???
  - Agriculture ???
  - WWTP ???



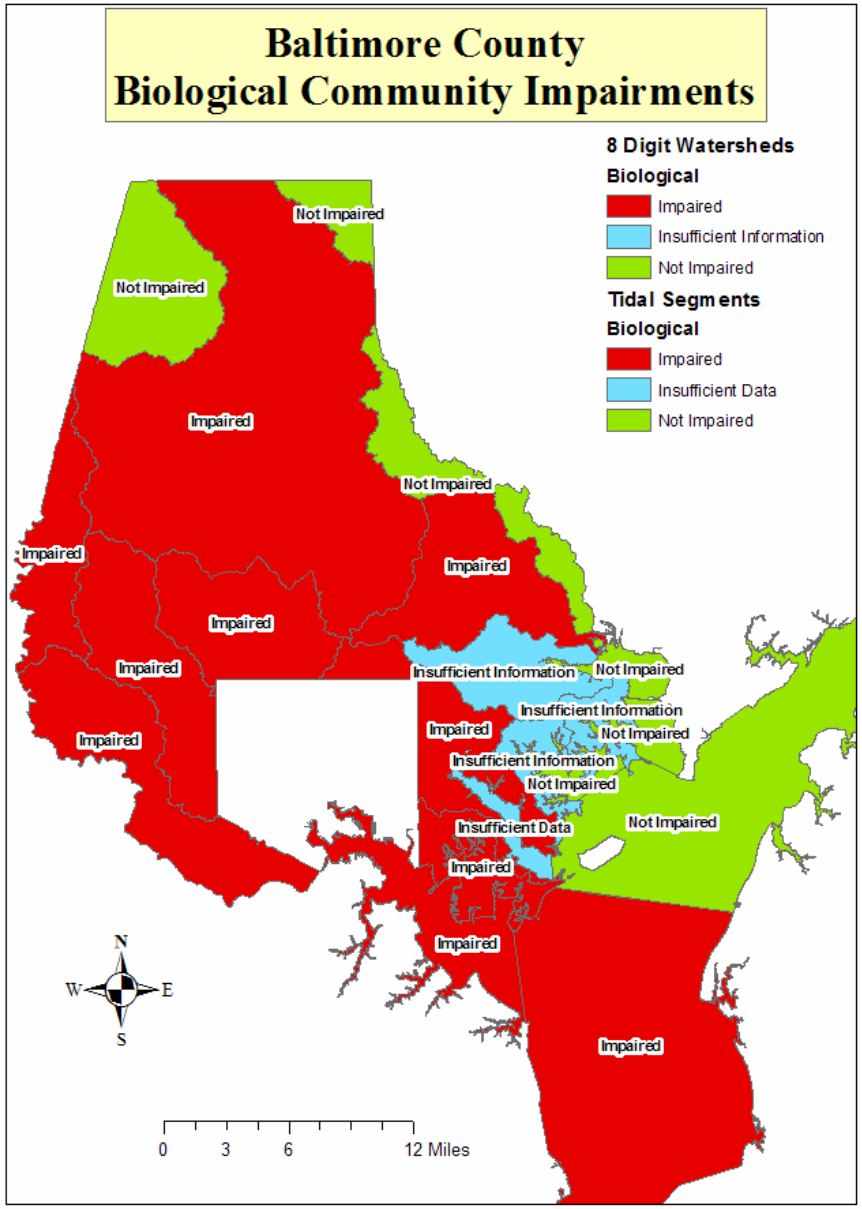
Sediment

- Based on
  - Infilling of reservoirs
  - Biological Community impairment
- Reductions Required
  - Loch Raven infilling – 25%
  - Biological Community Impairment – varies, even within a watershed
- Chesapeake Bay TMDL ???



