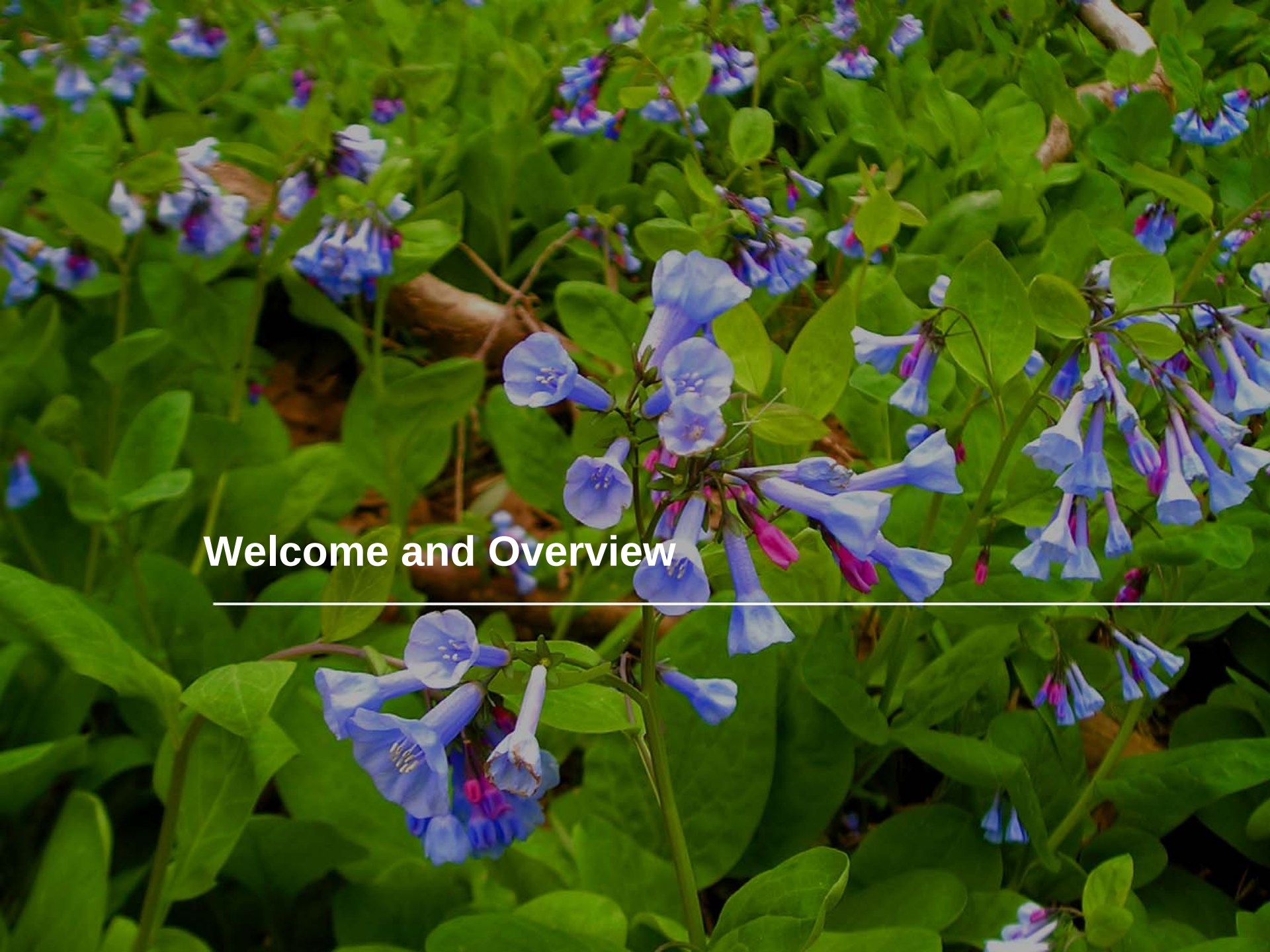
Little Rocky Run
Johnny Moore Creek
Watershed Management Plan

Watershed Advisory Group #4
February 22, 2010

Fairfax County Department of Public Works and Environmental Services
Presented by Watershed Planning & Assessment Branch, Stormwater Management



