

# Virginia Aquatic Resources Trust Fund

## Meadow Creek

Diane Frisbee

Stream Project Manager

The Nature  
Conservancy



Protecting nature. Preserving life.™

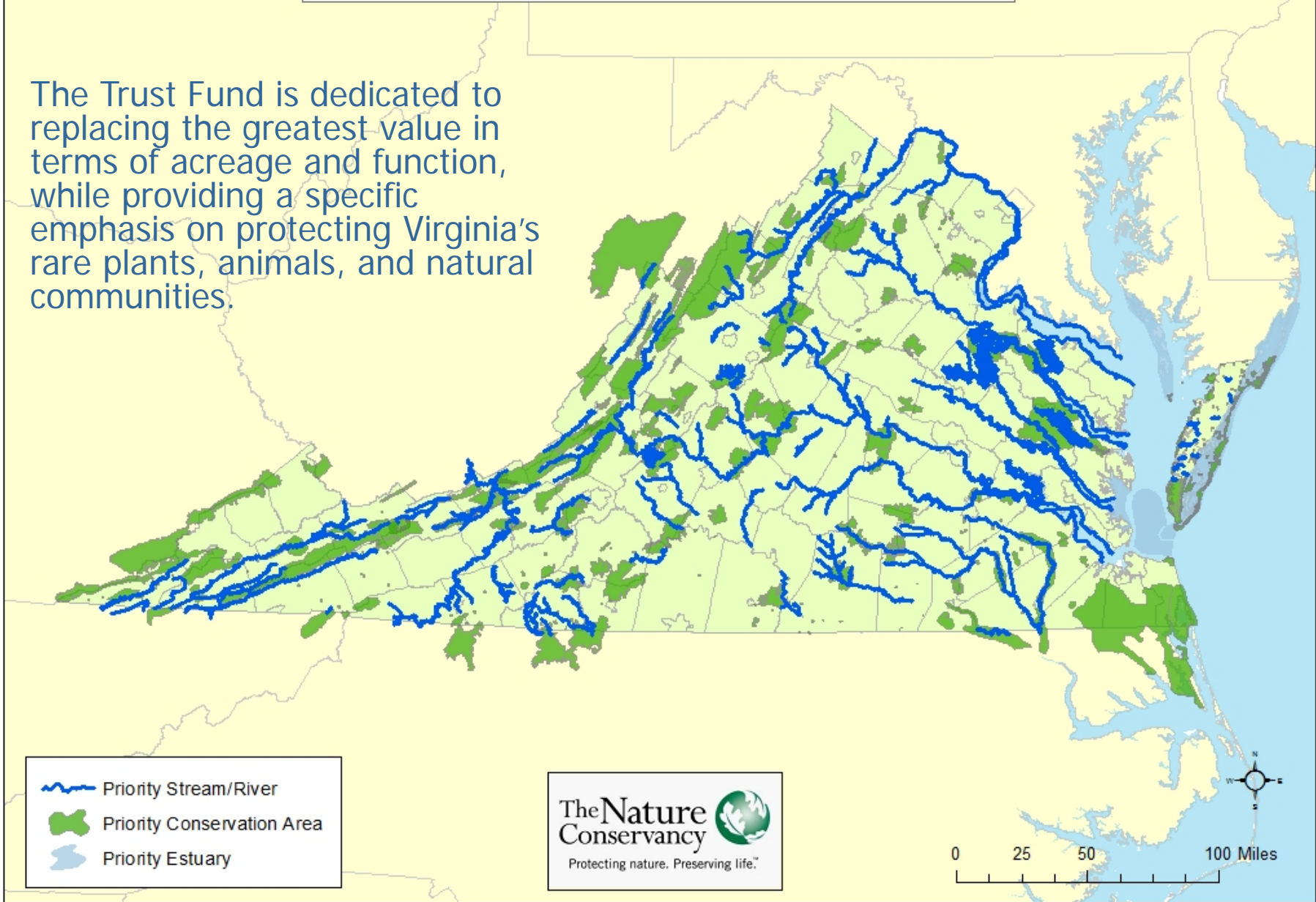
# Virginia Aquatic Resources Trust Fund

- In-lieu fee mitigation program administered in partnership with the Corps, DEQ, and TNC
- Operating agreement established in 1995, amended in 2003, and new agreement signed in 2011
- Consolidates money from many projects with small impacts to accomplish larger projects that have a greater chance of ecological success
- Funds are used by TNC, upon approval from the Corps and DEQ, to implement projects involving the restoration, enhancement and preservation of wetlands and streams



# The Nature Conservancy Priorities

The Trust Fund is dedicated to replacing the greatest value in terms of acreage and function, while providing a specific emphasis on protecting Virginia's rare plants, animals, and natural communities.



# How Does it Work?

- Corps determines fees to be paid for impacts and applicants pay fees to Trust Fund
- Funds are held by TNC in an interest-bearing account
- TNC tracks funds and associated information and provides tracking info to Corps and DEQ, including an Annual Report on the status and activities of the Trust Fund
- TNC identifies potential projects and presents proposals at monthly Interagency Review Team meetings, chaired by Corps and DEQ and attended by FWS, EPA, DGIF, DOF, and DHR
- Projects public noticed for 30-day comment period
- TNC develops final mitigation plan and submits to IRT for funding approval
- TNC manages all aspects of implementation, from land protection through construction and success monitoring

# Summary of Funds

- From 1995 through 2012, the Trust Fund has accrued over \$57M for non-tidal wetland, tidal wetland and stream impacts
- The Trust Fund has allocated over \$42M on 121 projects

Resource Type	Mitigation Payments (\$)	Allocated Funds (\$)
Non-Tidal Wetlands	21,496,600	15,935,400
Tidal Wetlands	743,900	552,500
Stream USM	13,191,700	1,538,600
Stream pre-USM	22,451,700	24,381,500
<b>TOTALS</b>	<b>57,883,900</b>	<b>42,408,000</b>

