



# How Your Property Effects Your Watershed

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# Agenda

- Stream 101
  - Stormwater
  - Watersheds/Streams
  - CEM
- State of Fairfax County Streams
- What Can YOU Do?
- Workshops

# Part I

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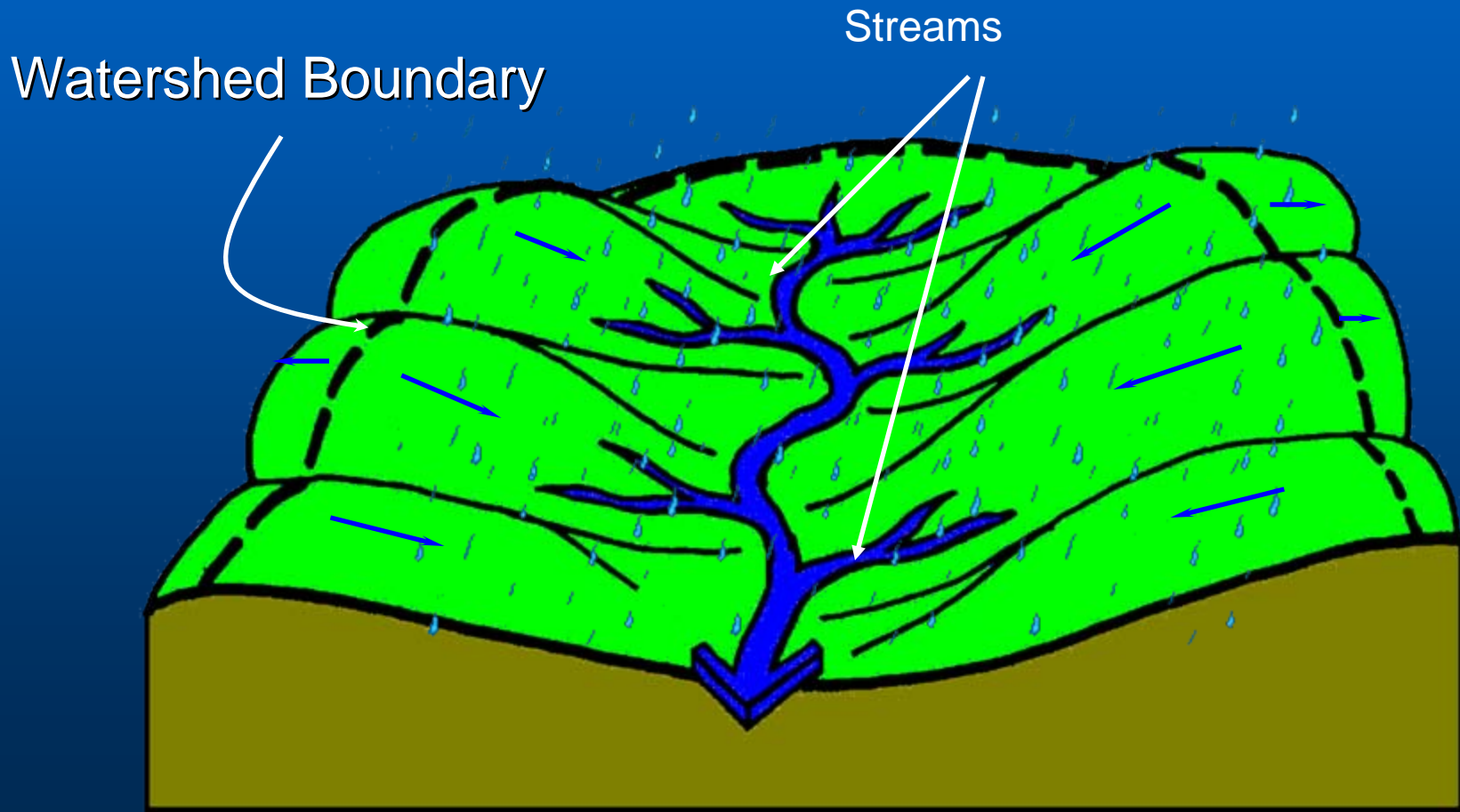
Stream 101