Welcome and Overview

Agenda

- 7:00 Recap where we are in the process
- 7:10 Introduction to the project prioritization process
- 7:30 Break out to review and discuss any concerns with individual projects by upper and lower Little Rocky Run and Johnny Moore Creek
- 8:30 Regroup and discuss any overarching questions about the schedule and next steps for completing the project list and holding a public workshop.
- 9:00 Adjourn

Process Recap

Fred Rose, SWPD

Project Prioritization Process

Candidate Project Investigation

- After last WAG meeting, 120 project sites were investigated in the field
- Assessed for feasibility
- Items assessed included:
  - Construction access
  - Permitting issues
  - Land ownership
  - Utility conflicts
  - Impacts to streams, wetlands, trees, floodplain

Selection of Projects for Prioritization

- Projects were assessed based on their feasibility and impact to the watershed
- Projects were removed from the list if they were found during the field investigation to be infeasible or if it was determined that their impact would be minimal
- Projects estimated to cost less than $80,000 or in close proximity to each other were combined
- Projects in close proximity to each other were combined
- Total of 79 structural projects for prioritization

Project Prioritization

- County-developed process to evaluate all projects using the same criteria
- A project score is computed using a weighted average of the following 5 components:
  - Effect on Watershed Impact Indicators (30%)
  - Effect on Source Indicators (30%)
  - Location within Priority Subwatersheds (10%)
  - Sequencing (20%)
  - Implementability (10%)
- Source Indicator = Cause; Impact Indicator = Effect

Indicator/Goal Review

County Wide Goals

1. ***Improve and maintain watershed functions in Fairfax County, including water quality, habitat, and hydrology***
2. ***Protect human health, safety, and property by reducing stormwater impacts***
3. ***Involve stakeholders in the protection, maintenance and restoration of county watersheds***

Hydrology - 1 & 2

Habitat - 1

Stream Water Quality – 1 & 2

Drinking Water Quality - 2

Stewardship - 3

Watershed Impact Indicators

- Benthic Communities
- Fish Communities
- Aquatic Habitat
- Channel Morphology
- Hydrology
- RPA Riparian Habitat
- Headwater Riparian Habitat
- Wetland Habitat
- Road Hazards
- Building Hazards
- Flood Complaints
- In-stream Sediment
- Nitrogen Loading
- Phosphorous Loading
- Sediment Loading

Source Indicators

- Channelized/Piped Streams
- Impervious Area
- Stormwater Outfalls
- Parcels served by septic
- Population density
- Erosion and Sediment permits
- Sanitary Sewer Crossings
- Stream Buffer Deficiency
- Nutrient Loading
- Sediment Loading
- Urban Land Cover
- VPDES Point Sources
- Other Hot Spots

Effect on Watershed Impact Indicators (30%)

- Project types were evaluated based on their impact to indicators known to be affected
- Combination of quantitative and qualitative analyses used to define a baseline condition as well as to measure the impact of implementing the proposed project
- Impact indicator scores range from 1-5, based on breaking the results into quintiles. In other words, the projects (regardless of type – top 20%) that have the greatest positive impact on Total Nitrogen concentration, receive a score of 5

Effect on Watershed Impact Indicators (30%)

Attachment 1 – Project Type/Impact Indicator Association

	Regional Pond/ Alternatives	New/ Retrofit SWM Pond	Stream Restoration	Culvert Retrofit	New/Retrofit BMP/LID	Flood Protection/Mitigation	Outfall Improvement
Benthic Communities			X				X
Fish Communities			X				X
Aquatic Habitat			X	X			X
Channel Morphology	X	X	X			X	X
Instream Sediment	X	X	X				X
Hydrology	X	X			X	X	X
Number of Road Hazards				X		X	
Magnitude of Road Hazards				X		X	
Residential Building Hazards						X	
Non-residential Building Hazards						X	
Flood Complaints				X	X	X	
RPA Riparian Habitat			X		X		
Headwater Riparian Habitat			X		X		
Wetland Habitat			X		X		
Terrestrial Forested Habitat					X		
E. coli	X	X	X		X		X
TSS Concentration	X	X	X		X		X
TN Concentration	X	X			X		X
TP Concentration	X	X	X		X		X

Effect on Watershed Source Indicators (30%)