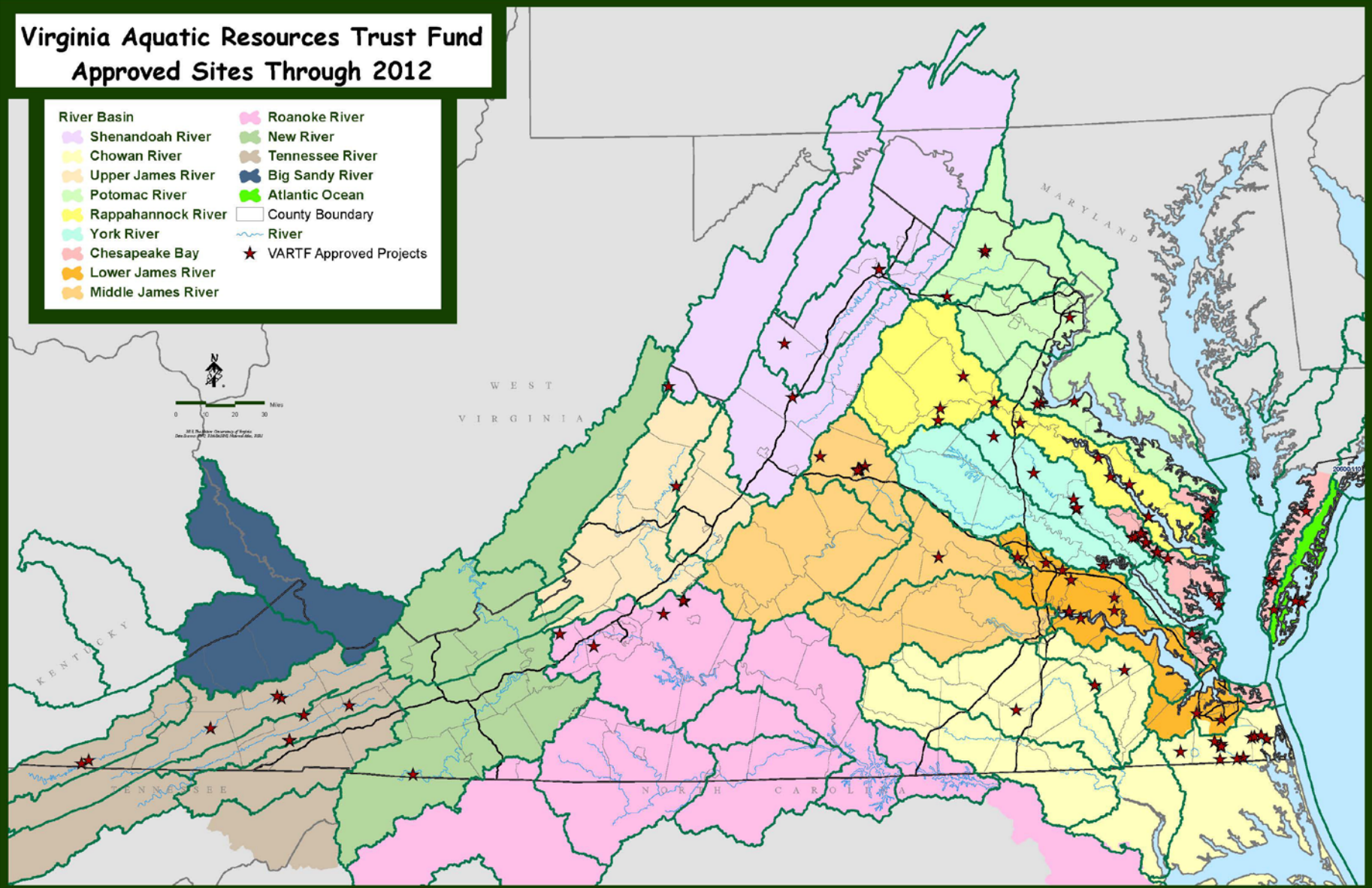
# Program-wide Leverage

Resource Type	Mitigation Liability (Credits)	Total Credits Proposed/ Completed
Non-Tidal Wetlands	452.93	991.78
Tidal Wetlands	2.86	70.05
Stream USM	30,132	18,610
	Impacts (linear feet)	Total Linear Feet Proposed/ Completed
Stream pre-USM	167,690	653,973

# Trust Fund Sites—121 projects

## Virginia Aquatic Resources Trust Fund Approved Sites Through 2012

- |                    |                         |
|--------------------|-------------------------|
| River Basin        | Roanoke River           |
| Shenandoah River   | New River               |
| Chowan River       | Tennessee River         |
| Upper James River  | Big Sandy River         |
| Potomac River      | Atlantic Ocean          |
| Rappahannock River | County Boundary         |
| York River         | River                   |
| Chesapeake Bay     | VARTF Approved Projects |
| Lower James River  |                         |
| Middle James River |                         |



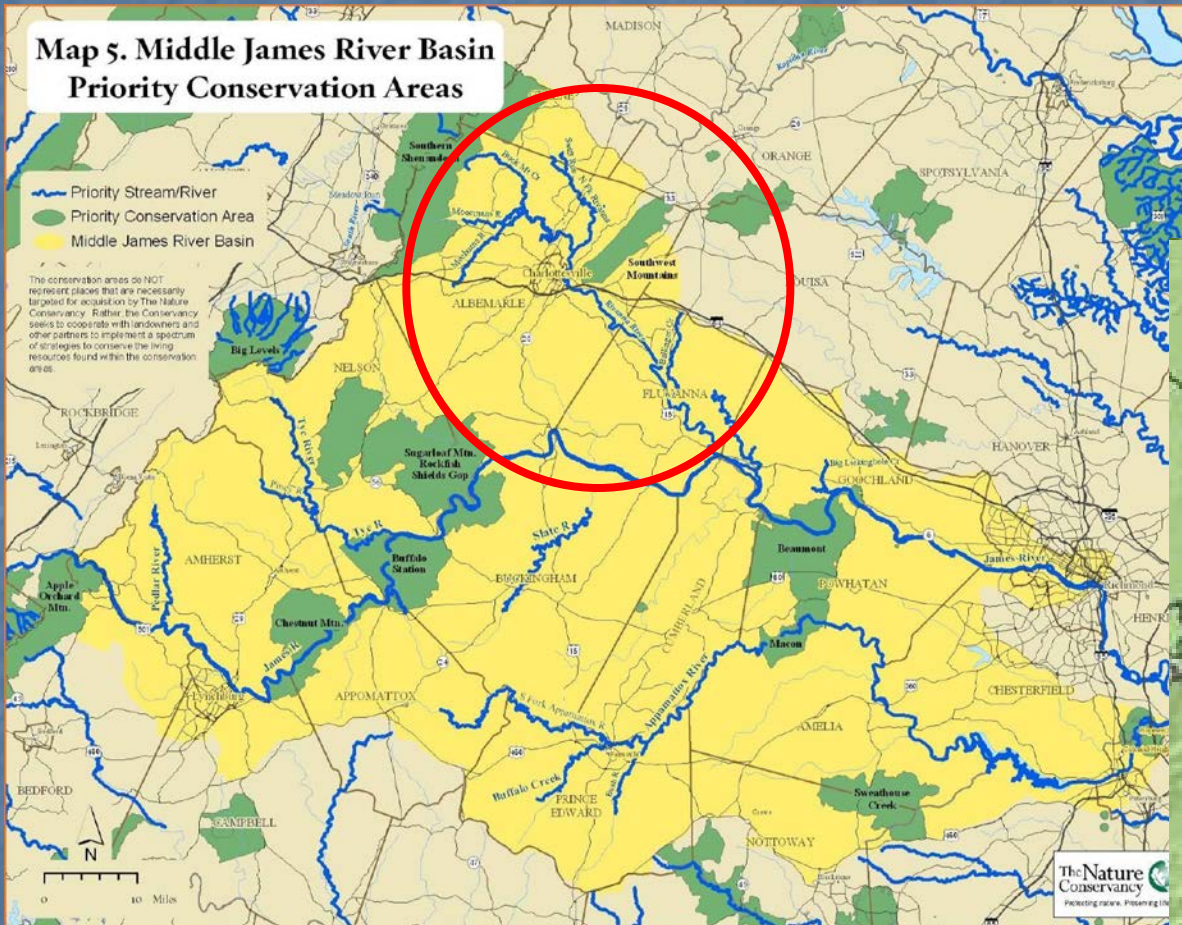
# Meadow Creek Stream Restoration





# Why Meadow Creek?


## Mitigation Need




TNC Priority



# Watershed Planning Framework



**Rivanna Watershed**  
Conservation Area Plan



The Nature Conservancy in Virginia  
Charlottesville, Virginia  
September 2004


## Benthic TMDL Development for the Rivanna River Watershed

Submitted by  
*Virginia Department of Environmental Quality*


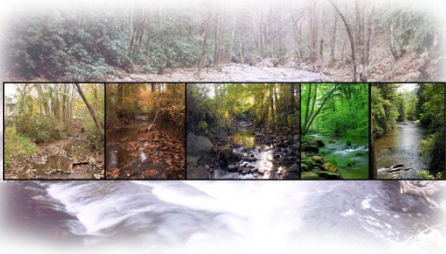
Prepared by



THE Louis Berger Group, INC.  
2445 M Street, NW Washington,



**Final**  
**November 2005**  
**Water Quality Management Study:**  
**An Assessment of Existing Conditions**  
**and Improvement Opportunities**  
**City of Charlottesville**



