

SMART

Stormwater Management and Restoration Tracker

Making Every Practice Count!

University of Maryland Sea Grant Extension Program

University of Maryland Center for Environmental Science @ Department of Natural Resources

Towson University GIS



UM College Park • UM Eastern Shore

Tool Overview: Origin

Why Do We Need this Tool?

Voluntary Practices Can Earn Credit
Education and Outreach → Behavior Change



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Tool Overview: Synopsis

Going from here . . .



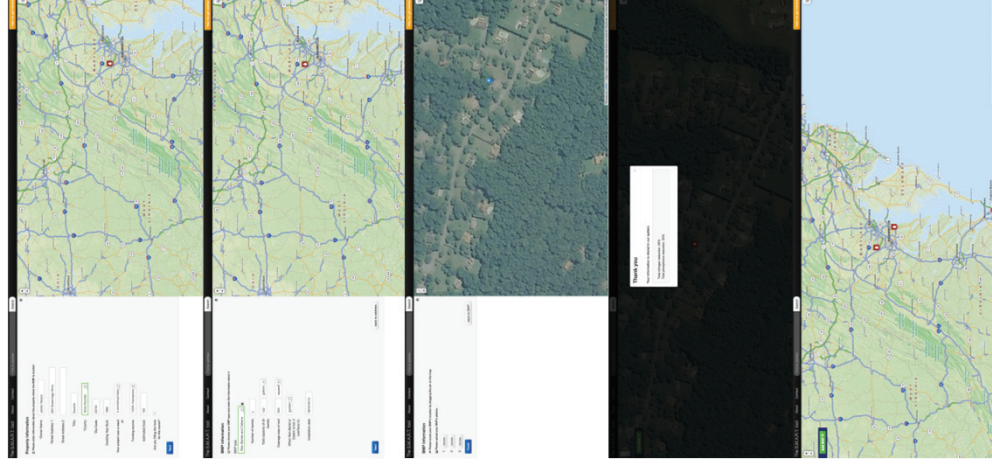
Situation: Small-scale residential Stormwater BMPs have **perceived** insignificant reductions in nutrients and sediment loading rates, but when aggregated these practices **can** result in significant measurable reductions.

Problem: Small-scale residential stormwater BMPs are most often **voluntarily** installed by environmental conscientious property owners and are not usually **tracked** by county and municipal agencies.

Solution: Create an interactive mapping and tracking tool for counties and towns to account for these **voluntary** BMPs for nutrient and sediment reductions under TMDLs and NPDES and MS4 permit requirements.

Target Audience for Tool Use: Property owners, watershed groups, local government staff

. . . to here

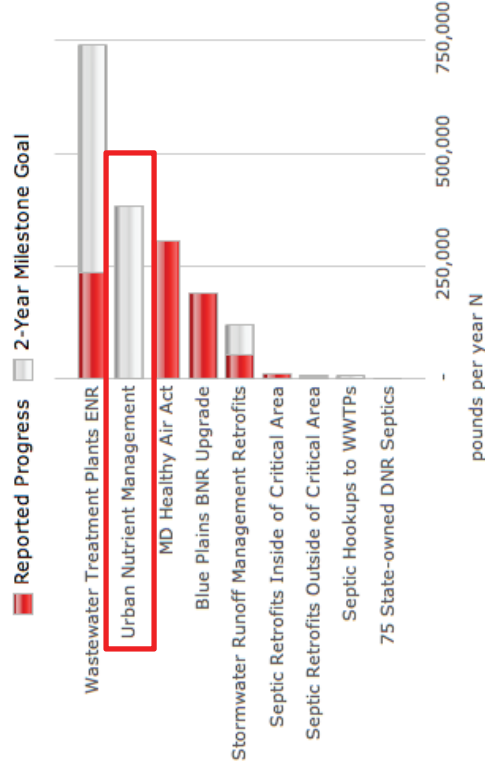


Tool Overview: Background

Why Do We Need this Tool?

Voluntary practices will help with
 Urban Nutrient Management

Reducing Pollution from Urban Areas



Data from Jim George, MDE in 2010

Urban Nutrient Loads Are Fast Becoming a Big Slice of the Bay Pie

Year	Total N	Total P
1985	2%	5%
2000	9%	15%
2009	12%	22%
2030	??	??

