

Welcome to your

DEPARTMENT OF THE ENVIRONMENT

Watershed Restoration in Prince George's County

November 12, 2014



DEPARTMENT OF THE ENVIRONMENT

Prince George's County, Maryland



Welcome
from
Jerry Maldonado



Purpose of Hearing



- Review why watershed restoration plans are needed in Prince George's County.
- Inform the public of contents of the draft watershed restoration plans.
- Answer questions and collect comments on the draft plans.



Speakers



- Melissa DeSantis, Environmental Scientist, Tetra Tech
- Mark Sievers, Environmental Engineer, Tetra Tech
- Sam Stribling, Biologist/Monitoring and Assessment Specialist, Tetra Tech

Technical Panel



- Jerry Maldonado, DoE
- Lilantha Tennekoon, DoE

- Mike Clar, Tetra Tech
- Mark Sievers, Tetra Tech
- Sam Stribling, Tetra Tech

REGULATORY OVERVIEW



Two Regulatory Drivers



Under the Clean Water Act

1. Municipal Separate Storm Sewer System (MS4) Permit
2. Total Maximum Daily Loads (TMDLs) = *Pollution Diet*

MARYLAND DEPARTMENT OF THE ENVIRONMENT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT

PART I. IDENTIFICATION

A. **Permit Number:** 11-DP-3314 MD0068284

B. **Permit Area**

This permit covers all stormwater discharges from the municipal separate storm sewer system (MS4) owned or operated by Prince George's County, Maryland, and all incorporated municipalities within the County except for the City of Bowie.

C. **Effective Date:** January 2, 2014

D. **Expiration Date:** January 1, 2019

The screenshot shows the Maryland Department of the Environment website. The main heading is "Current Status of TMDL Development in Maryland (A L)". Below this is a table with four columns: Basin Name, DEN 8 digit Basin Number, Impairment, and Status. The table lists four basins: Choptank River, Patuxent River, Rappahannock River, and York River. The status for each basin is "Approved" with a date. A search bar and navigation menu are visible at the top of the page.

Basin Name	DEN 8 digit Basin Number	Impairment	Status
Choptank River	02120202	Phosphorus & Sediment	Approved: March 24, 2014
Patuxent River	02110201	Toxicity	Approved: March 14, 2012
Rappahannock River (New)	02140202	TCB	Approved: March 21, 2012
York River	02110201	Sediment	Approved: July 27, 2012
York River	02140202	TCB	Approved: June 9, 2012

Water Quality Impairments



What is an MS4?

Municipal Separate Storm Sewer System (MS4) = Conveyance system owned by a state, city, town, or other public entity that discharges to waters of the United States.

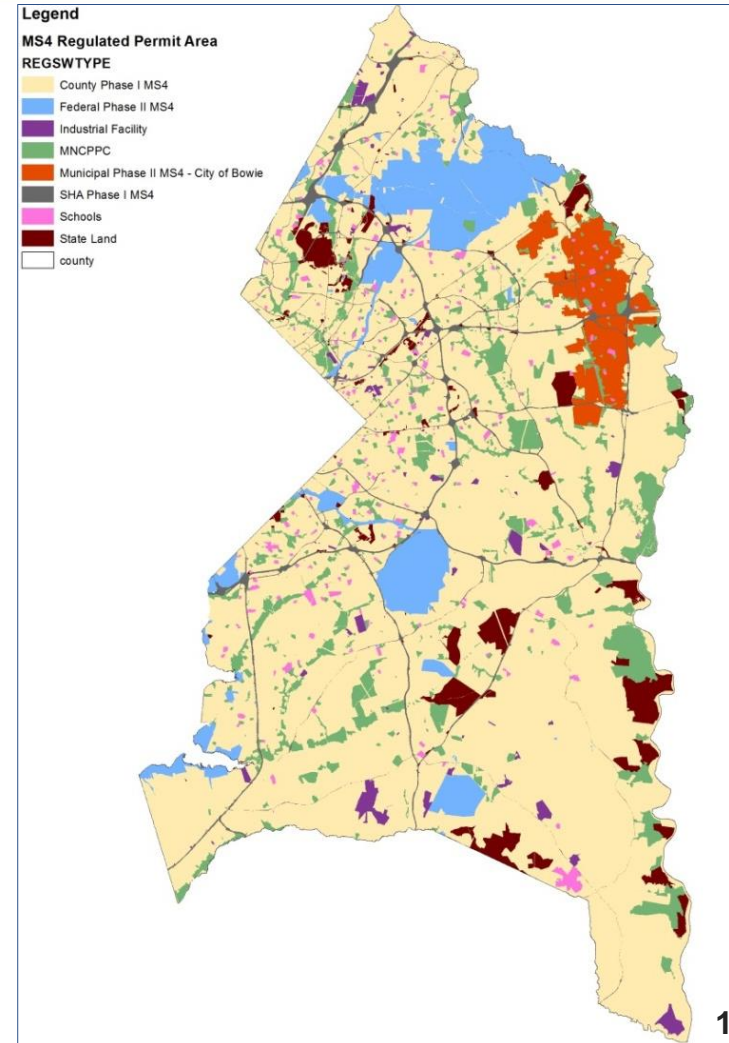


County's MS4 Regulated Lands



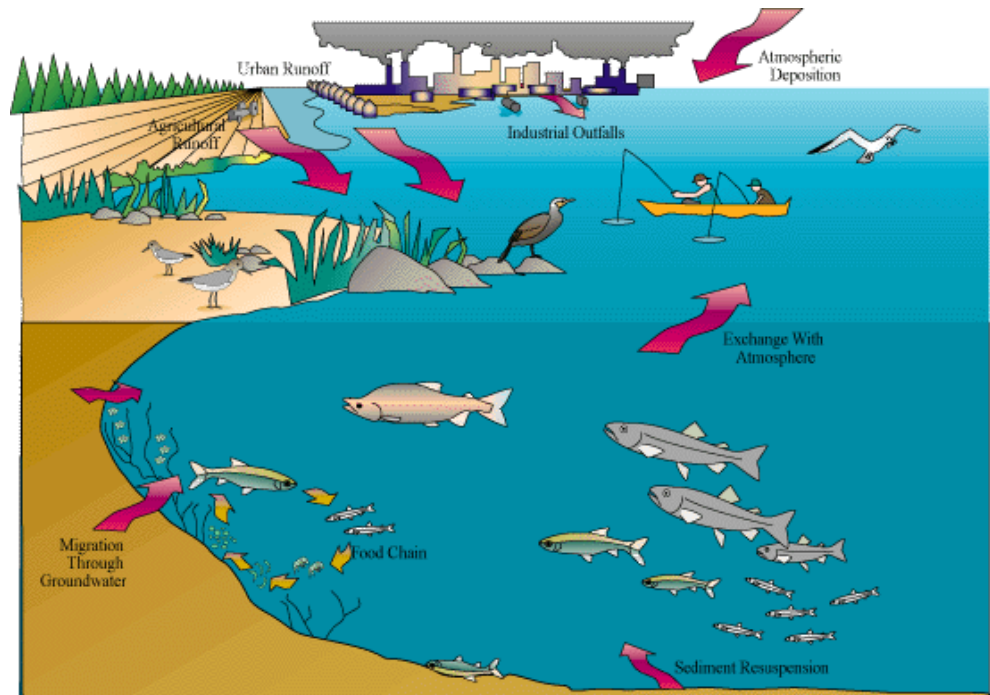
■ Excluded Properties:

- Federal
- State
- SHA
- City of Bowie
- M-NCPPC
- Board of Education



Pollution Diet (TMDLs)

- Addresses a single pollutant or stressor.
- Allocations issued to natural, point, and nonpoint sources.



TMDLs can be viewed as a pollution diet.