- Project types were evaluated based on their impact to indicators known to be affected
- Combination of quantitative and qualitative analyses used to define a baseline condition as well as to measure the impact of implementing the proposed project
- Source indicator scores range from 1-5, based on breaking the results into quintiles. In other words, the projects (regardless of type – top 20%) that have the greatest positive impact on stream bank buffer deficiency, receive a score of 5

Effect on Watershed Source Indicators (30%)

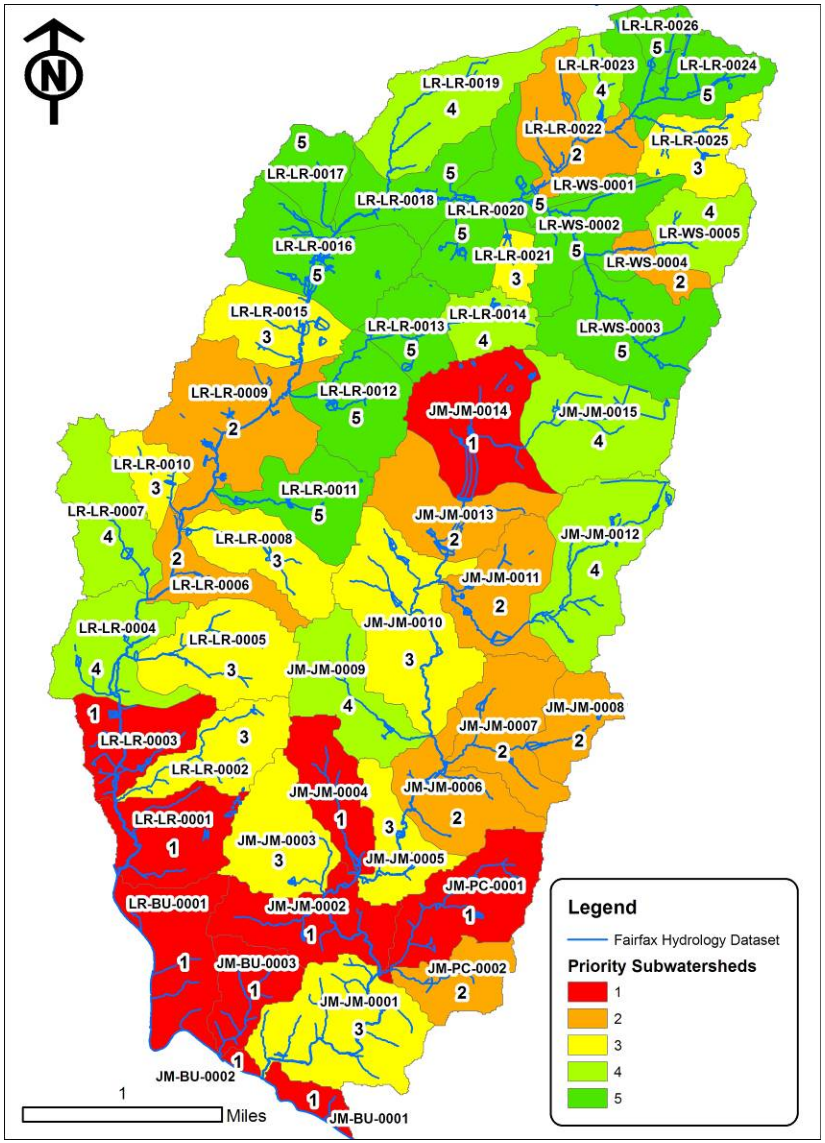
Attachment 3 – Project Type/Source Indicator Association

	Regional Pond/ Alternatives	New/ Retrofit SWM Pond	Stream Restoration	Culvert Retrofit	New/Retrofit BMP/LID	Flood Protection/Mitigation	Outfall Improvement
Channelized/Piped Streams			X	X		X	X
Directly Connected Impervious Area	X	X			X	X	
Impervious Surface	X	X			X	X	
Stormwater Outfalls	X	X	X		X	X	X
Streambank Buffer Deficiency			X				
TSS Concentration	X	X	X		X		X
TN Concentration	X	X	X		X		X
TP Concentration	X	X	X		X		X

Location Within Priority Subwatersheds (10%)