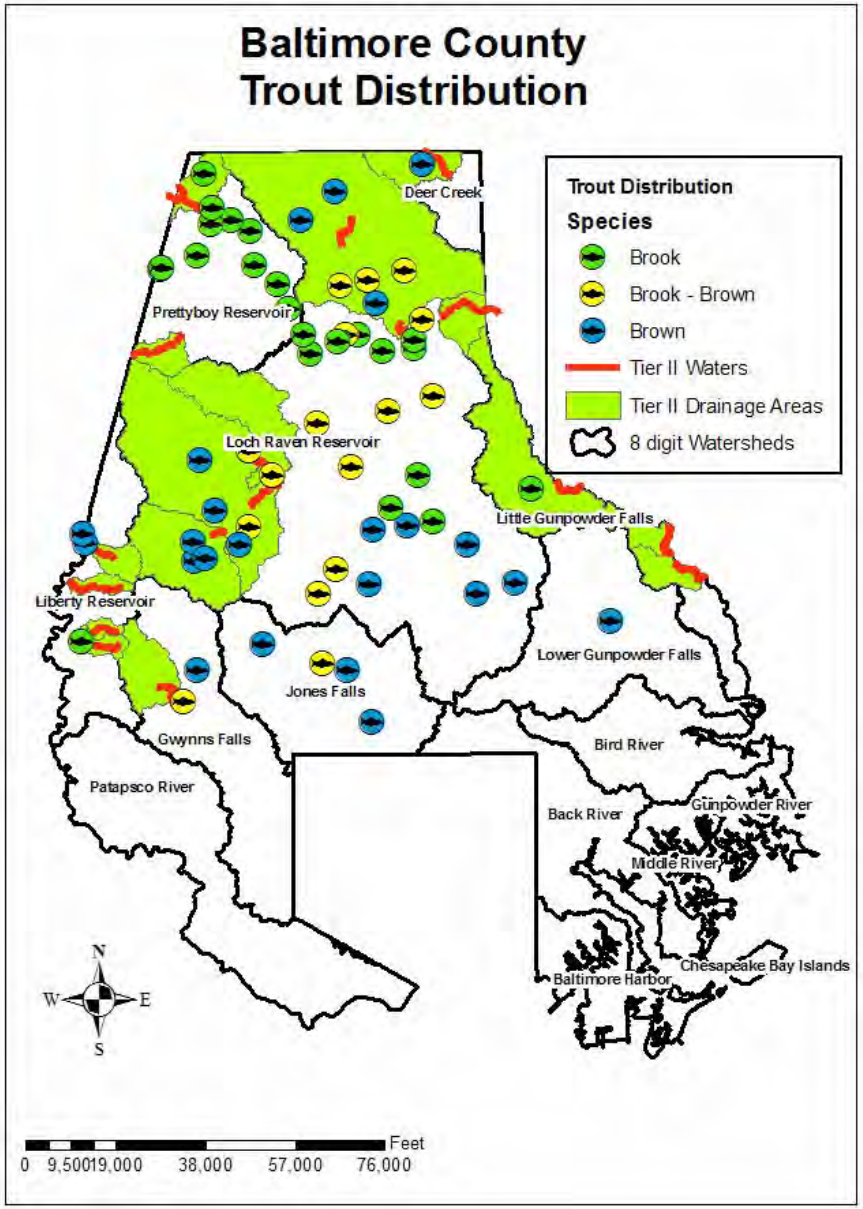
Bacteria

- Based on MDE monitoring
- Reductions vary up to 98%
- No assurance of meeting standards due to wildlife component



Biological Impairments

- Based on MBSS data
- Biological Stressor Identification Methodology used to identify impairing substances
- Sediment, chlorides, and sulfate often identified as impairing substances.



