



Arlington County Watershed Retrofits

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Center for Watershed Protection



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About the Center for Watershed Protection

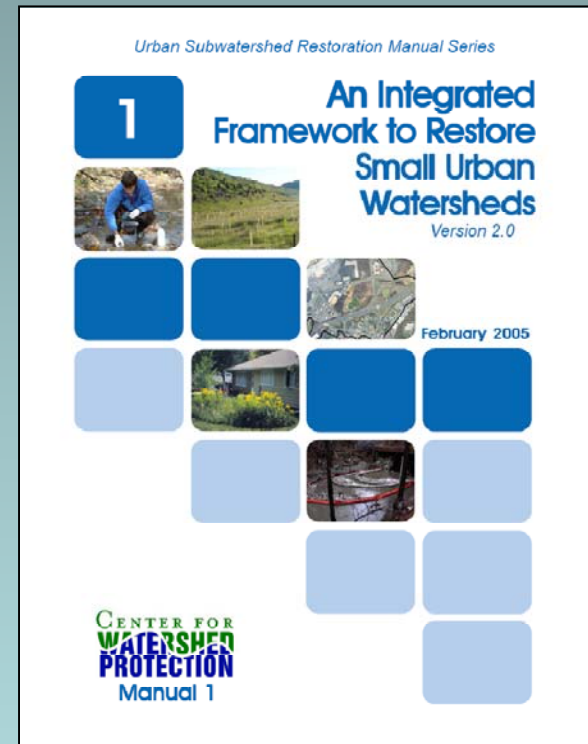
- Non-profit 501(c)3, non-advocacy organization
- Work with watershed groups, local, state, and federal governments
- Provide tools communities need to protect and restore streams, lakes, and rivers
- 21 staff in MD, VA, NY

www.cwp.org



Stormwater Retrofits

- **Stormwater retrofits** are just one type of urban watershed restoration practice.
- Others include:
 - Stream Repair
 - Riparian Management
 - Illicit Discharge Prevention
 - Watershed Forestry
 - Pollution Prevention
 - Municipal Good Housekeeping



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Retrofitting is Different

- Retrofitting is different than new stormwater design
- Retrofitting requires:
 - Sleuthing skills to determine what can work at highly constrained sites
 - Simultaneously envisioning restoration possibilities and anticipating potential problems
- Design, permitting and construction of stormwater retrofit practices is almost always more complex than new stormwater management practices

Retrofitting is Challenging

- It can be difficult to find enough retrofit locations to meet restoration objectives
 - Required storage volumes can get prohibitively large, particularly when channel protection and flood control are restoration objectives
 - Depending on watershed condition and restoration objectives, many retrofit sites may be needed
 - The more impervious a watershed becomes, the more storage is required and the more difficult it becomes to find retrofit sites

Our Retrofit Approach

- Articulate realistic and measurable restoration goals
- Apply to small subwatersheds (less than 10 square miles)
- Utilize rapid methods to find, design and implement a variety of restoration practices



Step 1: Retrofit Scoping

- Purpose
 - Define a retrofit strategy to meet local restoration objectives
- Key tasks
 - Review local stormwater management infrastructure and practices
 - Define restoration objectives
 - Define preferred retrofit locations and practices

Arlington County Retrofit Objectives

Primary Objectives

1. Treat stormwater runoff to eliminate pollutants.
2. Promote runoff reduction to the extent achievable.
3. Address pollution hotspots where appropriate.