Urban and suburban runoff is the only Bay nutrient load sector where we are seeing reverse progress
 In load reductions- source OIG (2007)

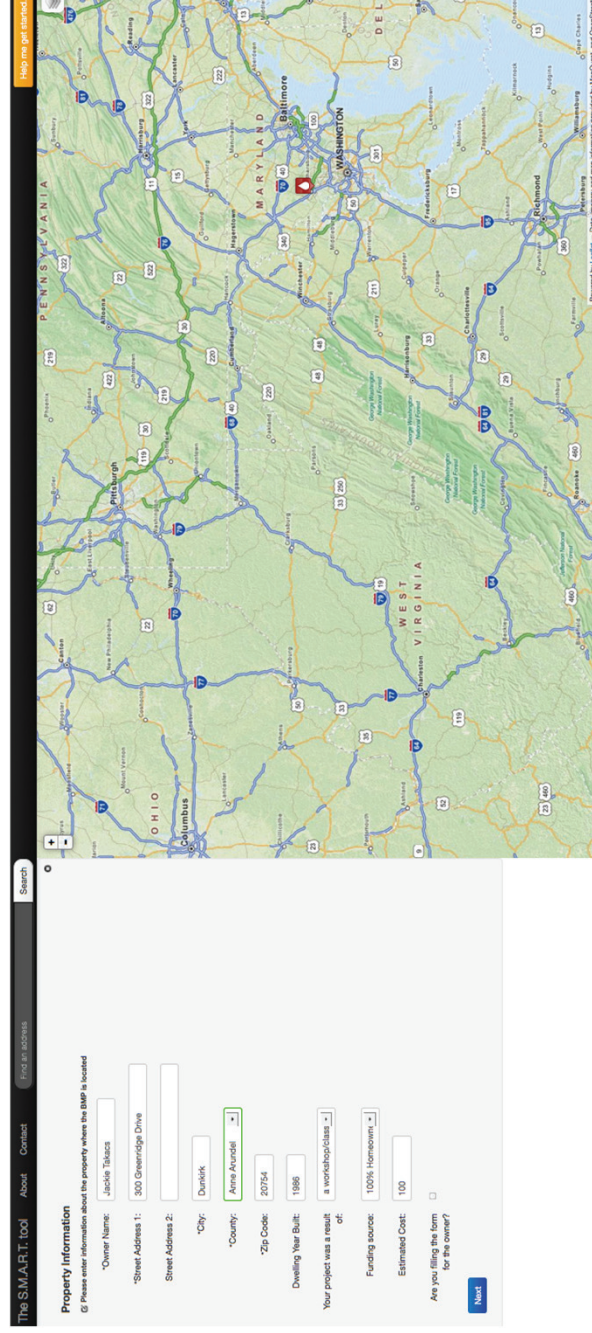
Data from Tom Schueler, Chesapeake Stormwater Network

Tool Overview: Background

Developing the Tool

Funding: grant from UMD Extension in 2011

Collaborator: Towson University Center for GIS



The SMART tool interface is divided into two main sections. On the left is a form titled "Property Information" with a search bar at the top. The form contains several input fields: "Owner Name" (filled with "Jackie Tibbits"), "Street Address 1" (filled with "300 Greenridge Drive"), "Street Address 2" (empty), "City" (filled with "Dundalk"), "County" (filled with "Anne Arundel"), "Zip Code" (filled with "20754"), and "Dwelling Year Built" (filled with "1988"). There are also dropdown menus for "County" and "Dwelling Year Built". A "Search" button is located at the top right of the form. On the right is a map of the Baltimore area, showing major roads, green spaces, and a red pin indicating the location of the property. The map includes labels for "PENNNSYLVANIA", "MARYLAND", "WASHINGTON", "DELA", "OHIO", "WEST VIRGINIA", "Baltimore", and "Columbus". A "How do I get started" button is located at the top left of the map area.

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Tool Overview: How it Works

Entering a Stormwater BMP

- Identifiers – who, where, cost and funding source

The S.M.A.R.T. Tool About Contact Find an address Search

Property information
Please enter information about the property where the BMP is located

*Owner Name:

*Street Address 1:

Street Address 2:

*City:

*County:

*Zip Code:

Dwelling Year Built:

Your project was a result of:

Funding source:

Estimated Cost:

Are you filling the form for the owner?