## Moores Creek, Lodge Creek, Meadow Creek, and Schenks Branch Watersheds TMDL Implementation Plan;

Albemarle County and the City of Charlottesville, Virginia



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Submitted to:  
The Stakeholders of the Moores Creek, Lodge Creek, Meadow Creek and Schenks Branch Watersheds

Prepared by:  
Virginia Tech Department of Biological Systems Engineering

In Cooperation With:  
Virginia Department of Environmental Quality  
and  
Virginia Department of Conservation and Recreation

Final Draft: September 6, 2012



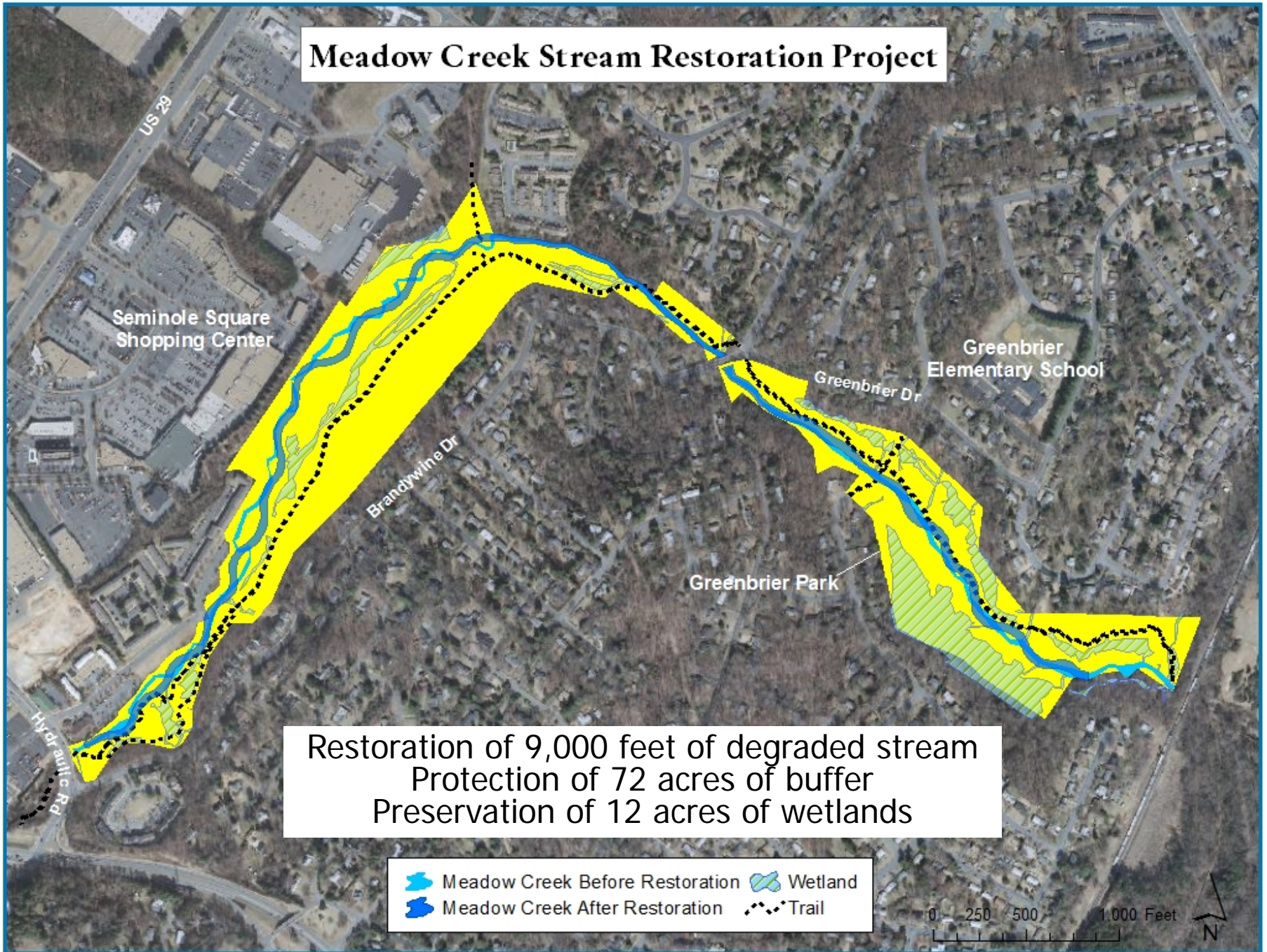
VT-BSE Document No. 2012-0005







# Meadow Creek Stream Restoration Project

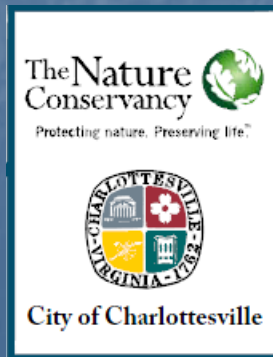


Restoration of 9,000 feet of degraded stream  
Protection of 72 acres of buffer  
Preservation of 12 acres of wetlands

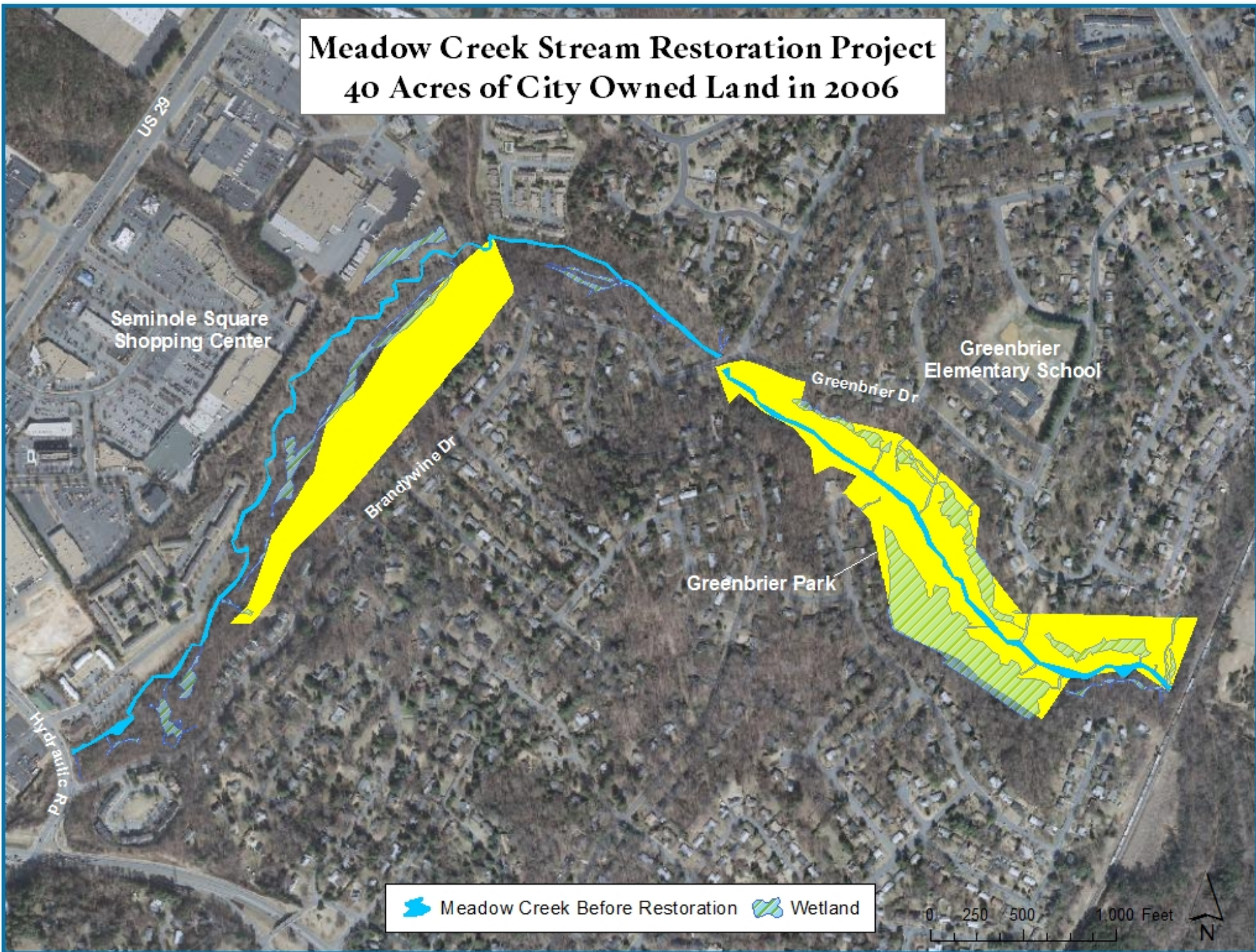
 Meadow Creek Before Restoration	 Wetland
 Meadow Creek After Restoration	 Trail