Secondary Objectives

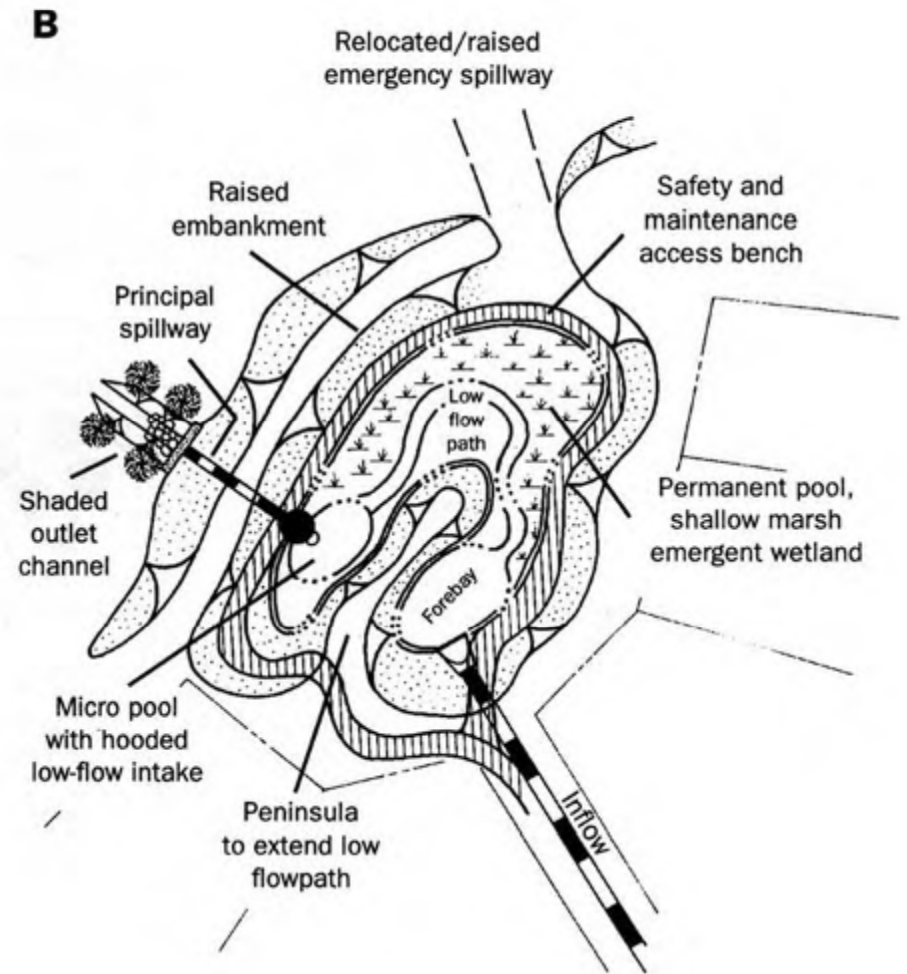
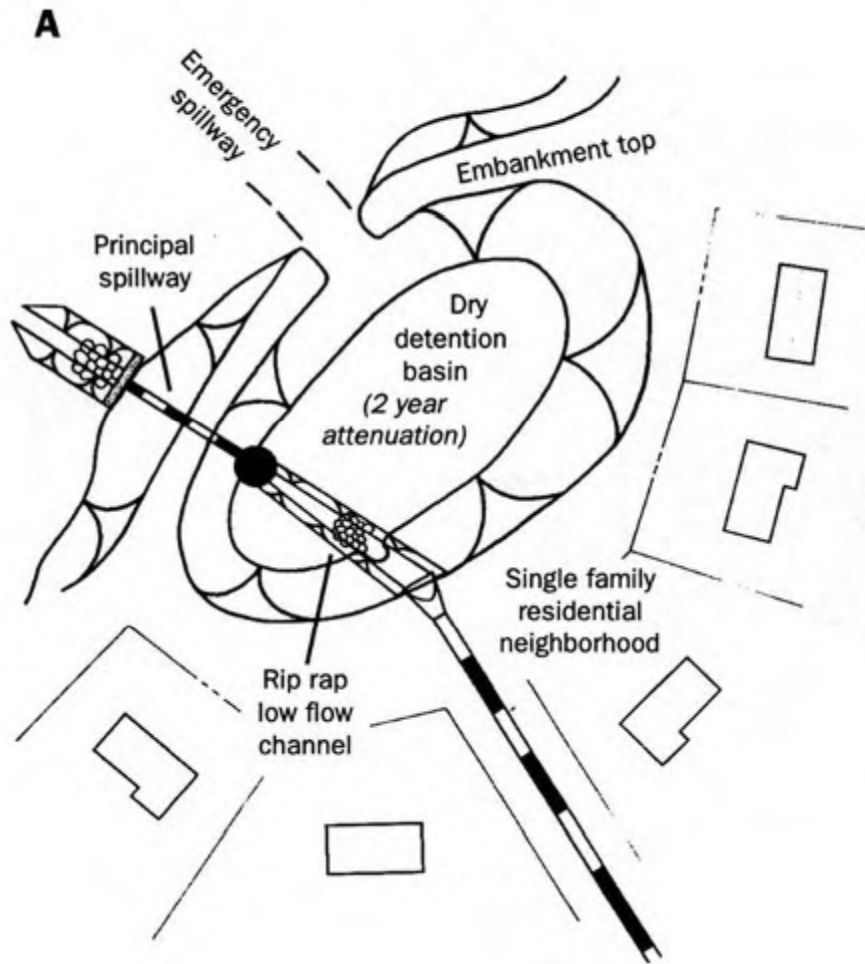
4. Alleviate existing drainage problems when feasible.
5. Implement safe, aesthetically beneficial retrofits.
6. Provide outdoor learning and outreach opportunities.
7. Create desirable wildlife habitat areas.
8. Support existing recreational uses and naturalization efforts.