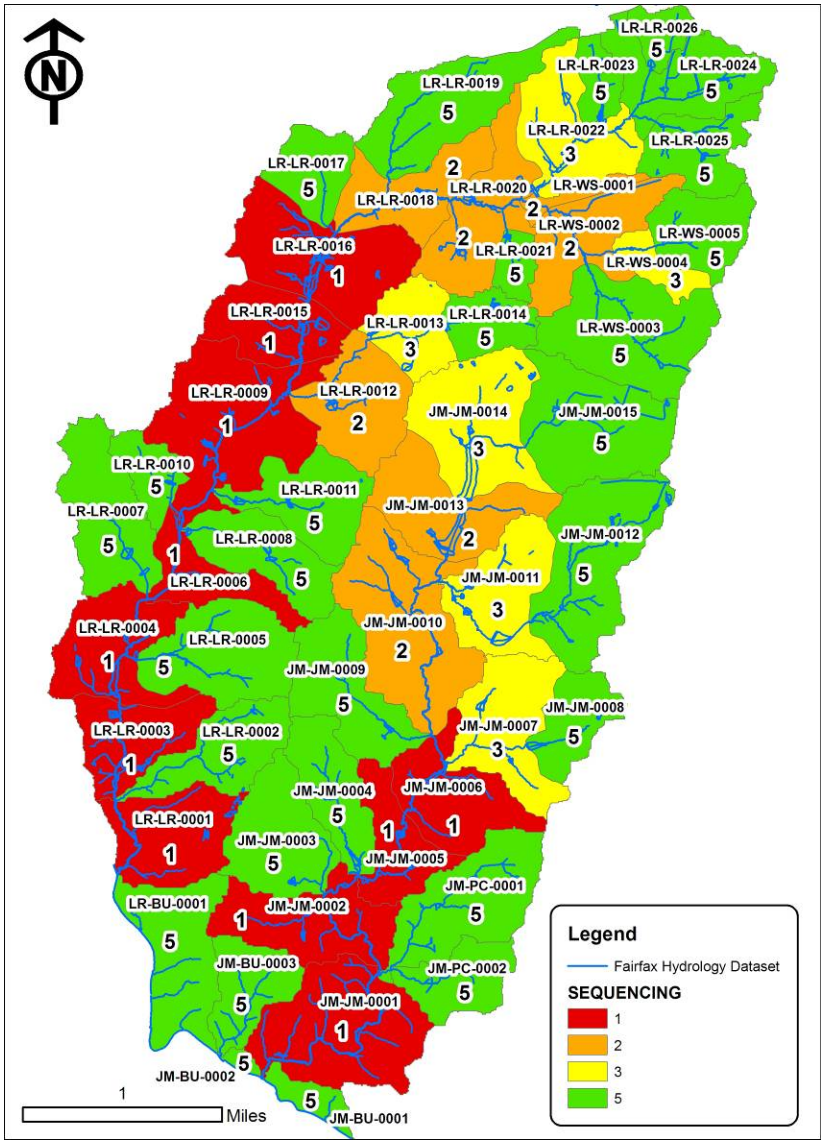
- Subwatersheds were divided into 5 groups and scored from high (5) to low (1) based on the watershed impact composite score
- The impact composite score represents the average of the scores for all impact indicators (19 in total) and is a barometer for determining watershed degradation
- Those watersheds scoring poorly for this composite score were given the highest priority

Location Within Priority Subwatersheds (10%)



- Upper Little Rocky contains majority of high - priority subwatersheds
- Based on the ‘future without’ condition – this scenario describes what would happen if no action were taken and accounts for landuse changes as defined in the County’s 25-yr comprehensive plan

Sequencing (20%)



Part of the County's holistic approach to watershed management involves prioritizing headwater projects. This allows implementation to mitigate sources and stressors that cause cumulative impacts downstream and hopefully reduce the number, need, or scope of downstream projects that typically require larger capital investments.

