

Southern Middle Patuxent River Watershed Assessment

COMMUNITY MEETING NO. 1

June 17, 2015



Meeting Outline

- Welcome and Introductions
- Reasons for Study
- Watersheds 101
- Overview of Current Watershed Conditions
- Restoration Toolbox
- Q&A – Information Stations



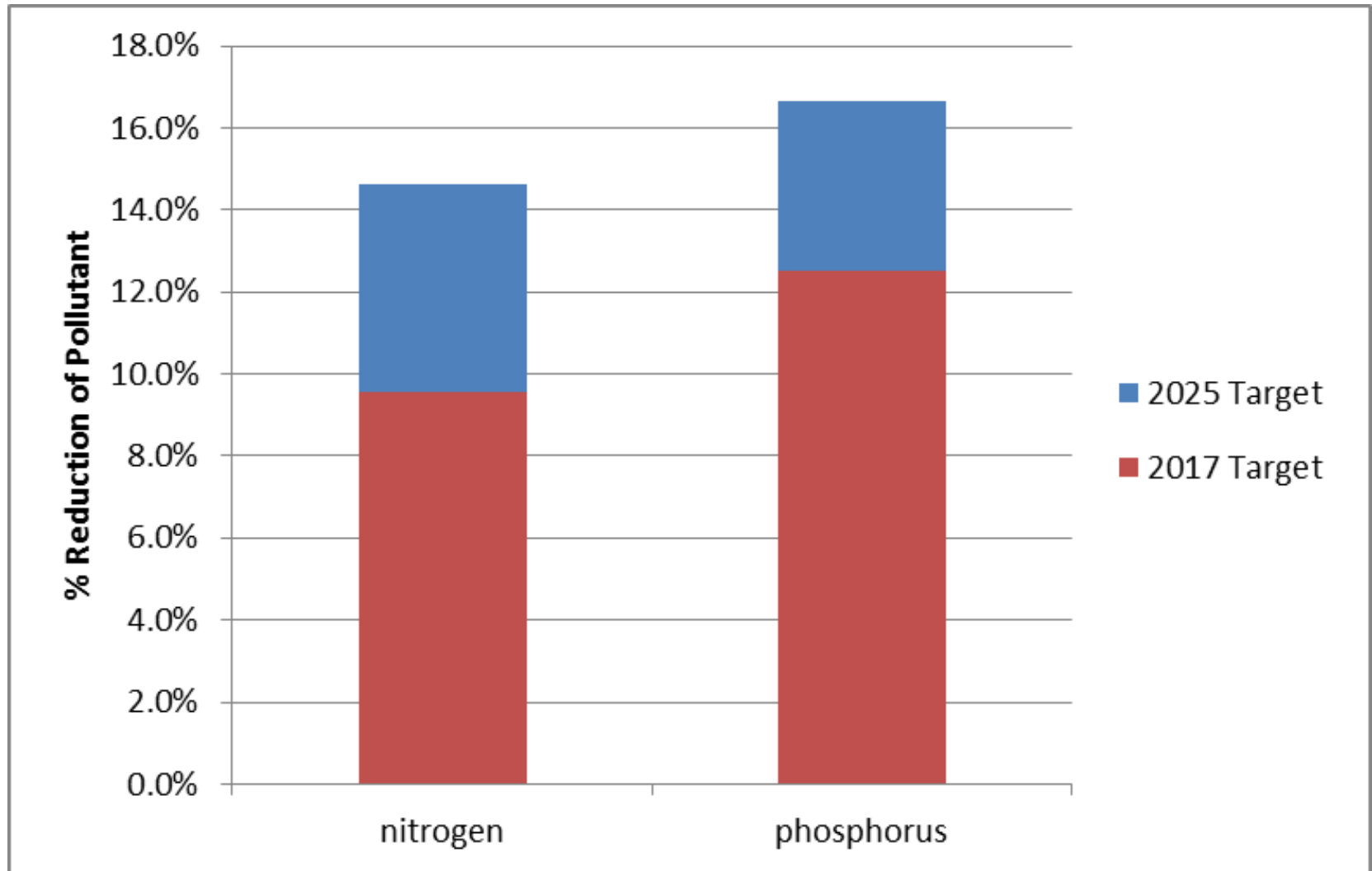
Why is the County doing a Watershed Assessment?

- Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) permit
 - Permit requires treatment of 20% of currently untreated impervious
 - Perform a comprehensive watershed assessment for the entire County within five year permit term
 - Little and Middle Patuxent Rivers in FY15 (Permit Year 1)
 - Patapsco and Mainstem Patuxent Rivers in FY16 (Permit Year 2)
 - Develop a Countywide restoration plan in Year 1 (CIS)
- Total Maximum Daily Load (TMDL) “pollutant diet” for nutrients
- Looking for cost-effective opportunities for environmental restoration

Chesapeake Bay TMDL

- Chesapeake Bay TMDL Sectors:
 - Agriculture
 - Forest
 - Septic
 - Wastewater
 - Urban Stormwater
- NPDES Permit Year 1 - Restoration Plans for All Existing TMDL Waste Load Allocations
- All Sectors – Reduce Phosphorus (P) by ~30% and Nitrogen (N) by ~40% (approx half of total reduction is urban stormwater)
- Meet 60% by 2017 and 100% by 2025

Urban Stormwater Sector Goals



General Strategies

To restore, enhance and protect the County's natural resources.

- Reduce negative impact of impervious surfaces
- Reduce levels of pollutants in waterways
- Reduce streambank erosion
- Increase forest area and connectivity of riparian habitats
- Increase public awareness and positive behaviors



Watersheds

101

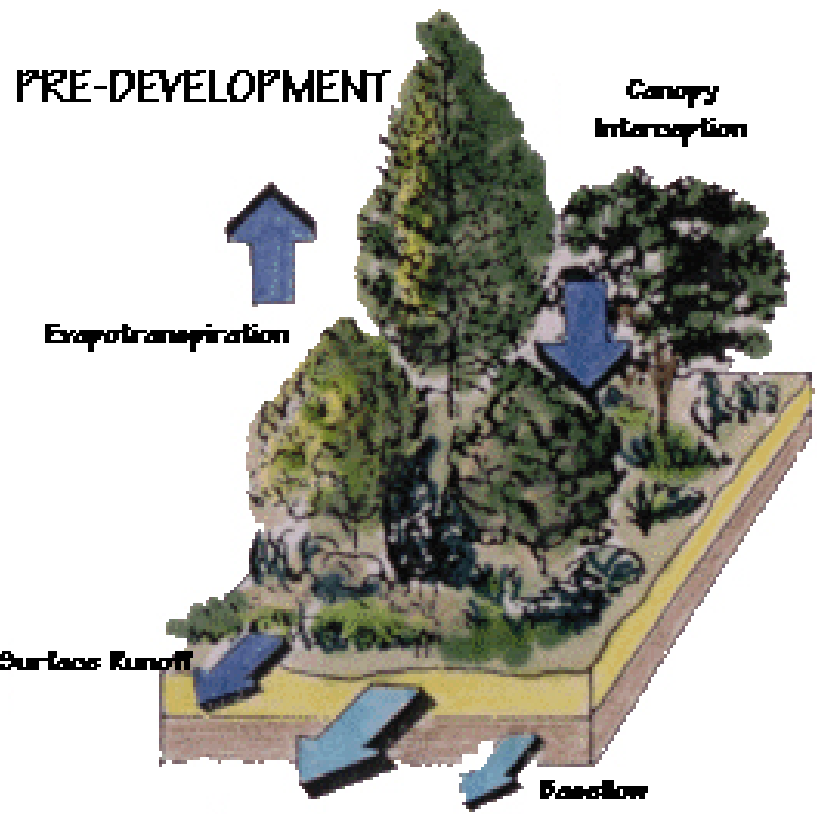


What is a Watershed?
&
What is Stormwater Management?

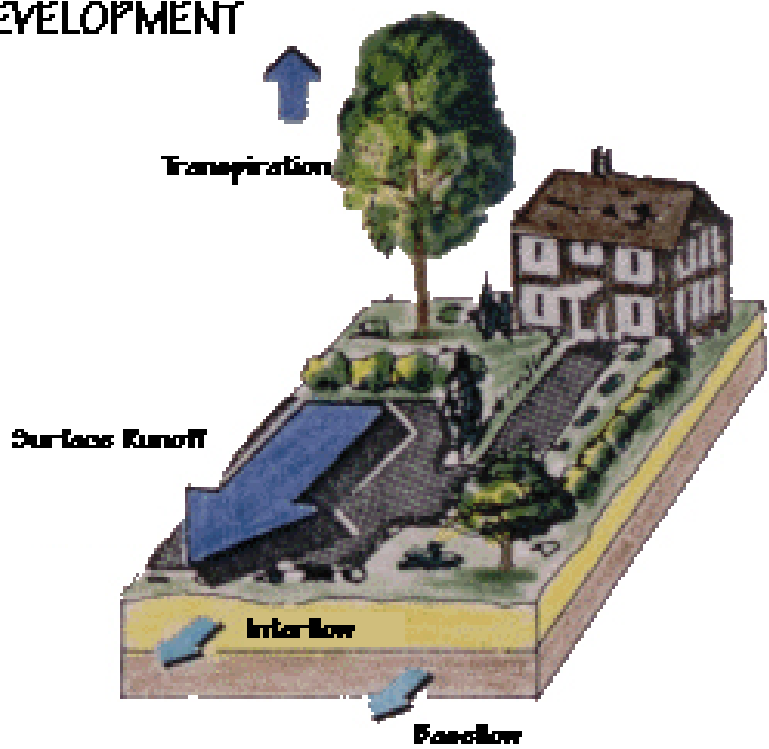


WATER BALANCE

PRE-DEVELOPMENT



POST-DEVELOPMENT



Where does storm water go?