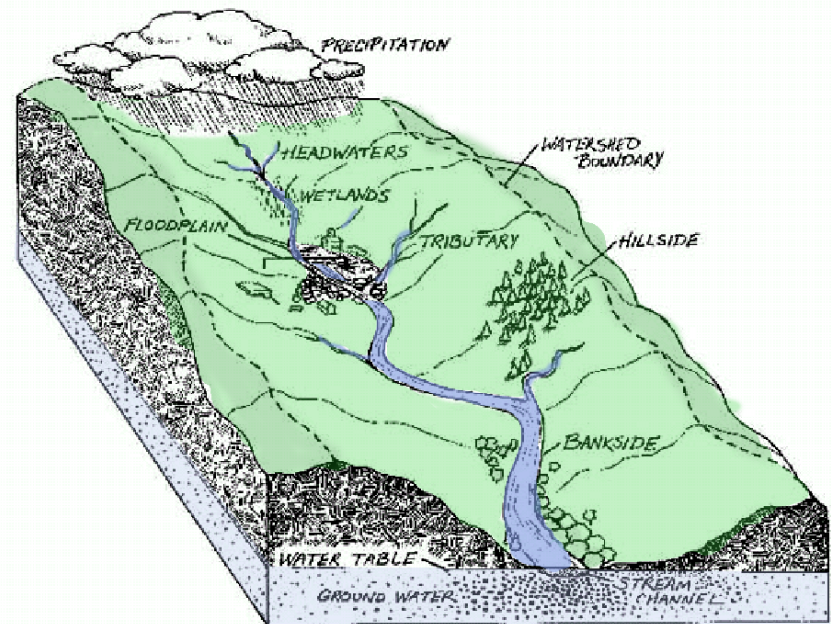
Watershed Mechanics



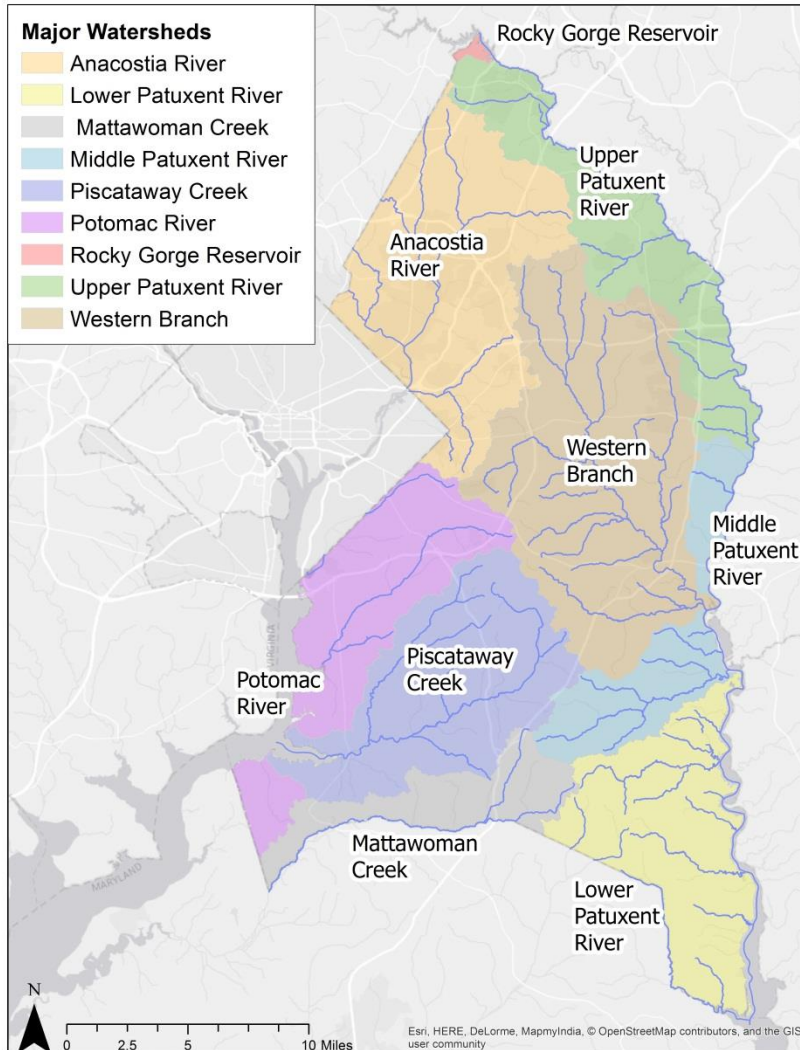
What Is a Watershed?

Watersheds are like sponges and drain like funnels . . .

- Land accumulates pollutants from urban, agricultural, and other areas.
- Whatever is on the land washes into the waterways directly or via storm drains.
- Appropriate land management practices can greatly reduce polluted runoff.



County Watersheds



■ Five Restoration Plans

- Anacostia River
- Patuxent River Basin
- Mattawoman Creek
- Piscataway Creek
- PCB-Impacted Water Bodies

(PCB = polychlorinated biphenyl)

Pollutant Types



Pollutants and Sources



- **Bacteria** from animal waste and sewer leaks and overflows
- **Nutrients and Biochemical Oxygen Demand (BOD)** from sanitary waste, fertilizers, and organic material
- **Sediment** from construction sites, bare soils, and eroding streambanks
- **Trash** from littering
- **Toxics** (polychlorinated biphenyls [PCBs]) from legacy contaminated sites
- **ALL** can be contributed from urban stormwater



Polychlorinated Biphenyls (PCBs)

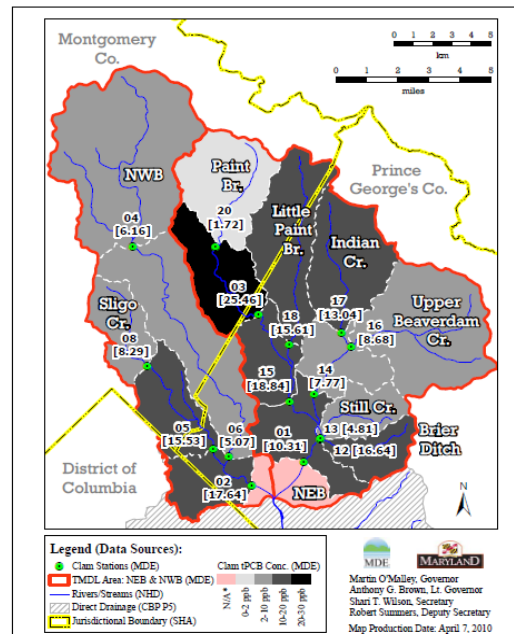
- Group of similar chemicals
 - Do not readily break down in environment
 - Tend to bioaccumulate and be associated with sediment
 - Are carcinogenic
 - Are man made

- Uses

- Electrical insulation
- Cooling applications
- Hydraulic fluids
- Heat transfer fluid
- Lubricants
- PCB fluorescent light ballasts
- Caulk
- Paints
- Power transformers

- Sources

- Contaminated upland soils/sites
- Contaminated stream sediments
- Facility point sources
- Aerial deposition



Note: *N/A - refers to the most downstream sub-watersheds in each basin, where clam concentrations are not available. For the purpose of the NEB and NWB PCB TMDL analysis clam data from the most adjacent station were used instead.