Watershed

Stormwater

Streams

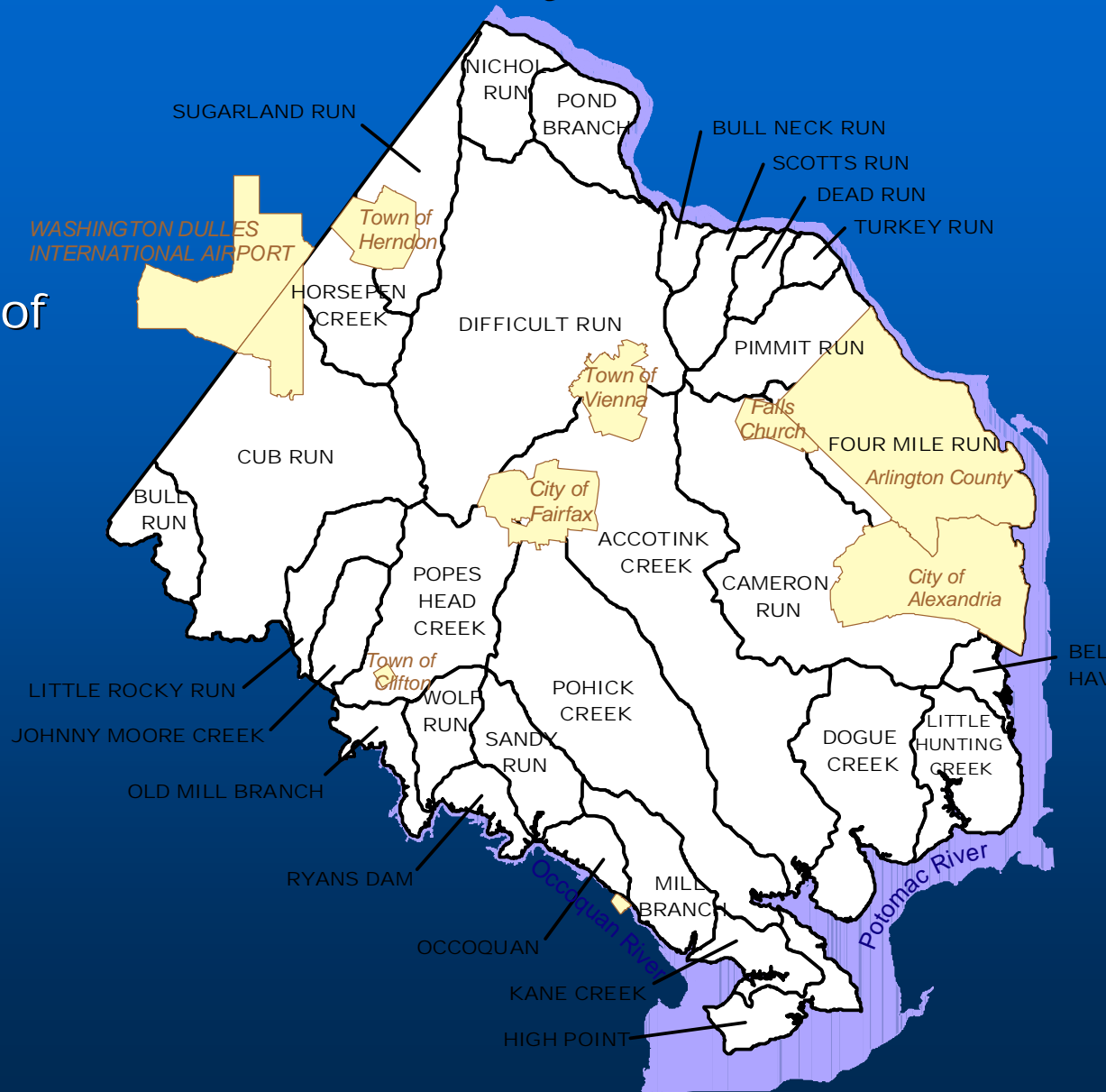
# What is a Watershed?



# Fairfax County

Population = 1 million

More than 1,000 miles of stream, ~850 miles of perennial streams.





