

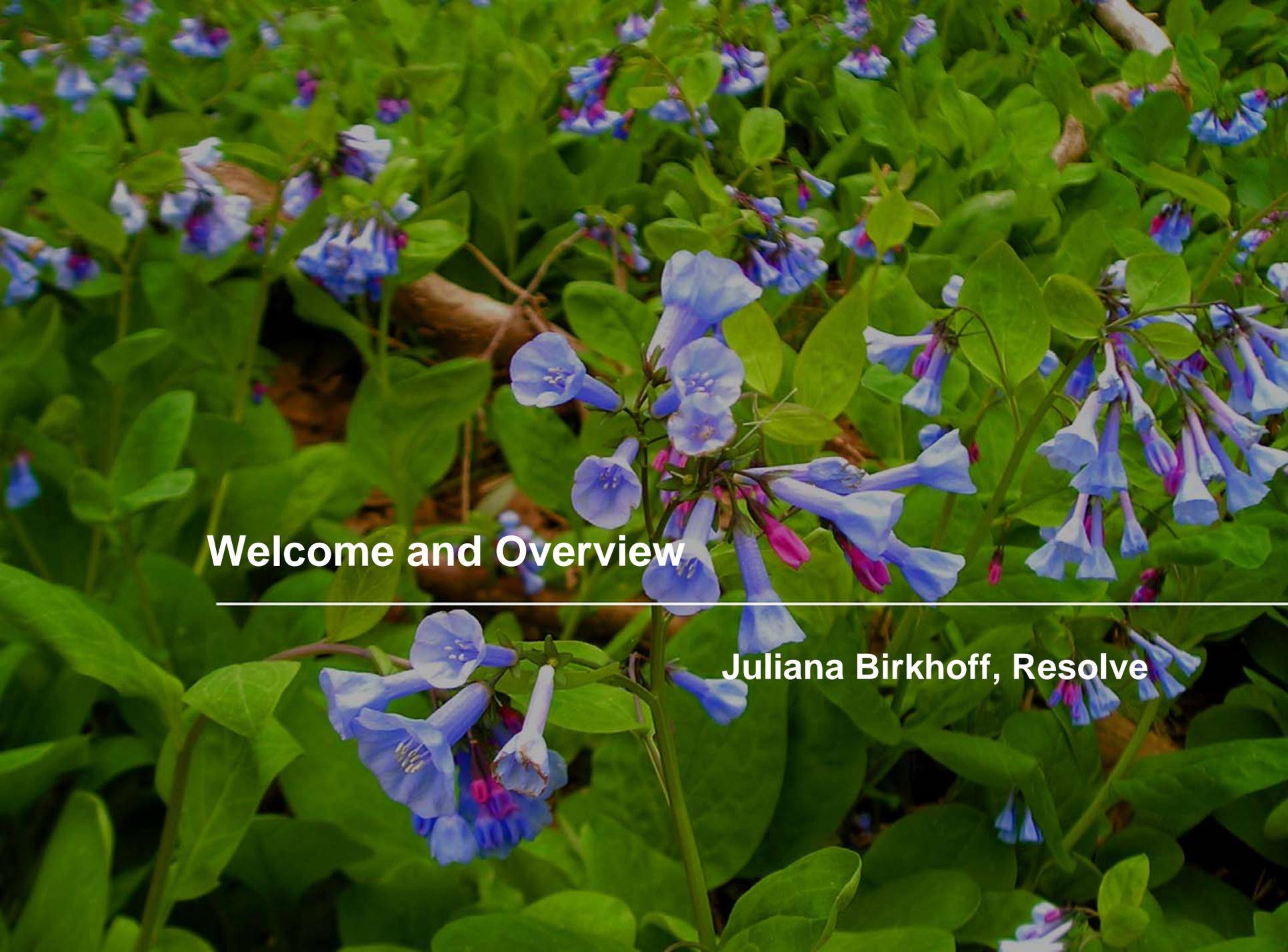
Nichol Run Pond Branch Watershed Management Plan

Watershed Advisory Group #5
September 9, 2010

**Fairfax County Department of Public Works
and Environmental Services**

Presented by Watershed Planning & Assessment Branch,
Stormwater Management



A close-up photograph of a dense field of blue and purple flowers, likely Salpiglossis, with vibrant green foliage. The flowers are bell-shaped and hang from thin stems. The background is filled with more of the same plants, creating a lush, textured appearance.

