

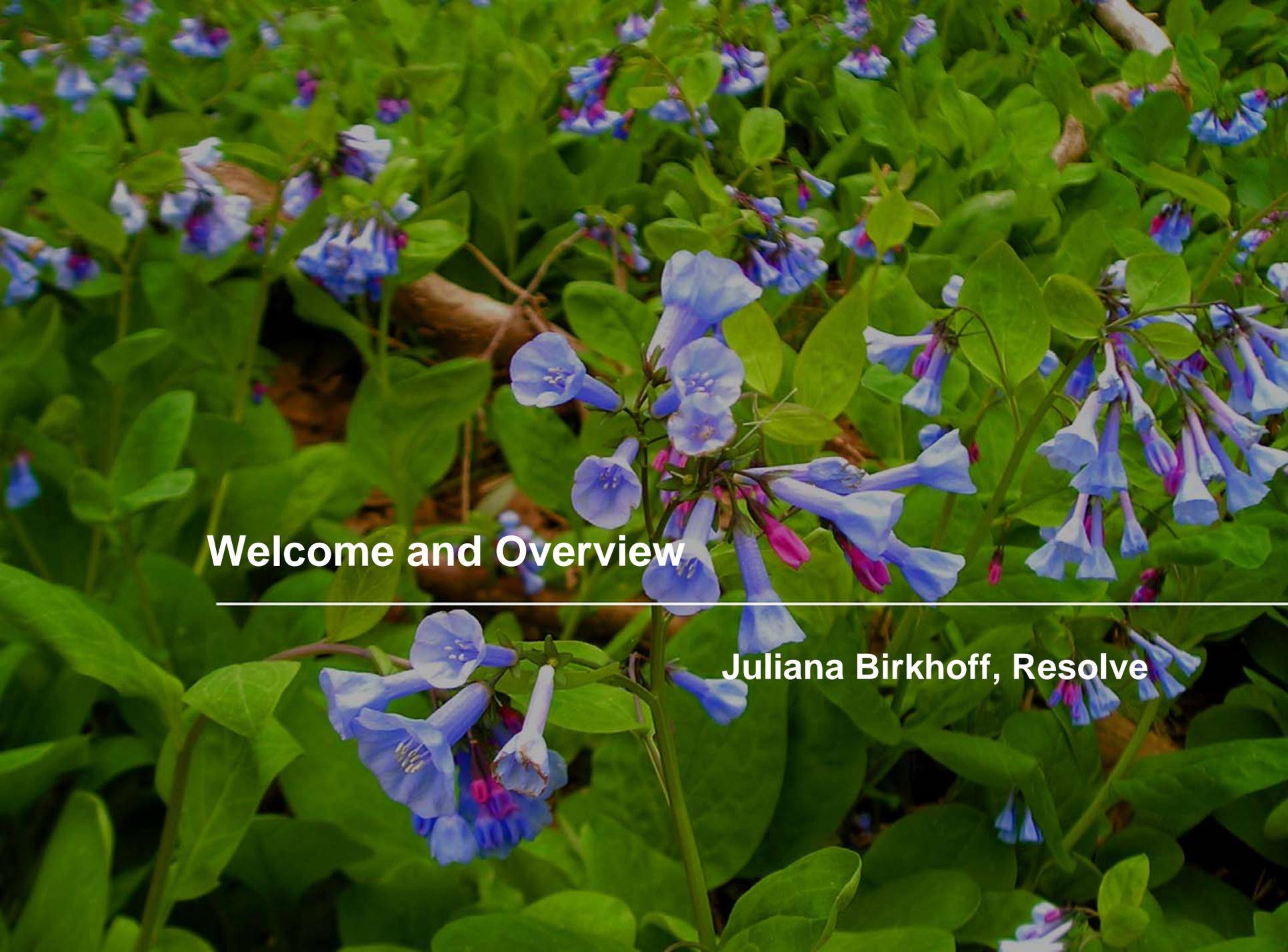
# Sugarland Run Horsepen Creek Watershed Management Plan

Watershed Advisory Group #5  
July 21, 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**

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**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

A close-up photograph of a dense field of blue and purple flowers, likely 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.

