Emerging Best Management Practices in Urban Greening & Land Conservation

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New Ideas to Accelerate the Chesapeake Bay Restoration
Chesapeake Beach Club, Stevensville, MD on March 18, 2016
Prince George’s County
Stormwater Stewardship

Restoration activities that improve communities and water quality and engage residents in the restoration and protection of the local rivers and streams

- Hire 8 high school students, 1 college student, and 1 elder
- Research, examine, maintain, trees
- Engage residents
- Present to Council

TreeKeepers, Town of Forest Heights
University of Maryland Golf Course Rain Gardens

Most of the rain that falls on walkways, roads, and parking lots surrounding the UMD golf course is collected by our storm drain system. While storm drains help to remove stormwater from the site, it has a negative effect on the hydrology of the Chesapeake Bay. The rain gardens will collect and slow down stormwater flows preventing localized and downstream flooding. Improperly managed runoff during storm events leads to erosion in streambeds and carries harmful pollutants such as oil, sediment, trash, and pet waste. These rain gardens also serve to reduce and prevent these types of harmful pollutants from entering into the storm drains. With an average annual precipitation of 42 inches, these rain gardens are capturing, infiltrating, and reducing the temperature of almost 1 million gallons of rainwater that would otherwise enter into the Anacostia River and then into the Chesapeake Bay.

The UMD Golf Course Rain Gardens were completed in the spring of 2016 in collaboration with the Chesapeake Bay Trust, Prince George’s County, and the Anacostia Watershed Society, in partnership with the University of Maryland. Funding was made possible through the Prince George’s Stormwater Stewardship grant program.

This project also removed over 1,200 square feet of asphalt and converted 2,400 square feet of lawn into 3,500 square feet of BayScape which will provide habitat for butterflies such as the Baltimore Checkerspot (the official butterfly of the State of Maryland) and other small wildlife.

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Metallic Green Bee
Anoplognathus metallicus

Black Eyed Susan
Rudbeckia hirta

Blue Eyed Grass
Sisyrinchium angustifolium

Butterfly Weed
Asclepias tuberosa

Mount Airy False Indigo
Baptisia ‘Mount Airy’

Red Sprig Winterberry
Sarcococca ‘Premonter’

Turk’s Cap
Malvaviscus arboreus

Baltimore Checkerspot
Euphydryas chrysippus

Native plants create habitat for birds and butterflies

Surface Layer of plants add to the uptake and processing of pollutants

Mulch Layer works as a first layer of filtration for both solid and chemical pollutants that are picked up by stormwater runoff

Engineered soils help to filter and break down chemical and particulate pollutants while allowing rainwater to infiltrate

Overflow drain pipe (not in all rain gardens)

Gravel Layer provides for rainwater storage and allows for infiltration (not in all rain gardens)
Rain Check Program

- Property owners receive rebates for installing stormwater management practices

Stormwater is created when rainwater runs across the landscape, picking up pollutants and debris as it travels to local waterways.
Projects must accomplish on-the-ground restoration and help the County meet local water quality and runoff reduction improvement goals.

Funding Level: Up to $300,000

Camp Woodlands Stormwater Retrofit

**Project Goals:**
- Restore 190 LF leading into a stream
- Reforest 9,000 SF surrounding retrofit
- Engage civic and community groups in planting
Anne Arundel County Planting & Forestry and Greening

Increase the number of forested acres in Anne Arundel County

Planting grant: rolling deadline & request up to $2,500
Forestry and Greening grant: March 2016 deadline & request >$2,500
Planning, Design, Implementation, White Paper, and Charrettes

Faster, cheaper, greener!
A Green "O"vation Project (Ecological Restoration and Re-opening of O Street)

Current position of West side of O St NW

Current position of East side of O St NW

Aerial photo showing the current layout of Dunbar High School.

Newly reopened O St NW with bioretention cells lining the street. One of the proposed cells was removed to install a curb cut/driveway so that a neighboring charter school could have access to O St NW.

An architectural rendering of the finished Dunbar High School Campus.
A Green "O"vation Project (Ecological Restoration and Re-opening of O Street)
Urban Farms
A Green Infrastructure Tool for the Chesapeake Bay
IDENTIFYING OPPORTUNITIES:

Downtown Walkable Commercial

Downtown commercial streets provide connections between commercial areas of a city (e.g., neighborhood business district). Major urban streets have high volumes of vehicular, transit, pedestrian, and bike traffic. Roadways vary in width but are typically 2-4 lanes divided by a median or a turning lane.