Welcome and Overview

Juliana Birkhoff, Resolve

Agenda

- Welcome and Introductions
- Thank You and Process Recap
- Overview of Draft Watershed Management Plan
- Questions and Discussion of the Watershed Plan
- Next Steps
- Adjourn

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Thank You

Fred Rose, SWPD

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Overview of Draft Watershed Management Plan

Melissa Taibi, F.X. Browne, Inc.

Review of Previous Steps

- WAG #1
 - Introduction of WAG Process
 - Discussion of County-wide Goals and Objectives
 - Review of Watershed Workbook
- WAG #2
 - Subwatershed Characterization and Ranking
 - Identifying Problem Areas and Restoration Strategies



Review of Previous Steps

- WAG #3
 - Project Development/Identification Process
 - WAG Comments on Initial Candidate Project List
- WAG #4
 - Project Prioritization Process
 - WAG Comments on 10 and 25 year Implementation Plan Projects

Plan Progress Since WAG #4

- Integrated WAG Comments into Project Prioritization
 - Adjusted 10 and 25 year Implementation Plans
- Revised Project Information (detailed descriptions, costs, benefits and considerations, GIS shapefiles of project areas)
- Modeled Water Quality Benefits for 10-year and 25-year Implementation Plans



Plan Progress Since WAG #4

- Modeled Water Quantity Benefits
 - Individual Projects
 - 10-year Implementation Plan as a whole
- Created Fact Sheets for each project in the 10-year Implementation Plan
- Developed Draft Watershed Management Plan

Organization of Watershed Management Plan

Executive Summary

1. Introduction
2. Watershed Planning Process
3. Summary of Watershed Conditions
4. Summary of Watershed Restoration Strategies
 - Describes Strategies and Project Types
5. WMA Area Restoration Strategies
 - Identifies Projects in each WMA
6. Benefits of Plan Implementation
 - Modeling Results and Project Cost/Benefit Analysis
7. Glossary and Acronyms
8. References



Executive Summary

- Overview of Plan
- Master Project List
 - 10-year Implementation Plan
 - 25-year Implementation Plan
 - Non-Structural Projects



1. Introduction

- Introduction to Watersheds
- Introduction to Watershed Planning Process

2. Watershed Planning Process

- Watershed Goals and Objectives
- Subwatershed Ranking
 - Watershed Impact Indicators
 - Source Indicators
 - Programmatic Indicators
 - Composite Scores
- Stormwater Modeling
 - Pollution Model (STEPL)
 - Hydrologic Model (SWMM)
 - Hydraulic Model (HEC-RAS)
- Public Involvement Plan

3. Summary of Watershed Conditions

- Summary of Existing Watershed Conditions by WMA
 - General WMA information
 - Land use
 - Stream Condition
 - Results of Flooding Model
 - Overall Condition based on Subwatershed Ranking
- WMAs Organized in Alphabetical Order with Nichol Run WMAs first



4. Summary of Watershed Restoration Strategies

- Priority Subwatershed Identification
- Description of Prioritization Process
- Summary of Subwatershed Strategies
- Project Type Descriptions
 - Each Major Project Type
 - Description, Diagrams, and Photos



5. WMA Area Restoration Strategies

- WMAs Organized in Alphabetical Order with Nichol Run WMAs first
- Each WMA Section Contains
 - Key WMA Conditions
 - Descriptions of each Project
 - Table Containing all Projects within WMA
 - Map Showing Types and Locations of all Projects
- Fact Sheets for all 10-year Projects
 - Organized in order by project number



Project Fact Sheets

- All projects in 10-year Implementation Plan
- Contains overview of project, benefits and considerations
 - General project information
 - Project description
 - Project map
 - Project benefits
 - Project design considerations
 - Summary of project costs
- Fact sheets are organized in order by project number with Nichol Run projects first



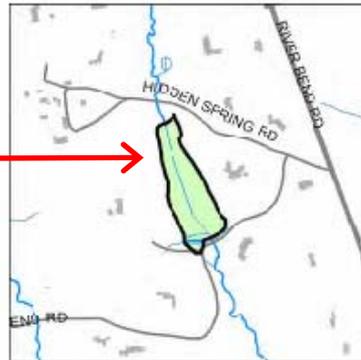
Project # & Type →

PN9118 Stormwater Pond Retrofit, Culvert Retrofit

Pond Branch Watershed
Pond Branch - Mine Run Watershed Management Area

← **Watershed & WMA**

Location Map →



Address:	456 River Bend Road
Location:	Near River Bend Road & Hidden Springs Road
Land Owner:	Private
PIN:	0084 01 0020, 0084 01 0021, 0084 01 0025, 0084 01 0028, 0084 01 0034Z, 0084 01 0036, 0084 09 0012
Control Type	Quality/Quantity
Drainage Area	181.34 acres
Receiving Waters	Mine Run Branch

