



Arlington County Watershed Retrofits

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About the Center for Watershed Protection

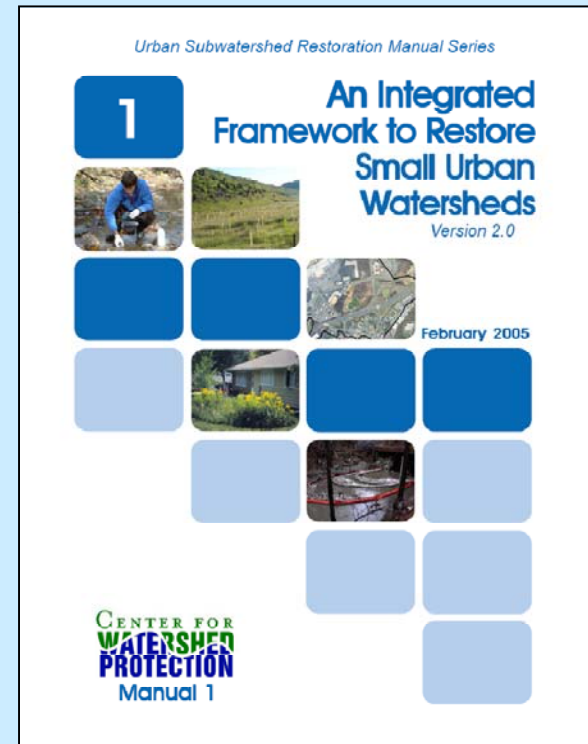
- Non-profit 501(c)3, non-advocacy organization
- Work with watershed groups, local, state, and federal governments
- Provide tools communities need to protect and restore streams, lakes, and rivers
- 21 staff in MD, VA, NY

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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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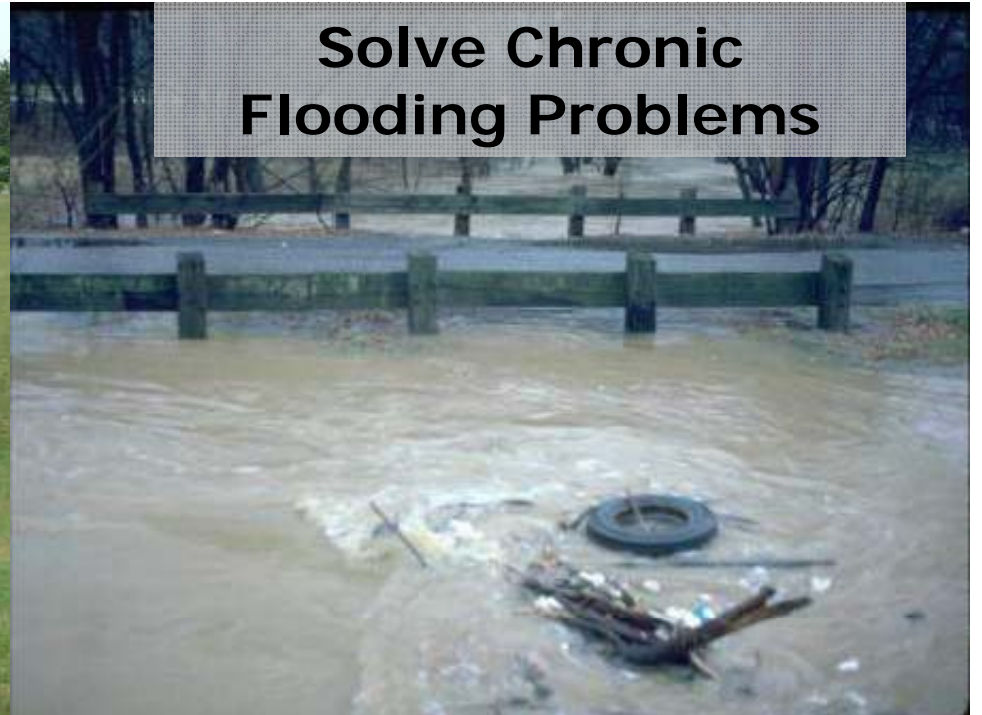
Why Retrofit?