Next

Map showing the location of the property in Anne Arundell County, Maryland, near the intersection of I-495 and I-270. The map includes labels for major cities like Baltimore, Washington, and Richmond, and various highways.

Tool Overview: How it Works

Entering a Stormwater BMP

- BMP Type, size and design factors

Rain Barrels and Cisterns

Bioswales and Vegetated Open Channels

Bioretention

Tree plantings

Dumpsite cleanup

Living Shorelines

Downspout disconnection

Install pet waste stations

Attend stormwater educational events

Conversion from turf to conservation landscaping

Conversion from impervious to turf/conservation landscaping

Rain Gardens

Infiltration Trench or Basin

Permeable Pavers

Riparian buffer plantings

Green Roof

Certified Baywise Landscaping

Lawn depression/infiltration

Pledge not to Fertilize

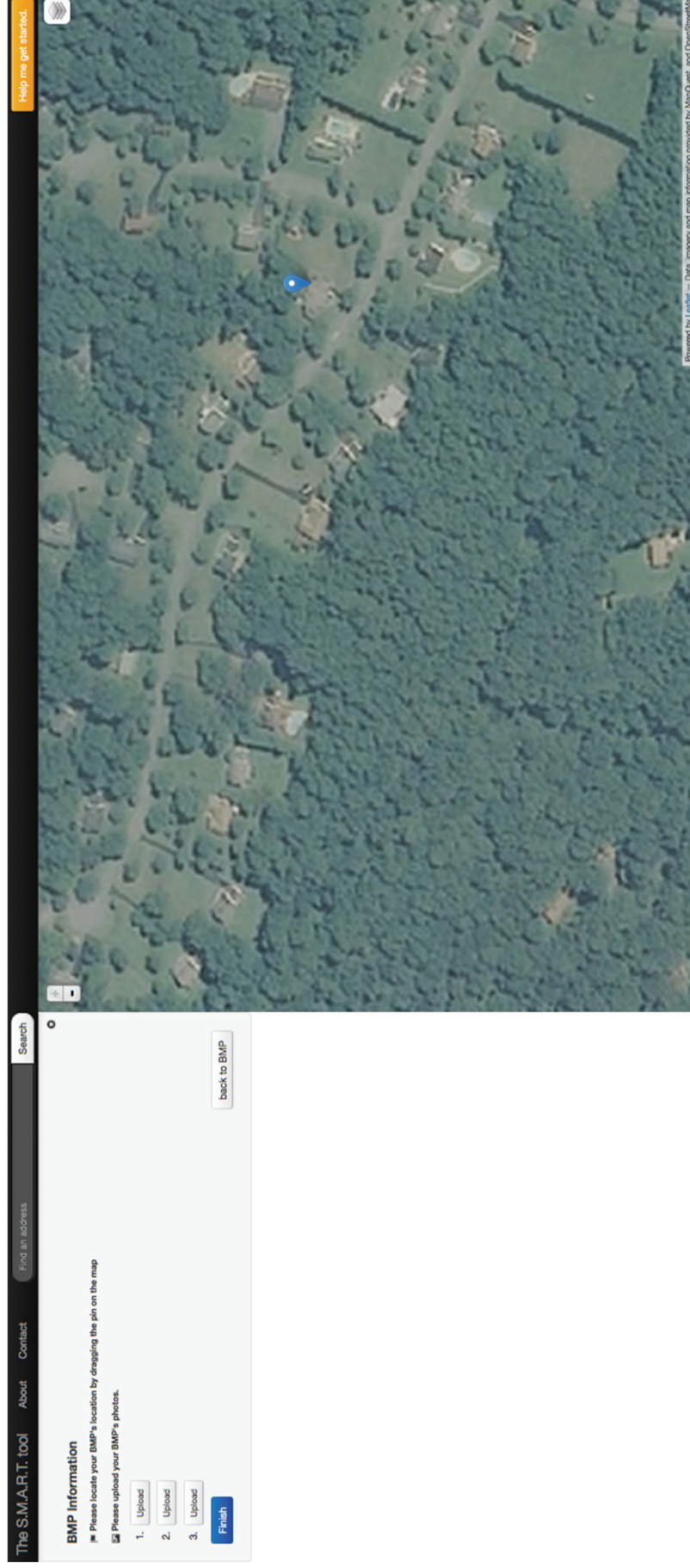
Fertilizer Management



Tool Overview: How it Works

Entering a Stormwater BMP

- Photo upload & placement



The S.M.A.R.T. tool interface is shown. The top navigation bar includes links for 'About', 'Contact', 'Find an address', and 'Search'. Below the navigation bar, the 'BMP Information' section contains instructions: 'Please locate your BMP's location by dragging the pin on the map' and 'Please upload your BMP's photos.' There are three 'Upload' buttons and a 'Finish' button. A 'back to BMP' button is also present. The main area displays an aerial satellite map of a residential neighborhood with a blue location pin. A small orange banner at the top right of the map area says 'Help me get started.' At the bottom right of the map, there is a small text credit: 'Powered by Leaflet - Data, imagery and map information provided by Mapbox, and OpenStreetMap'.