**Thank You**

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**Fred Rose, SWPD**

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# Overview of Draft Watershed Management Plan

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Melissa Taibi, F.X. Browne, Inc.

# 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

## Appendices



# 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
- Sugarland Run listed before Horsepen Creek
- WMAs Organized in Alphabetical Order



## 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

- Sugarland Run listed before Horsepen Creek
- WMAs Organized in Alphabetical Order
- Each WMA Section Contains
  - Key WMA Conditions
  - Description of 10-year Structural Projects and Non-Structural Projects
  - Table Containing all Projects within WMA
  - Map Showing Types and Locations of all Projects
- Fact Sheets for all 10-year Projects
  - Organized in the same order as the WMA sections

# 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
- Regional pond alternatives are a larger suite of projects
  - Additional sub-project description, map and costs for each subproject greater than \$80,000
- Fact sheets are grouped by WMA and organized alphabetically with Sugarland WMAs first



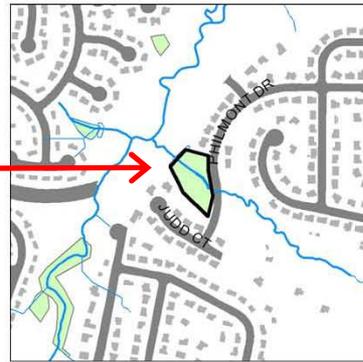
**Project # & Type** →

SU9123 Stormwater Pond Retrofit

Sugarland Run Watershed  
Sugarland - Folly Lick Watershed Management Area

← **Watershed & WMA**

**Location Map** →



Address:	12538 Philmont Drive
Location:	Near Philmont Drive & Judd Court
Land Owner:	County
PIN:	0102-16-C4
Control Type:	Quality/Quantity
Drainage Area:	60 acres
Receiving Waters:	Folly Lick Branch

← **Project Info:**

Location  
Land Owner  
Control Type  
Drainage Area  
Receiving Waters

**Project Description** →

**Description:** Improve existing regional dry pond S-04 (1440DP) to enhanced extended detention dry basin with marsh areas. Remove concrete trickle ditch and retrofit outlet structure.



← **Detailed Project Area Map**

**Map Legend** →

 Retrofit to Enhanced ED Basin

*Project Area Map*





## Project Benefits

Qualitative &  
Quantitative  
(Modeling)

**Project Benefits:** An estimated one ton/yr of total suspended solids, 75 lbs/yr of nitrogen, and 10 lbs/yr of phosphorus will be removed. This project will also generally improve water quality, reduce peak stormwater flows for storms up to a 10-year event, and provide for evapotranspiration and wildlife habitat.

## Project Design Considerations

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

**Project Design Considerations:** Minimal environmental permitting requirements are anticipated. Projects in RPAs may require exemptions or waivers. This is an existing county facility. A storm drainage easement may be necessary. Accessibility is excellent from Philmont Drive. No tree impacts or significant construction issues are anticipated.

Costs:				
Item	Units	Quantity	Unit Cost	Total
Organic Compost Soil Amendment	CY	158	\$40.00	\$6,320.00
Plantings	AC	0.79	\$25,000.00	\$19,750.00
Grading and Excavation	CY	2535	\$35.00	\$88,725.00
Embankment	CY	200	\$50.00	\$10,000.00
Outflow Pipe	LF	20	\$125.00	\$2,500.00
RipRap Stabilization	SY	11	\$100.00	\$1,100.00
Structural BMP Retrofit and Incidentals (Low)	LS	1	\$10,000.00	\$10,000.00
<b>Initial Project Costs</b>				<b>\$138,395.00</b>
<i>Plantings: 5% of project costs (unless incl. as line item)</i>				\$0.00
<i>Ancillary Items: 5% of project cost</i>				\$6,919.75
<i>Erosion and Sediment Control: 10% of project costs</i>				\$13,839.50
<b>Base Construction Costs</b>				<b>\$159,154.25</b>
<i>Mobilization (5%)</i>				\$7,957.71
<b>Subtotal 1</b>				<b>\$167,111.96</b>
<i>Contingency (25%)</i>				\$41,777.99
<b>Subtotal 2</b>				<b>\$208,889.95</b>
<i>Engineering Design, Surveys, Land Acquisition, Utility Relocation and Permits (45%)</i>				\$94,000.48
<b>Total Costs</b>				<b>\$302,890.43</b>
<b>Estimated Project Costs</b>				<b>\$310,000.00</b>