- Many of our subwatersheds were developed without effective stormwater management practices
- This has caused a number of negative impacts on our receiving waters
- Stormwater retrofitting can be used to address these situations and help meet a wide range of subwatershed restoration objectives...

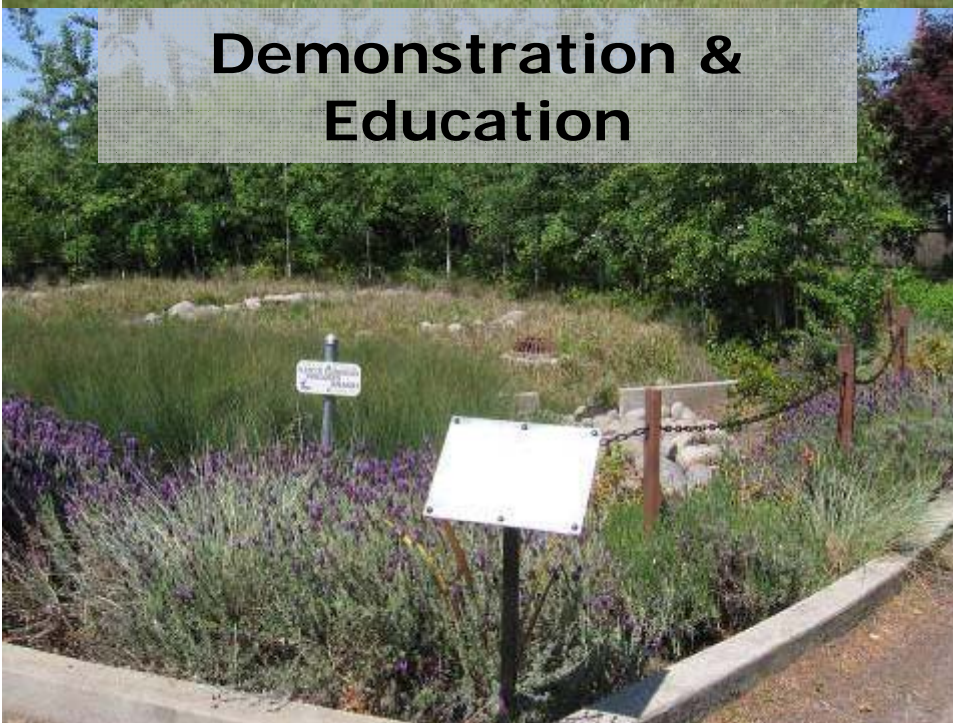
Fix Past Mistakes & Maintenance Problems