- A. To a wastewater treatment plant so pollutants and trash can be removed before the water goes to a nearby stream.
- B. To a nearby stream without any treatment.
- C. To a stormwater management pond for pollutant removal and then to a nearby stream.
- D. B or C



The Problem



Pollutants build up on impervious surfaces and wash off into the stream system when it rains



Harmful Pollutants in Runoff



Bacteria

Nutrients

Pesticides



Oil & Grease

Muddy Water

Heavy Metals

(e.g. Zinc, Copper, Lead)

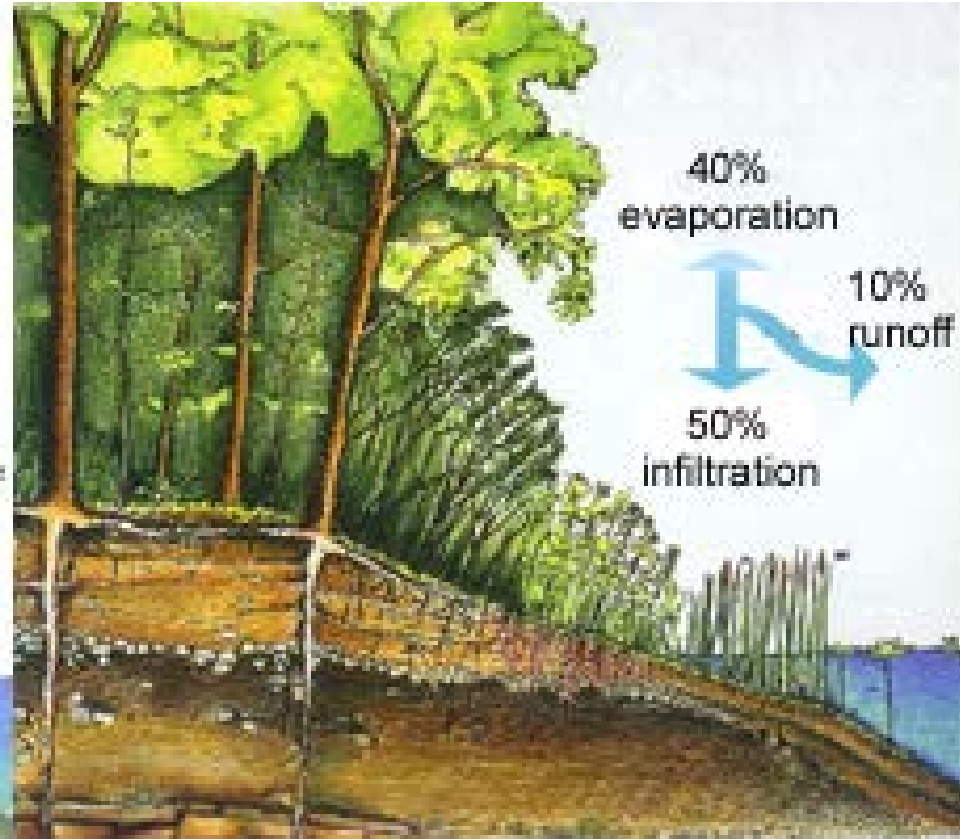
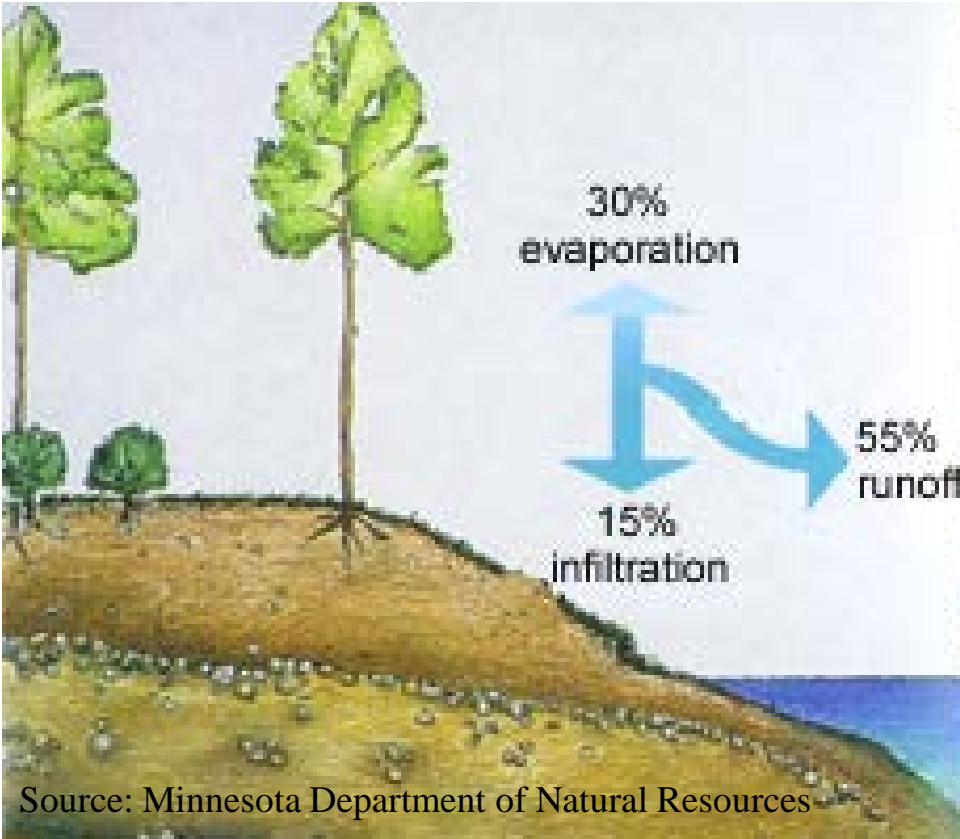