# Partnership with City

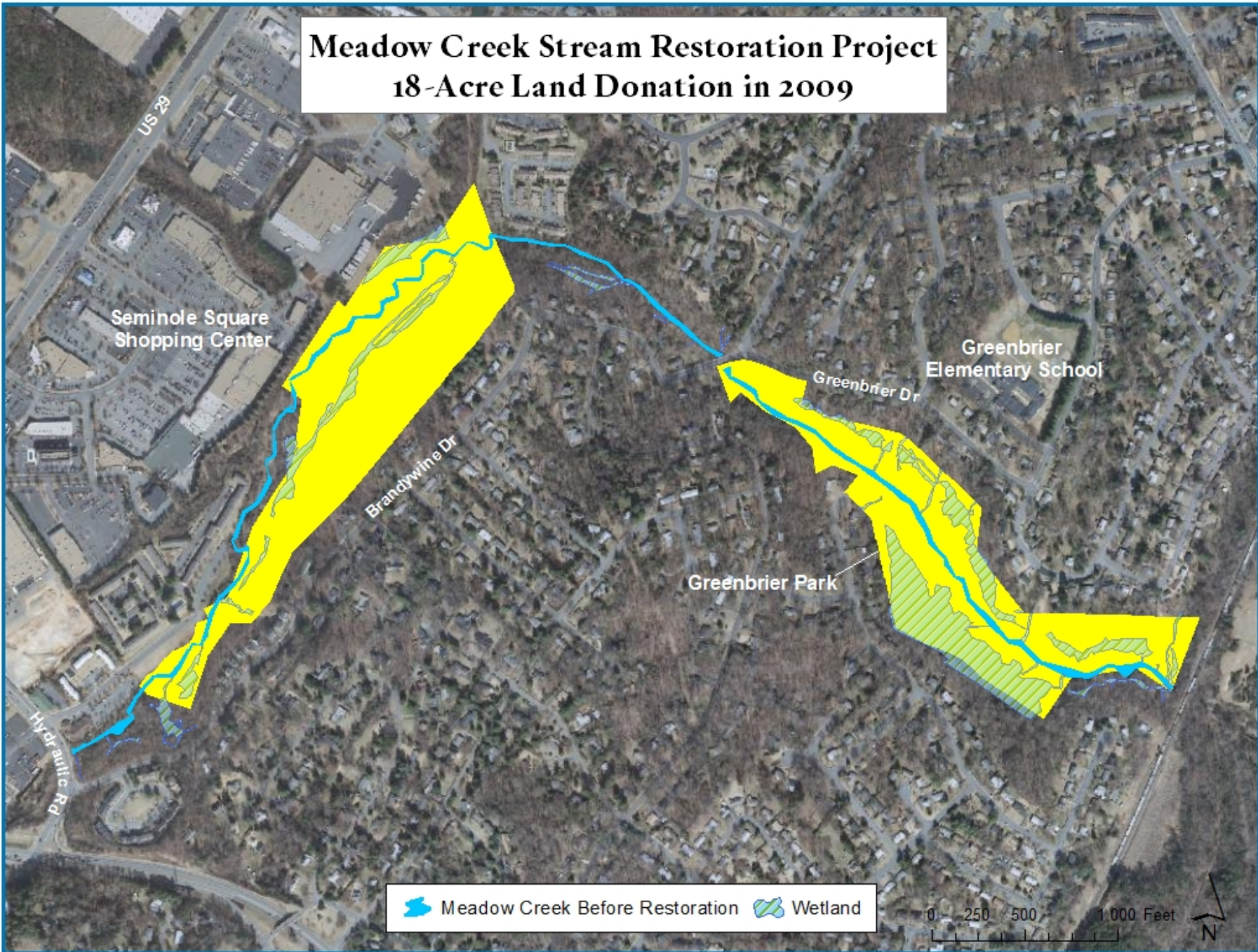


# Meadow Creek Stream Restoration Project 40 Acres of City Owned Land in 2006



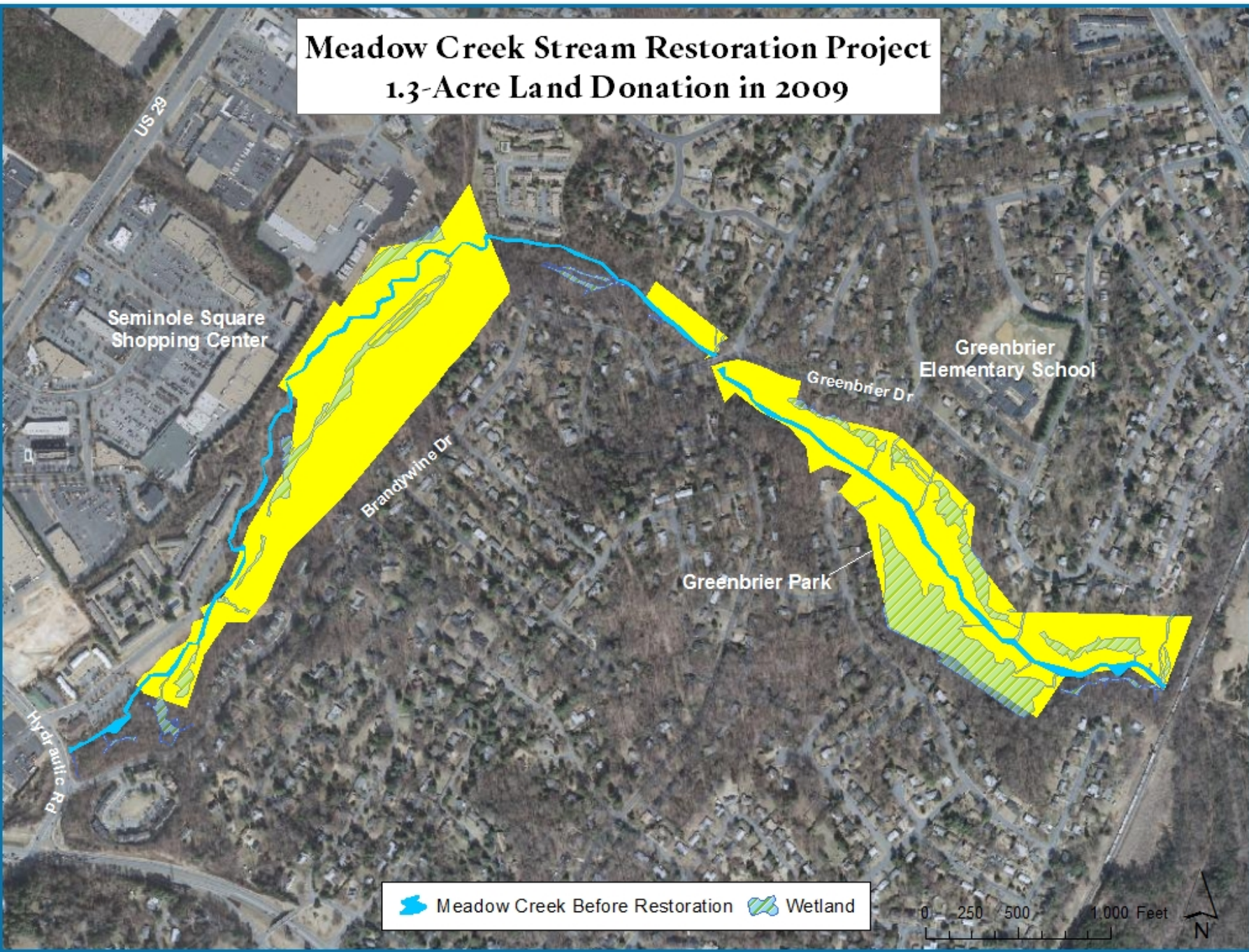