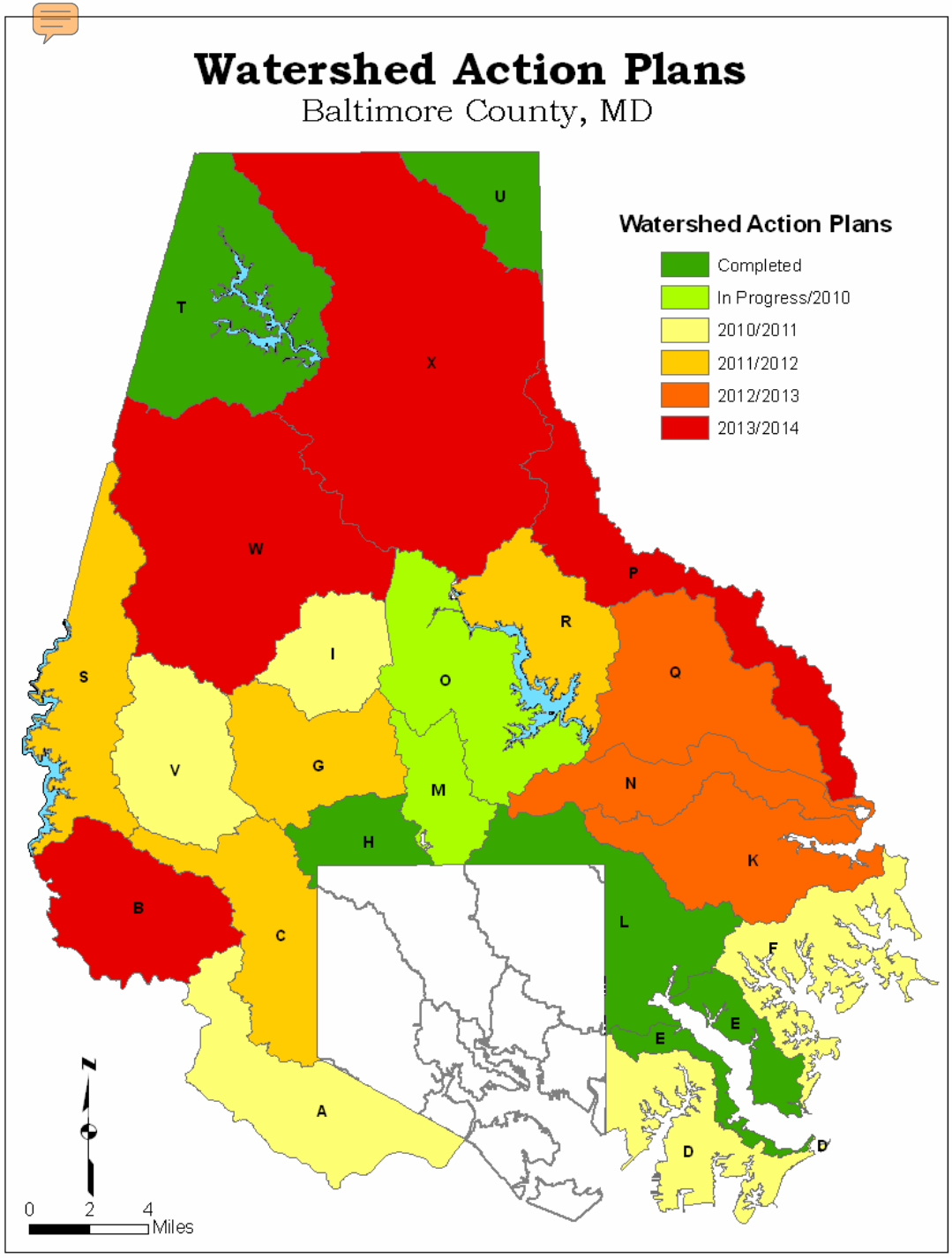
Tier II Waters and Trout Resources

- Higher quality waters
  - Tier II identified through MBSS data
- Requires additional protection

Small Watershed Action Plans

Small Watershed Action Plan Framework

- **Finer scale**
  - **23 planning areas**
- **Involve stakeholders**
  - **Steering Committee**
  - **Stakeholder Meetings**
- **Set measurable goals**
  - **TMDL reductions**
  - **Protection of high quality waters**
  - **Stakeholder identified goals**
- **Identify projects**
- **Cost/ benefit**
- **Prioritize activities**
- **Monitor success**



Small Watershed Action Planning Areas

- **Planning Area Selection**
  - **Similarity of issues**
  - **Active watershed group**
  - **Completed TMDLs**
- **5 Completed Plans**
- **3 Underway**
- **4 to be initiated this fall**

Stakeholders

- Steering Committee
  - Composed of representatives from organizations that have a stake in restoration or protection of aquatic resources, or whose activities may impact aquatic resources.
  - Develops vision statement and goals
  - Provides input for overall plan direction
  - Reviews and comments on plans
  - Commits organization to future actions.
- Stakeholders
  - Composed of any interested citizen in the planning area
  - Provides input on vision, goals, actions

Stakeholders

- Bring awareness to watershed improvement activities that are not currently recognized
- Bring awareness to watershed impacts that are not currently recognized
- Report conditions in the area that could affect County projects
- Identify new projects and ideas to enhance our watersheds
- Goals
- How to measure success

Small Watershed Action Plan Stakeholder Meetings

- Characterization and goal setting
- Restoration options prioritization
- Small Watershed Action Plan presentation

County's Water Quality Goals

- NPDES municipal discharge permit
- TMDL's - Total maximum daily loads, water quality standards
- Chesapeake Bay Program TMDL
- MD Tributary Strategies Program

Example Vision Statement

Our vision for the Prettyboy Reservoir watershed in 2050 is a watershed with a balance of responsible land uses; sustainable development with environmentally sensitive site design and smart growth practices implemented in the watershed; agriculture as a viable, productive, and environmentally responsible land use; a healthy forest that is economically and ecologically sustainable; habitat that supports terrestrial biodiversity; clean and adequate water supply to the users of ground water for private wells and the users of the reservoir for drinking water; healthy water quality that sustains a balanced ecosystem; a sustainable cold water fishery; an informed citizenry who practice proper stewardship and understand their impact on the watershed; and responsible use of the watershed for recreation.