Impervious Cover

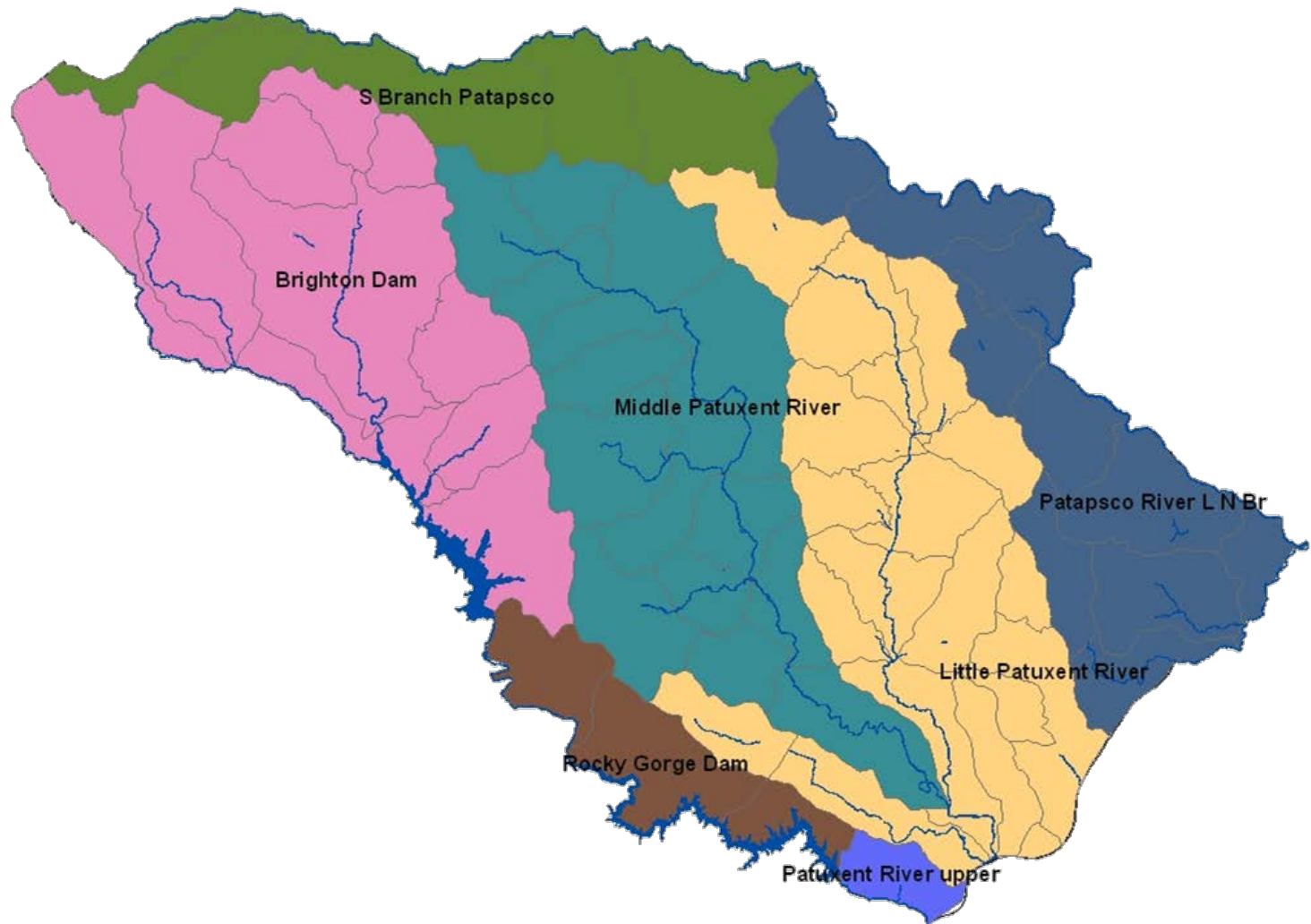


County = 13.6% Columbia ~ 15%-20%

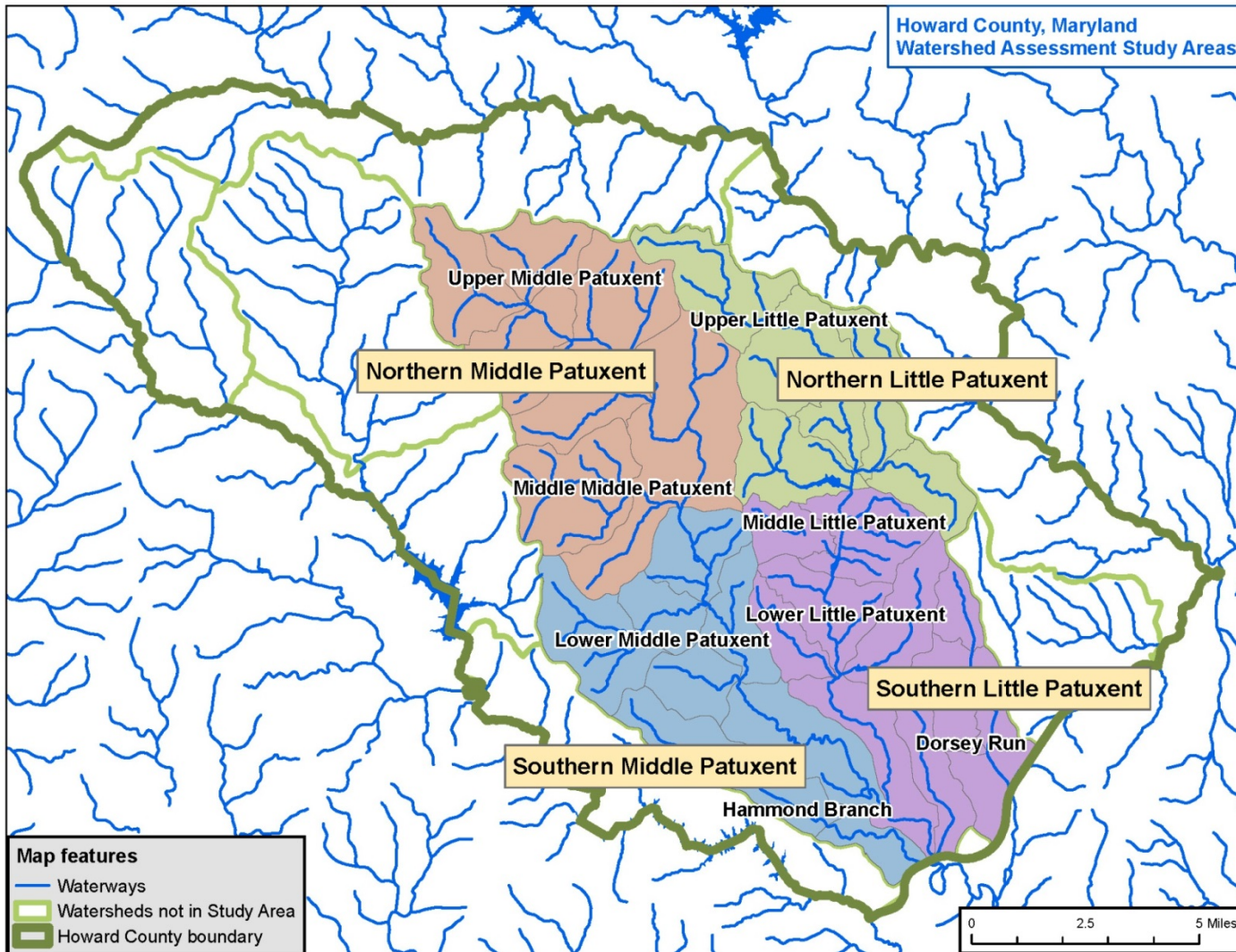


Water quickly runs off a shoreline cleared of natural vegetation, washing nutrients and pesticides into the water. A natural shoreline holds rainfall, which soaks into the soil; less water, soil and chemicals run into the lake or river. Shoreline and aquatic plants anchor shoreline areas, helping to protect them from erosion due to runoff and waves (Source:MN DNR)

County Watersheds



Breakdown of Study Areas



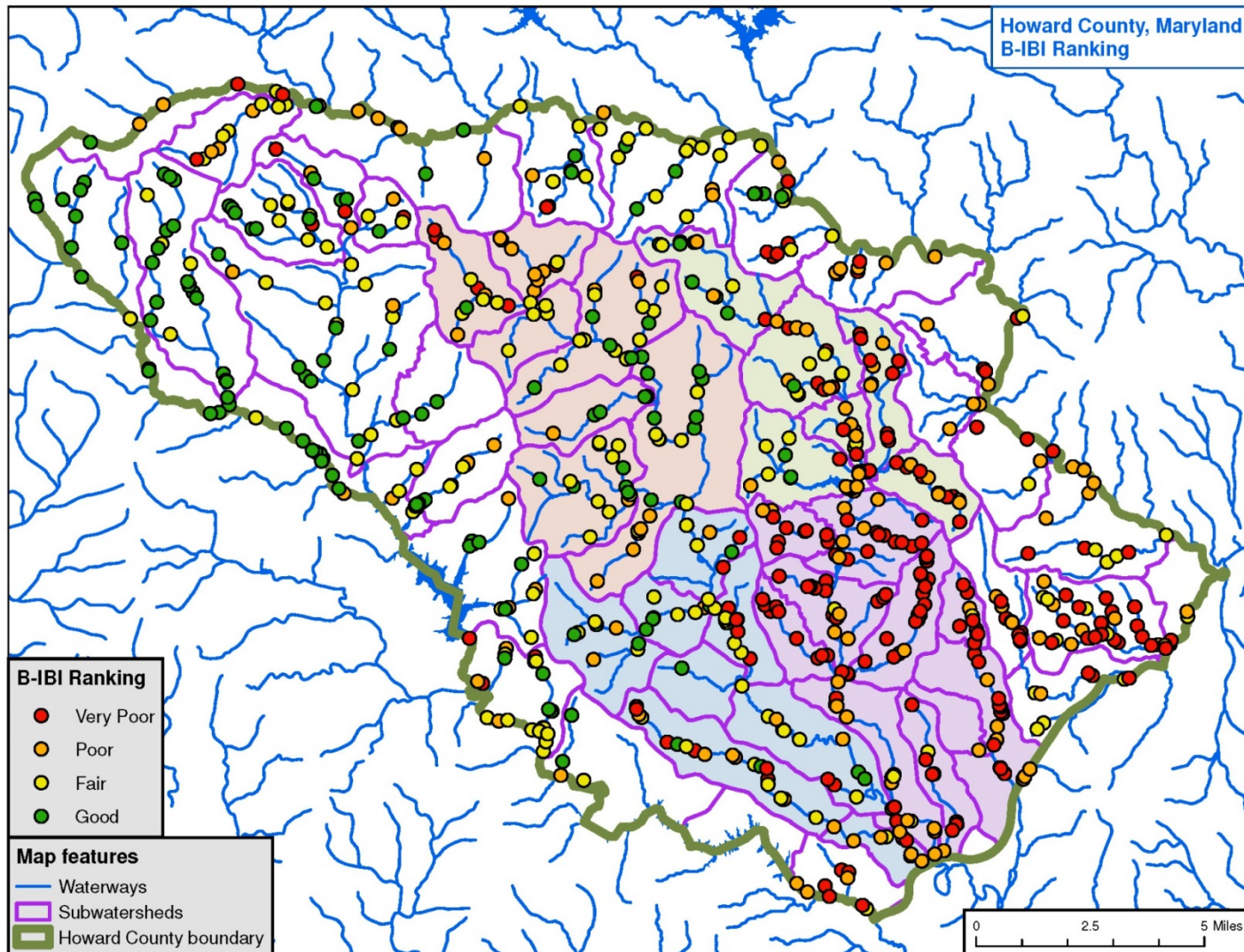
Watershed Study Overview

- Phase I – completed mid-July 2015
 - Desktop Analysis
 - Handheld Tablet Setup and Programming
 - Consultant Field Calibration and Training
 - Field Assessment (Approx. 3 months)
 - Review and Compile Field Data
 - **Community Meetings - #1**
 - Prepare Site Ranking and Prioritization

Desktop Analysis

- Data Review and Processing
 - Previous Studies
 - Existing Monitoring Results
 - Drainage Complaint Database
 - GIS Queries
- Create GIS Maps and Overlays
- GIS Review (Office)
 - Multiple Day Review of All Sites From GIS Analysis
 - Generated Final Map and List of Sites For Field Review