Solve Chronic Flooding Problems



Demonstration & Education



Reduce Pollutants of Concern



Reduce Stormwater Runoff Volumes



Trap Trash & Floatables



Reduce Downstream Channel Erosion



Support Stream Restoration Projects



Retrofitting is Different

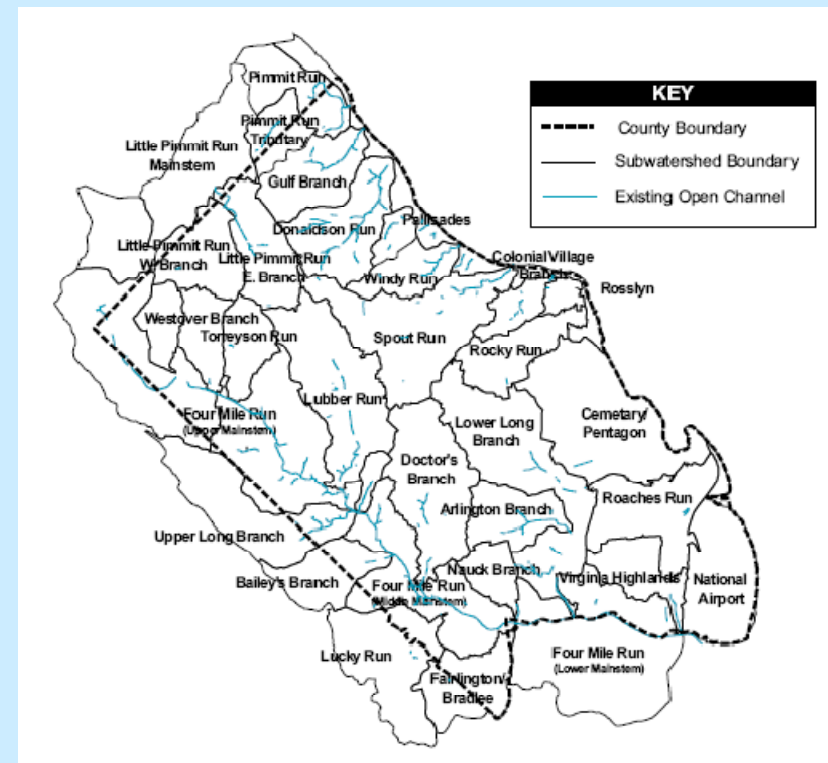
- Retrofitting is different than new stormwater design
- Retrofitting requires:
 - Sleuthing skills to determine what can work at highly constrained sites
 - Simultaneously envisioning restoration possibilities and anticipating potential problems
- Design, permitting and construction of stormwater retrofit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