Example Prettyboy Reservoir Goals

- Goal Statement: *Ensure that the Prettyboy Reservoir and its watershed will continue to serve as a source of high-quality raw water for the Baltimore metropolitan water-supply system.*

- Goal Statement: *Maintain existing aquatic biodiversity and recreational fishing opportunities in the Prettyboy Reservoir Watershed, while exploring opportunities to expand and restore them in currently unsuitable areas.*
- Goal Statement: *Ensure that all surface waters in the watershed will support existing environmental, wildlife-habitat and aesthetic purposes, and will support beneficial recreational uses.*

- Goal Statement: *Restore, maintain and create riparian, wetland and upland wildlife habitat that provide for terrestrial biodiversity.*

- Goal Statement: *Achieve ecological and economic sustainability of forest resources, including retention and expansion of existing forest cover, expansion of riparian buffers, control of exotic and invasive species, and education about and promotion of sustainable forestry practices.*

Example Prettyboy Reservoir Goals

- Goal Statement: *Encourage farmers to continue farming and protect farms by supporting their "right to farm," through conservation planning and implementation of best management practices, in an effort to improve water quality and to maintain and preserve the existing agricultural land within the Prettyboy Reservoir watershed.*

- *Goal Statement: Employ zoning categories and apply development regulations and guidelines that are protective of the natural resources in Prettyboy Reservoir watershed, and require environmentally sensitive design for any future development.*

- Goal Statement: *Support existing inter-governmental commitments and mandates for management of environmental resources.*

Completed SWAPs On-line

- Prettyboy

  http://www.baltimorecountymd.gov/Agencies/environment/watersheds/ep_pbmain.html

- Upper Back River and Tidal Back River

  http://www.baltimorecountymd.gov/Agencies/environment/watersheds/ep_brmain.html

- Lower Jones Falls

  http://www.baltimorecountymd.gov/Agencies/environment/watersheds/ep_jonesmain.html

Field Assessments

- Upland Assessments
  - Neighborhood Source Assessments
  - Institutional Site Assessments
  - Pervious Area Assessments
  - Hotspot Site Assessments
- Stream Assessments
- Stormwater Facility Assessments