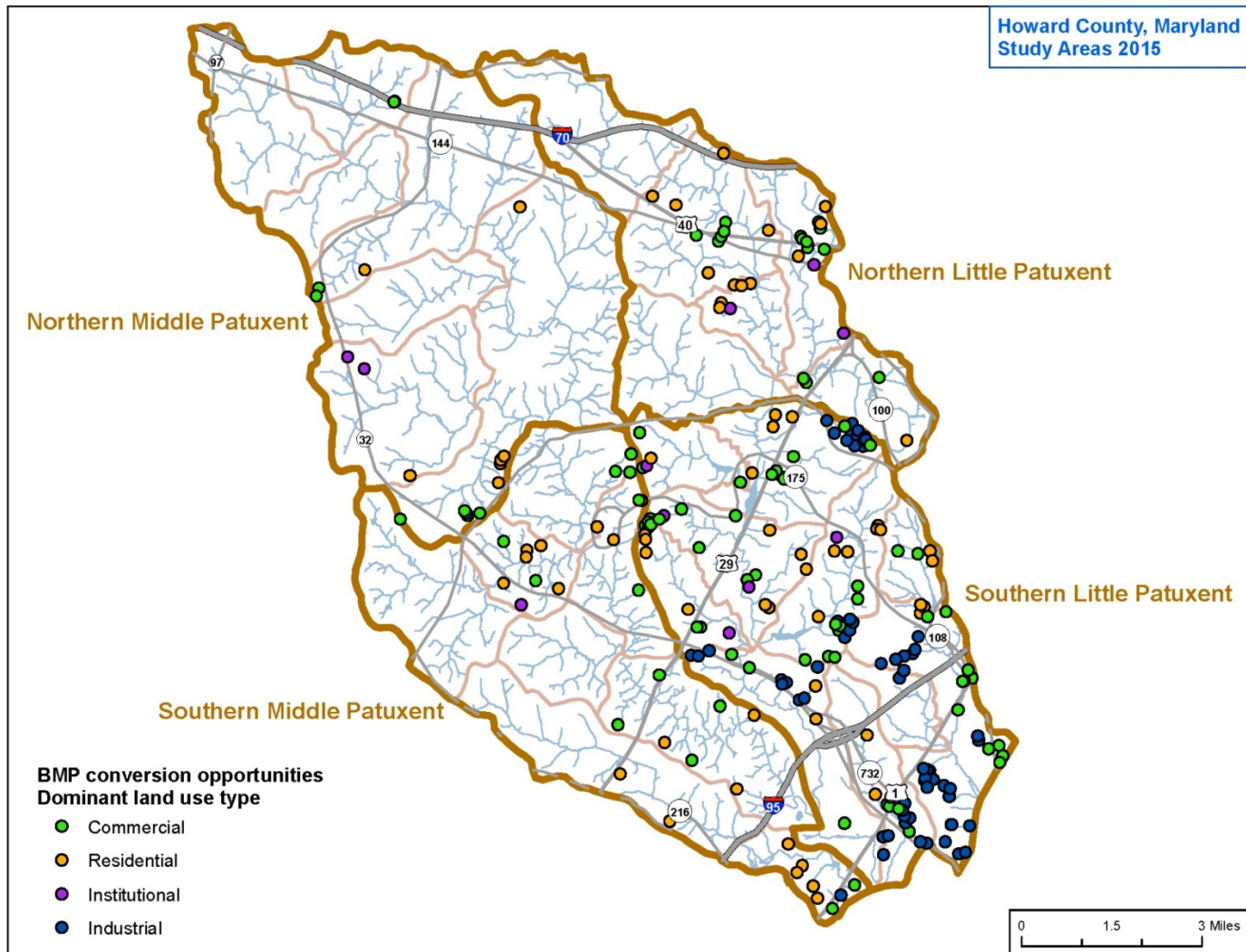
Monitoring Results – Biological Health



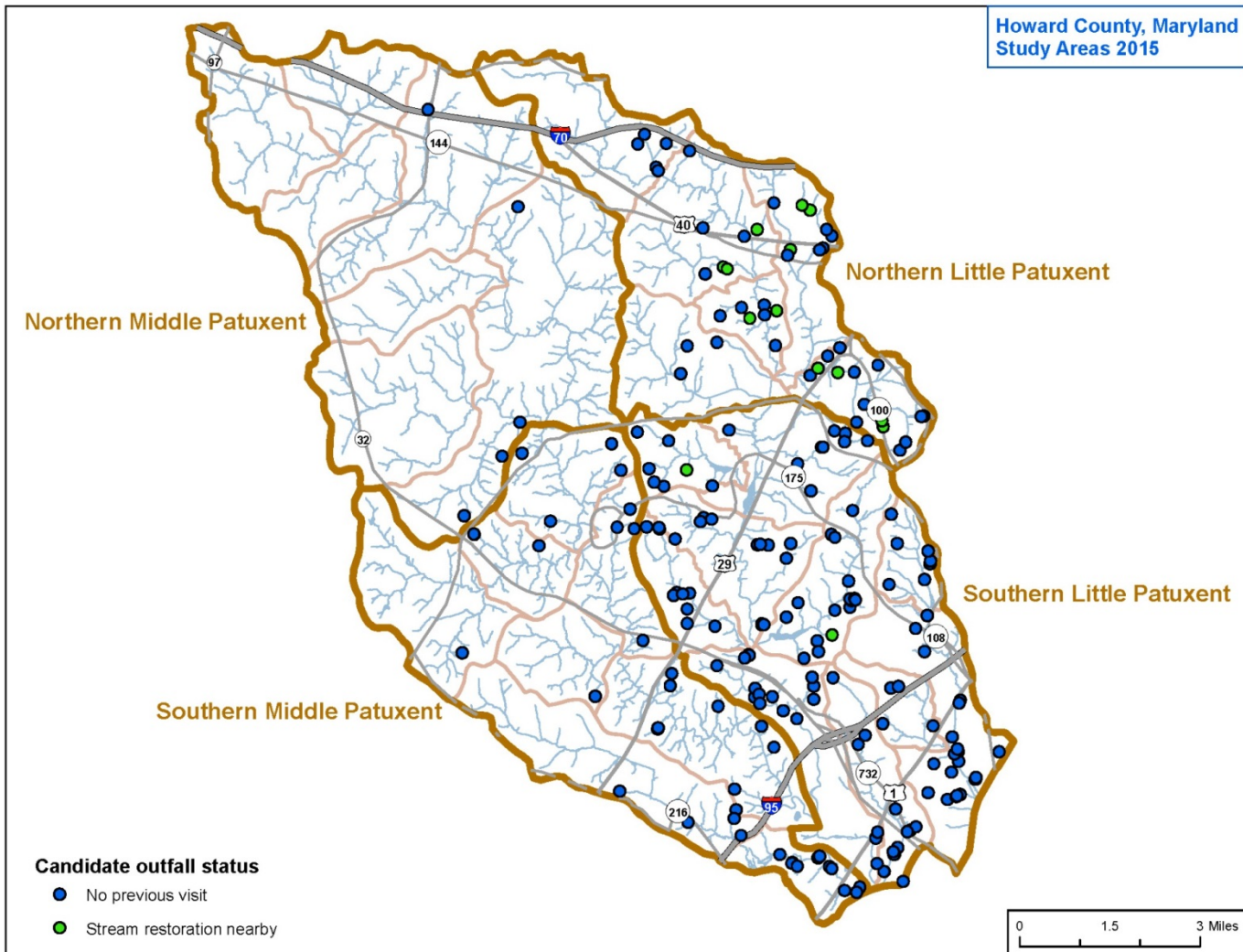
Project Types Being Investigated

- Retrofit of Existing BMPs
- New BMPs
- Outfall Stabilization
- Stream Restoration
- Reforestation/Riparian Buffers