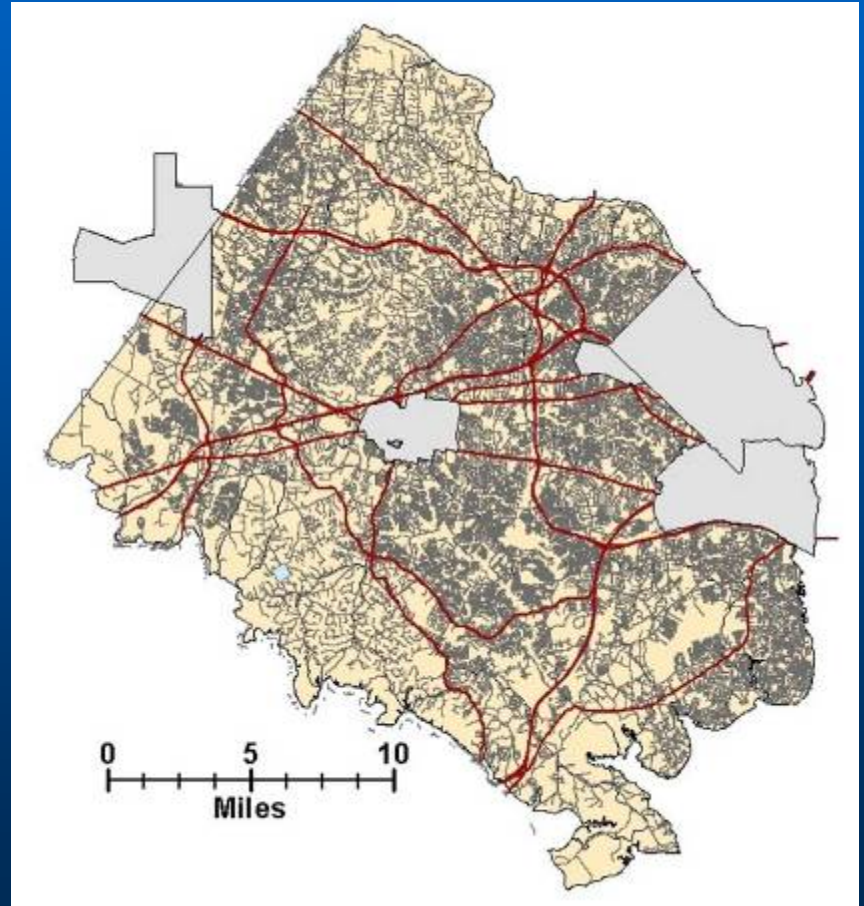
# Stormwater Management

The process of controlling **stormwater runoff** that drains off rooftops, driveways, roads and other hard surfaces that do not allow water to permeate into the ground.



# Why Our Streams Need Your Help...

Fairfax County is rapidly transitioning from a quiet suburban neighbor of Washington D.C., to one increasingly feeling development pressures.





# Need to Restore and Protect

Healthy watersheds, healthier communities





# Need to Understand the Journey of Stormwater Runoff



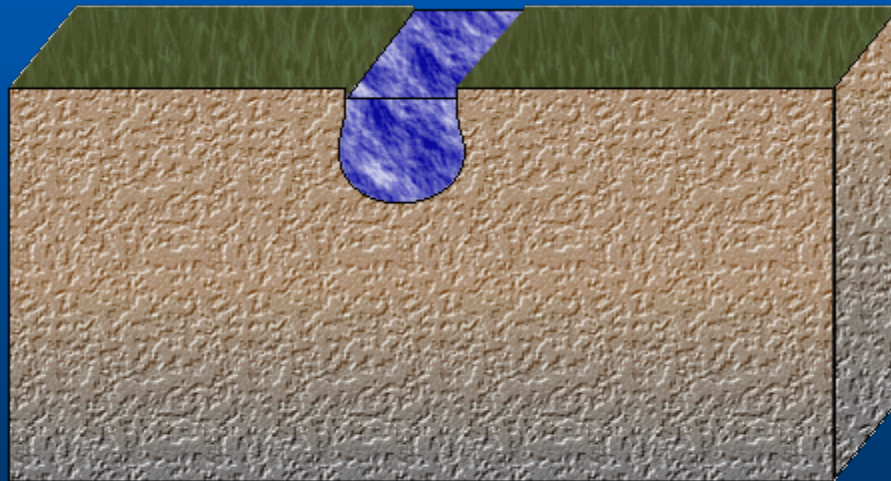
# Loss of Streamside (Riparian) Vegetation

- Filters pollutants
- Shade
- Stabilize stream banks
- Feed aquatic life
- Slows runoff



# Channel Evolution Model

Need to understand How Excess  
Stormwater Effect our Streams?