Figure 7: Location of Clam Stations in the NEB and NWB Tributary Drainage Basins

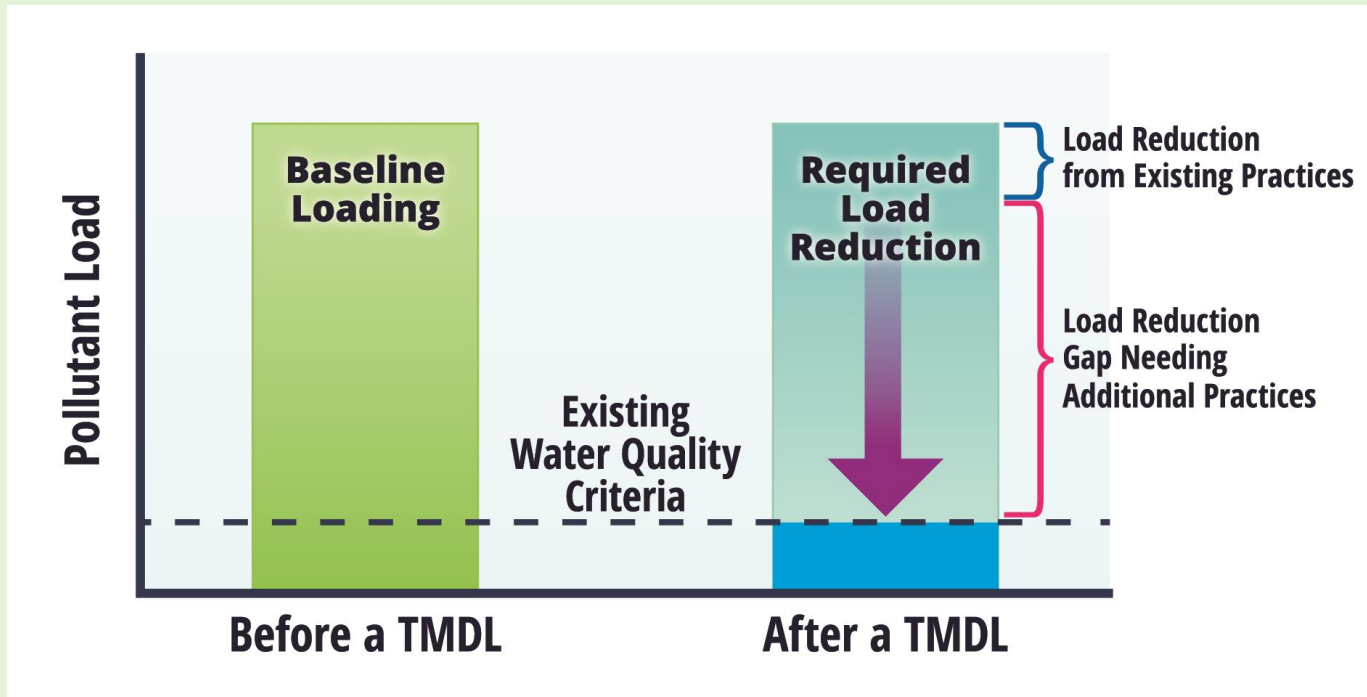
Map Credit: MDE 2011

Pollution & Impairment Limits



What Is a Pollution Diet/TMDL?

- TMDL = Total Maximum Daily Load (Pollution Diet)
- The maximum amount of a pollutant that a water body can assimilate and still meet water quality standards and designated uses.



Maryland's TMDL Program



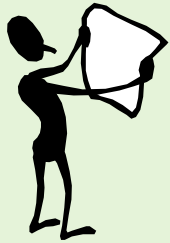
- Maryland Department of the Environment (MDE) is the state's regulatory agency for TMDLs.
- Maryland is required under the Clean Water Act to list impaired waters and to take action to restore them.
- Impaired waters are identified every two years.
- A two-part process is used for restoration:
 1. Establish and submit a TMDL to EPA.
 2. Once TMDL is approved, develop a restoration plan.

Restoration Strategies



How Will We Get There?

Restoration Planning Steps



Characterize Watershed

- Gather existing data
- Inventory TMDLs
- Create data inventory
- Identify data gaps
- Collect additional data, if needed
- Analyze data



Design Restoration Program

- Develop restoration strategies
- Develop restoration schedule and milestones
- Develop monitoring component and evaluation process
- Identify financial assistance needed



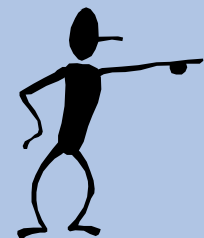
Implement Restoration Plan

- Implement management strategies
- Conduct monitoring
- Conduct outreach activities



Measure Progress and Make Adjustments (Adaptive Mgmt)

- Review and evaluate
- Share results
- Prepare annual plans
- Make adjustments



Draft Watershed Restoration Plans



Restoration Plan for the Upper Patuxent River and Rocky Gorge Reservoir Watersheds in Prince George's County

October 31, 2014
DRAFT



Prepared for:
Prince George's County, MD
Department of the Environment
Stormwater Management Division
1801 McCormick Drive, Suite 500
Largo, MD 20772

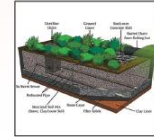


Restoration Plan for the Mattawoman Creek Watershed in Prince George's County

October 31, 2014
DRAFT



Prepared for:
Prince George's County, MD
Department of the Environment
Stormwater Management Division
1801 McCormick Drive, Suite 500
Largo, MD 20772



Prepared by:
Tetra Tech, Inc.
10306 Eaton Place, Suite 340
Fairfax, VA 22030



Restoration Plan for PCB-Impacted Water Bodies in Prince George's County

October 31, 2014
DRAFT



Restoration Plan for the Anacostia River Watershed in Prince George's County

October 31, 2014
DRAFT



Prepared for:
Prince George's County, MD
Department of the Environment
Stormwater Management Division
1801 McCormick Drive, Suite 500
Largo, MD 20772



Prepared by:
Tetra Tech, Inc.
10306 Eaton Place, Suite 340
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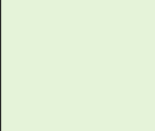


October 31, 2014
DRAFT

Restoration Plan for the Piscataway Creek Watershed in Prince George's County



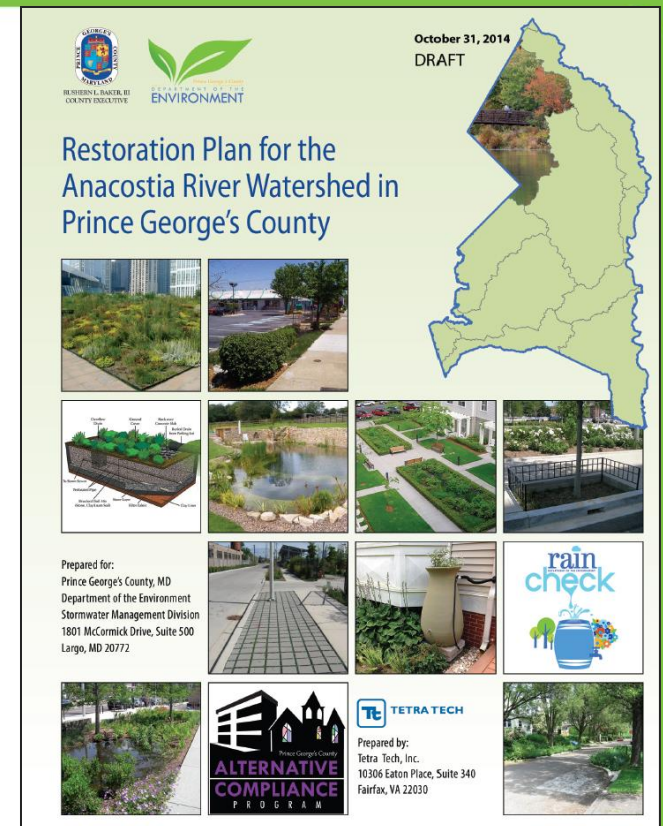
Prepared by:
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Elements of Restoration Plans



- Introduction
- Watershed Characterization
- Restoration Plan Goals and Objectives
- Current Management Activities
- Strategy Development
- Implementation Process Discussion
- Tracking and Adaptive Management
- Other Sections: References, Best Management Practices (BMP) Examples, Funding Opportunities



County Goals



- Protect, restore, and enhance habitat for healthier ecosystems.
- Conduct restoration efforts with a balanced approach.
- Support compliance with regional, state, and federal regulatory requirements.
- Increase awareness and stewardship by the public and policymakers.
- Protect human health, safety, and property.
- Improve quality of life and recreational opportunities.