BMP Retrofit Opportunities

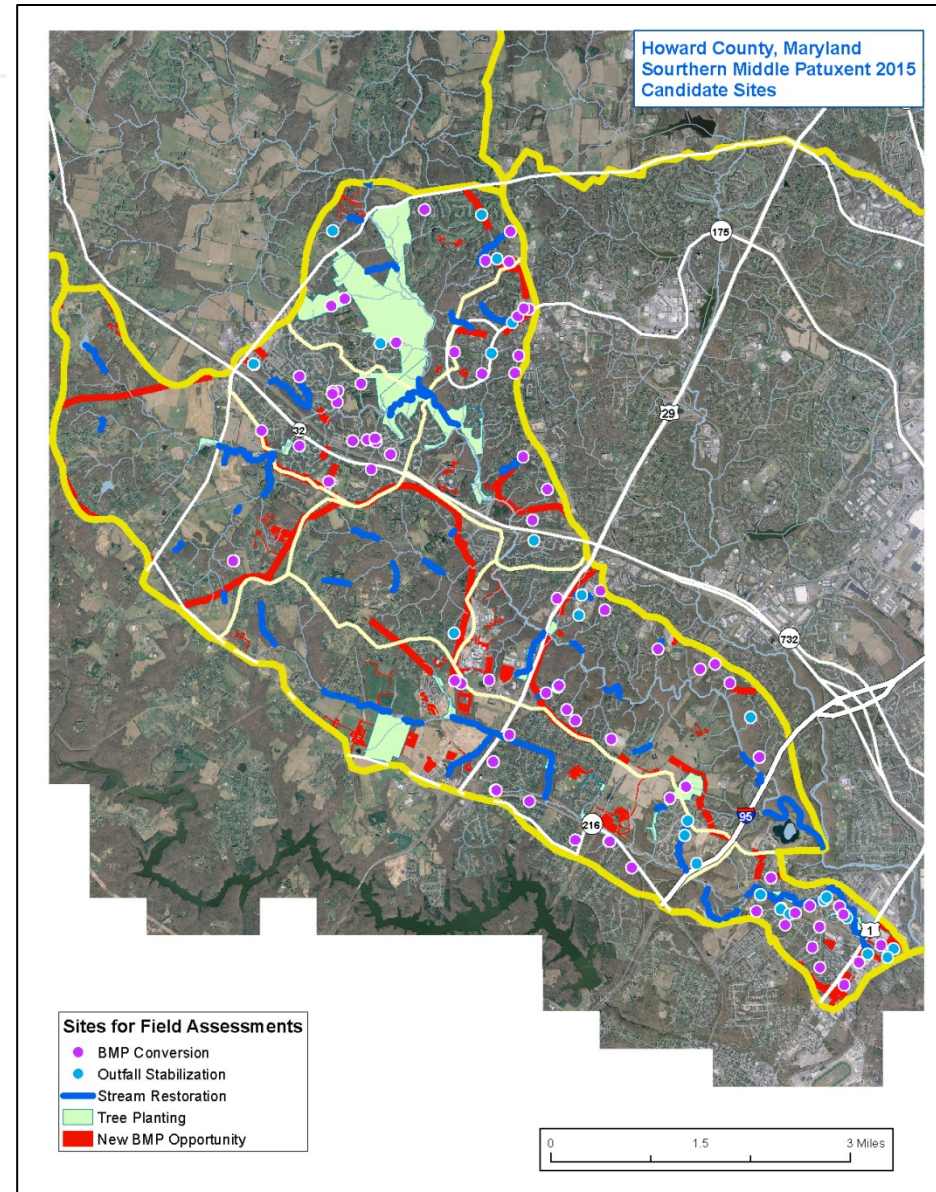


Outfall Stabilization Opportunities



Desktop Analysis

Sample composite GIS map
used for final office review

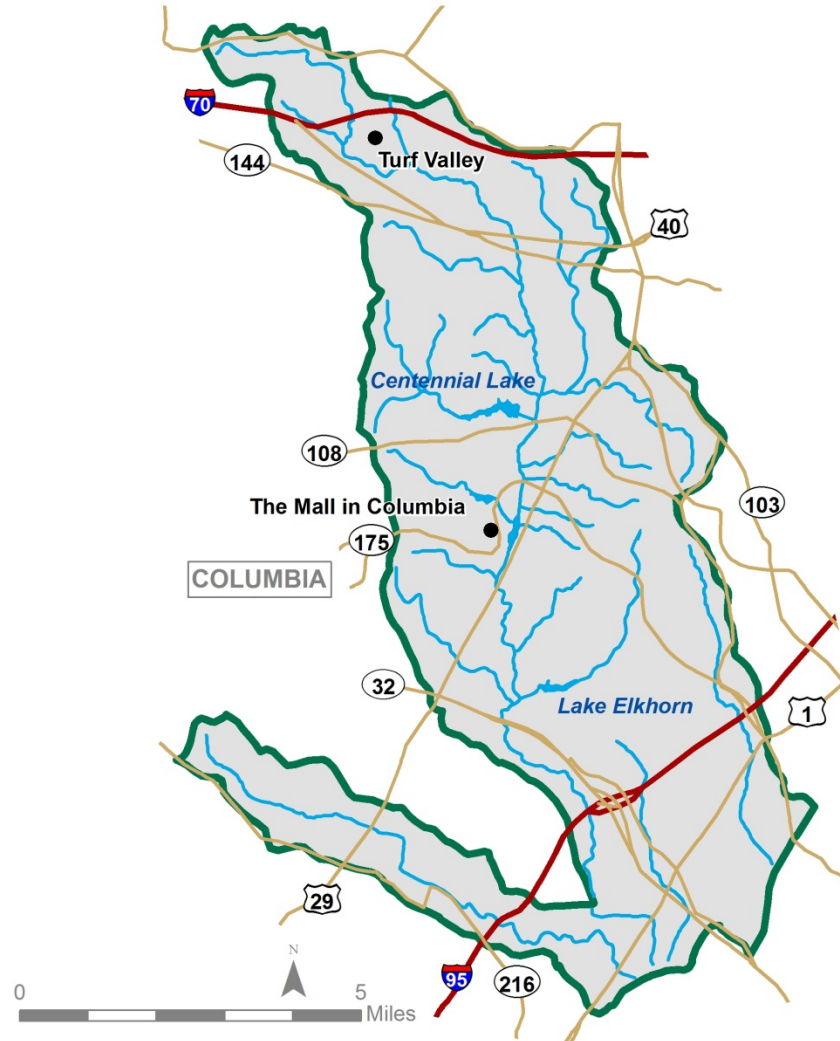


Watershed Characteristics

Little Patuxent River Watershed

Little Patuxent River

- 59 square miles
- 37,727 acres
- 9,688 impervious acres
- 9,043 wooded acres
- 190 miles of streams
- 1,746 stormwater BMPs treating 47 of impervious



Middle Patuxent River Watershed

Middle Patuxent River

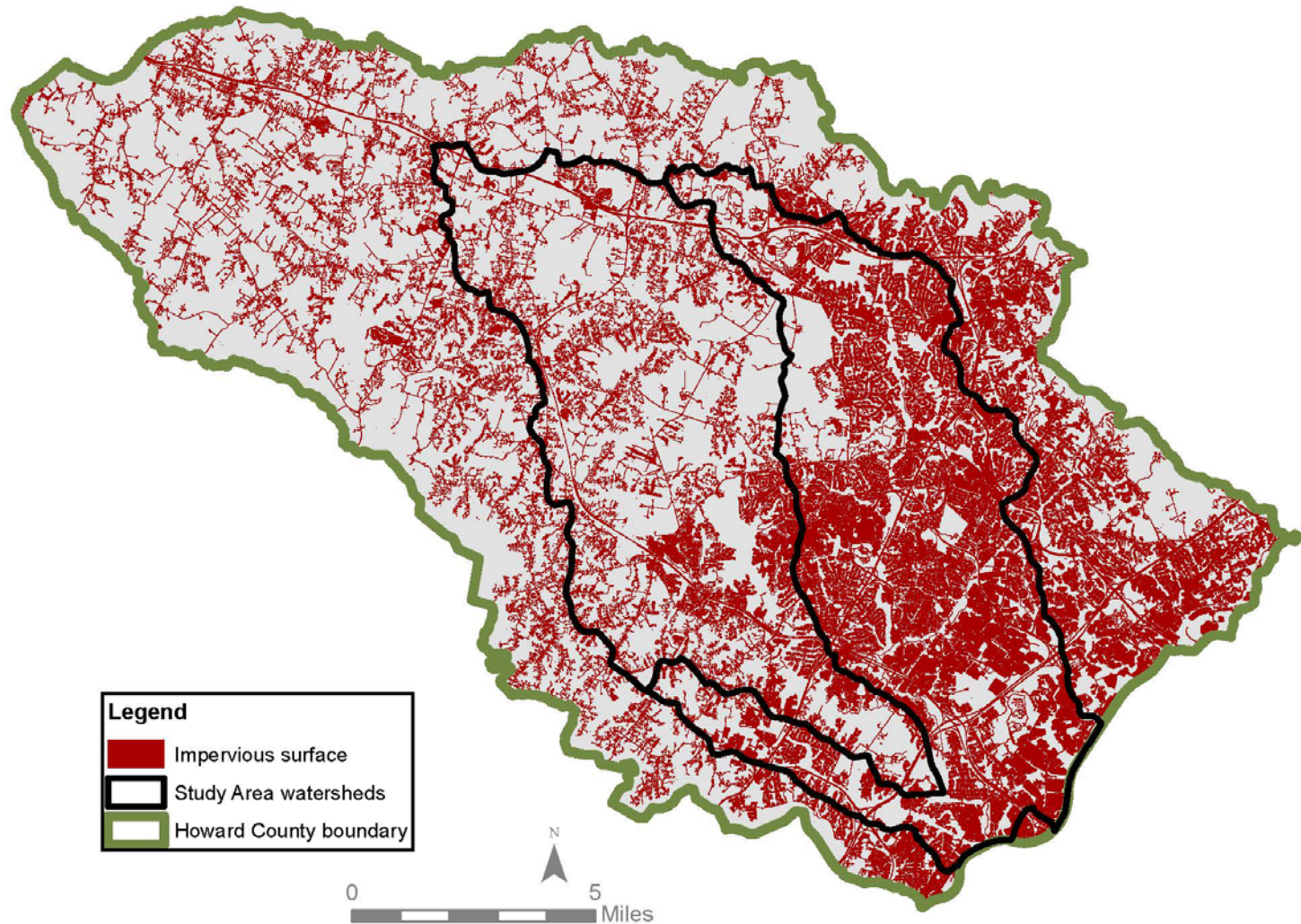
- 58 square miles
- 37,074 acres
- 3,675 impervious acres
- 12,367 wooded acres
- 227 miles of streams
- 593 stormwater BMPs treating 40 of impervious



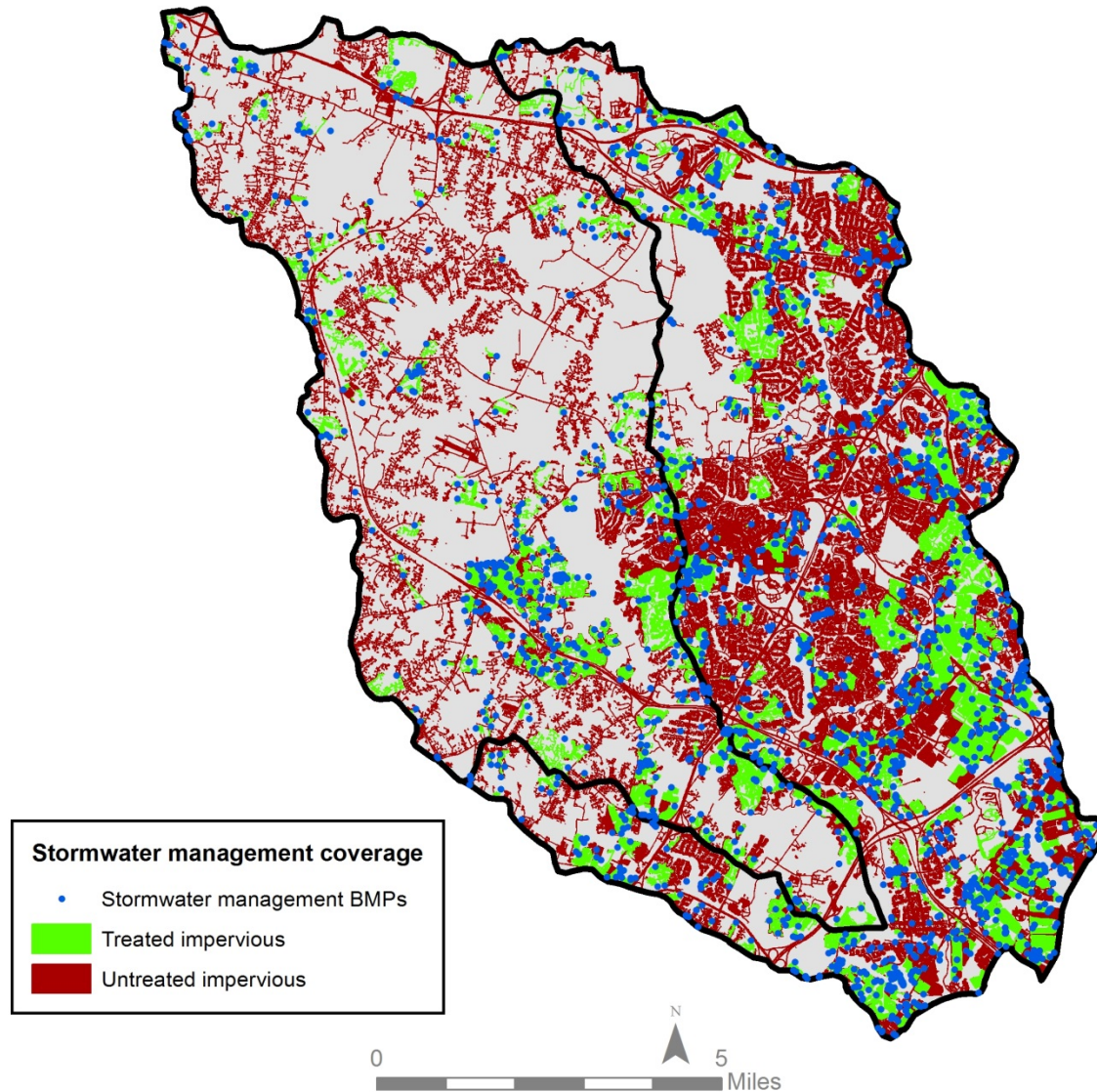
Imperviousness

	Total Area (sq miles)	Impervious Area (sq miles)	Impervious Percent
County	253	34.3	13.6
Little Patuxent	59	15.1	25.6
Percent of County	23%	44%	n/a
Middle Patuxent	58	5.7	9.8
Percent of County	23%	17%	n/a