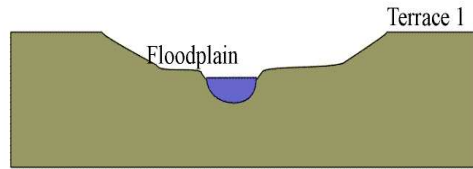




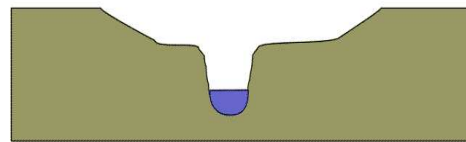
# INCISED CHANNEL EVOLUTION MODEL

(Schumm, Harvey, Watson 1984)

I  
STABLE

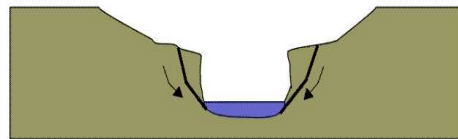


II  
INCISION



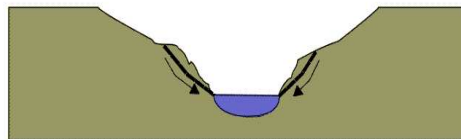
Headcutting

III  
WIDENING

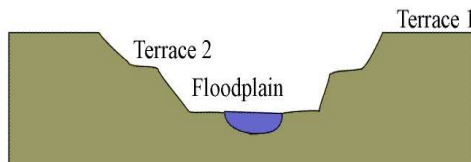


Bank Failure

IV  
STABILIZING



V  
STABLE



Stage I



# Water Quality Degradation



# Part II

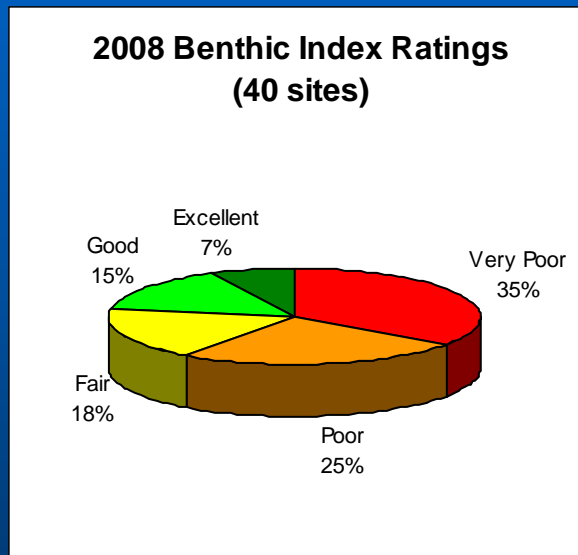
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## State of Fairfax County Streams