Curb cuts shunt runoff from roads and parking lots to pervious areas.

County Objectives



- Protect land with critical habitat.
- Implement BMPs and programmatic initiatives.
- Protect downstream aquatic habitat and designated uses.
- Comply with regulatory requirements.
- Educate stakeholders on how to prevent pollution and how to get involved.
- Integrate watershed protection/restoration into policy-making.



Swales and other bioretention practices filter runoff from roads and other impervious surfaces.

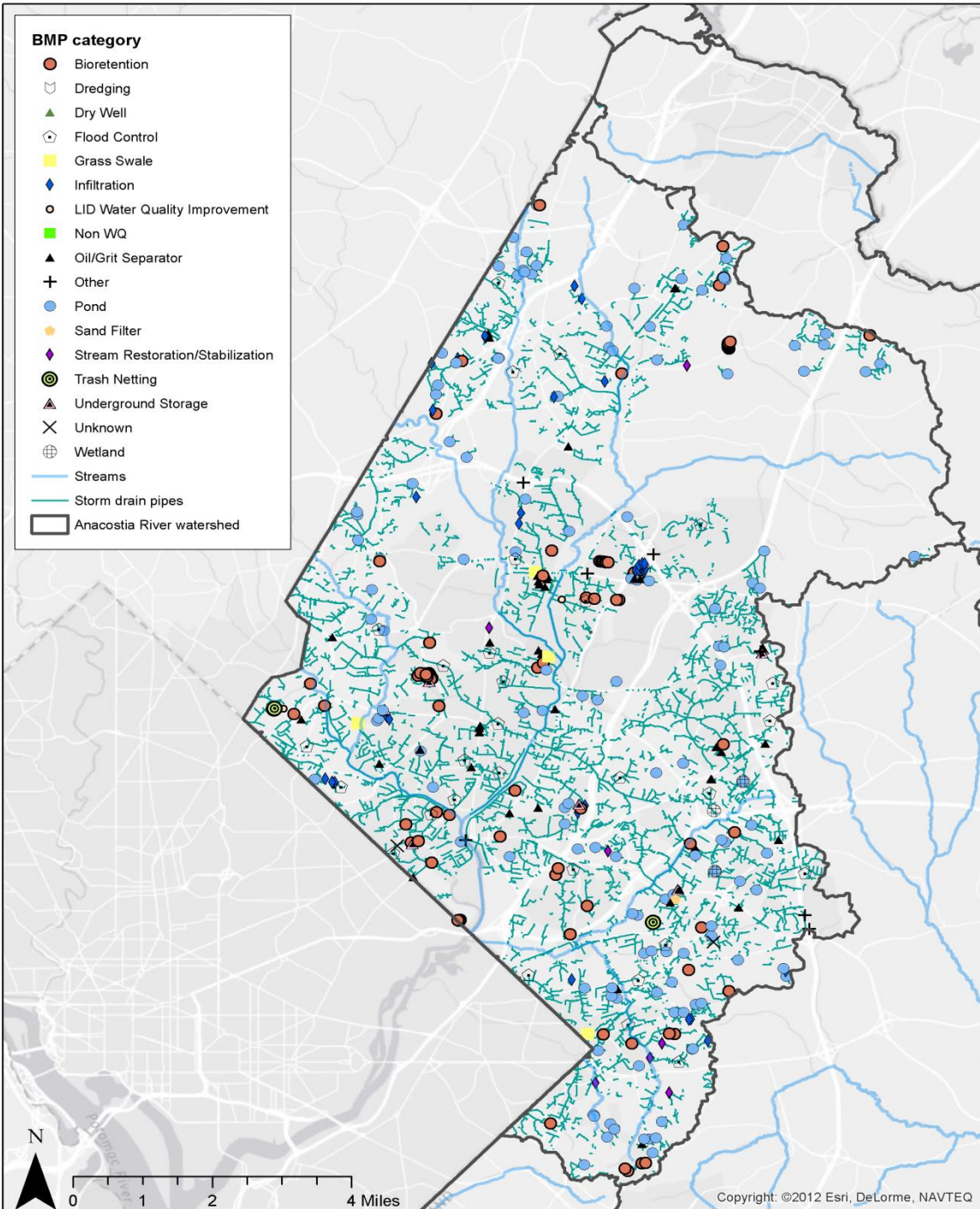
Current County Programs and Activities Addressing Impairments



Current Management Activities and BMPs



- Reviewed practices and activities currently in place that can be credited to pollution reduction.
- Determined *how much* each activity or practice *contributes* to reducing pollutant loads.



Existing BMP Locations in the Anacostia River Watershed

Existing County Programs



■ Stormwater-Specific Programs

- Stormwater Management Program
- P3 - Restoration
- Rain Check Rebate and Grant Program
- Alternative Compliance Program
- Countywide Green/Complete Streets Program
- Street sweeping, stormdrain stenciling, litter control, illicit discharge detection and elimination, cross-connections elimination

■ Tree-Planting Programs

- Tree ReLeaf, volunteer tree planting, Neighborhood Design Center, Arbor Day Every Day

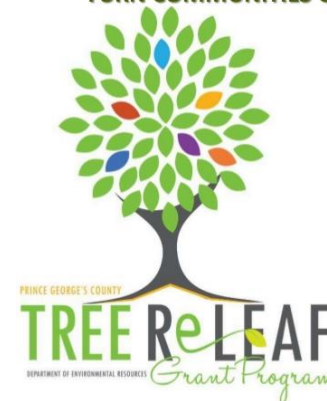
■ Public Education Programs

- Master Gardeners, Transforming Neighborhood Initiative, flood awareness, animal management

■ Transit/Transportation Programs

- Commuter and carpool programs (e.g., Ride Smart Commuter, Park and Ride lots, Metrobus/rail, and TheBus)

"TURN COMMUNITIES GREEN" WITH TREES



Arbor Day



Load Reduction Targets



Waste Load Reduction Needs



💧 Water Treatment Model (WTM) used to determine the amount of reductions that still need to be achieved.

Load reductions from current BMPs compared to required load reductions for the County's MS4 area in the Anacostia Watershed. (Based on Current County Restoration Efforts.)