# Meadow Creek Stream Restoration Project 18-Acre Land Donation in 2009

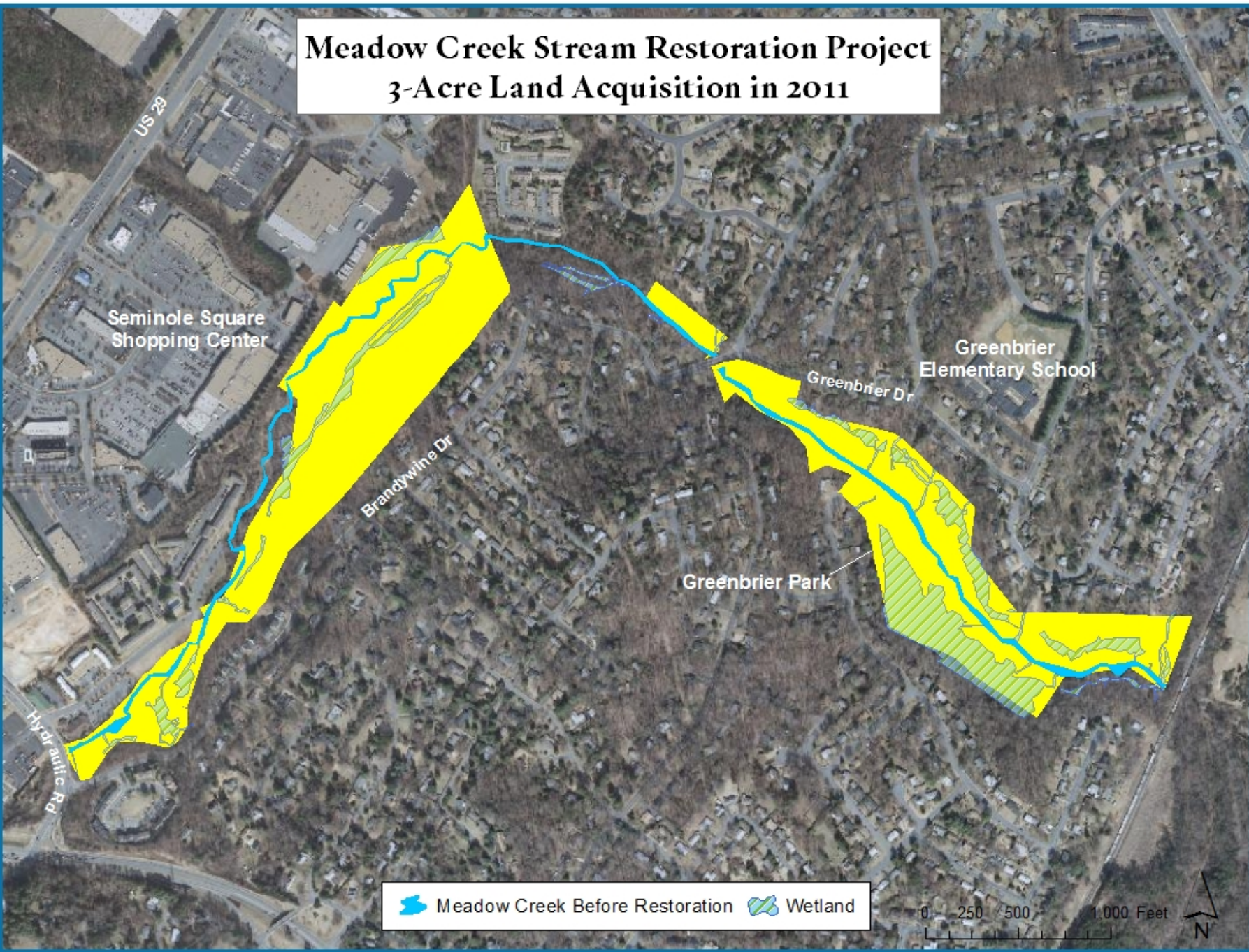


# Meadow Creek Stream Restoration Project

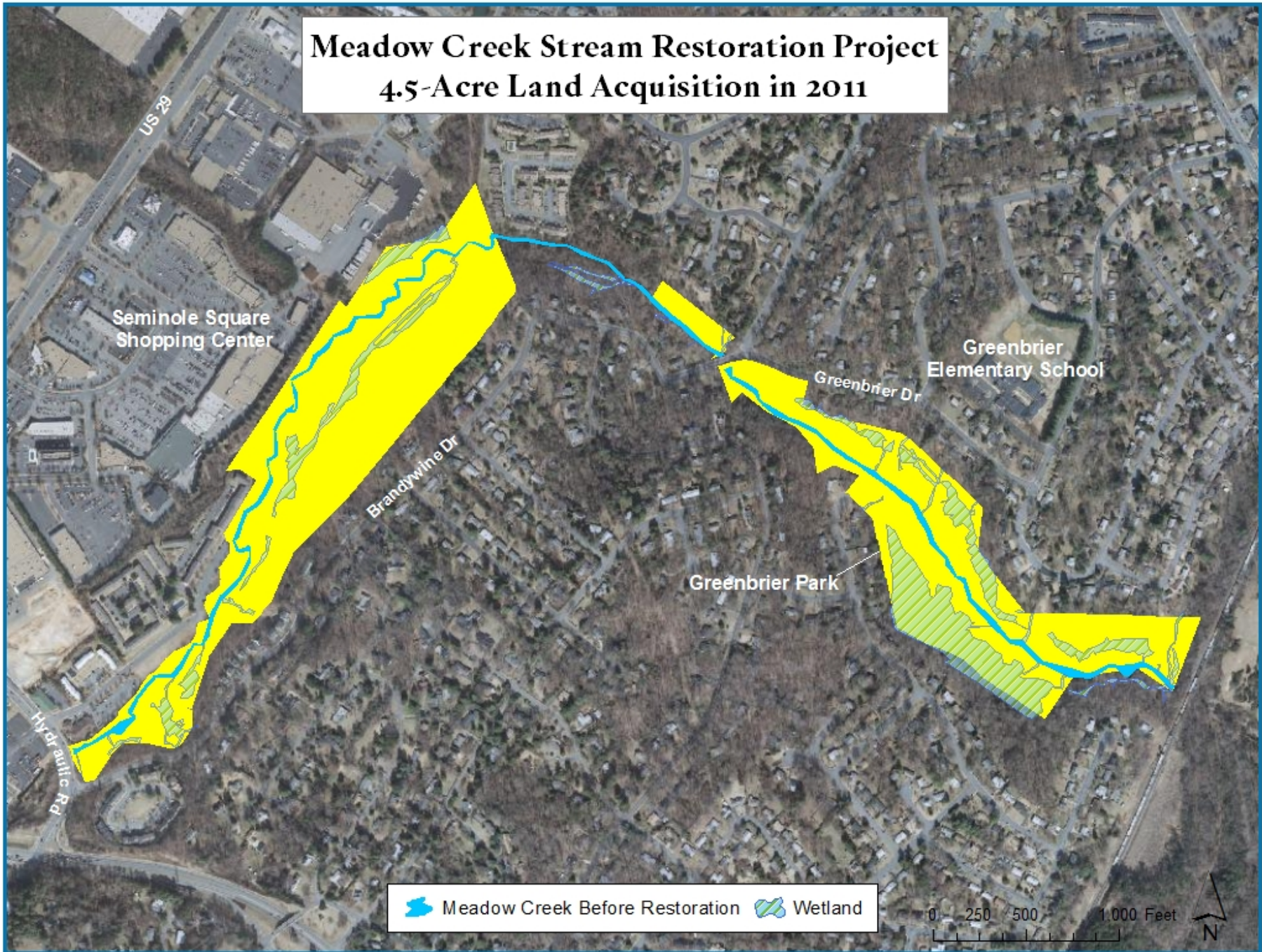