Detailed  
Project Costs

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-year Implementation Plan Modeled
- Water Quality Benefits of 25-year Implementation Plan Will Be Added for Final Plan

Watershed	Area (ac)	Scenario	Runoff Volume (in/yr)		Peak Flow (cfs/ac)		TSS (lb/ac/yr)	TN (lb/ac/yr)	TP (lb/ac/yr)
			2 Year	10 Year	2 Year	10 Year			
Sugarland Run	14,407.07	Existing Condition	613.11	1,447.72	0.070	0.170	204.29	4.958	0.719
		Future Without Projects	649.40	1,550.05	0.075	0.178	202.51	4.952	0.714
		Future With Projects	624.97	1,516.01	0.072	0.174	193.48	4.826	0.693
		Reduction (10-year Plan)	-24.43	-34.04	-0.003	-0.004	-9.03	-0.13	-0.021
			-4%	-2%	-4%	-2%	-4%	-3%	-3%
Horsepen Creek	14,597.04	Existing Condition	1,176.07	2,625.44	0.140	0.300	213.24	4.80	0.660
		Future Without Projects	1,342.96	2,972.98	0.155	0.342	220.20	4.99	0.682
		Future With Projects	1,327.69	2,924.03	0.153	0.336	205.48	4.88	0.661
		Reduction (10-year Plan)	-15.27	-48.95	-0.002	-0.006	-14.72	-0.12	-0.021
			-1%	-2%	-1%	-2%	-7%	-2%	-3%



## 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
  - Prioritization
  - Modeling
- Appendix C: Public Involvement
  - Summaries of Initial Forum and WAG Meetings