Implementability (10%)

- High Implementability (5 points)
  - Tree buffer restoration
  - Debris/trash removal
  - SWM retrofits in County maintained facilities where no additional land rights are required
  - Stream restorations that do not require upstream runoff quantity reductions and are proposed on sites with significant land owner support
  - LID retrofits at schools and other County facilities
  - Other priority projects that have significant land owner support
- Moderate Implementability (3 points)
  - Other pond and LID retrofits and other stream restorations that do not require upstream runoff quantity reductions
- Low Implementability (1 point)
  - Projects that do not fit into the above categories and are likely to be less feasible than the majority of recommended projects

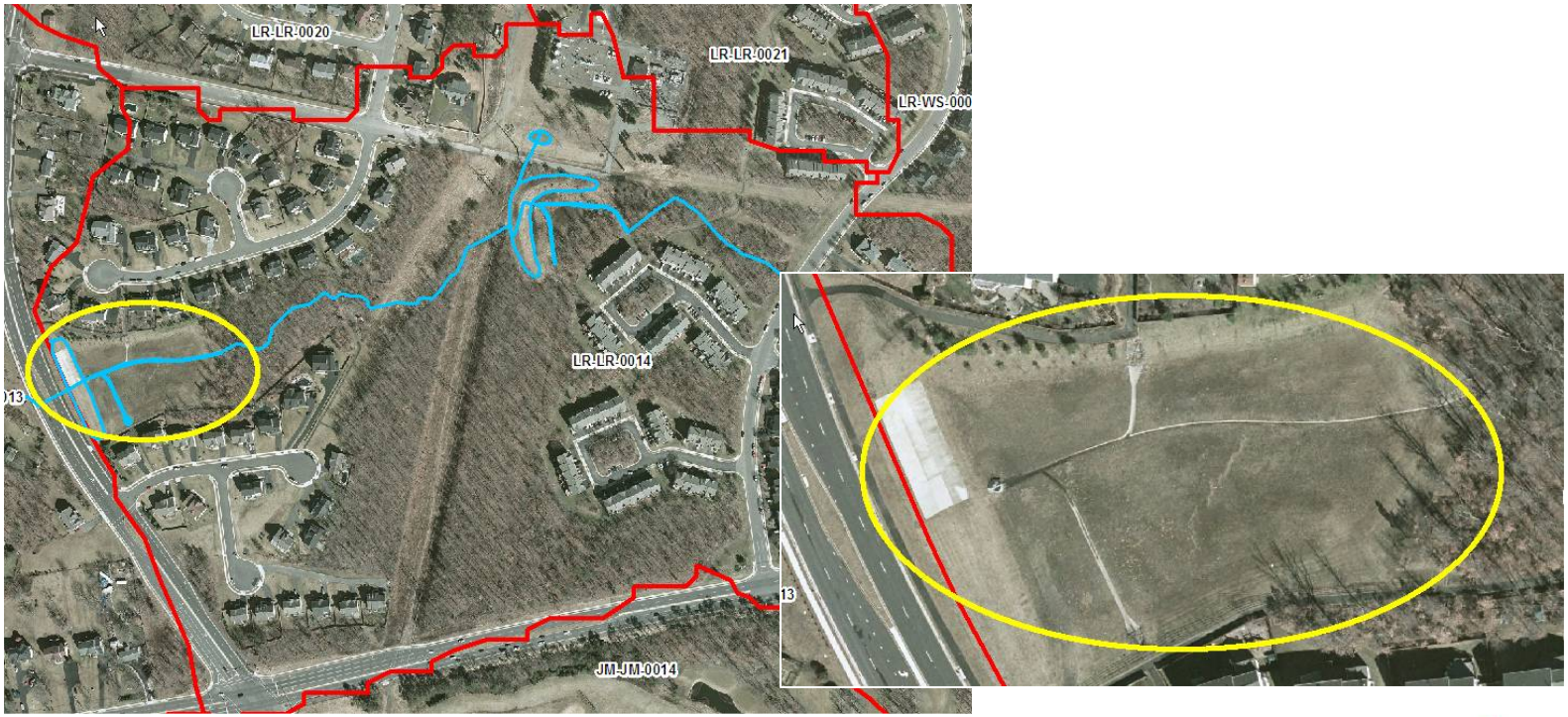
Draft Scores and Rankings

Attachment 7
Draft Scores and Rankings

Name	Subwatershed	Type	Comments	Impact Indicators Score	Source Indicators Score	Priority Subwatersheds Score	Watershed Sequencing Score	Project Implement-ability Score	Composite Project Score	Rank
LR9509L	LR-LR-0007	New BMP/LID	Flooding complaint at WAG - retrofit area u/s of culvert for SWM	4.40	5.00	4	5	3	4.52	1
LR9512L	LR-LR-0010	New BMP/LID	Treatment at culvert outlet, upstream opportunities - community not supportive of regional pond in area	4.40	5.00	3	5	3	4.42	2
LR9118L	LR-LR-0021	Pond Retrofit	Regional R-7 - opportunity to regrade/plant/direct more flow to pond - clogged during field visit	4.71	3.83	3	5	5	4.36	3
LR9529L	LR-LR-0025	New BMP/LID	Missed facility? - opportunity for LID	4.20	4.83	3	5	3	4.31	4
LR9103L	LR-LR-0010	Pond Retrofit	Modify pond to provide additional capacity, pollutant removal in replacement of Regional Pond R-5	3.86	4.33	3	5	5	4.26	5
LR9510L	LR-LR-0007	New BMP/LID	Retrofit opportunities at school	3.80	4.00	4	5	5	4.24	6
LR9504L	LR-LR-0005	New BMP/LID	Possible site for culvert retrofit	4.10	4.50	3	5	3	4.18	7
LR9104L	LR-LR-0011	Pond Retrofit, Stream Stabilization	Erosion in area from issues forum/Remove trickle ditches, add micropools/plantings	3.57	3.67	5	5	5	4.17	8
LR9100L	LR-LR-0005	Pond Retrofit	Retrofit to include wetland plantings	4.00	3.83	3	5	5	4.15	9
LR9113L	LR-LR-0014	Pond Retrofit	Remove trickle ditches, add micropools/plantings - stabilize eroded areas	4.14	3.33	4	5	5	4.14	10