## 1.3-Acre Land Donation in 2009



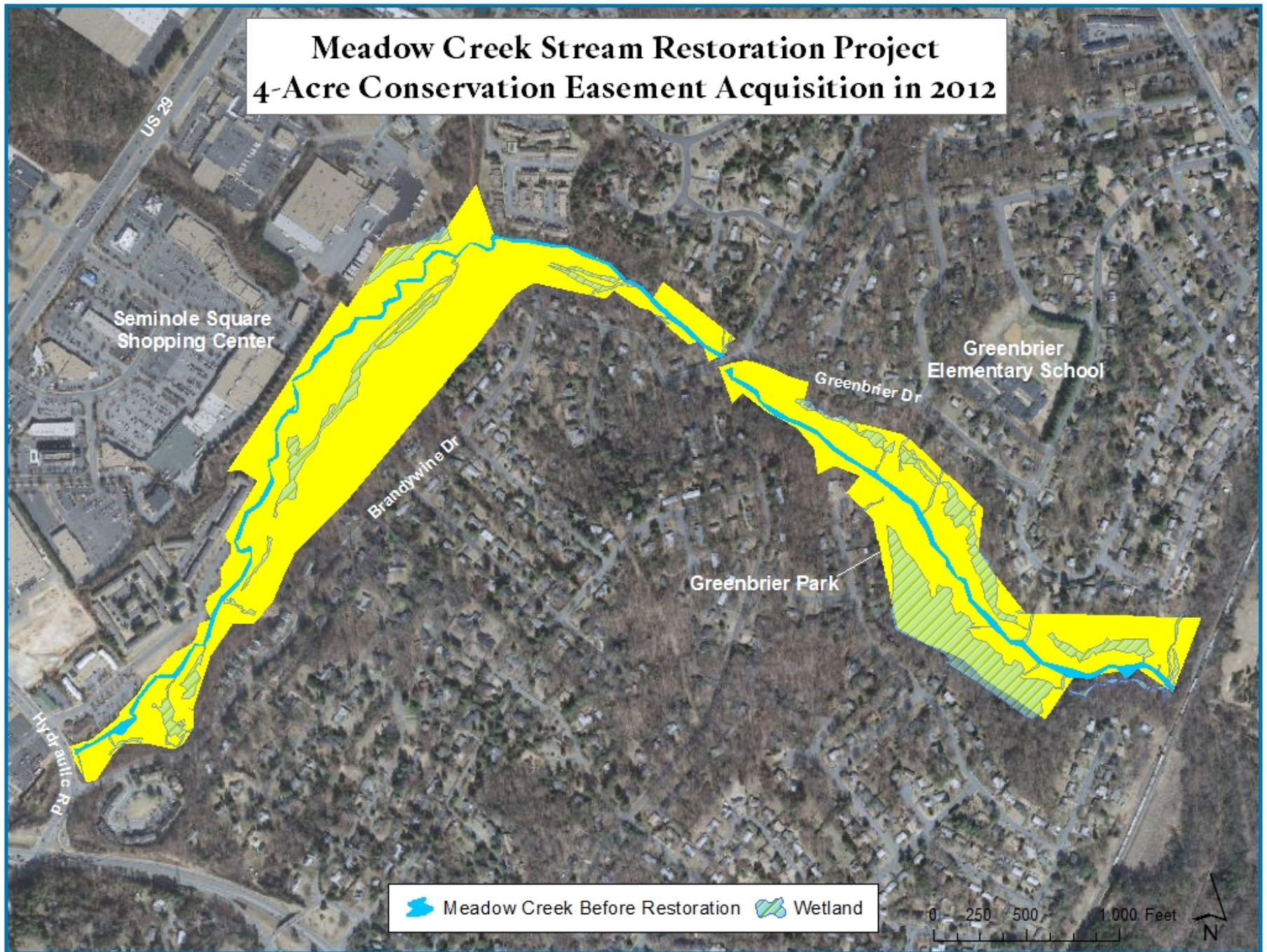
# Meadow Creek Stream Restoration Project 3-Acre Land Acquisition in 2011