Preferred Retrofit Locations & Practices

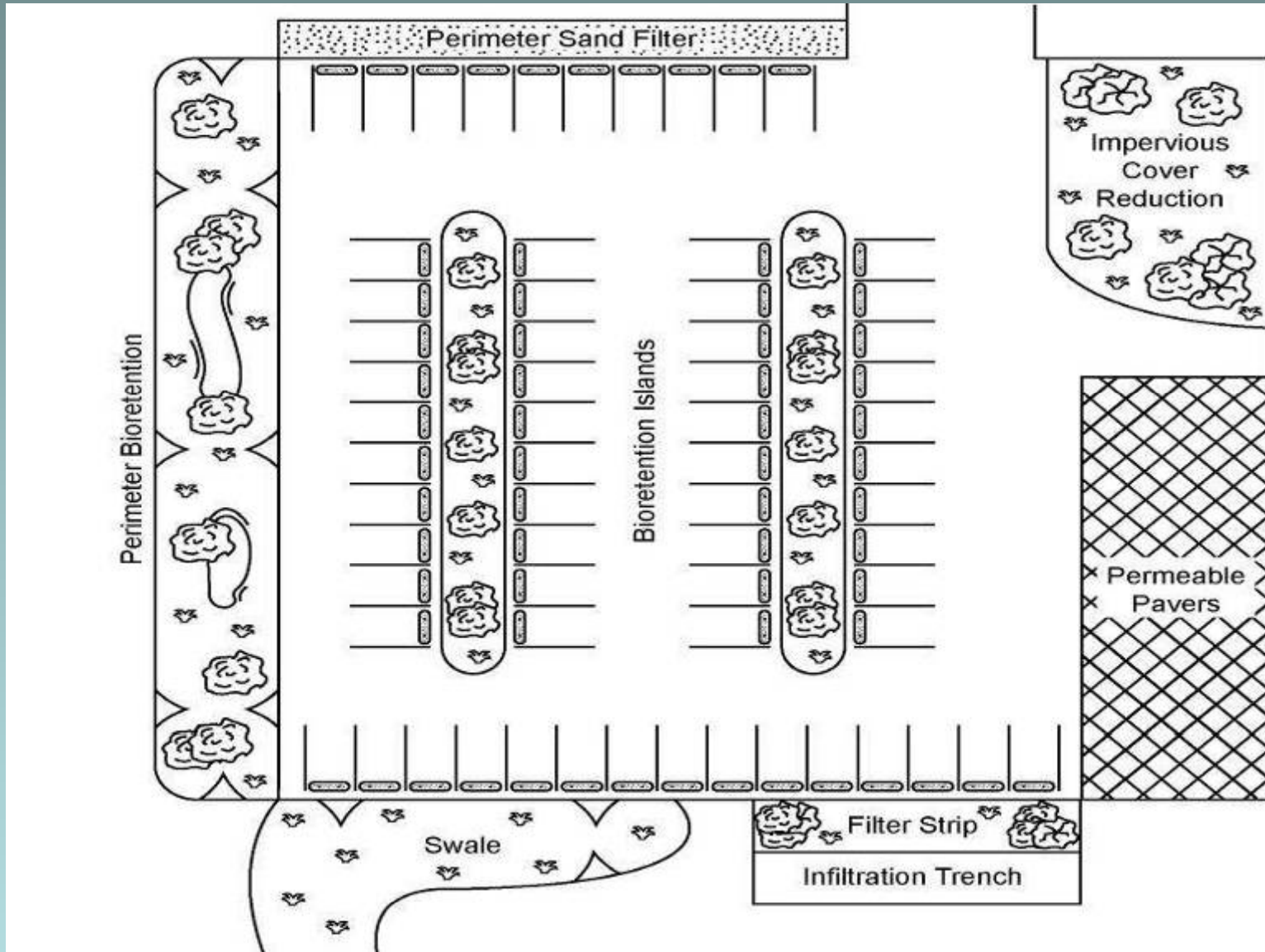
Different types of stormwater management practices used in stormwater retrofitting