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Tool Overview: How it Works

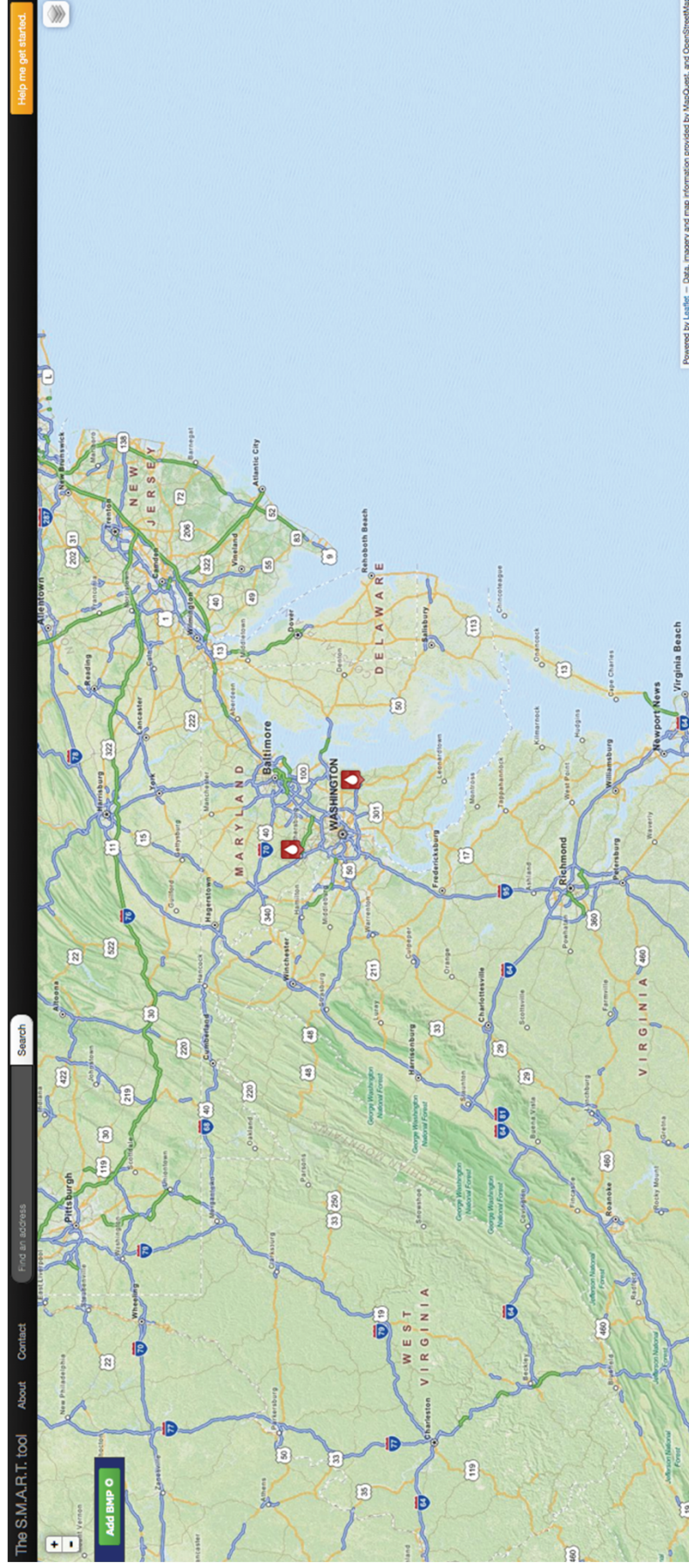
Entering a Stormwater BMP

- Nutrient and Sediment reduction estimates



Tool Overview: How it Works

Finding Your Stormwater BMP



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Tool Overview: How it Works

SMART Certification

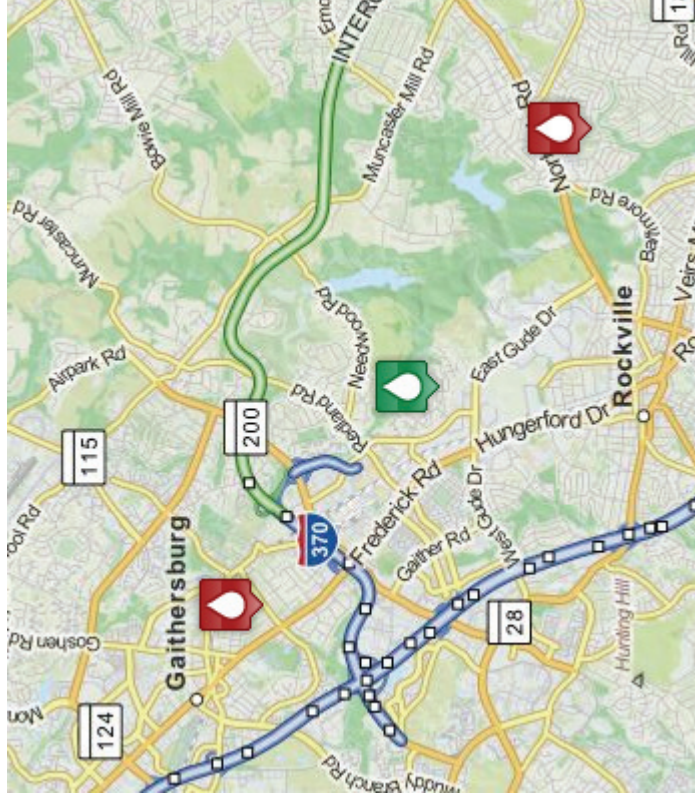
- BMP  email alert
- SMART Team Member deployed
 - Trained UME Volunteer
 - Armed with education!
- BMP icon changes from red to green
- Practice is now Certified – sediment and nutrient reductions can be used



Tool Overview: How it Works

SMART Outputs

- Map of the BMPs – certified and uncertified
- NO Addresses: only name of BMP and picture if provided
- Reductions aggregated across practices, by county



Tool Overview: How it Works

Reports

BMP	Total footprint
Dumpsite cleanup	0
Living shoreline	0
Install pet waste station	0
Stormwater Educational events	0
Lawn depression/infiltration:	0
Tree planting (if not already tracked through Me	0
Riparian buffer plantings	0
Certified Baywise Landscaping	0
Pledge Not to Fertilize	0
Green Roof	0

- UME and county designees can query and download data for planning and reporting
- Excel files provide the necessary data for direct entry into MAST and NEIEN
- Edge-of-stream pound reduction info available for each BMP

Tool Overview: How it Works

Anticipated Benefits

Private Property Owners:

- Better understand their contribution to stormwater pollution
- Know their efforts count toward the larger Bay restoration effort

County Government:

- Gain capacity to track and report sediment and nutrient reductions for small-scale residential stormwater BMP projects
- Meet outreach requirements of various state and federal permits

Tool Overview: Getting There

SMART Program Elements

SMART Tool
Pilot Counties
Written Materials
UME Website
SMART Certifier
Evaluation