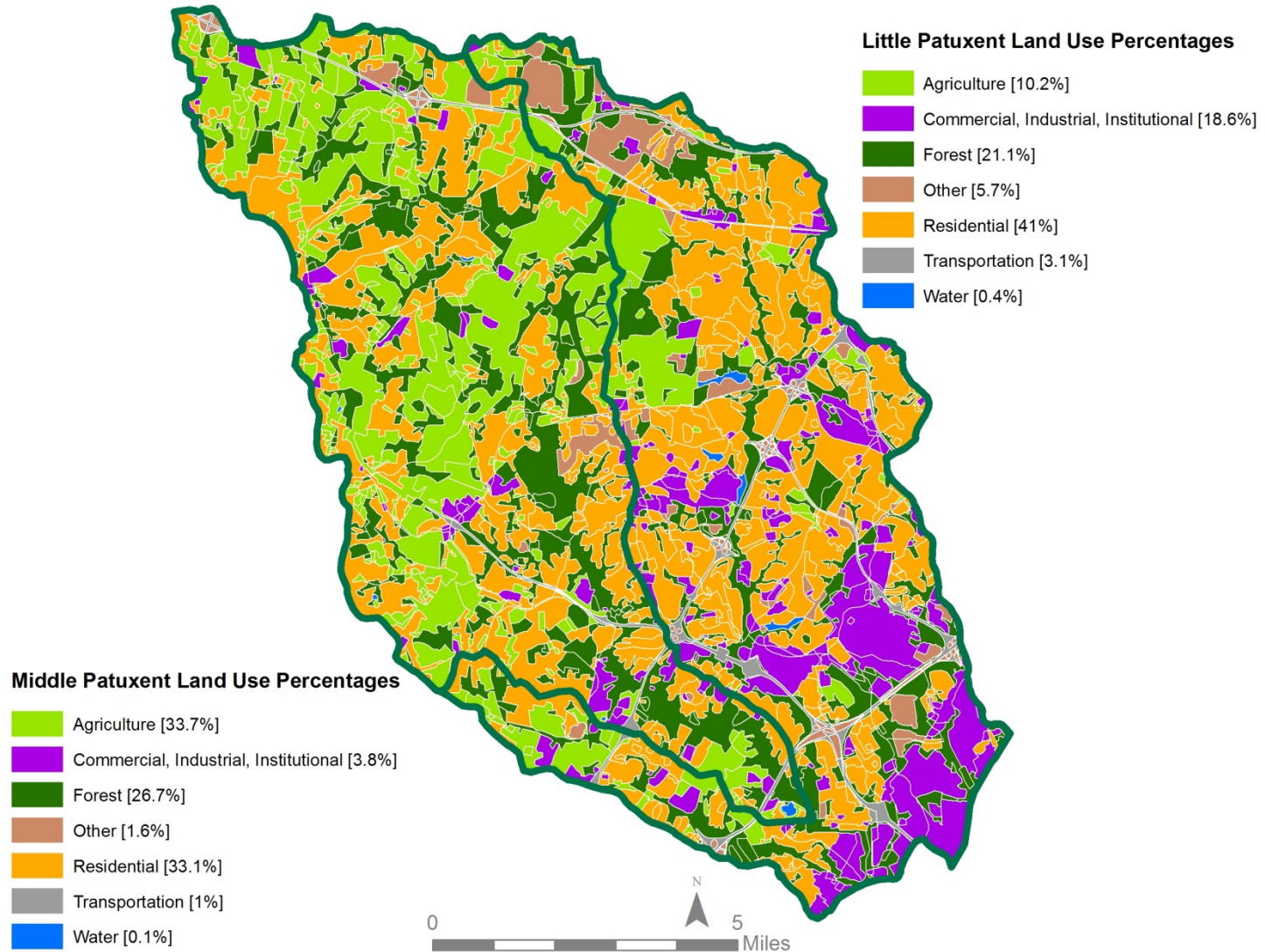
Imperviousness



Stormwater BMPs



Land Use



Field Assessments and Results

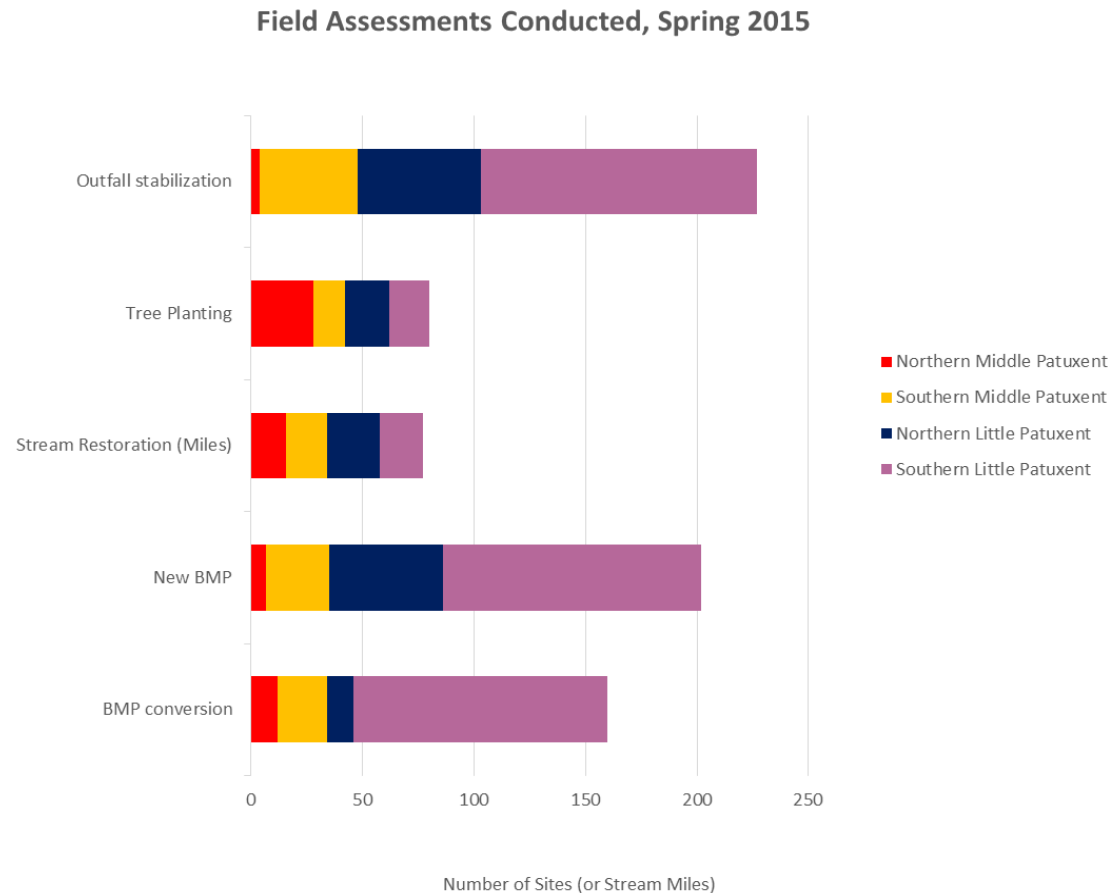
Field Assessment



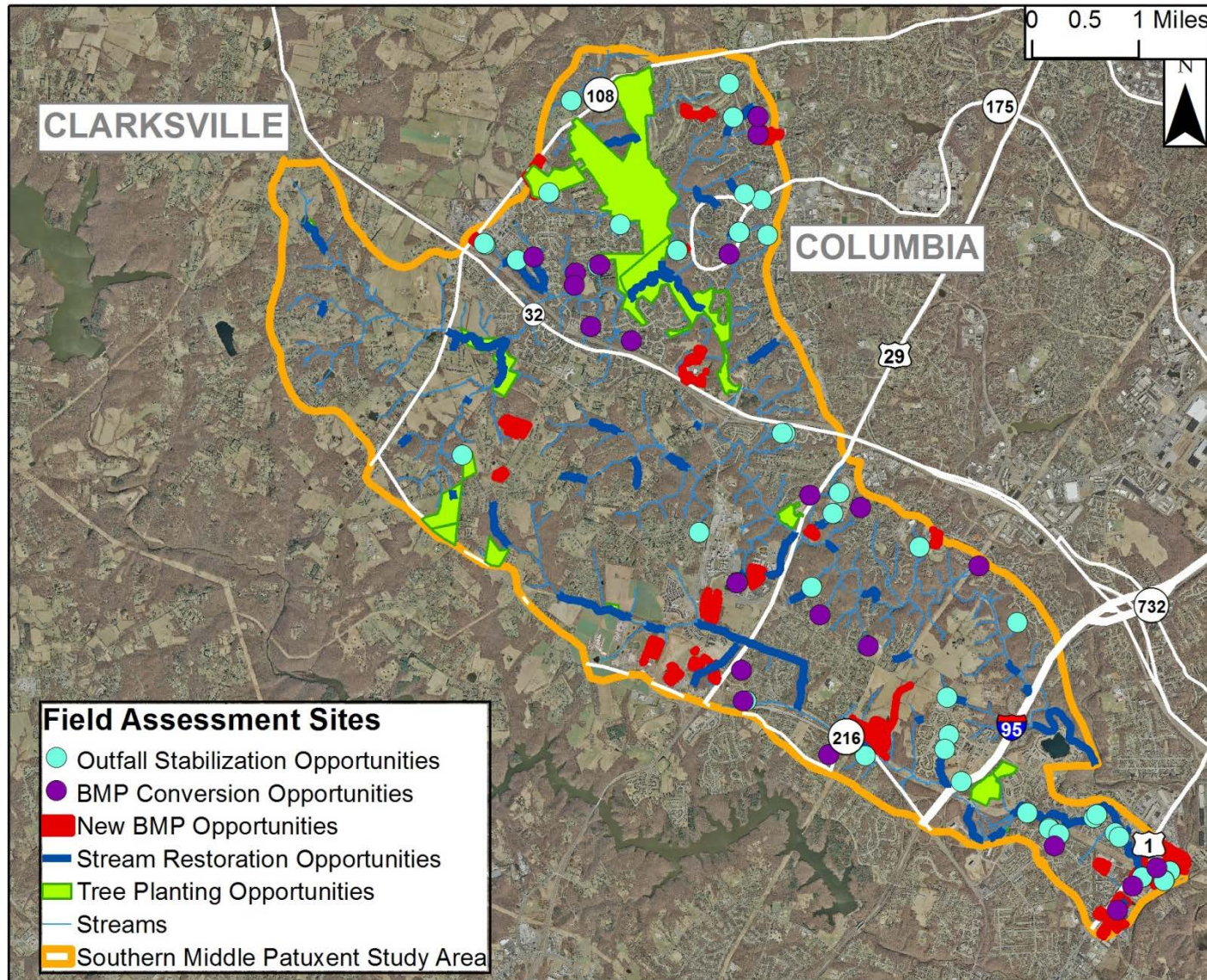
Field Assessment Results - Total

Sites Assessed:

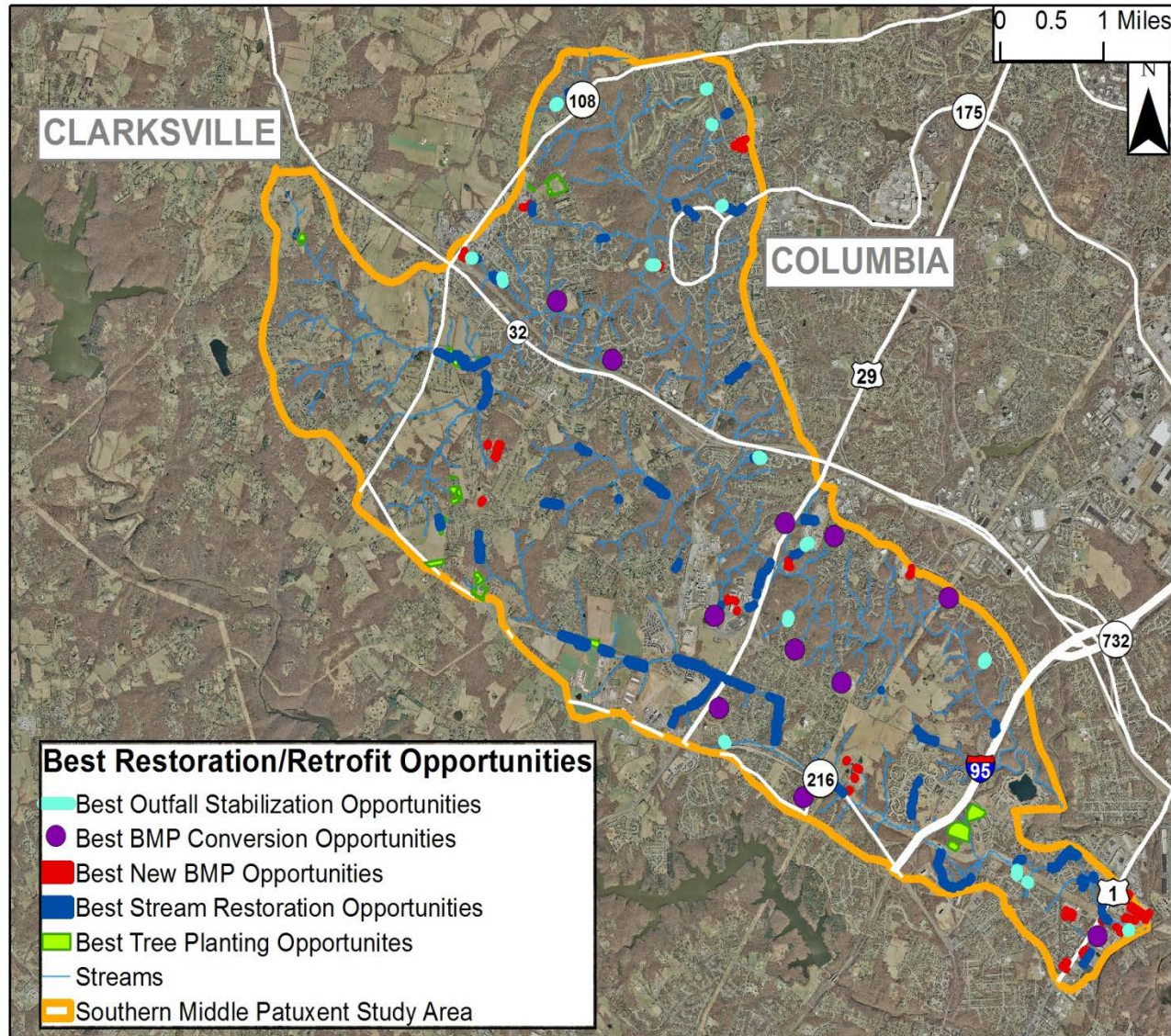
- 227 Outfall stabilizations
- 80 Tree planting sites
- 77.1 Stream miles
- 202 New BMP sites
- 160 BMP conversions



Field Assessment Sites - SMP



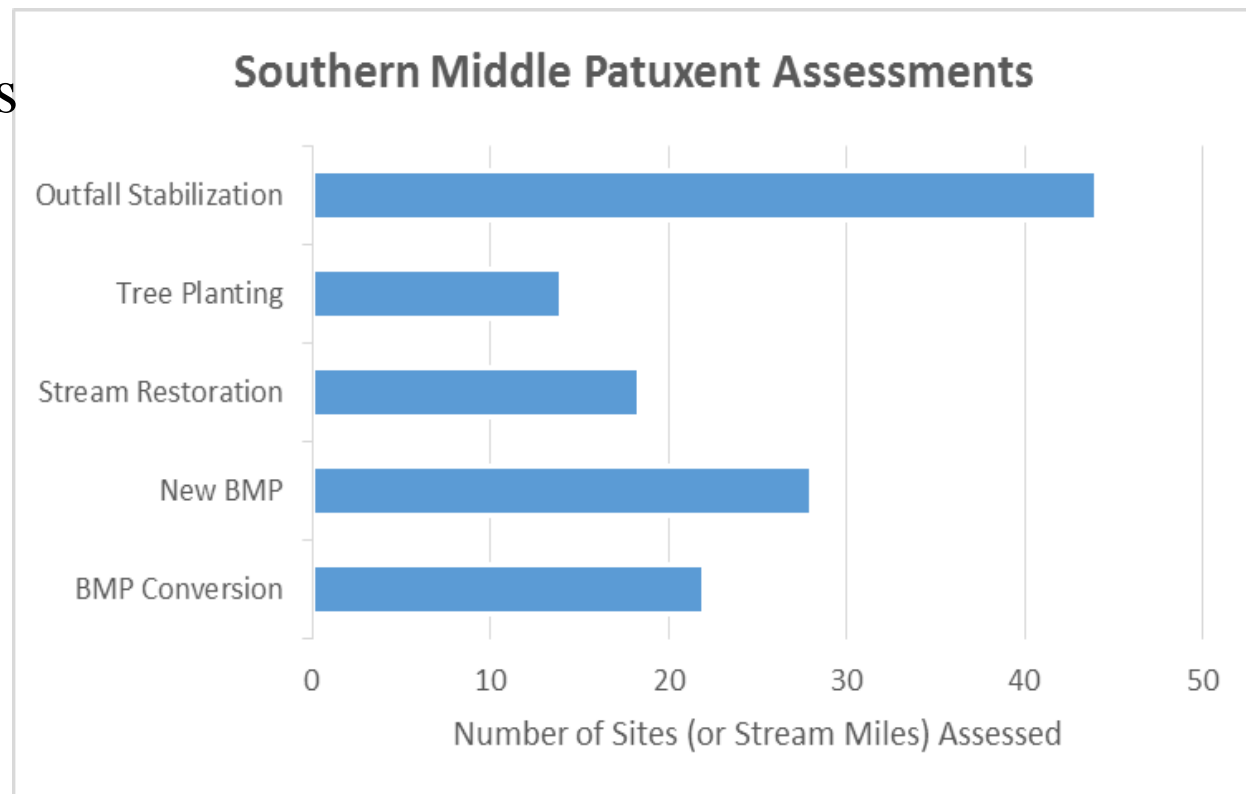
Field Assessment Results - SMP



Field Assessment Results - SMP

Sites Assessed:

- 44 outfall stabilizations
- 14 tree planting sites
- 18.4 miles of stream
- 28 new BMP sites
- 22 BMP conversions