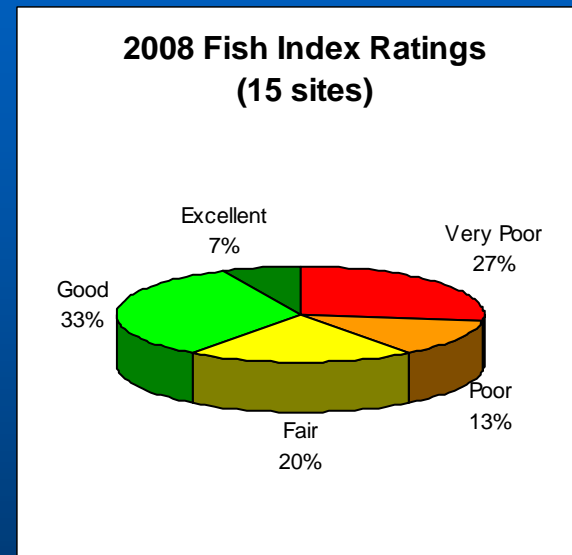
# State of Fairfax County's Streams

## Benthic Macroinvertebrate & Fish Community

2008 Benthic Index Ratings



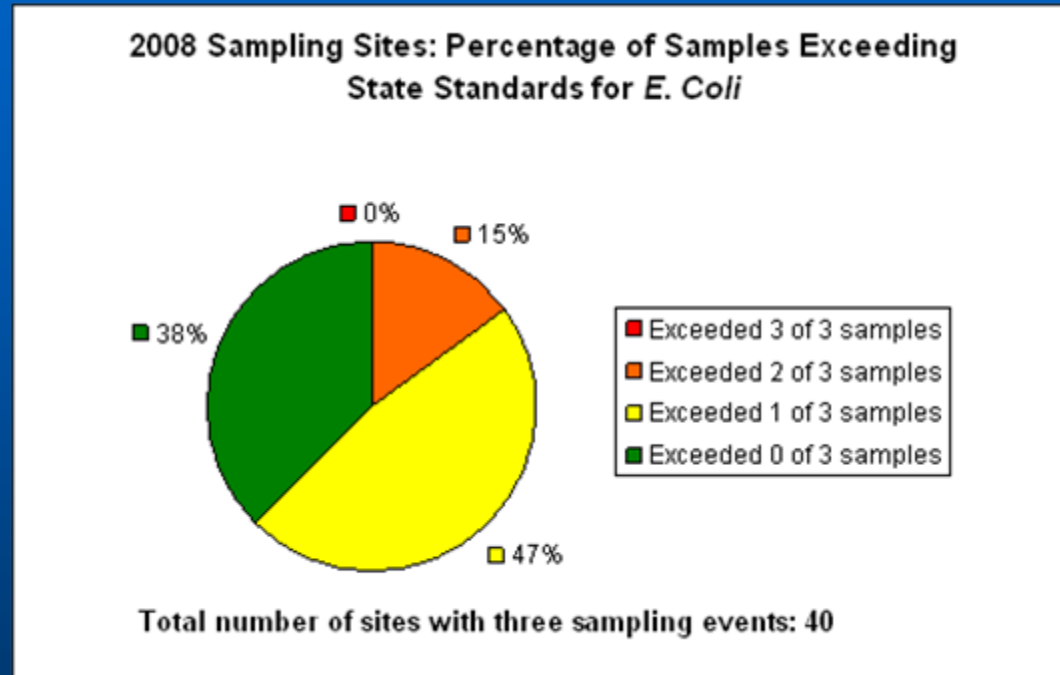
2008 Fish Index Ratings



- 78% of the 40 sites sampled for benthic macroinvertebrates rated from very poor to fair.
- 60% of the 16 sites sampled for fish rated from very poor to fair.