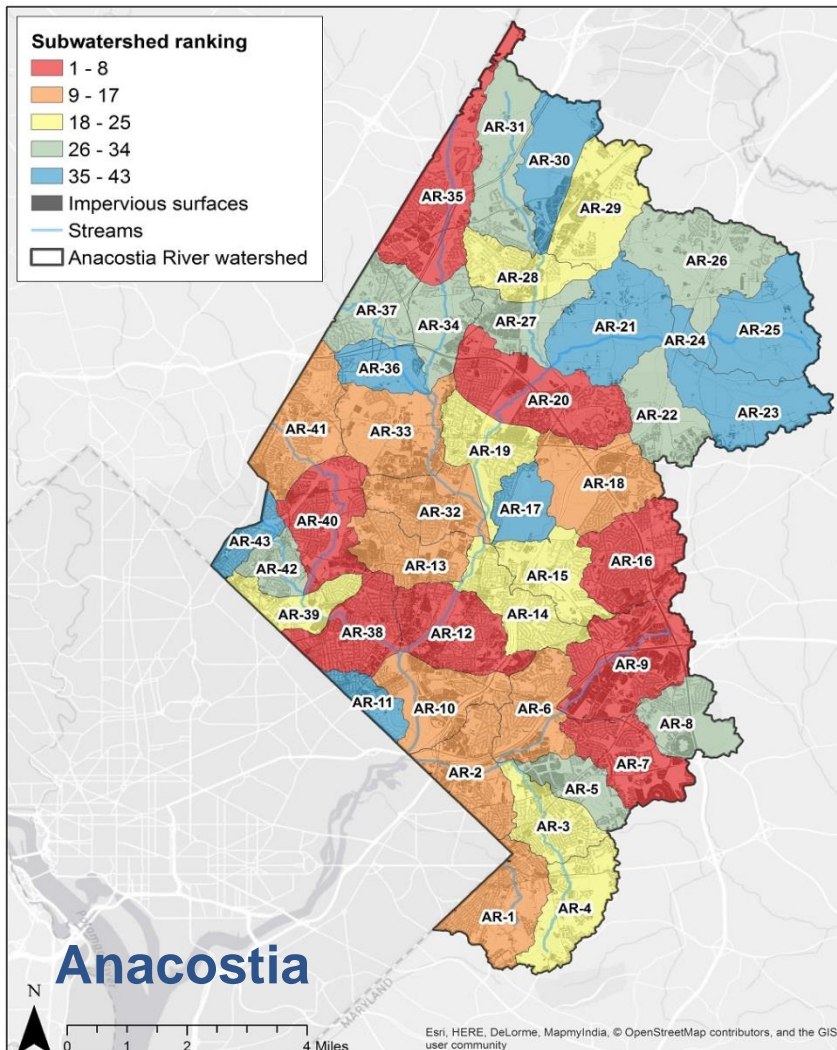
Parameter	Baseline	Percent Reduction	WLA	Required Reduction	Reduction from Current BMPs	Remaining Reduction or Reduction Gap	Percent of Required Load Reduction Satisfied by Current BMPs
Total nitrogen (lb/yr)	281,378	81.00%	53,462	227,917	4,759	223,157	2.09%
Total phosphorus (lb/yr)^a	45,041	81.20%	8,467	36,573	1,366	35,208	3.73%
TSS (ton/yr)^a	14,532	85.00%	2,180	12,352	2,600	9,752	21.05%
BOD (lb/yr)	1,151,816	58.00%	483,763	668,053	31,017	637,037	4.64%
Fecal coliform bacteria (MPN B/yr)	4,375,323	86.40%	594,281	3,781,042	39,756	3,741,286	1.05%

^a Includes contributions from streambank erosion.