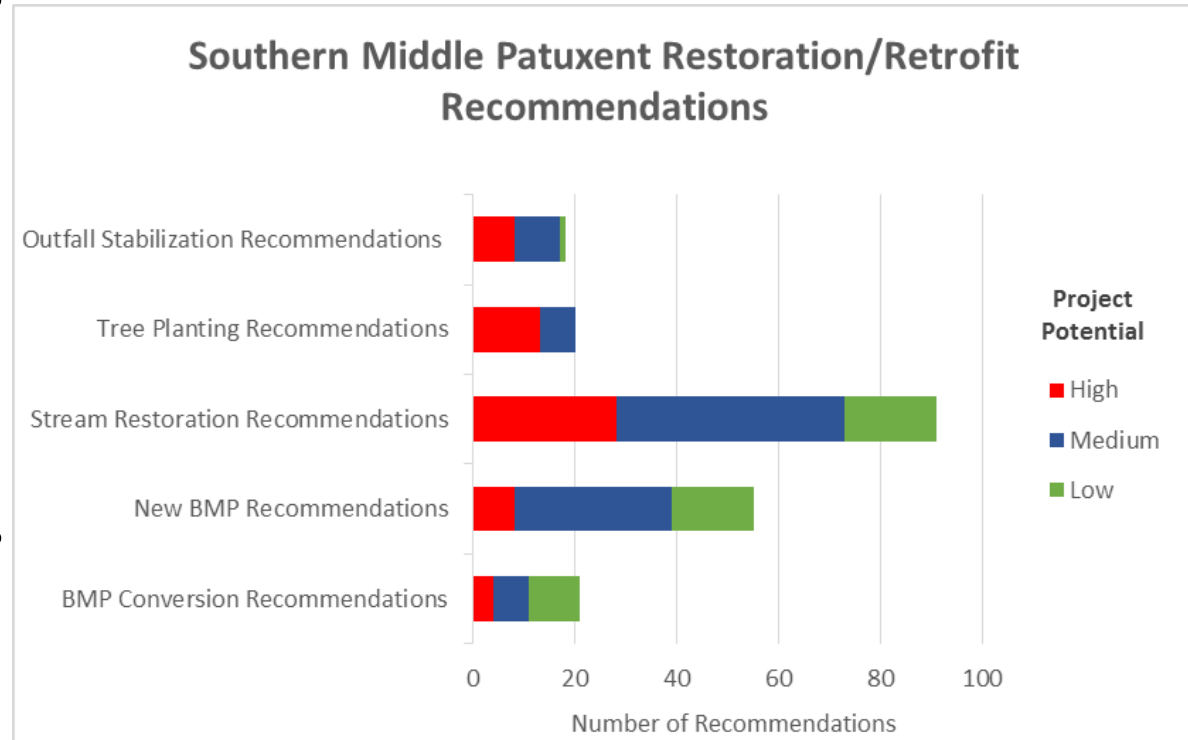
Field Assessment Results - SMP

High Priority Sites:

- 8 outfall stabilizations
- 13 tree planting sites
- 28 stream sites
- 8 new BMP sites
- 4 BMP conversions

Medium Priority Sites:

- 9 outfall stabilizations
- 7 tree planting sites
- 45 stream sites
- 31 new BMP sites
- 7 BMP conversions



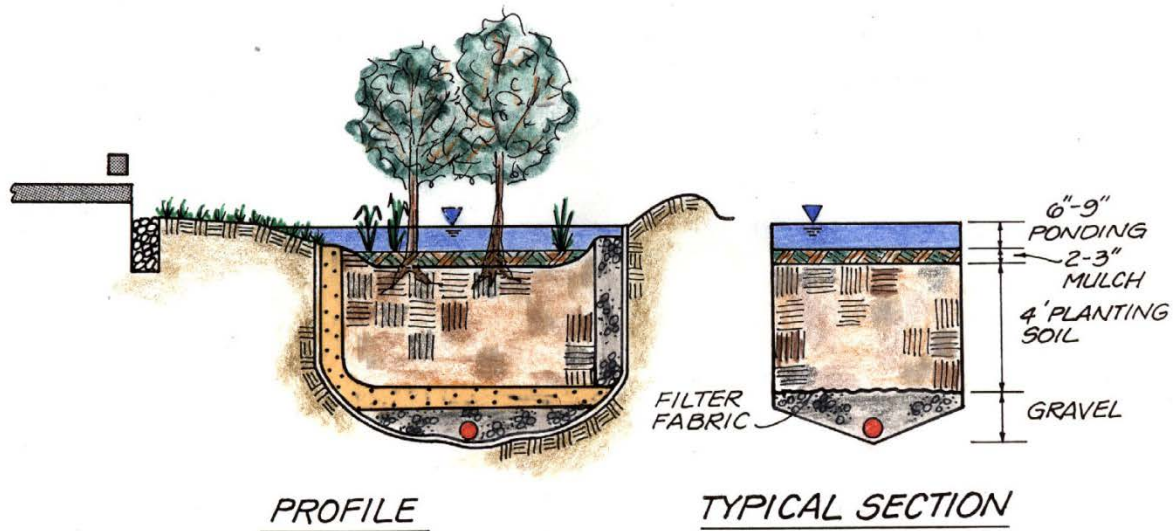
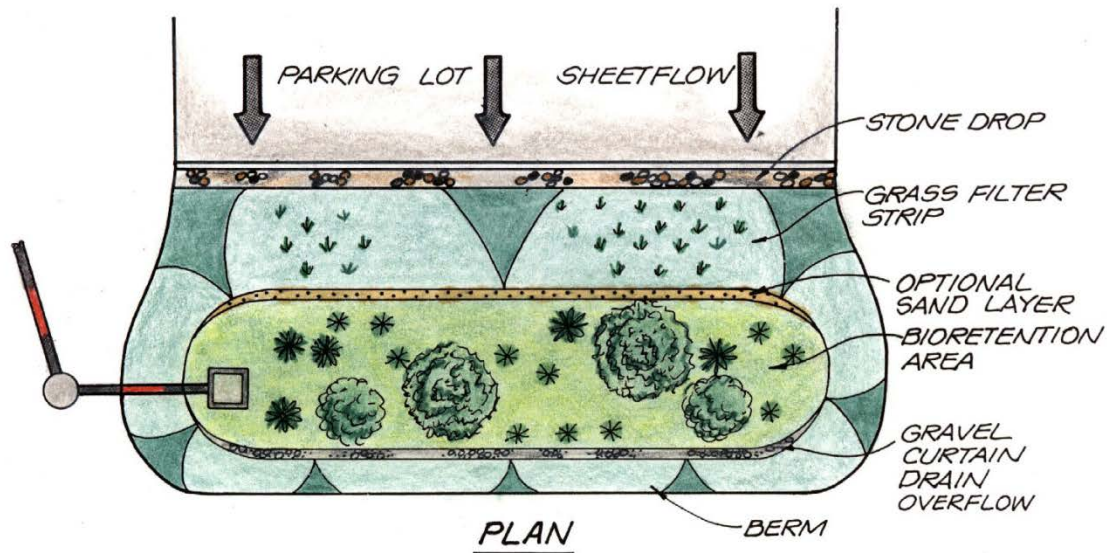
Watershed Study Overview

- Phase II – scheduled completion end of 2015
 - Perform Concept Level Designs (Including Cost Estimates)
 - Rank sites (\$/acre of impervious treated)
 - Input to restoration plan (CIS)
 - Generate Draft Watershed Report
 - Community Meetings - #2 (October 2015)
 - Review and Comment Period
 - Final Report to MD Department of the Environment

If we build it, they will come . . .



Restoration Toolbox



BIORETENTION FILTER

Bioretention Facility



Bioretention



Pond Retrofit Project



Pond Retrofit Project



Permeable Pavement



Outfall Stabilization



Stream Restoration



Riparian Buffer Enhancement

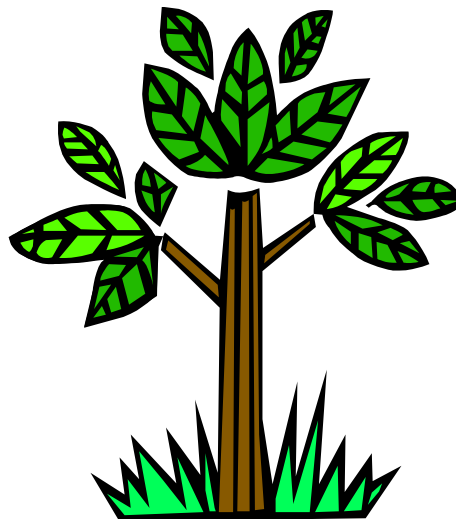


Riparian Buffer Enhancement





**What can homeowners do to
improve the water quality in the
their watershed?**



Everyday Things

Reduce the amount of fertilizer you use

Remember that anything that runs off your driveway or lawn ends up in the creek

Oil leaks

Pesticides

Pick up after your pet

No dumping

Reduce runoff from your yard

Disconnect your downspouts

Reduce turf area

Plant a tree

Reduce, Reuse and Recycle!!



Frequent Fertilizers

Nutrient runoff from lawns can cause eutrophication in streams, lakes & estuaries

52% of people who fertilize OVER-fertilize

People who over-fertilize put on more nutrients than farmers do to grow our food

Turf grass is single largest crop by area in the Chesapeake Bay Basin



Chronic Car Washers

55-70% of households wash their own cars

60% are “chronic car washers” who wash their car at least once a month

70-90% report that their wash water drains directly to the street and the storm drain



Poor Pooch Poop Scoopers

- 41% of people own dogs
- Of dog walkers, **41% admit they rarely or never clean up**
- Of these, 44% would not clean up even with a fine, complaints, collection or disposal methods
- However, 63% agreed that pet wastes contribute to water quality problems



Attention Dog Guardians

Pick up after your
dogs. Thank you.

Attention Dogs

Grrrrr, bark, woof.
Good dog.

District of North Vancouver.
Bylaw 5981-11(i)



Volume Reduction

There are both simple and complex ways to reduce runoff from our yards

- downspout disconnection
- rain barrels
- rain gardens
- lawn conversion

Bad Approach



A photograph of a landscaped area. In the foreground, a black metal fence with vertical bars runs across the frame. Behind the fence is a garden bed covered in dark brown mulch. Several green plants are growing in the bed, including a large bush on the left and two smaller trees on the right. A small green rectangular object is visible in the mulch. In the background, a red brick building with a window is visible. To the left of the building, a black metal fence separates the garden from a parking lot where several cars are parked. The text "Good Approach" is overlaid on the right side of the image.

Good Approach

Rain Barrel



Overfertilization?
Too much turf?



Disconnected impervious



Rain Garden

Photo: LID Center



Lack of
riparian buffer.

What can be recycled in the blue carts?

❖ Paper & Cardboard



❖ Glass Bottles and Jars



❖ Metal



❖ Plastic



Summary

- County has completed the initial assessment phase of the Little and Middle Patuxent River watershed study. There is still more work to be done and we will report back again Fall 2015.
- The County continues to strive for water quality improvements through large and small efforts.
- **We can ALL can make a difference!**