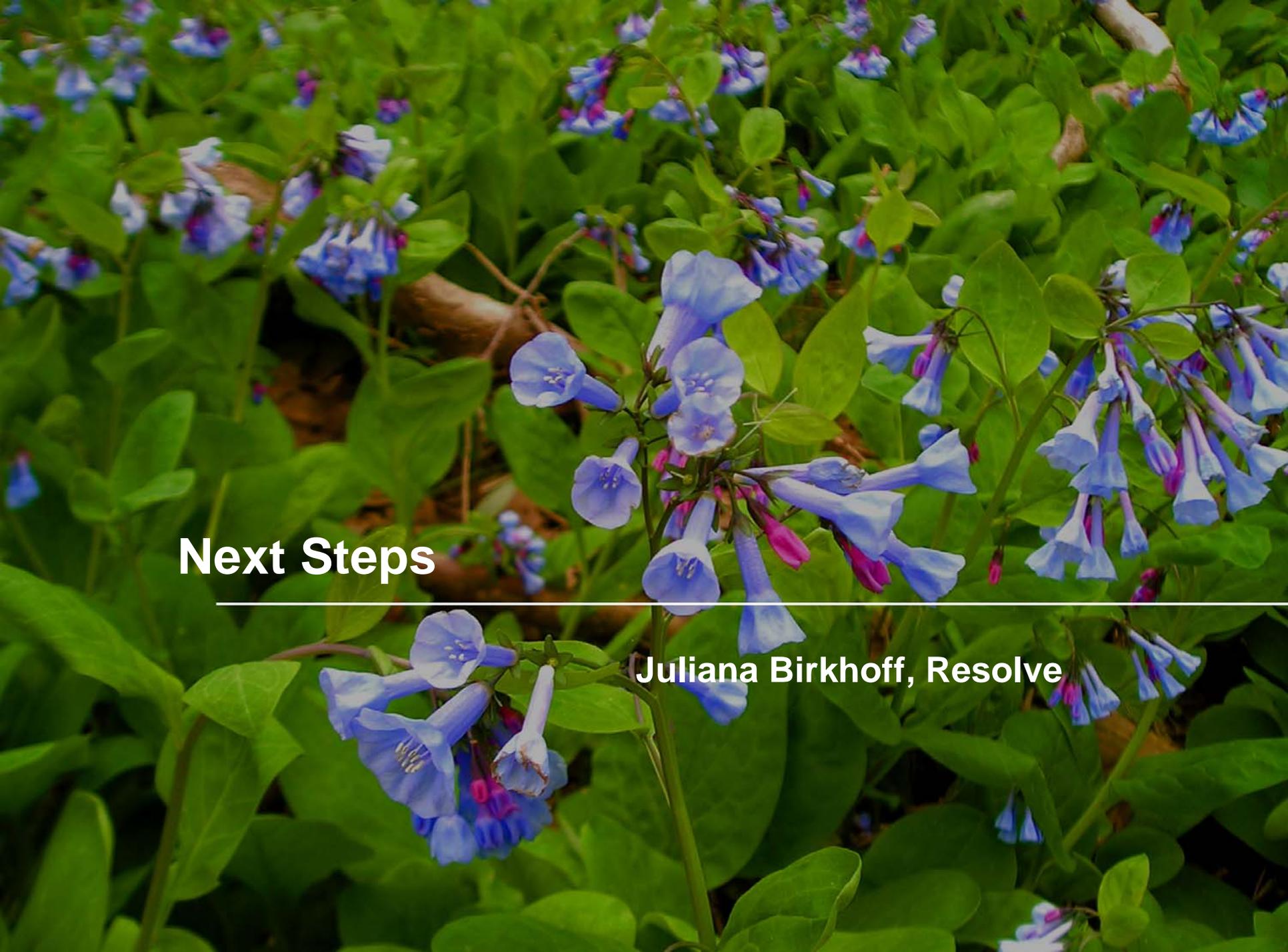
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## Discussion of Watershed Plan

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# Points of Discussion

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

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**Next Steps**

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**Juliana Birkhoff, Resolve**

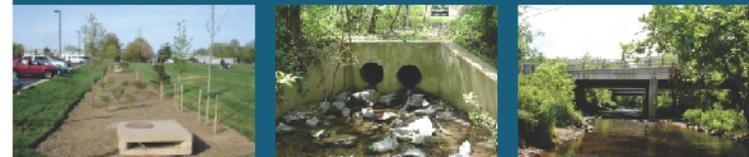
# Next Steps

- Draft Plan
  - Interagency County Review
    - LDS, DPZ, BOS, etc.
  - WAG Role
    - Encourage constituents to attend forum
  - Public Forum August 3
    - 30 day comment period
  - Compile comments and revise plan
- Final Plan
  - BOS for Adoption
    - Proposed for December 7<sup>th</sup> meeting

## SUGARLAND RUN AND HORSEPEN CREEK DRAFT WATERSHED MANAGEMENT PLAN

JULY 2010

FAIRFAX COUNTY DEPARTMENT OF PUBLIC WORKS AND  
ENVIRONMENTAL SERVICES-STORMWATER MANAGEMENT DIVISION



PREPARED BY  
F. X. BROWNE, INC.

# Next Steps

- How to Comment:
  - At the Draft Plan Forum on August 3<sup>rd</sup>
  - E-mail
    - Melissa Taibi [mtaibi@fxbrowne.com](mailto:mtaibi@fxbrowne.com)
    - Joe Sanchirico [joseph.sanchirico@fairfaxcounty.gov](mailto:joseph.sanchirico@fairfaxcounty.gov)
  - Online Comment Form
    - Available on August 3<sup>rd</sup>
    - [www.fairfaxcounty.gov/dpwes/watersheds/sugarlandrun\\_docs.htm](http://www.fairfaxcounty.gov/dpwes/watersheds/sugarlandrun_docs.htm)

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**Thank you for attending!**

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