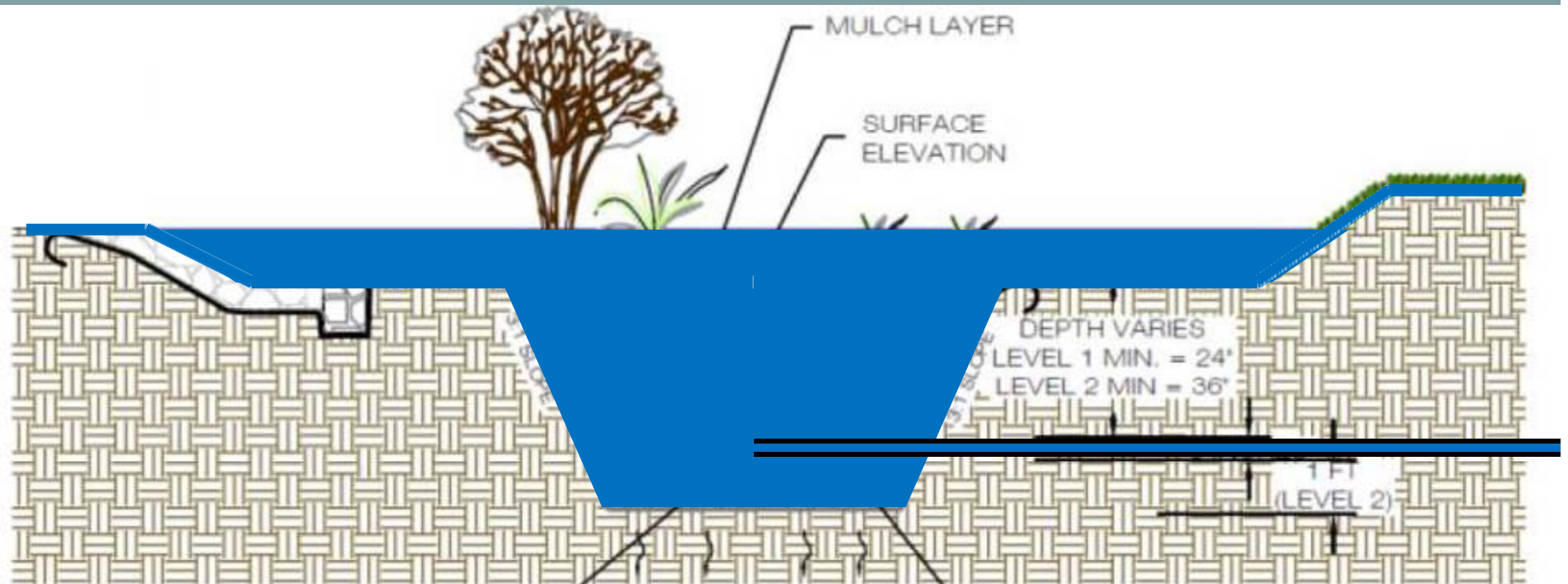
Extended Detention, Wet Ponds, and Wetlands



Bioretention, Filtration, Infiltration, & Swales



Bioretention in Action



Patrick Henry Drive



Green Roofs, Cisterns, & Permeable Pavement



Step 2: Desktop Analysis

- Purpose
 - Rapidly search for and identify potential retrofit sites across the subwatershed
 - Save time in the field



Step 3: Retrofit Reconnaissance Inventory (RRI)

- Purpose
 - Determine feasibility of candidate retrofit locations
 - Collect information
- Key tasks
 - Evaluate potential retrofit sites, collect pertinent site information, and produce a basic design sketch



Typical Arlington County Retrofit Locations

1. Local Streets



Typical Arlington County Retrofit Locations

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Typical Arlington County Retrofit Locations

2. Public Land



Typical Arlington County Retrofit Locations

3. Institutional Properties



Typical Arlington County Retrofit Locations

3. Institutional Properties



Typical Arlington County Retrofit Locations

4. Large Impervious Properties



Step 4: Compile Retrofit Inventory

- Purpose
 - Communicate the results of the field assessments.
 - Provide the information needed to develop an implementation plan.
- Key tasks
 - Catalogue the field assessment data.
 - Rank and prioritize projects.
 - Develop concept designs for the most highly rated projects.

Small Group Activity

1. Mark your house on the watershed map.
2. Discuss possible retrofit locations, opportunities, and challenges.
3. Note retrofit opportunities on map, and write a short description.