Tool Overview: Getting There

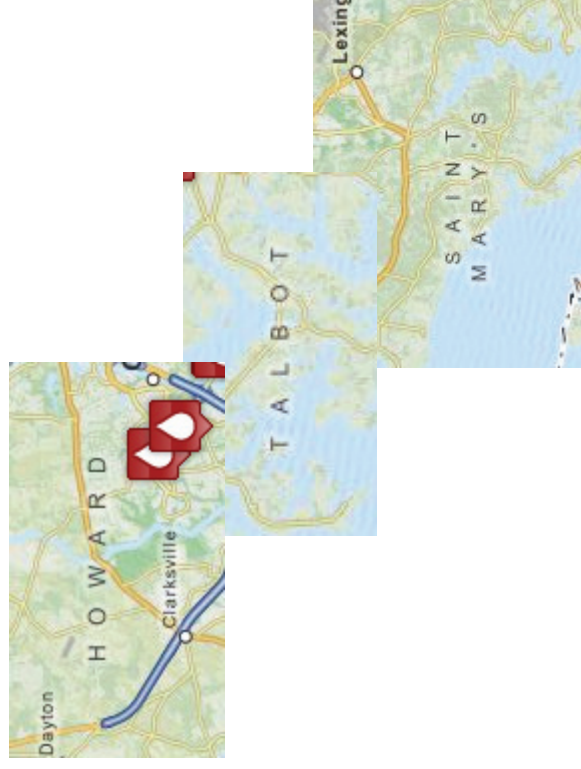
SMART Program Elements: SMART Tool

- Tool has been developed by Towson and is being piloted.
- Sea Grant Watershed team has initiated 2 new scopes of work with Towson for 1) some additional upgrades and 2) general maintenance.
- Working with Towson for a SMART mobile app.

Tool Overview: Getting There

SMART Program Elements: Pilot Counties

- Howard, Talbot, St. Mary's
- April 15, 2013 – first preview
- Feedback from Counties will shape final product



Tool Overview: Getting There

SMART Program Elements: Written Materials

- 3 SMART Factsheets
 - SMART
 - Overview for County/Municipal Officials and Staff
 - Overview for Property Owners
- Manual
 - Data entry manual (reference)
 - Certification manual (for volunteers)
- Other Factsheets
 - BMP overview and maintenance

Tool Overview: Getting There

SMART Program Elements: Website

- UMD Sea Grant Extension
 - extension.umd.edu/watershed
 - SMART Tool
 - Separate page for Certifiers and Counties
 - Links to Factsheets

 extension.umd.edu/watershed/smart-tool



Count My Practice!

Click on the link below to have your practice counted towards efforts to clean up your local waterways!

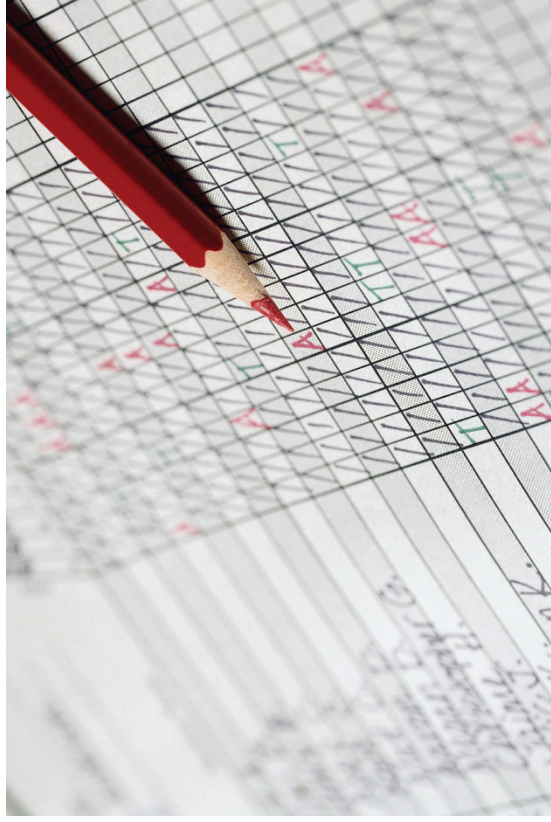
Use The S.M.A.R.T. Tool

This link will direct your web browser outside the University of Maryland Extension website. The site is managed by University of Maryland Sea Grant Extension.

Tool Overview: Getting There

SMART Program Elements: SMART Certifiers

- Recruit Volunteers
- Train Volunteers
 - Online readings
 - Overview of program
 - Data entry
 - Day long workshop
 - ½ day classroom / computer session
 - ½ day field work
- Spot Check certified practices



Tool Overview: Getting There

SMART Program Elements: Evaluation

- Pilot Counties
- Written materials
- SMART volunteers
- Private property owners



Tool Overview: Timeline

SMART Program Elements

SMART Tool

Completed

Pilot Counties

- Contact/comments
- Rollout

In progress

October 2013

Written Materials

- 3 SMART Factsheets
- Manuals
- Other factsheets

In progress

In progress

December 2013

UME Website

In progress

SMART Volunteers

January 2014

Evaluation

October – December 2013

****STATEWIDE ROLLOUT ----- APRIL/JUNE 2014****

Sea Grant Watershed Team

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Thank You!

Questions?