← **Project Info:**

Location
Land Owner
Control Type
Drainage Area
Receiving Waters

Project Description →

Description: Retrofit existing farm pond (FM0002) to wet retention pond; install outlet structure and lower water level for additional storage. Repair and stabilize erosion impacts to spillway and downstream channel and culvert at River Bend Road.



← **Detailed Project Area Map**

Map Legend →

 Retrofit to Wet Retention Pond
  Culvert Retrofit

Project Area Map





Project Benefits

Qualitative &
Quantitative
(Modeling)

Project Design Considerations

- Project Coordination & Sequencing
- Permitting & Easements
- Construction Issues & Tree Impacts

Project Benefits: This project will reduce sediment and nutrient loadings, improve water quality in downstream waterbodies, increase storage volume, reduce peak stormwater flows up to the 10-year event, and provide for evapotranspiration and wildlife habitat. This project will also repair damage to the spillway. The new outlet structure will allow for a more controlled stormwater discharge to enhance the performance of the pond. This project will also repair damage to River Bend Road and stabilize the channel. An estimated 1,612 lbs/yr of total suspended solids, 19 lbs/yr of nitrogen, and 5 lbs/yr of phosphorus will be removed.

Project Design Considerations: Minimal environmental permitting requirements are anticipated. Additional permitting may be required for a project within a stream or wetland. Projects in RPAs may require exemptions or waivers. The farm pond is privately owned by multiple owners. A storm drainage easement may be necessary. Accessibility is excellent via an ingress-egress easement from nearby roads. There are no tree impacts or significant construction issues anticipated.

Costs:

Item	Units	Quantity	Unit Cost	Total
Organic Compost Soil Amendment	CY	40	\$40.00	\$1,600.00
Plantings	AC	0.1	\$25,000.00	\$2,500.00
Clear and Grub	AC	0.1	\$8,500.00	\$850.00
Grading and Excavation	CY	250	\$35.00	\$8,750.00
Embankment	CY	150	\$50.00	\$7,500.00
Outflow Pipe	LF	50	\$125.00	\$6,250.00
RipRap Stabilization	SY	75	\$100.00	\$7,500.00
Structural BMP Retrofit and Incidentals (High)	LS	1	\$20,000.00	\$20,000.00
Initial Project Costs				\$84,950.00
<i>Plantings: 5% of project costs (unless incl. as line item)</i>				\$0.00
<i>Ancillary Items: 5% of project cost</i>				\$2,747.50
<i>Erosion and Sediment Control: 10% of project costs</i>				\$5,495.00
Base Construction Costs				\$63,192.50
<i>Mobilization (5%)</i>				<i>\$3,159.63</i>
Subtotal 1				\$66,352.13
<i>Contingency (25%)</i>				<i>\$16,588.03</i>
Subtotal 2				\$82,940.16
<i>Engineering Design, Surveys, Land Acquisition, Utility</i>				
<i>Relocation and Permits (45%)</i>				\$37,323.07
Total Costs				\$120,263.23

Detailed
Project
Costs

Estimated Project Costs **\$130,000.00**

Total Project Cost
Rounded up to
nearest \$10,000



6. Benefits of Plan Implementation

- Overview of Stormwater Models
 - Pollution Model (STEPL)
 - Hydrologic Model (SWMM)
 - Hydraulic Model (HEC-RAS)
- Analysis of Stormwater Modeling Results
- Cost Benefit Analysis
- Overall Costs and Benefits of Plan Implementation