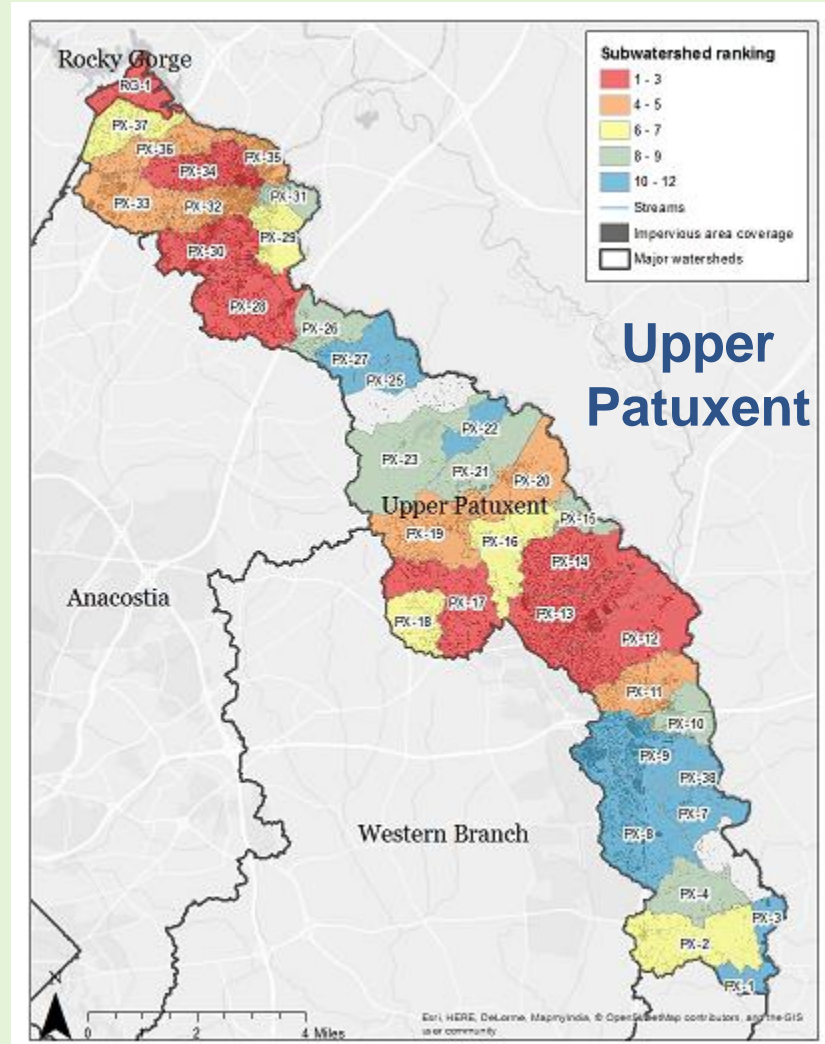
Prioritize Watersheds



Priority Subwatersheds

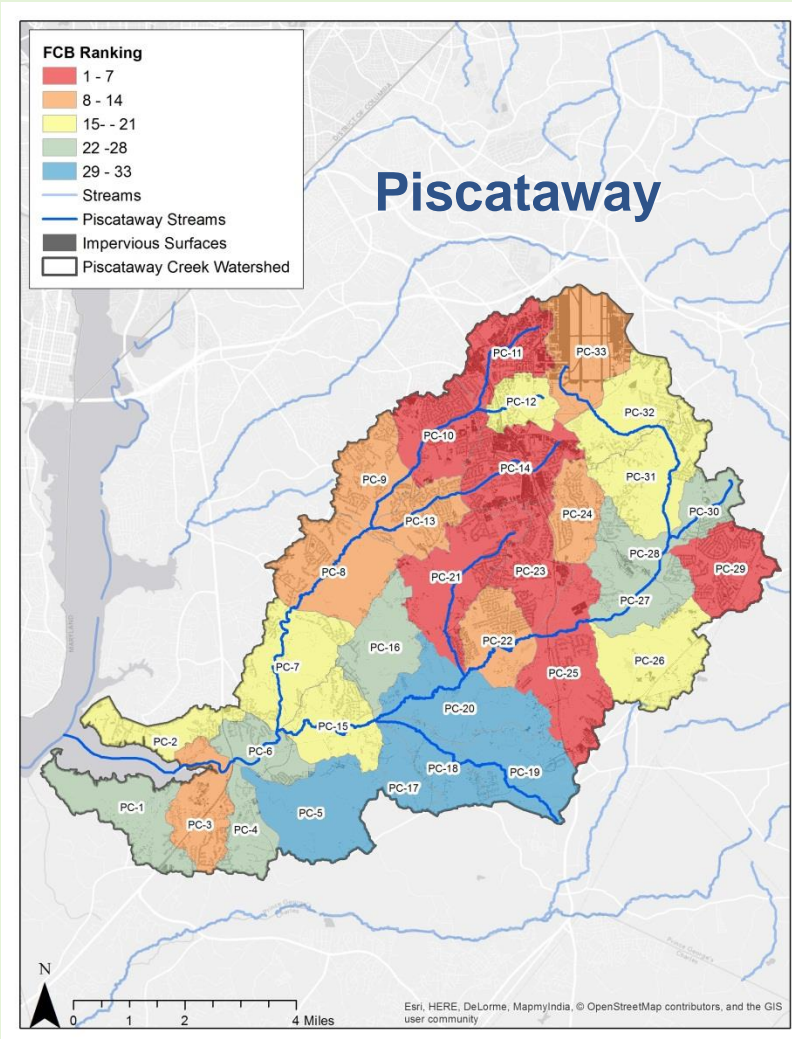


Priority Pollutants:
Nitrogen, Phosphorus, BOD, Bacteria, Sediment

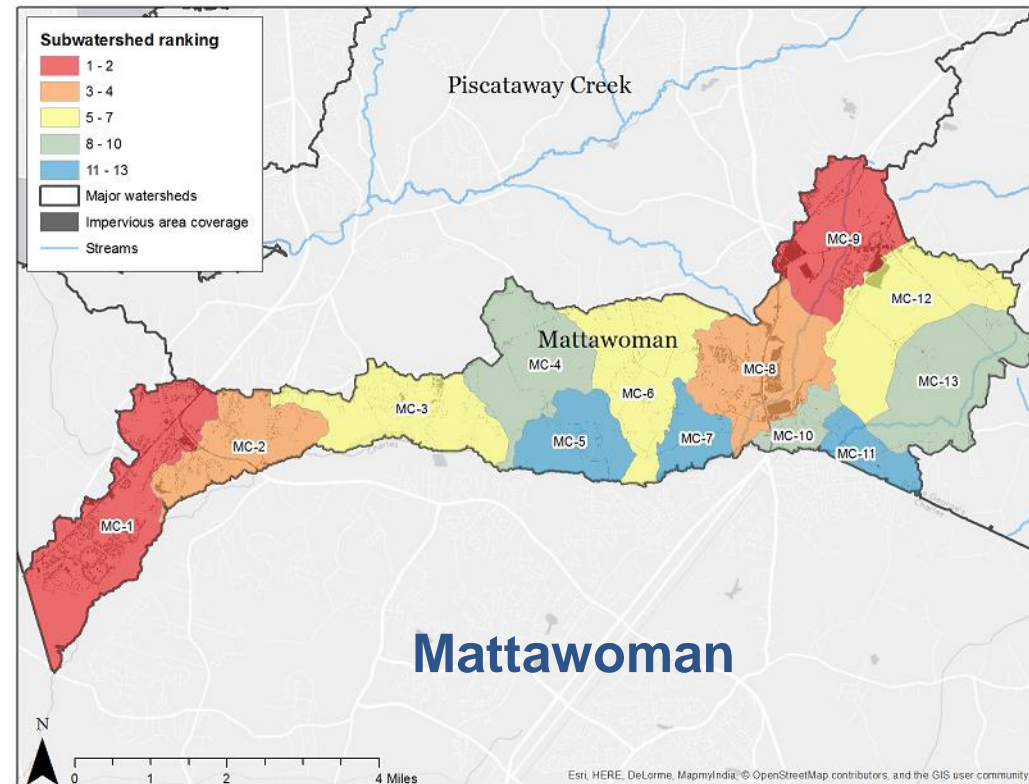


Priority Pollutants:
Bacteria, Sediment, Phosphorus - Rocky Gorge only

Priority Subwatersheds



Priority Pollutant:
Bacteria



Priority Pollutants:
Nitrogen and Phosphorus

Priority Subwatersheds

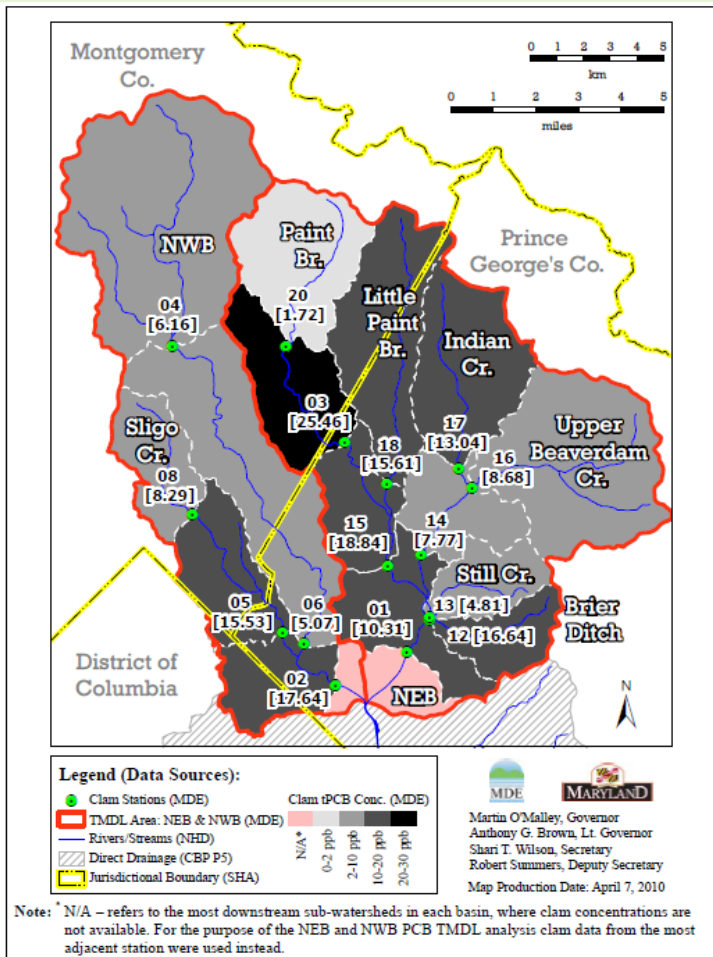
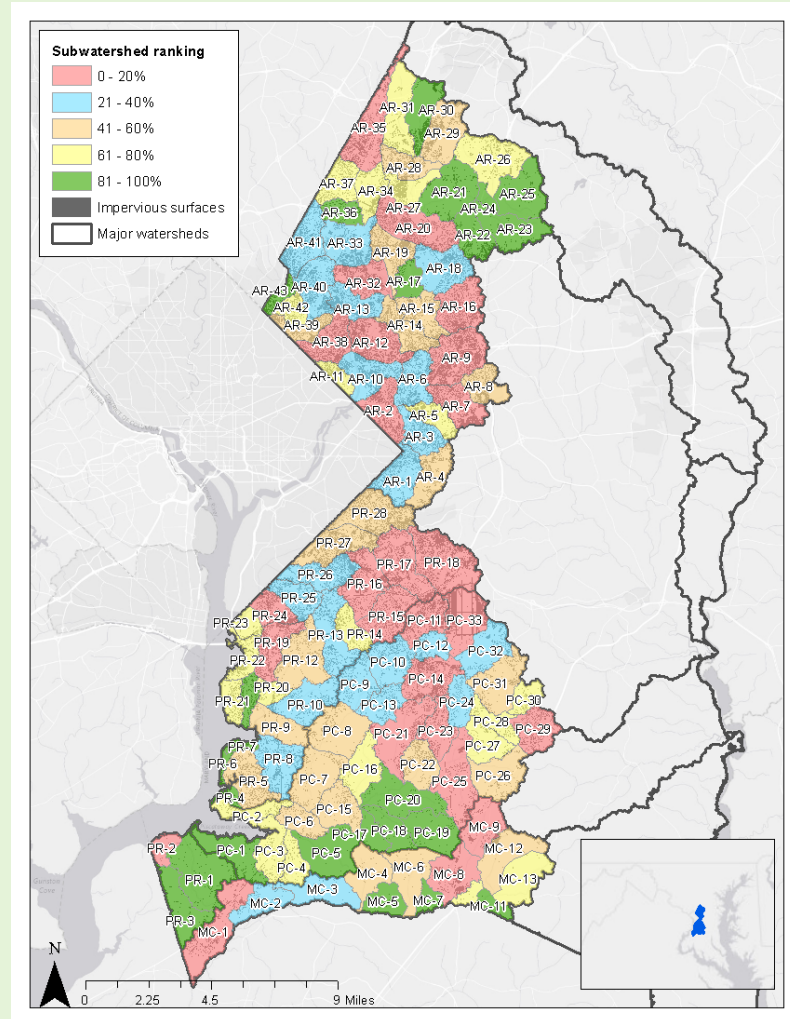


Figure 7: Location of Clam Stations in the NEB and NWB Tributary Drainage Basins

TMDL PCB Impacted Subwatersheds



Priority Pollutant:
PCBs –Due to TSS Transport

Proposed Strategies & Activities



Determine Restoration Strategies



- Keep effective current and planned BMPs and programmatic initiatives.
 - Rain Check Rebate Program, Alternative Compliance Program, Street Sweeping, etc.
- Add new activities to supplement.
- Physical BMPs vs. programmatic initiatives.