Characterization Report

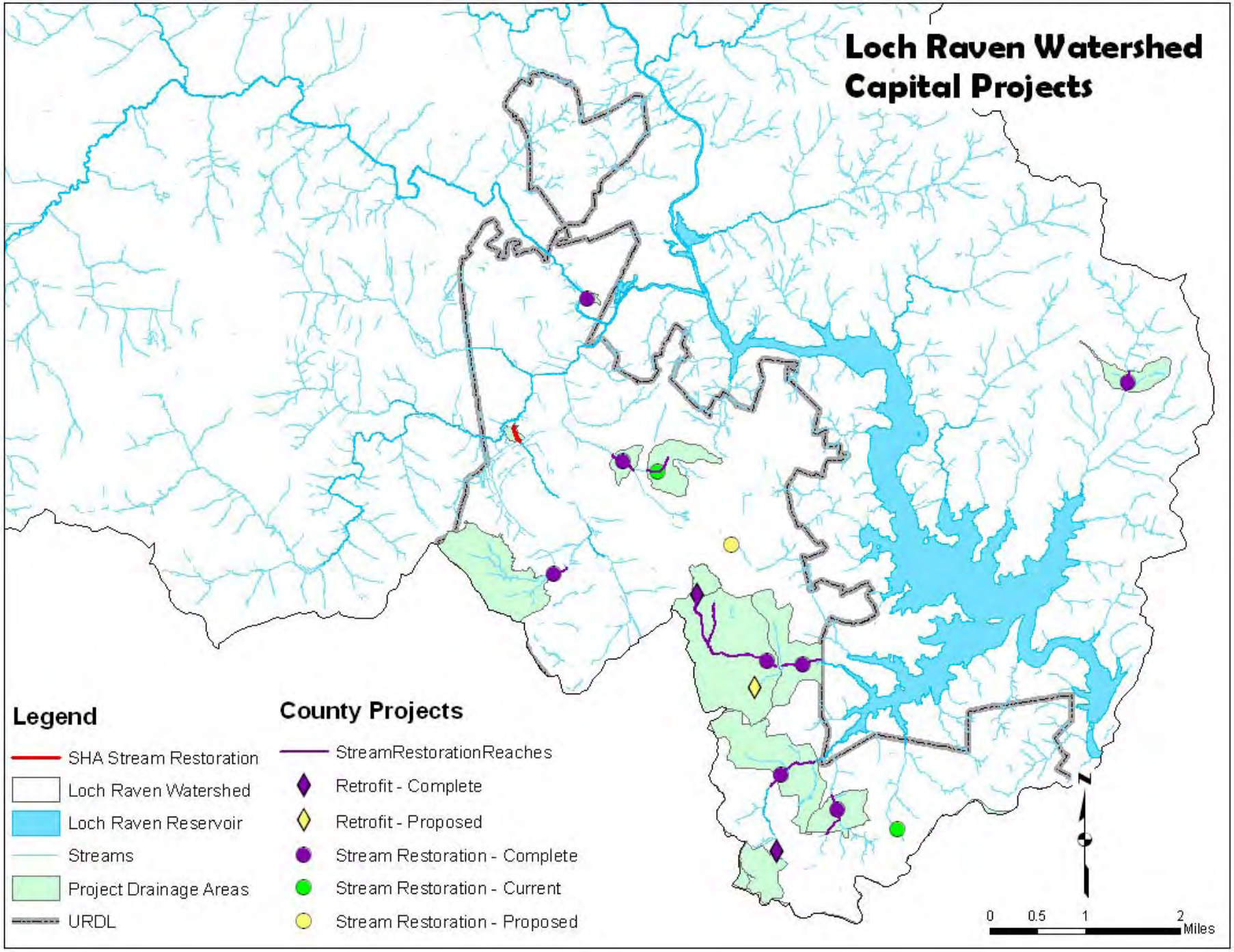
- GIS analysis of natural and human modified landscapes (topography, geology, soils, forest cover, streams, riparian buffer, land use, population, impervious surfaces, etc.
- Summary of existing water quality data
- Summary of field collected data

Structure of SWAP Report

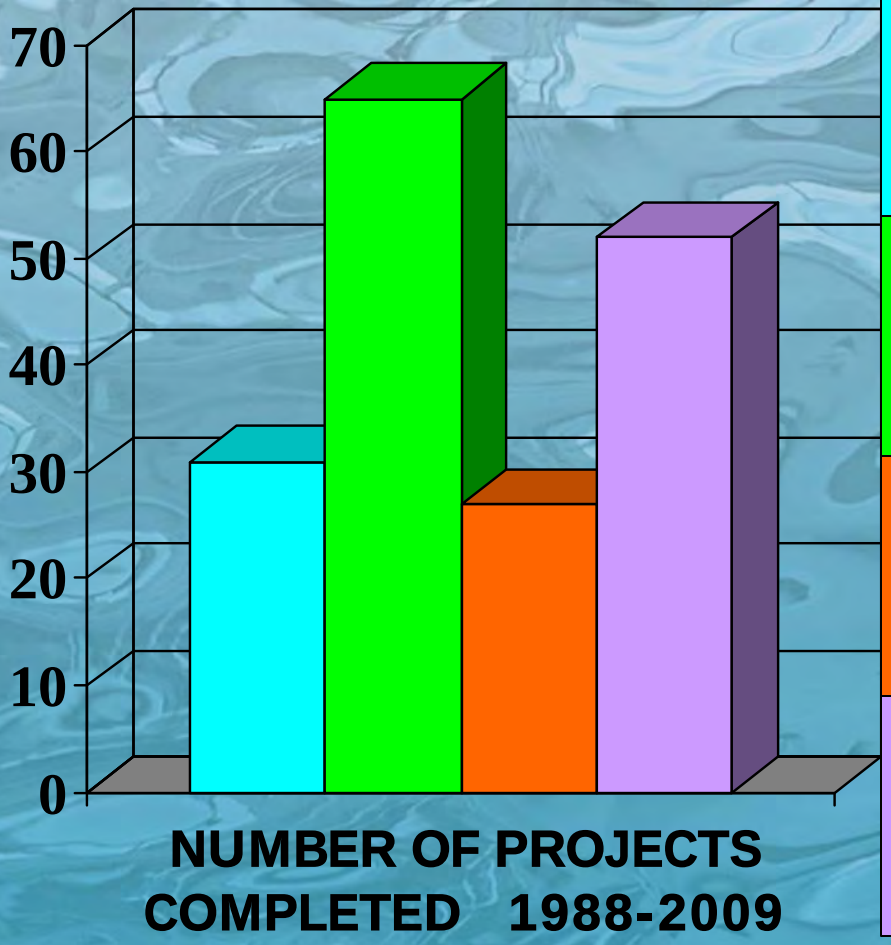
- Chapter 1 – *Introduction*
- Chapter 2 – *Details of vision, goals, and objectives*
- Chapter 3 – *Description of Restoration Strategies*
- Chapter 4 – *Restoration Strategies by subshed*
- Chapter 5 – *Performance measures and long term implementation*
- Appendix A – *Action Strategy Table*
- Appendix B - *How EPA A-I Criteria are met*
- Appendix C – *Cost Analysis and Funding Sources*
- Appendix D - *Latest CBP BMP Reduction Efficiencies*