LR9102L	LR-LR-0008	Pond Retrofit, Outfall Improvement	Remove trickle ditches, plantings, enlarge to improve downstream conditions/Erosion downstream of trail - WAG comment	3.71	4.00	3	5	5	4.11	11
LR9519L	LR-LR-0012	New BMP/LID	Centreville HS drains to dry pond, opportunities for LID onsite	4.20	4.83	5	2	5	4.11	12
LR9516L	LR-LR-0011	New BMP/LID	Union Mill ES drains to dry pond, opportunities for LID onsite	3.50	3.50	5	5	5	4.10	13
JM9202L	JM-JM-0003	Stream Restoration	Issues Scoping Forum Comment - flooding and erosion	3.91	4.00	3	5	3	3.97	14
LR9528L	LR-LR-0024	New BMP/LID	New outfall treatment for Regional Pond R-12	3.20	3.33	5	5	5	3.96	15
LR9526L	LR-WS-0002	New BMP/LID	Outlet treatment for uncontrolled area	4.30	4.83	5	2	3	3.94	16
LR9201L	LR-LR-0007	Stream Restoration	Erosion/poor flow in channel - comment from Kevin Marley - Green Trails HOA - phone conversation	3.36	4.00	4	5	3	3.91	17
LR9525L	LR-LR-0019	New BMP/LID	Colin Powell ES drains to R-161 - opportunities for onsite LID	3.30	3.33	4	5	5	3.89	18
LR9508L	LR-LR-0007	New BMP/LID	Bioretention to treat back side of townhouses/Add tree box filters or treatment at culvert outlet for untreated system	3.60	3.67	4	5	3	3.88	19
LR9209L	LR-WS-0003	Stream Restoration	Stream in concrete channel being undermined - restore buffer and natural channel	3.91	3.00	5	5	3	3.87	20

Project Profile

- Pond Retrofit – LR9113L
  - Subwatershed LR-LR-0014
  - Remove trickle ditches, add micropools/plantings, stabilize eroded areas



Project Profile – Impact Indicators

Attachment 1 – Project Type/Impact Indicator Association

	Regional Pond/ Alternatives	New/ Retrofit SWM Pond	Stream Restoration	Culvert Retrofit	New/Retrofit BMP/LID	Flood Protection/Mitigation	Outfall Improvement
Benthic Communities			X				X
Fish Communities			X				X
Aquatic Habitat			X	X			X
Channel Morphology	X	X	X			X	X
Instream Sediment	X	X	X				X
Hydrology	X	X			X	X	X
Number of Road Hazards				X		X	
Magnitude of Road Hazards				X		X	
Residential Building Hazards						X	
Non-residential Building Hazards						X	
Flood Complaints				X	X	X	
RPA Riparian Habitat			X		X		
Headwater Riparian Habitat			X		X		
Wetland Habitat			X		X		
Terrestrial Forested Habitat					X		
E. coli	X	X	X		X		X
TSS Concentration	X	X	X		X		X
TN Concentration	X	X			X		X
TP Concentration	X	X	X		X		X