Plan Benefits

- Benefits of 10 and 25-year Implementation Plans Modeled

WMA	Area (ac)	Scenario ³	Runoff Volume (in/yr) ¹		Peak Flow (cfs/ac) ¹		TN ² (lb/ac/yr)	TP ² (lb/ac/yr)	TSS ² (lb/ac/yr)
			2 Year	10 Year	2 Year	10 Year			
Nichol Run Watershed	5,249.63	Existing Condition	1,122	2,637	0.129	0.303	1.90	0.290	111.87
		Future Without Projects	1,138	2,665	0.131	0.307	2.07	0.310	111.84
		Future With Projects (10yr)	1,021	2,478	0.117	0.285	2.01	0.300	79.80
		Reduction (10-year Plan)	-10.3%	-7.0%	-10.3%	-7.0%	-2.9%	-3.2%	-28.6%
		Future With Projects (25yr)	N/A	N/A	N/A	N/A	1.96	0.290	76.72
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	-5.3%	-6.5%	-31.4%

Pond Branch Watershed	5,404.10	Existing Condition	2,398	5,623	0.276	0.647	2.09	0.330	115.55
		Future Without Projects	2,449	5,700	0.282	0.656	2.21	0.350	115.72
		Future With Projects (10yr)	972	3,057	0.112	0.352	2.07	0.310	85.00
		Reduction (10-year Plan)	-60.3%	-46.4%	-60.3%	-46.4%	-6.3%	-11.4%	-26.5%
		Future With Projects (25yr)	N/A	N/A	N/A	N/A	2.00	0.290	78.70
		Reduction (25-year Plan)	N/A	N/A	N/A	N/A	-9.5%	-17.1%	-32.0%



7. Glossary and Acronyms

8. References

Appendices

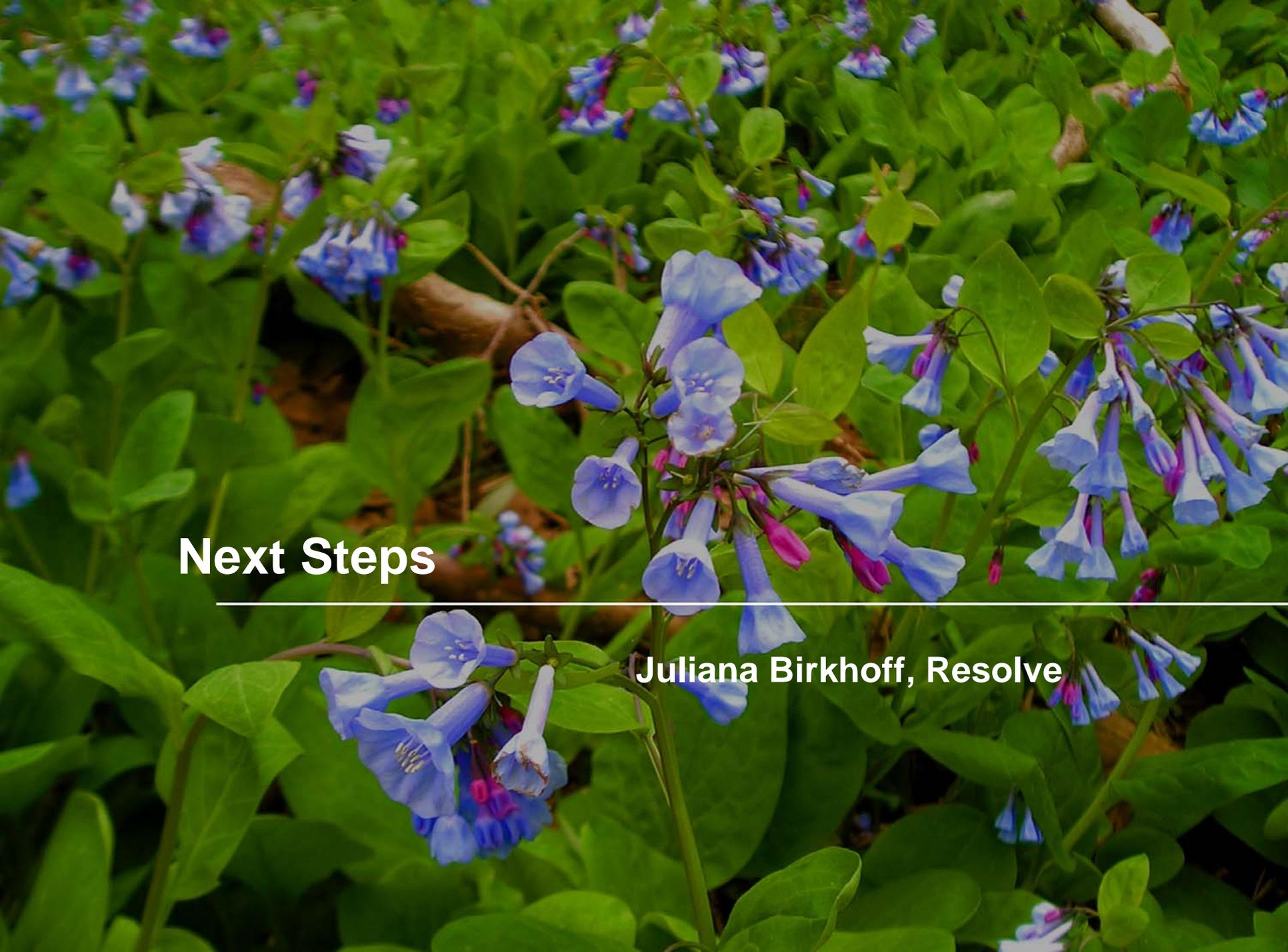
- Appendix A: Watershed Workbook
 - Watershed Study Methodology
 - Detailed Characterization of Existing Watershed Conditions
 - Draft Document
- Appendix B: Technical Documents
 - Subwatershed Strategies
 - Project Prioritization
 - Future with Projects Modeling
- Appendix C: Public Involvement
 - Summaries of Initial Forum and WAG Meetings