Post SWAP Development

- The Steering Committee becomes the Implementation Committee
- The Implementation Committee meets twice yearly to assess progress and discuss what is working what is not
- Tracking of implementation and progress toward meeting TMDL reductions
- Monitoring results


Loch Raven Watershed
Capital Projects
Legend
SHA Stream Restoration
Loch Raven Watershed
Loch Raven Reservoir
Streams
Project Drainage Areas
URDL
County Projects
StreamRestorationReaches
Retrofit - Complete
Retrofit - Proposed
Stream Restoration - Complete
Stream Restoration - Current
Stream Restoration - Proposed
N
0 0.5 1 2
Miles

Waterway Improvement Program - Restoration Efforts To Date



- 2,500 acres treated
- 22 miles of streams
- 4 miles of shoreline
- 31 miles of channel

Regional Cooperative Agreements

- Reservoir Management Program
  - Webpage: http://www.baltometro.org/content/view/10/124/
  - Contact: Gould Charshee 410-732-0500 gcharshee@baltometro.org
- Baltimore Watershed Agreement
  - Webpage: http://www.baltimorecountymd.gov/Agencies/environment/watershedagreement/index.html

Contact Information

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BALTIMORE COUNTY
MARYLAND

BALTIMORE COUNTY
Department of Environmental Protection
and Resource Management

Patuxent Reservoirs Watershed Protection Group
Technical Advisory Committee

Meeting Summary

September 21, 2010

Participants
Martin Chandler (WSSC), Meo Curtis (MCDEP), Kristal McCormick (HSCD), Angela Morales (HCDPW), Katherine Nelson (M-NCPPC), Steve Nelson (WSSC), Bert Nixon (HCHD), Susan Overstreet (HCDPZ), David Plummer (MSCD), Howard Saltzman (HCDPW), Mark Symborski (M-NCPPC), Debbie Weller (PGCDER).

Administrative Business

- The meeting was called to order at 1:40 pm by Chair Mark Symborski.
- TAC members reviewed the July 2010 meeting summary. Susan Overstreet suggested one addition for clarification on page 3. Specifically the second sentence in the last bullet and should read, "The general consensus was that an overall TMDL implementation framework is needed that includes and coordinates the non-point **source** components of TMDLs." The summary was approved unanimously with this clarification added.
- TAC members reviewed a draft letter from TAC chair responding to Bob Hoyt's August, 2010 letter
    - Meo Curtis noted that this draft was circulated to the TAC within the past 2 days and she requested more time to review the response letter.

      ACTION ITEM: TAC members will review the letter if possible during the same week following the September TAC to enable the letter to be sent as soon as possible.

- Steve Nelson noted that November 9 will be the date for the 2010 Annual Meeting of the Policy Board.
- Meo Curtis presented a 2010 Izaak Walton League Honor Roll Award to Katherine Nelson for her efforts in using volunteers to establish a forested buffer along Reddy Branch. Ms. Curtis commented that this award recognizes the conservation efforts of individuals who exemplify outstanding work in the area of outreach. Ms. Nelson acknowledged the needed assistance that the TAC provided, especially from Carrie Capuco and Ms. Curtis.

On-Going Business

Work Program Updates

Stream System Priority Resource

- Meo Curtis noted that MCDEP biologists recently discovered a freshwater mussel in the Hawlings River. This is the first identification by DEP of this mollusk in the Montgomery County portion of the Potomac. It has been identified previously in lower reaches of good

quality streams within the Potomac watershed in MC (termed Stronghold Watersheds by MD DNR)

Reddy Branch Planting Project Update

- Katherine Nelson noted that little progress has been made by the Patuxent Riverkeepers to contact a private landowners in the Reddy Branch watershed with existing Forest Conservation Easements to plant buffers within this easement.
- A NRCS grant application to was not successful, although modifications to FC regulations may free up funds to allow this to happen via in house
- Existing plantings (2 ½ years old) are doing well, and the recent plantings by the IWLA with tree cages are doing very well (with none lost).