Project Profile – Impact Indicators

Project Number	Project Type	Subwatershed	Benthic Communities	Fish Communities	Aquatic Habitat	Channel Morphology	Instream Sediment	Hydrology	Number of Road Hazards	Magnitude of Road Hazards	Number of Building Hazards	Non-residential Building Hazards	Flood Complaints	Riparian Habitat	Headwater Riparian Habitat	Wetland Habitat	Terrestrial Forested Habitat	E. coli	TSS Concentration	TN Concentration	TP Concentration	Sum	Score
LR9010S	0	LR-WS-0005	-	-	-	5	4	5	-	-	-	-	-	-	-	-	-	5	5	5	5	34	4.86
LR9013S	0	LR-LR-0013	-	-	-	3	5	5	-	-	-	-	-	-	-	-	-	5	5	5	5	33	4.71
LR9118L	1	LR-LR-0021	-	-	-	5	4	5	-	-	-	-	-	-	-	-	-	5	4	5	5	33	4.71
LR9600L	6	LR-LR-0018	-	-	-	5	-	5	5	5	5	5	3	-	-	-	-	-	-	-	-	33	4.71
JM9400L	4	JM-PC-0001	-	-	5	-	-	-	5	5	-	-	3	-	-	-	-	-	-	-	-	18	4.50
LR9005S	0	LR-LR-0010	-	-	-	2	4	5	-	-	-	-	-	-	-	-	-	5	5	5	5	31	4.43
LR9121L	1	LR-WS-0004	-	-	-	5	4	5	-	-	-	-	-	-	-	-	-	5	2	5	5	31	4.43
LR9509L	5	LR-LR-0007	-	-	-	-	-	5	-	-	-	-	5	3	3	5	3	5	5	5	5	44	4.40
LR9512L	5	LR-LR-0010	-	-	-	-	-	5	-	-	-	-	5	3	3	5	3	5	5	5	5	44	4.40
LR9526L	5	LR-WS-0002	-	-	-	-	-	5	-	-	-	-	4	3	3	5	3	5	5	5	5	43	4.30
JM9100L	1	JM-JM-0003	-	-	-	5	5	5	-	-	-	-	-	-	-	-	-	5	2	4	4	30	4.29
LR9206L	2	LR-LR-0020	5	5	5	5	4	-	-	-	-	-	-	3	3	3	-	5	5	-	4	47	4.27
JM9500L	5	JM-PC-0002	-	-	-	-	-	5	-	-	-	-	3	3	3	5	3	5	5	5	5	42	4.20
LR9519L	5	LR-LR-0012	-	-	-	-	-	5	-	-	-	-	3	3	3	5	3	5	5	5	5	42	4.20
LR9529L	5	LR-LR-0025	-	-	-	-	-	5	-	-	-	-	3	3	3	5	3	5	5	5	5	42	4.20
LR9109L	1	LR-LR-0012	-	-	-	3	4	5	-	-	-	-	-	-	-	-	-	5	4	4	4	29	4.14
LR9113L	**1**	**LR-LR-0014**	**-**	**-**	**-**	**3**	**5**	**5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**5**	**1**	**5**	**5**	**29**	**4.14**
LR9115L	1	LR-LR-0018	-	-	-	5	5	5	-	-	-	-	-	-	-	-	-	5	3	3	3	29	4.14
LR9504L	5	LR-LR-0005	-	-	-	-	-	5	-	-	-	-	4	3	3	5	3	5	5	4	4	41	4.10