Redirecting downspouts from impervious areas to landscaped features can reduce runoff volume.



Rain Garden Signage

Future BMP Activities

- Examples include:
 - Retrofit of existing County dry ponds.
 - New right-of-way BMPs through County programs.
 - New BMPs on County property.
 - Partner with schools, libraries, churches, fire and police stations, hospitals, etc. to install new BMPs.



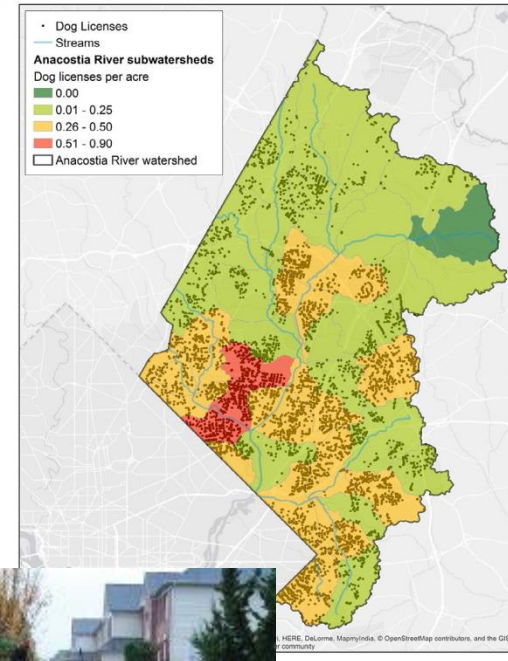
Bioretention in a right-of-way makes this a green street.



*Alternative Compliance Kickoff Event
at a Local Church.*

Potential Future Programmatic Activities

- Continue existing programmatic activities mentioned previously (Rain Check, Alternative Compliance, etc.)
- New outreach programs
 - Pet waste pickup
 - Lawn stewardship
 - Dumpster stewardship
 - Targeted reforestation
 - Municipal partnerships



Homeowners who install practices like rain gardens will help us meet our goals.

What Can We Achieve from These Strategies & Activities?



Impervious Acre Restoration Goals by Watershed



Year	Annual Available Impervious Acres	Anacostia River		Mattawoman Creek		Patuxent River		Piscataway Creek		Rocky Gorge Reservoir		PCB Watersheds ^a		Cost (\$M)
		Acres	Est. TSS (tons)	Acres	Est. TSS (tons)	Acres	Est. TSS (tons)	Acres	Est. TSS (tons)	Acres	Est. TSS (tons)	Acres	Est. TSS (tons)	
2015	1,000	750	140	9.1	1.6	29	3.9	47	8.1	0.2	0.05	165	20	\$60.02
2016	1,000	750	140	9.1	1.6	29	3.9	47	8.1	0.2	0.05	165	20	\$60.02
2017	1,000	750	140	9.1	1.6	29	3.9	47	8.1	0.2	0.05	165	20	\$60.02
2018	1,000	650	122	12.8	2.2	40	5.4	66	11.4	0.3	0.07	230	28	\$56.04
2019	1,000	500	94	18.3	3.2	57	7.7	95	16.4	0.4	0.09	329	39	\$56.04
2020	1,000	642	120	13.1	2.3	41	5.5	68	11.8	0.3	0.07	236	28	\$56.04
2021	1,000	642	120	13.1	2.3	41	5.5	68	11.8	0.3	0.07	236	28	\$56.04
2022	1,000	642	120	13.1	2.3	41	5.5	68	11.8	0.3	0.07	236	28	\$56.04
2023	1,000	642	120	13.1	2.3	41	5.5	68	11.8	0.3	0.07	236	28	\$56.04
2024	1,000	642	120	13.1	2.3	41	5.5	68	11.8	0.3	0.07	236	28	\$56.04
2025	1,000	642	120	13.1	2.3	41	5.5	68	11.8	0.3	0.07	236	28	\$56.04
2026	1,000	642	120	13.1	2.3	41	5.5	68	11.8	0.3	0.07	236	28	\$56.04
2027	1,000	642	120	13.1	2.3	41	5.5	68	11.8	0.3	0.07	236	28	\$56.04
2028	1,000	642	120	13.1	2.3	41	5.5	68	11.8	0.3	0.07	236	28	\$56.04
2029	1,000	642	120	13.1	2.3	41	5.5	68	11.8	0.3	0.07	236	28	\$56.04
2030	215	136	25	2.9	0.5	9	1.2	15	2.6	0.1	0.02	52	6	\$12.05
Total	15,215	9,955	1,864	192	33.4	603	81.5	997	172.5	4.3	1.01	3,463	416	\$864.62

^a The watershed acreage and the TSS tonnage have no relationship in this table to PCB loads.

Timeline for Implementation



Target	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Public Outreach																
Increase public outreach for Rain Check Rebates, Alternative Compliance, and other programs. (Continuous outreach that rotates throughout the County)	X	X														
Establish public outreach campaigns for pet waste and lawn care	X	X														
Public outreach (e.g., campaigns for pet waste and lawn care, education and outreach on Alternative Compliance and Rain Check Rebates)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BMP Implementation																
BMP planning and design	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BMP implementation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NPDES MS4 Permit and WIP (Countywide)																
MS4 requirement: 20% of untreated impervious cover	X	X	X	X	X											
Projected MS4 requirement: 20% of untreated impervious cover						X	X	X	X	X						
WIP goal: 30% of untreated impervious cover	X	X	X													
WIP goal: 20% of untreated impervious cover				X	X	X	X	X	X	X	X					
Monitoring																
Complete Round 3 of the biological monitoring.	X	X	X			X	X	X			X	X	X			X
Complete selection of water quality chemical monitoring stations	X															
Results of chemical monitoring		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tracking and Reporting																
Update County geodatabase with new BMP, programmatic, and monitoring information	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MS4 Annual Report	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Restoration Implementation Costs



Cost Estimate for Restoration



- Approach (Programmatic & Structural BMPs)
 - Estimated costs to maintain current programs and to implement future activities and install/retrofit BMPs.
 - BMP costs were adapted from the University of Maryland Center for Environmental Science report *Costs of Stormwater Management Practices in Maryland Counties*, prepared for MDE (King and Hagan 2011).

Estimated Cost to Implement Each Plan

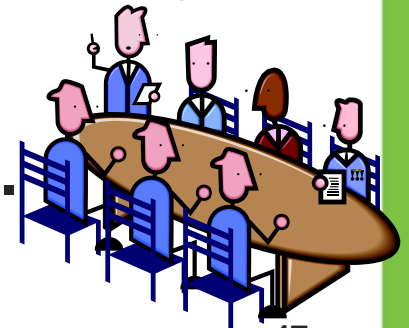


- Anacostia River : \$681 million
- Piscataway Creek : \$43 million
- Mattawoman Creek : \$8 million
- Patuxent River : \$21 million
- Rocky Gorge Reservoir : \$0.2 million
- PCB-Impaired water bodies: \$112 million
(Potomac River portion only)
- Chesapeake Bay WIP: \$727 million

Covering Costs



- How will the County pay for this work?
 - Current funds include Capital Improvement Program (CIP) budget, Clean Water Act fee, and stormwater ad valorem tax.
 - Additional sources will include grants, watershed restoration partners, and the sale of municipal bonds.