Montgomery County MS4 NPDES Permit – TMDL Implementation

- Meo Curtis reiterated that within the Patuxent Reservoirs Watershed the consultant team is focusing on opportunities to establish riparian forest buffer plantings rather than urban stormwater management retrofit projects. The pollutant load reductions estimated from these plantings would count against those allocated for the urban land uses in the watershed.

New Business

Discuss Approach to Priority Resources given TMDLs for reservoirs

Mark Symborski summarized what was accomplished since the last TAC meeting related to TMDL implementation and the Priority Resource Charts. He explained that creating a TMDL implementation plan will be essential in meeting the Reservoirs TMDLs, and that any significant revisions to the Priority Resource Charts would need to be undertaken as part of developing the plan. Because of this, the focus now should be on what needs to be done and what resources will be required to develop the plan. As a result, a slightly different approach than what was originally planned for this meeting was introduced beginning with discussion of a draft TMDL Implementation Framework. This discussion was followed by presentation of a list of key implementation items from the Priority Resources charts on which to focus in the interim before the TMDL implementation plan is initiated.

TMDL Implementation Framework

Mr. Symborski then introduced the draft framework of key steps needed to eventually address the nutrient and sediment TMDLs (see attached). Key points from the ensuing discussion include:

- A key component that has been missing in order to more effectively implement action items to protect the Priority Resources is getting needed funding into the actual budgets of Policy Board member agencies.
- Progress in developing a TMDL implementation plan will therefore depend on Policy Board approval, and corresponding changes to member agency work programs and budgets.
- The draft framework can be used to provide guidance to a TMDL implementation workgroup
- A TMDL implementation workgroup should be created next year and meet regularly to coordinate development, with the help of a consultant, of a TMDL Implementation Plan. The participating agencies will be responsible for various aspects of plan development, consistent with approved work program and budget adjustments. This workgroup will report back to the full TAC, which will function as a steering committee (similar to Baltimore County DEPRM process).

ACTION ITEMS:

1. **Mark Symborski and Steve Nelson will re-cast the Framework chart in light of potentially hiring a consultant to develop a TMDL implementation plan and distribute to TAC for review and comments.**
2. **TAC members will review and agree on the draft TMDL Implementation Framework chart to be included in the 2010 Annual Report and in the presentation to the Policy Board review.**

TMDL Implementation Plan Funding Options

There was much discussion about how to fund the development of a TMDL Implementation Plan.

- TAC members discussed the possibility of estimating costs needed to fund a consultant to develop a plan to present to the Policy Board at the upcoming meeting. This cost estimate should include an effort to model the non-point source load reductions needed to address the load allocation portion of the TMDLs plus an estimate for WLA portion for Howard County.
- TAC members considered existing staff time to devote to implementing the plan given current, limited staff and financial resources. Current agency budgets are very constrained, although MC already has developed needed GIS layers that would reduce staff effort. One of the major efforts of most of the TAC members would likely be reviewing TMDL implementation planning documents prepared by the consultant.
- The issue of the timing of the annual Policy Board meeting (typically in early November) in relation to TAC agency budget cycles was discussed, but there was no clear consensus on moving the meeting date.
- The possibility of having additional Policy Board meetings when needed to address important issues was discussed. Steve Nelson pointed out that this is allowed under the Patuxent Reservoirs Watershed Protection Agreement.
- Bert Nixon suggested that if this TMDL effort is linked with other TMDL county-wide efforts, then it may increase chances for support and funding.
- Howard Saltzman suggested that since TMDL implementation has yet to begin [except for MC MS4 permit conditions], it may become a priority to counties in the near future.
- Funding of this effort should be clearly stated both in the 2010 Annual Report and the upcoming Policy Board meeting. The TAC discussed that the Policy Board should be made aware of the upcoming request in advance of the meeting, and the TAC discussed the possibility of also including a list of agency responsibilities (GIS assistance, report review, etc.) with the funding request to the Policy Board.
- TAC members discussed how the non-point source portion of the plan could be developed. The agricultural component of the LA will probably need an approach similar to that used for Montgomery County's WLA implementation plan.
- Meo Curtis suggested that MDE should attend the 2010 Policy Board meeting to support the idea of creating a TMDL implementation plan, and the TAC agreed.