# State of Fairfax County's Streams

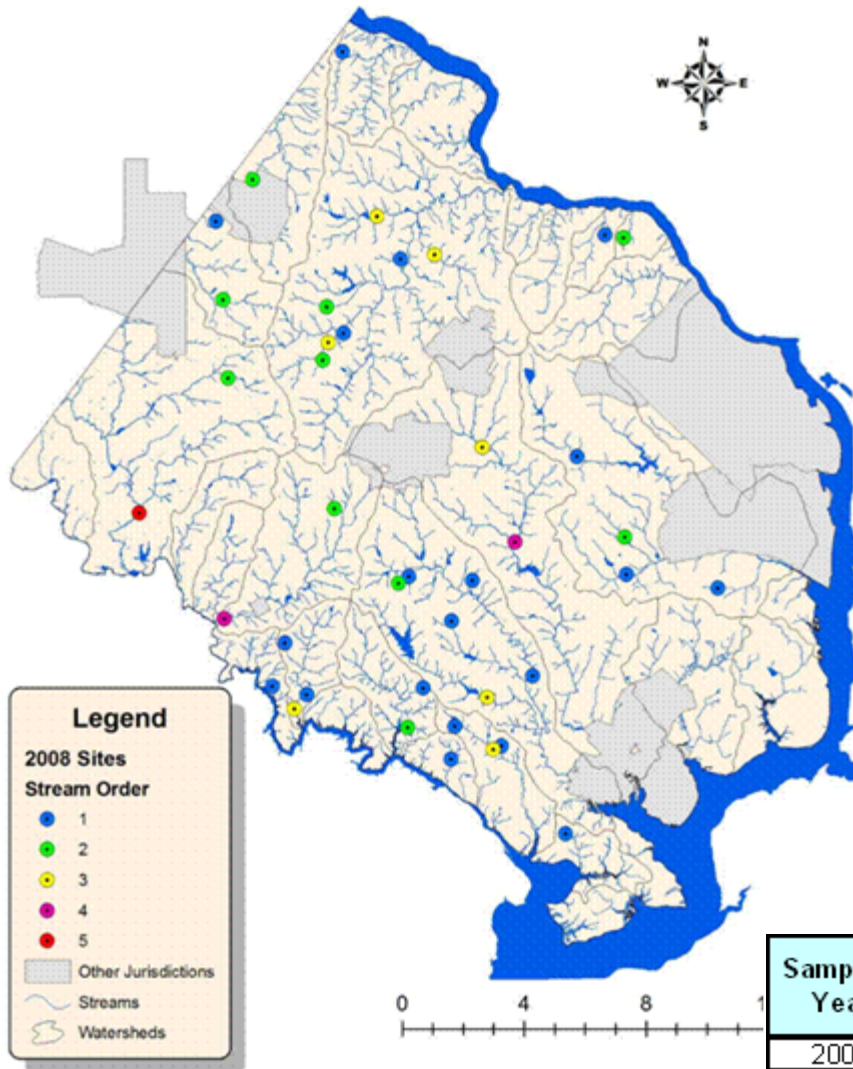
## Bacteria



- 62% of the sites sampled in 2008 exceeded the state's water quality standard for *E. coli* (235 cfu/100mL) at least once.



## 2008 Biological Monitoring Site Locations



# 2008 Biological Monitoring Site Locations and Site Index

Sampling Year	Percentage of Total Sites					Index Value
	Very Poor	Poor	Fair	Good	Excellent	
2004	40	30	17	13	0	<b>2.03</b>
2005	15	33	33	8	13	<b>2.70</b>
2006	36	34	16	11	2	<b>2.09</b>
2007	18	33	15	20	15	<b>2.83</b>
2008	35	25	18	15	8	<b>2.35</b>

## Overall Watershed Conditions (2004-2008)

Watershed	Benthics			Fish		
	Number of Sites	Average IBI	Rating	Number of Sites	Average IBI	Rating
Accotink Creek	18	24.1	Poor	11	33.1	Poor
Belle Haven	2	13.3	Very Poor	1	21.4	Poor
Bull Neck Run	N/A					
Bull Run	1	41.3	Fair	N/A		
Cameron Run	14	32.6	Poor	8	16.1	Very Poor
Cub Run	12	32.0	Poor	10	38.6	Poor
Dead Run	3	28.5	Poor	N/A		
Difficult Run	43	38.9	Poor	23	49.7	Fair
Dogue Creek	3	30.5	Poor	2	39.3	Fair
Four Mile Run	N/A					
High Point	N/A					
Horsepen Creek	2	20	Poor	N/A		
Johnny Moore Creek	3	41.8	Fair	1	64.3	Good
Kane Creek	2	58.9	Fair	N/A		
Little Hunting Creek	4	24.9	Poor	3	11.9	Very Poor
Little Rocky Run	7	18.1	Very Poor	3	54.8	Fair
Mill Branch	5	46.6	Fair	1	7.1	Very Poor
Nichol Run	6	64.4	Good	N/A		
Occoquan	3	85.8	Excellent	N/A		
Old Mill Branch	1	75.5	Good	N/A		
Pimmit Run	1	8.1	Very Poor	N/A		
Pohick Creek	29	31.1	Poor	12	53.6	Fair
Pond Branch	4	54.9	Fair	1	28.6	Poor
Popes Head Creek	13	51.9	Fair	8	65.2	Good
Ryans Dam	N/A					
Sandy Run	6	67.1	Good	N/A		
Scotts Run	1	13.4	Very Poor	1	7.1	Very Poor
Sugarland Run	5	44.7	Fair	2	46.4	Fair
Turkey Run	1	N/A*	Very Poor	N/A		
Wolf Run	5	78.8	Good	2	42.9	Fair
Fairfax County	194	30.9	Poor	89	42.4	Fair