A close-up photograph of a dense field of blue and purple flowers, likely a species of Salpiglossis, with vibrant green foliage. The flowers are trumpet-shaped and arranged in clusters. The background is filled with more of the same plants, creating a lush, textured appearance.

Discussion of Watershed Plan

Points of Discussion

- Comments on specific projects
 - Maps with proposed projects
- Comments on plan in general
 - Content
 - Layout

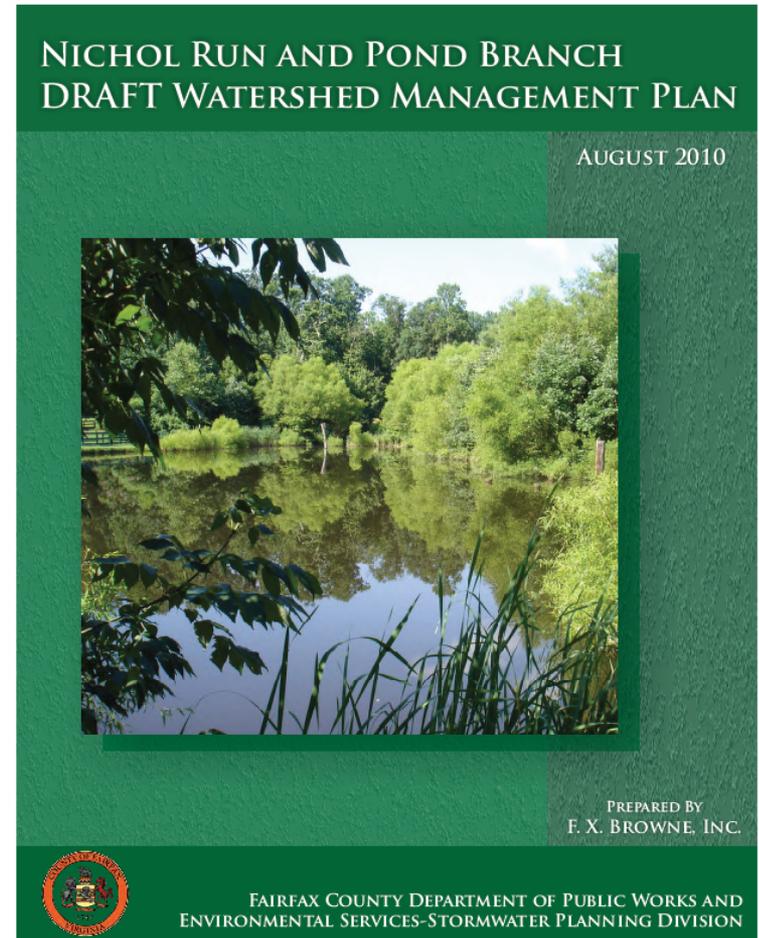
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Next Steps