The Big Picture

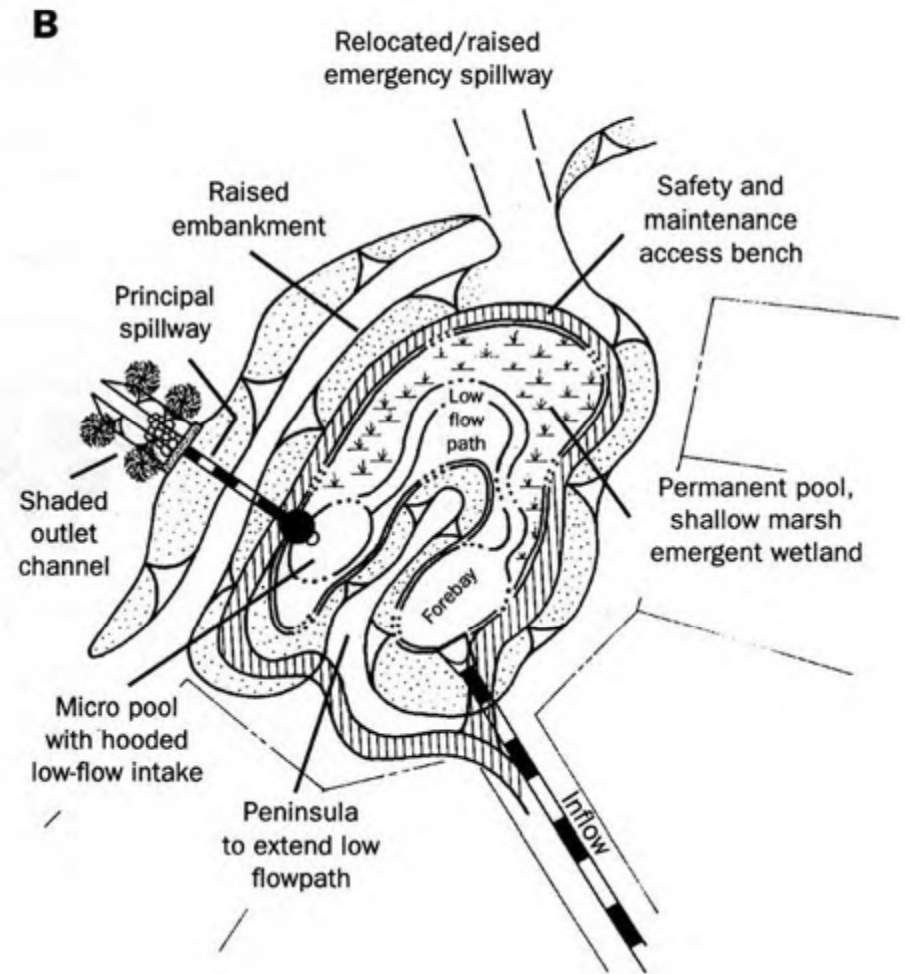
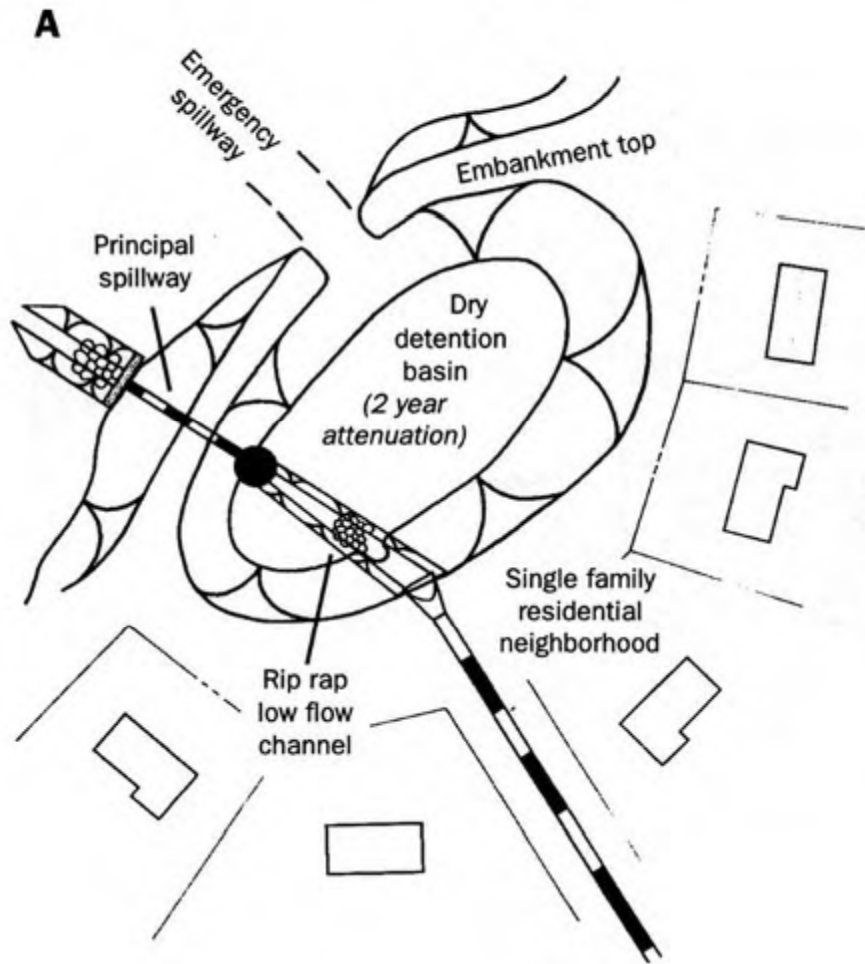


Preferred Retrofit Locations & Practices

Different types of stormwater management practices used in stormwater retrofitting