# Meadow Creek Stream Restoration Project 4.5-Acre Land Acquisition in 2011

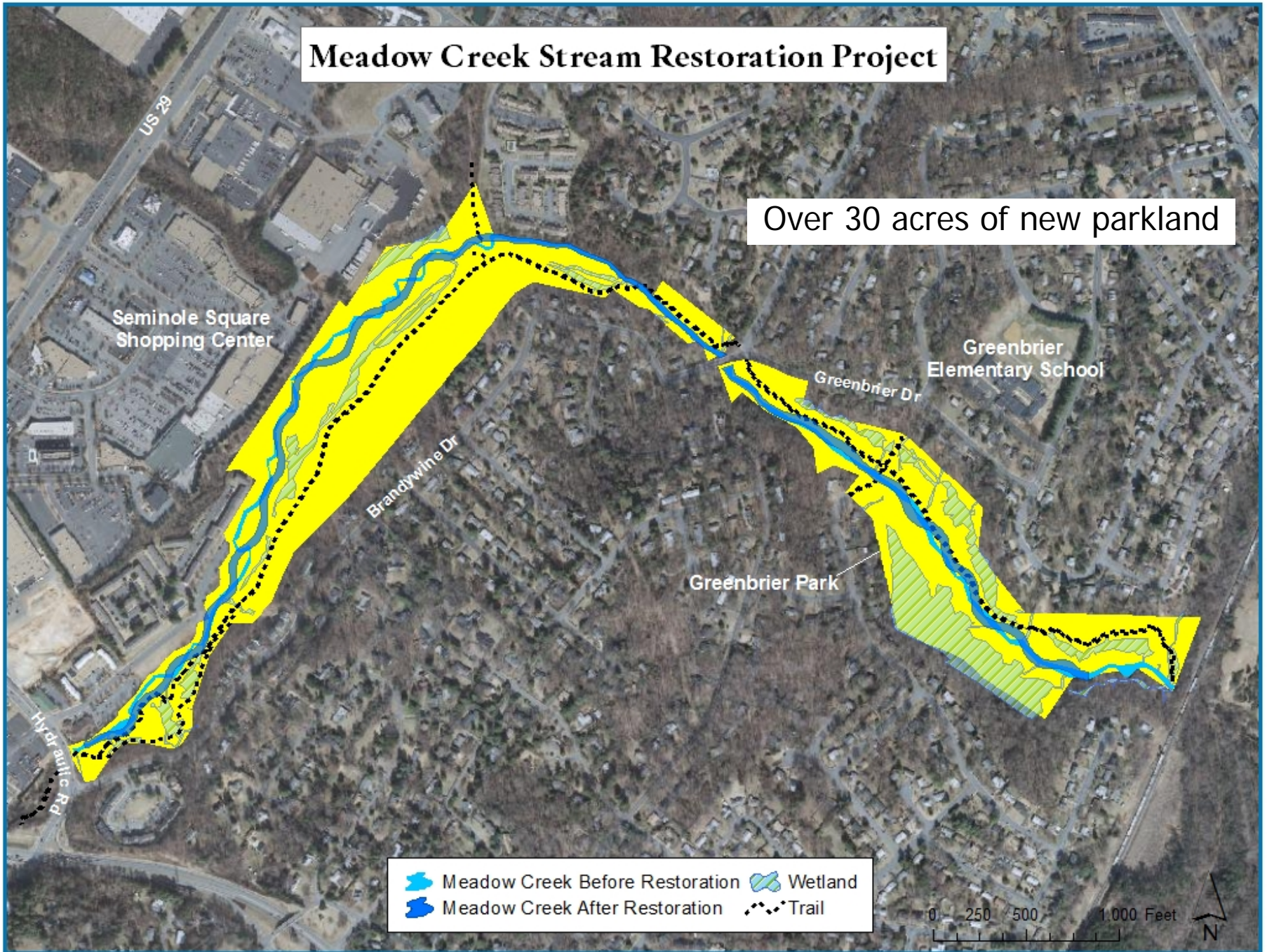


# Meadow Creek Stream Restoration Project 4-Acre Conservation Easement Acquisition in 2012



# Meadow Creek Stream Restoration Project

Over 30 acres of new parkland



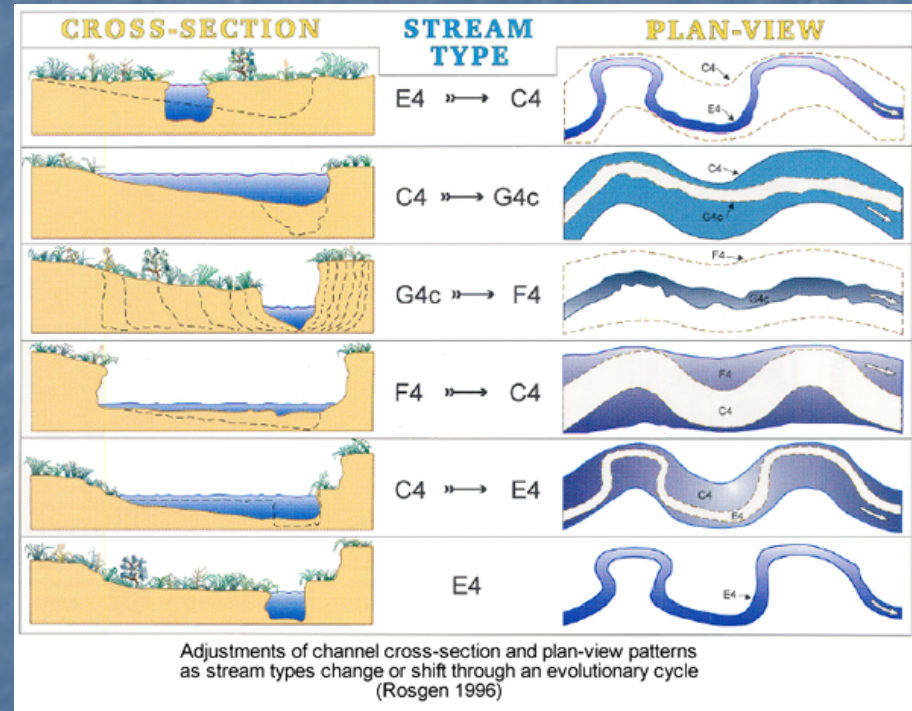
# Research, Education, Recreation

- Demonstration project
- Engage students and volunteers
- Research opportunities
- New parkland
- Protection of Rivanna Trail Corridor



# Design Goals

- Natural channel design
- Decrease sedimentation
- Improve stability
- Enhance/establish forested riparian buffers
- Improve in-stream habitat
- Wetland and buffer protection





# Reconnection to Floodplain



# Channel Relocation



# In-Stream Structures



*Rootwads*



*Boulder/cobble grade control*



*Cross vane*



*Bank toe protection*

# Restore Natural Riffle-pool Sequence



# Management of Invasive Species

**Table 1: Checklist of Invasive Plant Species (Pre-construction)**

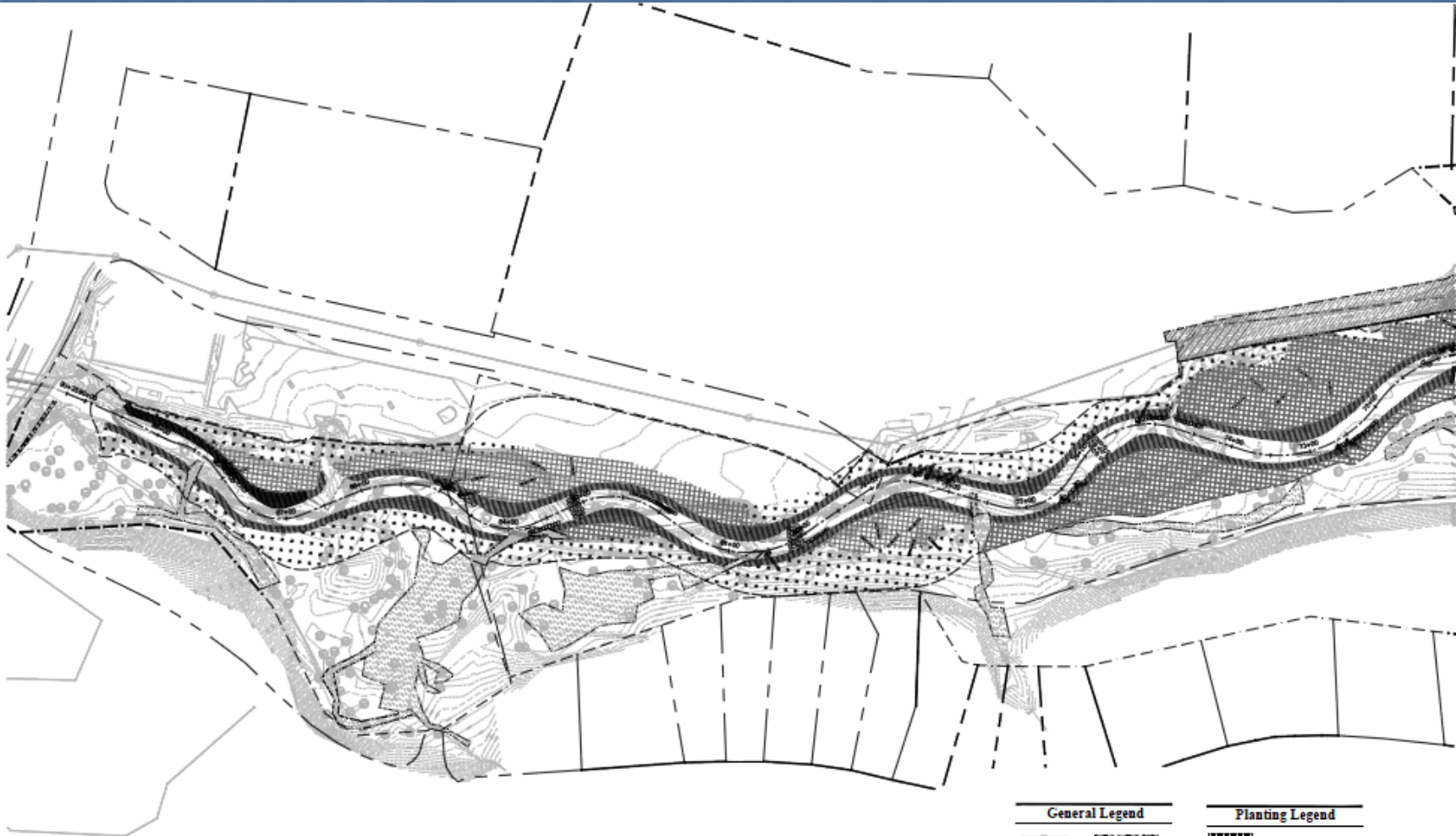
Meadow Creek Stream Restoration - Project Number 33248.00