Juliana Birkhoff, Resolve

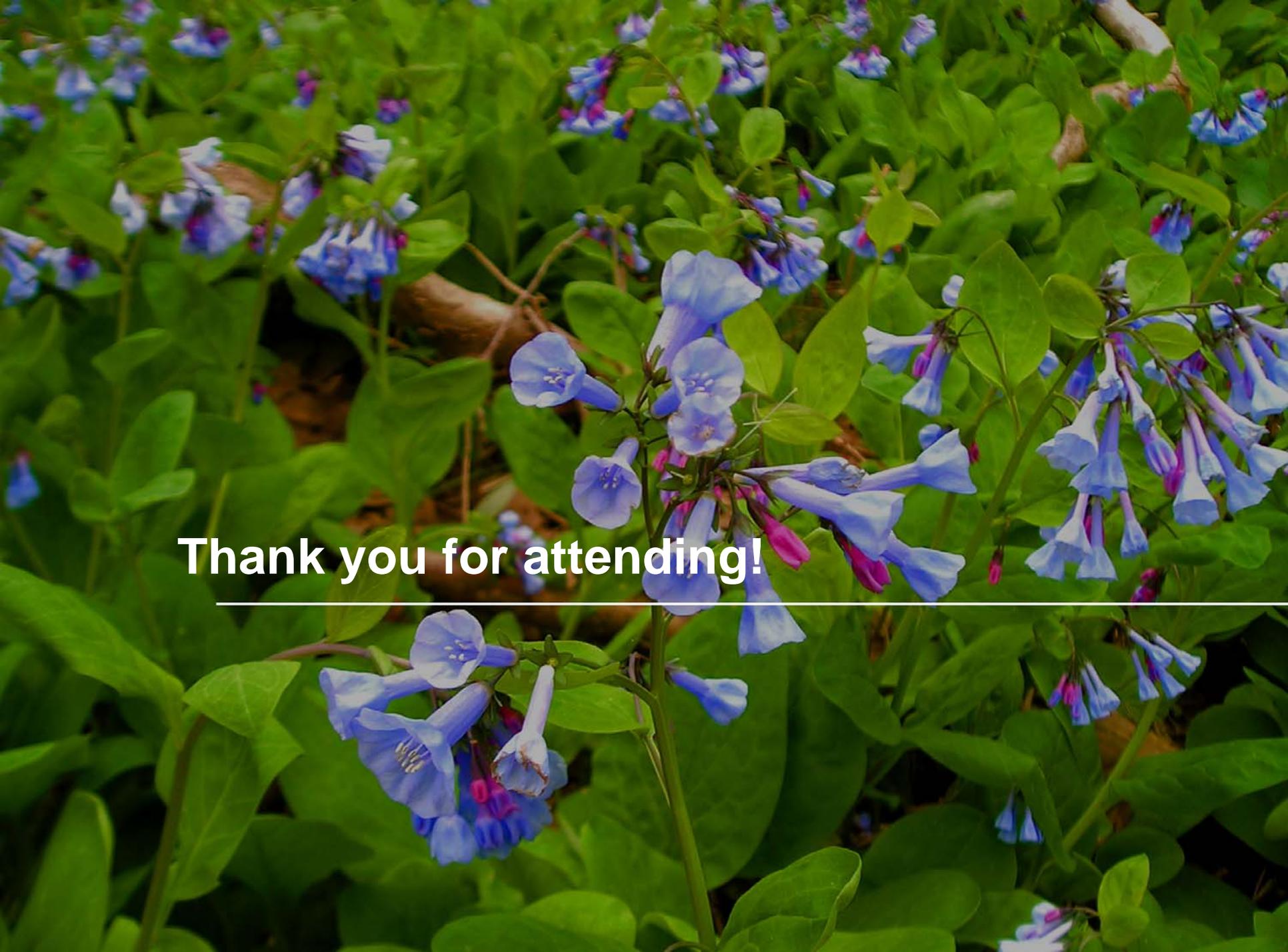
Next Steps

- Draft Plan
 - Interagency County Review
 - LDS, DPZ, BOS, etc.
 - WAG Role
 - Encourage constituents to attend forum
 - Public Forum September 23
 - 30 day comment period
 - Compile comments and revise plan
- Final Plan
 - BOS for Adoption
 - Proposed for December 7th meeting



Next Steps

- How to Comment:
 - At the Draft Plan Forum on September 23rd
 - E-mail
 - Melissa Taibi mtaibi@fxbrowne.com
 - Joe Sanchirico joseph.sanchirico@fairfaxcounty.gov
 - Online Comment Form
 - Available on September 23rd
 - www.fairfaxcounty.gov/dpwes/watersheds/nicholrun_docs.htm

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Thank you for attending!