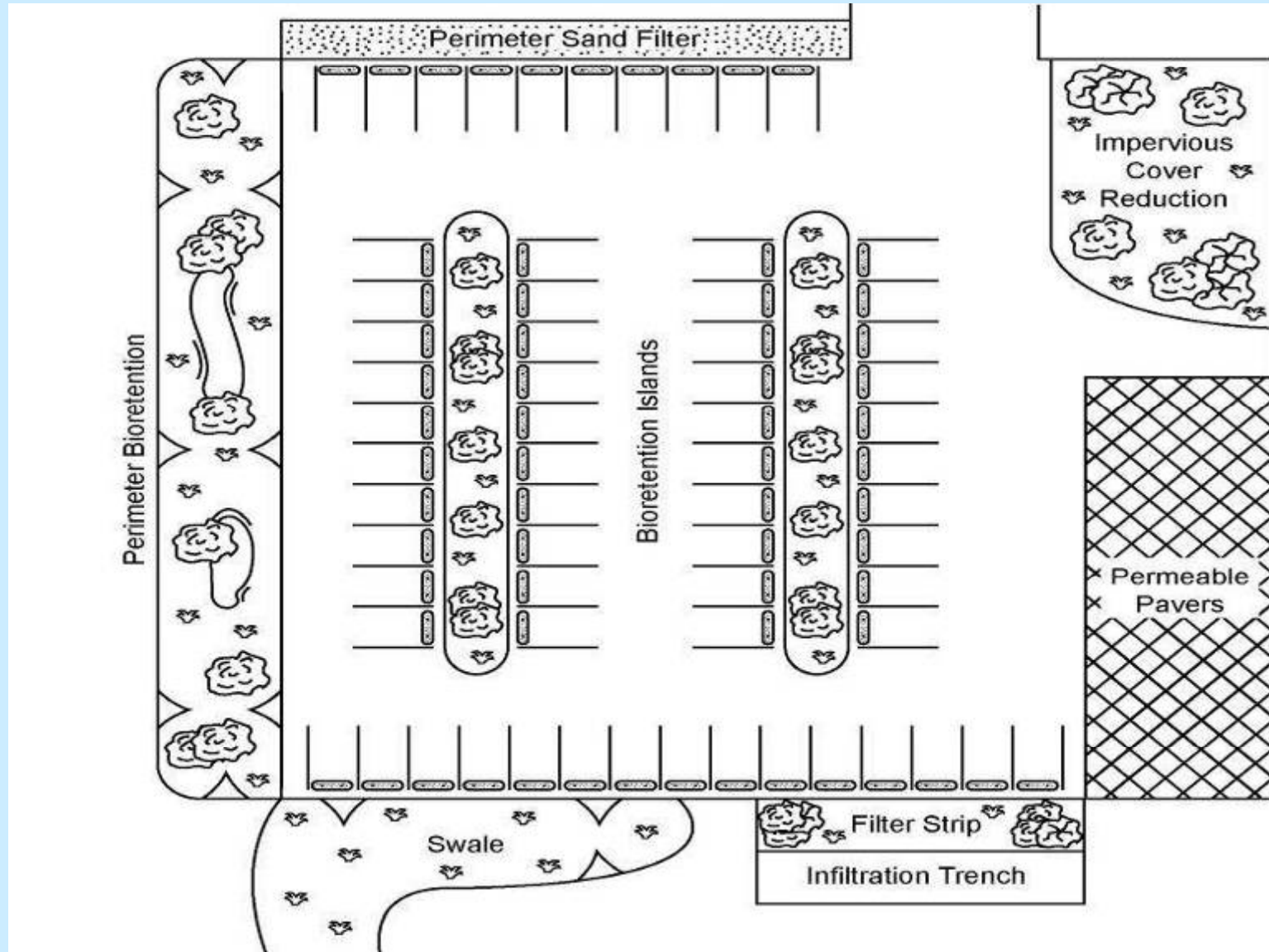


Extended Detention, Wet Ponds, and Wetlands





Bioretention, Filtration, Infiltration, & Swales





Other



Green Roof

Cistern



Arlington County Preferred Retrofit Locations & Practices

1. Local Streets



Arlington County Preferred Retrofit Locations & Practices

1. Local Streets



Arlington County Preferred Retrofit Locations & Practices

1. Local Streets



Arlington County Preferred Retrofit Locations & Practices

2. Public Land



Arlington County
Preferred Retrofit Locations & Practices
3. Institutional Properties



Arlington County Preferred Retrofit Locations & Practices

3. Institutional Properties



Arlington County
Preferred Retrofit Locations & Practices
4. Large Impervious Properties



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



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.

Questions?

Small Group Activity

1. Mark your house on the watershed map.
2. Discuss retrofit process and objectives for your watershed. Any questions? Any additional objectives to suggest?
3. Discuss possible retrofit locations, opportunities, and challenges, and mark them on map.



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