ACTION ITEMS:

1. **TAC members decided that if the TAC can identify needed resources to develop the plan in time for the 2010 Policy Board meeting, then it will present this cost estimate to the Policy Board and advise the Board to secure the needed funds for FY12. In addition, this budget**

item should be added to the Work Plan expenditures chart at the end of the 2010 Annual Report.

2. **David Plummer and Kristal McCormick will contact John Rhoderick of MDA to investigate how MDA can assist in this effort to estimate the cost of developing the LA (agricultural) portion of a TMDL Implementation Plan for the reservoirs watershed.**
3. **David Plummer will contact personnel from Anne Arundel and Caroline Counties to determine how they modeled their non-point source loads from agriculture.**
4. **Meo Curtis will inquire if Dr. Rich Eskin or someone else at MDE will support the TAC's idea to fund a TMDL Implementation Plan either by attending the upcoming Policy Board meeting or via a letter of support.**

Priority Resources Discussion Pending TMDL Implementation Plan

Mark Symborski stated that the TAC should continue to address existing priority resources goals and implementation items while waiting for funding for the TMDL implementation plan. He distributed a draft list of key priority resource action item on which the TAC should focus their efforts in the interim (attached).

- TAC members discussed the idea introduced by Mark Symborski to ask Policy Board for additional funding to support these interim goals; however, most TAC members wished to focus on funding the TMDL Implementation Plan.
- Since timelines for many implementation items have been missed, Meo Curtis asked if they are still worth accomplishing.

ACTION ITEM: Steve Nelson will distribute electronic copy of Key Interim Priority Resource Goals to TAC members for review and comment.

Decide which recommendations to include as priorities from Versar Inc. report

- Both Susan Overstreet and Meo Curtis expressed their doubts that few if any of these recommendations would be useful to the TAC in the future given their vagueness.
- No action was taken by the TAC.

Annual Meeting of the Policy Board

- TAC members suggested that obtaining needed funds to develop a TMDL Implementation Plan should be the main focus of the 2010 Policy Board Meeting.
- TAC members suggested that the presentation to the Policy Board should provide an update of current progress initially followed by a discussion of the need to begin TMDL implementation and a request for funding a TMDL Implementation Plan.

Annual Report (considering TMDLs/Resource Charts recommendations)

- TAC members suggested inserting the TMDL related information in the front of the report, and to create a new section in the report titled TMDL Implementation.

Adjournment

The meeting adjourned at 4:05 pm.
This summary was prepared by Steve Nelson.

Appendix F: Patuxent Reservoirs Watershed Protection Agreement

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 Chairpersons of Committee and Workgroups

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.

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

10/31/96
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

Appendix G: Patuxent Reservoirs Protection Strategy Agricultural MOU and Amendments

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 H: Technical Advisory Committee Members and Participants

Patuxent Reservoirs Watershed Protection Group
Technical Advisory Committee - 2010

Members

	Name	Agency	Alternate
1	Martin Chandler	WSSC - Environmental Group	
2	Ken Clare	Prince George's County Department of Health Division of Environmental Health	
3	Meo Curtis	Montgomery County Department of Environmental Protection	
4	Dwight Dotterer	Maryland Department of Agriculture Office of Resource Conservation	
5	Kristal McCormick	Howard Soil Conservation District	
6	Bert Nixon	Howard County Department of Health	
7	Susan Overstreet	Howard County Department of Planning & Zoning	Lindsay DeMarzo
8	David Plummer	Montgomery Soil Conservation District	
9	Howard Saltzman	Howard County Department of Public Works Stormwater Management Division	Angela Morales
10	Mark Symborski	Maryland-National Capital Park & Planning Commission	Katherine Nelson
11	Debbie Weller	Prince George's County Department of Environmental Protection	Jerry Maldonado
12	Stan Wong	Montgomery County Department of Permitting Services	
13	VACANT	Maryland Department of Natural Resources	
14	VACANT	Maryland Department of the Environment	

Participants

	Name	Agency
1	Sandy August	WSSC, Office of Communications & Community Relations
2	Carole Ann Barth	Prince George's County Department of Environmental Protection
3	Bob Ensor	Howard Soil Conservation District
4	Mohammad Habibian	WSSC, Environmental Group
5	Steve Nelson	WSSC, Environmental Group
6	Ryan Zerbe	Montgomery County Department of Environmental Protection