Tracking Progress



Tracking Progress

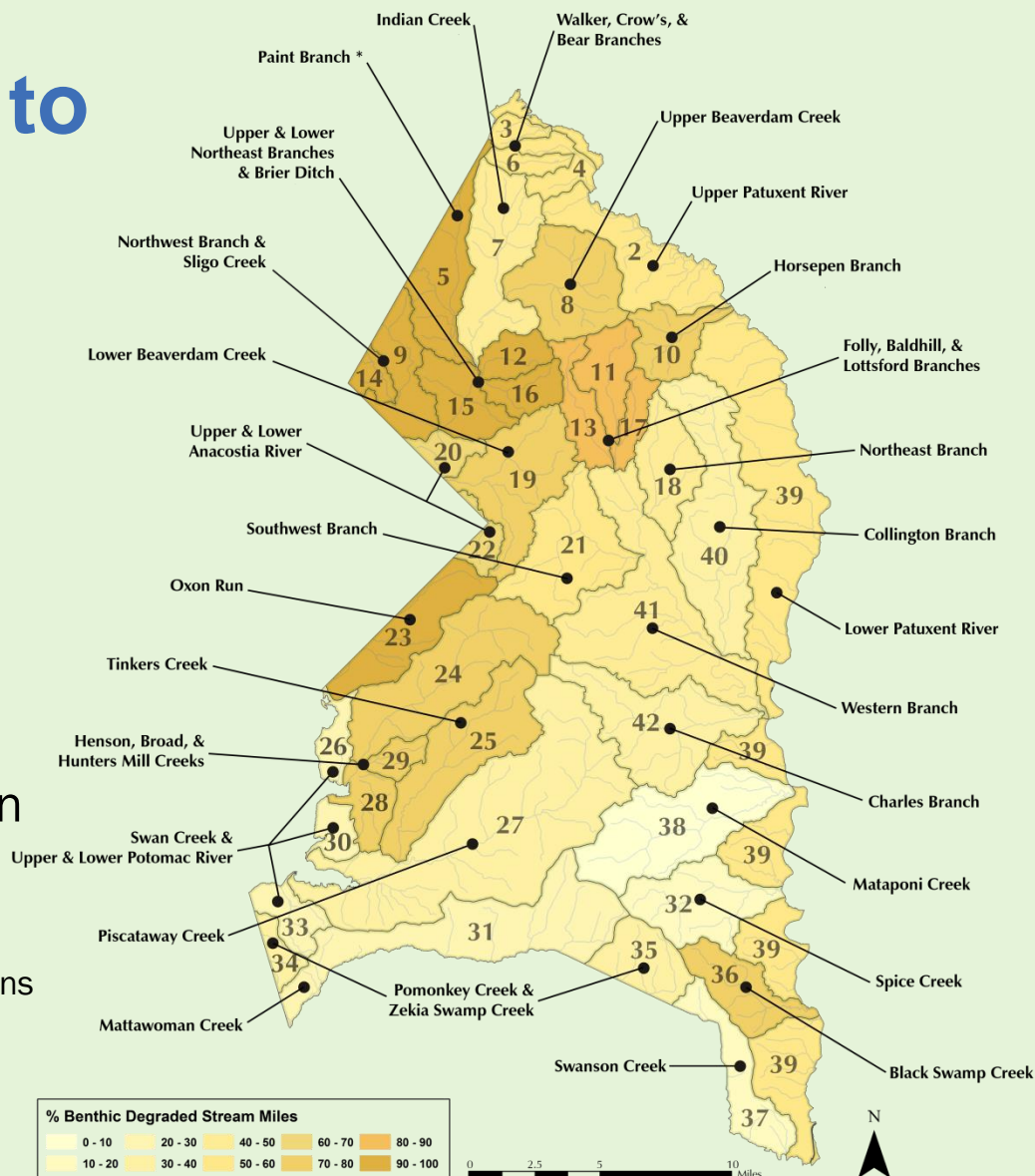
Three Main Activities

1. Track with required annual MS4 report
 - Document restoration BMP installation and activities such as outreach
2. Environmental monitoring
 - Biological and water quality
3. Geo-referenced database
 - Project locations, type, amount of imperviousness surface treated, etc.



How Will Biological Monitoring Be Used to Track Changes?

- Round 3 biological monitoring (2015-17)
- County will look for **substantial reductions** in “percent biological degradation”
 - Countywide scale
 - Subwatershed scale
- Can start to think about setting goals for reduced pct. degradation
- Interpret monitoring and assessment results in context of
 - Improved habitat and water chemistry conditions
 - Effectiveness of overall restoration activities (different from implementation effectiveness)



Water Quality Monitoring

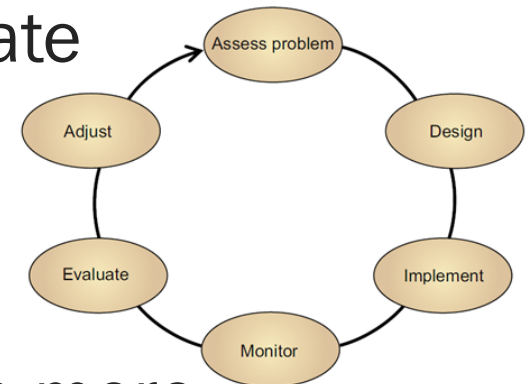


- Will be conducted in only one priority subwatershed.
 - County will ask permission from MDE to move the require NPDES monitoring locations in Bear Branch to the newly selected priority area in the Anacostia River watershed.
- Location will be selected within 6 months of plan finalization. Monitoring to begin within one year of plan finalization.
- Will monitor total nitrogen, total phosphorus, TSS, BOD, and fecal coliform bacteria.
- Monitoring assistance from MDE.



Adaptive Management

- Learn and change as we go.
- After strategies are in place, evaluate changes in:
 - Pollutants relative to TMDL
 - Biological integrity
- Advances in technology will provide more effective, smaller, cheaper reduction measures.
- Multiple bottom-line benefits.
- Determine needs for additional controls.
- Continue monitoring and evaluation.



Taken from Williams et al. 2007

What Is Next?



Your Role in Restoration



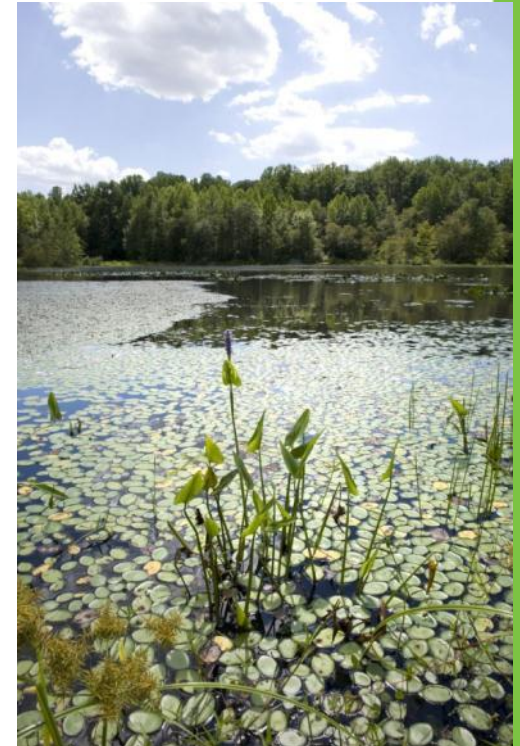
- Become informed.
- Provide input.
- Support implementation by preventing stormwater pollution.
 - Pick up after pets, plant trees, install rain barrels, leave grass clippings on lawn, don't litter, etc.
- Use County Click (<http://countyclick.princegeorgescountymd.gov/>).



30-Day Comment Period



- Public comments accepted Nov. 1 – Nov. 30.
- Submit Comments:
 - Tonight:
 - Comment forms
 - Orally at hearing
 - After Tonight:
 - Email: LTennekoon@co.pg.md.us
 - Regular mail:
Attn: Lilantha Tennekoon
Prince George's County Government
Stormwater Management Division
Department of the Environment
1801 McCormick Drive, Suite 500
Largo, MD 20774



Questions?



- Contact:
Mr. Lilantha Tennekoon
301-883-6198
LTennekoon@co.pg.md.us
- www.princegeorgescountymd.gov/sites/stormwatermanagement
- **Comments due November 30, 2014**

Thank you for attending!

Please remember to sign in if you have not done so already and turn in your comment forms!