The enhanced visualization of a downtown walkable commercial street illustrates how existing infrastructure can be retrofitted with tree box filters, bioswales, street trees, and bike lanes (Figure 4-4). Tree box filters should be placed and distributed along the length of a street to effectively intercept and treat stormwater runoff from the adjacent roadway. Placing tree box filters near existing infrastructure can provide an optimal opportunity to intercept stormwater and tie in overflows to existing infrastructure. Existing medians that are at least 5 feet wide can be converted into a functional bioswale with street trees.

OPPORTUNITIES:
- Incorporate tree box filters or planter boxes along the existing curb line.
- Install permeable pavement for parking zones.
- Reduce lane widths and provide a designated bike lane.
- Convert medians into bioswales with street trees.

CONSTRAINTS:
- Overhead and underground utilities
- Pedestrian volume and circulation
- High demand for parking in urban areas
- Space availability for adequate soil volume
- Designing to the level of future maintenance

Example of a typical downtown commercial street

Figure 4-5. Rendered overlay of green street retrofits in a downtown commercial street

KEY ELEMENTS
1. Tree box filter
2. Bioswale
3. Street tree
4. Permeable pavement
5. Bike lane
Nontidal Wetland

- Restored and enhanced 96 acres of forested wetlands
- $18,589/ac
Projects that accelerate the reduction of nutrient and/or sediment loads to the Maryland portion of the Chesapeake Bay and Maryland Coastal Bays from any nonpoint source focusing on new techniques, new information, or new programs.

Deadline: March 2016  Funding Level: Up to $75,000

**Eastern Shore Woodchip Bioreactors**

**Project Goals:**

- Install 2 woodchip bioreactors on agricultural land
- Monitor efficacy of nitrogen reduction
- Provide information for the Bay model and State cost-share programs
Restoration Research

Watershed Restoration assessment, stormwater management assessment, and Stream restoration research in Maryland

Literature review projects for up to $50,000
Research projects for up to ~$700,000

Students in Carroll County assessing the health of a local stream. Source: MD DNR
Living Shorelines

The Preservation of the Shoreline of Church Point on the St. Mary's River

St Mary’s Parish, Trinity Episcopal Church
Grants that accelerate the Bay Restoration

**Outreach / Restoration / Engagement**
- Outreach & Restoration Grant
- Green Street, Green Jobs, Green Towns
- Watershed Assistance Grant
- Community Engagement and Restoration Mini Grant

**County Specific**
- Prince George’s County Rain Check Rebate
- Prince George’s County Stormwater Stewardship
- Montgomery County Watershed Restoration and Outreach
- Anne Arundel County Watershed Restoration
- Anne Arundel County Forestry (two programs: >$2,500 or <$2,500)
- Charles County Forestry

**Education (K-12)**
- Environmental Education Mini grants
- Environmental Education
- Sustainable Schools

**Chesapeake Conservation Corps:** youth job training program

**Capacity Building Initiative:** 3yr support to increase capacity of orgs within watershed
Chesapeake Bay Trust Opportunities


The Chesapeake Bay Trust is proud to announce solicitations for Host Organizations for the 2016-17 Chesapeake Conservation Corps, a program that provides service-learning opportunities and green job training for young adults through environmental and energy conservation projects. This initiative, supported by the Trust, Constellation Energy, the National Park Service and the state of Maryland, pairs young adults with organizations that provide hands-on environmental, leadership, and technical training opportunities for a one-year term of service. To learn more about this program click here.

*NEW* Anne Arundel County Forestry and Greening Program - Deadline: March 4, 2016

The Anne Arundel County Government and the Chesapeake Bay Trust announce a new partnership to provide funds for forestry and greening projects in Anne Arundel County. The goal of this program is to implement cost-effective reforestation and greening projects in the County to increase tree canopy and/or implement demonstration-scale buffer projects. To learn more about this program and to apply, click here.

Green Streets, Green Jobs, Green Towns Grant Program Open - Deadline: March 3, 2016

The Green Streets, Green Jobs, Green Towns Grant Program, supported by funding from the Chesapeake Bay Trust, is now accepting applications for projects that promote sustainable practices and policies in communities throughout the Chesapeake Bay region.

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Chesapeake Bay Trust
Did we accelerate bay restoration?

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