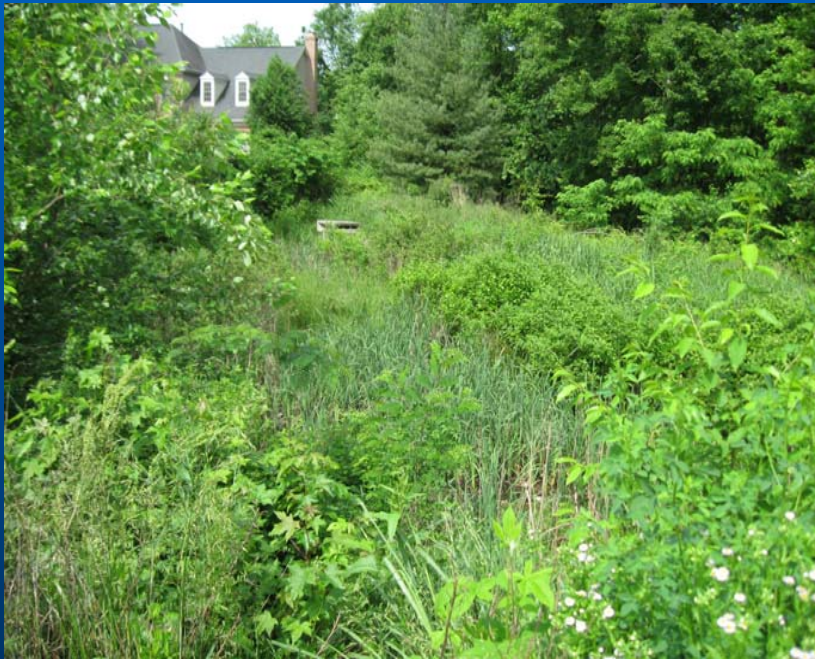
\* This site's sample did not contain enough individuals to calculate an IBI.

# Part III

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What YOU can do to  
help

# Examples of BMP/LID Retrofits



Essex Manor Pond Planting Project – Before & After & After



# Stream Restoration Projects



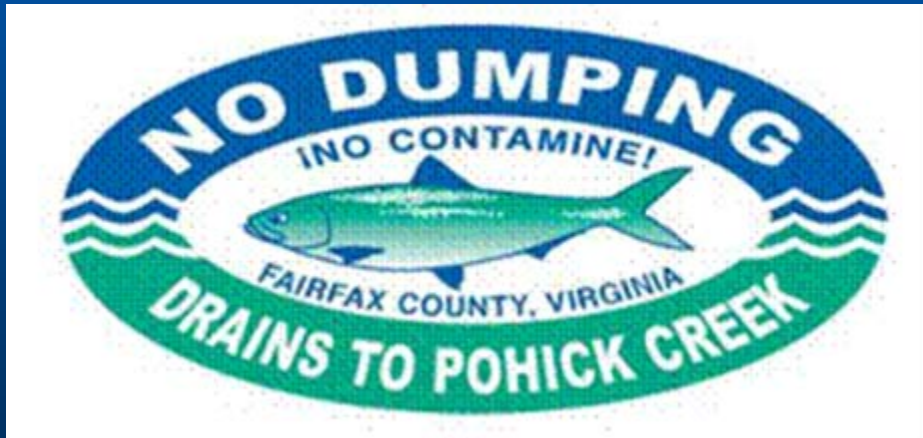
# Dump Site Cleanup



# Getting Involved!

## *Mark Stormdrains*

Many people don't realize stormdrains empty to our streams!





# Getting Involved!

## *Participate in a Stream Cleanup*

- Friends of the Occoquan Cleanup, *Spring & Fall*
- Alice Ferguson Foundation, *April*
- International Coastal Cleanup, *September/October*
- Adopt-A-Stream Cleanup, *Year-round!*





# Getting Involved!

## *Remove Invasives and Plant Natives*

Recipe for success:

1. Identify locations with invasive species
2. Recruit neighborhood volunteers
3. Yank 'em out!
4. Replant with native species



# Getting Involved!

## *Reduce Surface Runoff Using LID Techniques*

Promote infiltration around your home, by using:

- Rain Gardens
- Green Rooftops
- Rain Barrels & Cisterns



# Getting Involved!

## *Provide Insight on Your Watershed Plan*

What would you like to see:

- Protected?
- Restored?
- Mitigated?
- Retrofitted?





# Getting Involved!

## *Monitor Your Stream – Be an Ecologist*

Collect valuable biological data, four times a year! This information will be used for:

- County Monitoring Program
- Virginia Department of Conservation and Recreation



*This is the best way to tell if all of the hard work you are doing is making a difference!*



# *It's Important to Know That You're Not Alone!*



# Part IV

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## Workshops

# Workshops

- Workshop 1: Low Impact Landscaping, Aileen Winquist – Rm 9
- Workshop II: Falls Hill Demonstration Project, Asad Rouhi and Christin Jolicoeur - Rm 10

# **Fairfax County**

## **Stormwater Planning Division**

[www.fairfaxcounty.gov/dpwes/stormwater](http://www.fairfaxcounty.gov/dpwes/stormwater)

[www.fairfaxcountny.gov/dpwes/watersheds](http://www.fairfaxcountny.gov/dpwes/watersheds)

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