Data collectors: C. Senfield and C. Moore

Date of Observation: September 12-13, 2011

Scientific Name	Common Name	Family	IND*	DCR Rank**	Area of Assessment and Modified Braun-Blanquet Cover Class***																											
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
<i>Ailanthus altissima</i> (P. Mill.) Swingle	tree of heaven	Simaroubaceae	NI	H	2														3	1		1	2		1	2		2				
<i>Alliaria petiolata</i> (Bieb.) Cavara & Grande	garlic mustard	Brassicaceae	FACU-	H	1	2			1				1						3	3				2		3			1	2		
<i>Ampelopsis brevipedunculata</i>	porcelain-berry	Vitaceae		H			2			1																		4	2			
<i>Celastrus orbiculatus</i> Thunb.	Oriental bittersweet	Celastraceae		H	4	4	2		4		2	4	3	3	1	2									2	3	3	4	2	3		
<i>Elaeagnus umbellata</i> Thunb.	autumn olive	Elaeagnaceae		H	1																							1			3	
<i>Euonymus alatus</i> (Thunb.) Sieb. var. <i>alatus</i>	winged burning bush	Celastraceae		H																							2			1		
<i>Lespedeza cuneata</i> (Dum.-Cours.) G. Don	sericea lespedeza	Fabaceae	NI	H	1																							3				
<i>Ligustrum sinense</i> Lour.	Chinese privet	Oleaceae	FACU	H	1				2								2	3	3	3	3		3	3	3	1		2	2			
<i>Lonicera japonica</i> Thunb.	Japanese honeysuckle	Caprifoliaceae	FAC-	H	3	3		2	2	1	2	2	2	2		2	2	2		3		2	2		2	2		3	3	2		
<i>Microstegium vimineum</i> (Trin.) A. Camus	Nepalese browntop	Poaceae	FAC	H	2	2	2	2	3		4		5	4		4	5	3	4	3	4	5	3	3	4	3	4	3	2	2		
<i>Murdannia keisak</i> (Hassk.) Hand.-Maz.	marsh dewflower	Commelinaceae	OBL	H																		2										
<i>Rosa multiflora</i> Thunb. ex Murr.	multiflora rose	Rosaceae	FACU	H	3	4	3	2	3		3	3	3	3		2	3	3	3		3	3	2	3	3	2						
<i>Rubus phoenicolasius</i> Maxim.	wine raspberry	Rosaceae		H				2																								
<i>Acer platanoides</i> L.	Norway maple	Aceraceae		M	1																											
<i>Albizia julibrissin</i> Durazz.	silk tree	Fabaceae		M	2	2		1					1													2						
<i>Berberis thunbergii</i> DC.	Japanese barberry	Berberidaceae	FACU	M														1													2	
<i>Euonymus fortunei</i> (Turcz.) Hand.-Maz.	winter creeper	Celastraceae		M				1										1				2							2	2		
<i>Schedonorus pratensis</i> (Huds.) Beauv.	meadow fescue	Poaceae		M												1												2				
<i>Glechoma hederacea</i> L.	ground ivy	Lamiaceae	FACU	M								2		1	3	2		2	3	2	3		2									
<i>Hedera helix</i> L.	English ivy	Araliaceae		M	3	2		1		1				1		1				3		2		1	2						3	
<i>Paulownia tomentosa</i> (Thunb.) Sieb. & Zucc. ex S.	princess tree	Scrophulariaceae	UPL	M									1																			
<i>Phyllostachys aurea</i> Carr. ex A. & C. Rivière	golden bamboo	Poaceae		M																											2	
<i>Stellaria media</i> (L.) Vill.	common chickweed	Caryophyllaceae	UPL	M												1	1															
<i>Commelina communis</i> L.	Asiatic dayflower	Commelinaceae	FAC-	O		1												1					2	1	1							
<i>Securigera varia</i> (L.) Lassen	crownvetch	Fabaceae		O																								4				
<i>Miscanthus sinensis</i> Anderss.	Chinese silvergrass	Poaceae	FACU	O																								1				
<i>Vinca major</i> L.	bigleaf periwinkle	Apocynaceae		O																							2				2	
<i>Vinca minor</i> L.	common periwinkle	Apocynaceae		O																						2		3			2	
<b>OVERALL COVER CLASS</b>					4	4	3	2	4	1	3	4	5	4	1	4	5	3	4	4	4	4	5	3	3	5	4	3	4			

# Streambank and Buffer Planting



**VIIB**  
**Vincent Hangan Brothers, Inc.**  
 Transportation  
 Land Development  
 Environmental Services  
 151 McLane Circle, Suite 2  
 Williamsburg, Virginia 23185  
 757.200.0900 • FAX 757.226.8544



0 60 120  
 SCALE IN FEET

NO.	DATE	BY	REVISION

DATE: 1/14/02  
 DATE: April 18, 2002

**Meadow Creek  
 Stream Restoration**

Charlottesville, Virginia  
 Scale to  
**Final Plan**

Not Approved for Construction  
 Drawing No.  
**Planting Plan**

**ADDITIONAL PLANTING AREAS OUTSIDE THE LOD WILL BE IDENTIFIED IN THE FIELD AS PART OF THE INVASIVE SPECIES REMOVAL PROCESS. THESE AREAS WILL BE PLANTED IN ACCORDANCE WITH THE APPLICABLE PLANTING ZONE REQUIREMENTS AS DETERMINED IN THE FIELD BY THE ENGINEER.**

**General Legend**

	EXISTING CULVERT (SHED)
	EXISTING CONDUIT
	EXISTING STREAM CHANNEL
	PROPOSED STREAM CHANNEL
	EXISTING/PROPOSED PROPERTY LINES
	EXISTING/PROPOSED LOTS OF INTEREST
	EXISTING/PROPOSED EROSION CONTROL
	NOI BOUNDARY
	EXISTING/PROPOSED BODILY STRUCTURE
	EXISTING/PROPOSED TREE

**Planting Legend**

	ZONE 1 (LAW SPECIES) CORNUS, AND SMALL TREES
	ZONE 2 (LAW SPECIES) FLORICLAN (P)
	ZONE 3 (LAW SPECIES) FLORICLAN (P)
	ZONE 4 (LAW SPECIES) THE BUCKSHOOTER
	NON-PLANTING AREA

DATE: 1/14/02  
 DATE: April 18, 2002

Drawing Center

# Challenges/Opportunities

- Infrastructure
- Invasive species management
- Working in public park
- Coordination with stakeholders
- Public and neighborhood outreach
- Public hearings and City Council votes to establish conservation easements
- Citizen education
- Demonstration project



# For more information



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[www.nature.org/vartf](http://www.nature.org/vartf)

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