Project Profile – Source Indicators

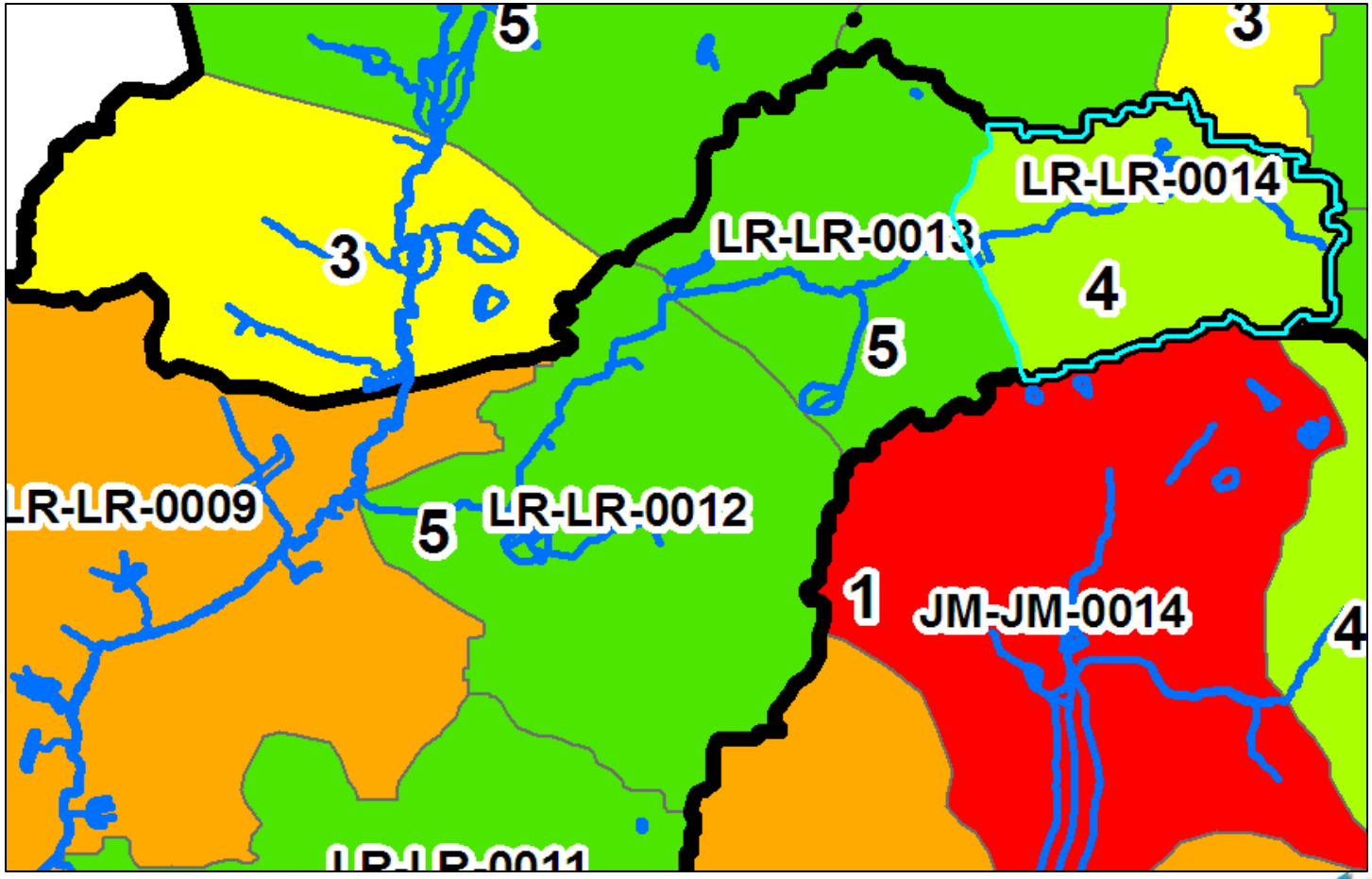
Attachment 3 – Project Type/Source Indicator Association

	Regional Pond/ Alternatives	New/ Retrofit SWM Pond	Stream Restoration	Culvert Retrofit	New/Retrofit BMP/LID	Flood Protection/Mitigation	Outfall Improvement
Channelized/Piped Streams			X	X		X	X
Directly Connected Impervious Area	X	X			X	X	
Impervious Surface	X	X			X	X	
Stormwater Outfalls	X	X	X		X	X	X
Streambank Buffer Deficiency			X				
TSS Concentration	X	X	X		X		X
TN Concentration	X	X	X		X		X
TP Concentration	X	X	X		X		X

Project Profile – Source Indicators

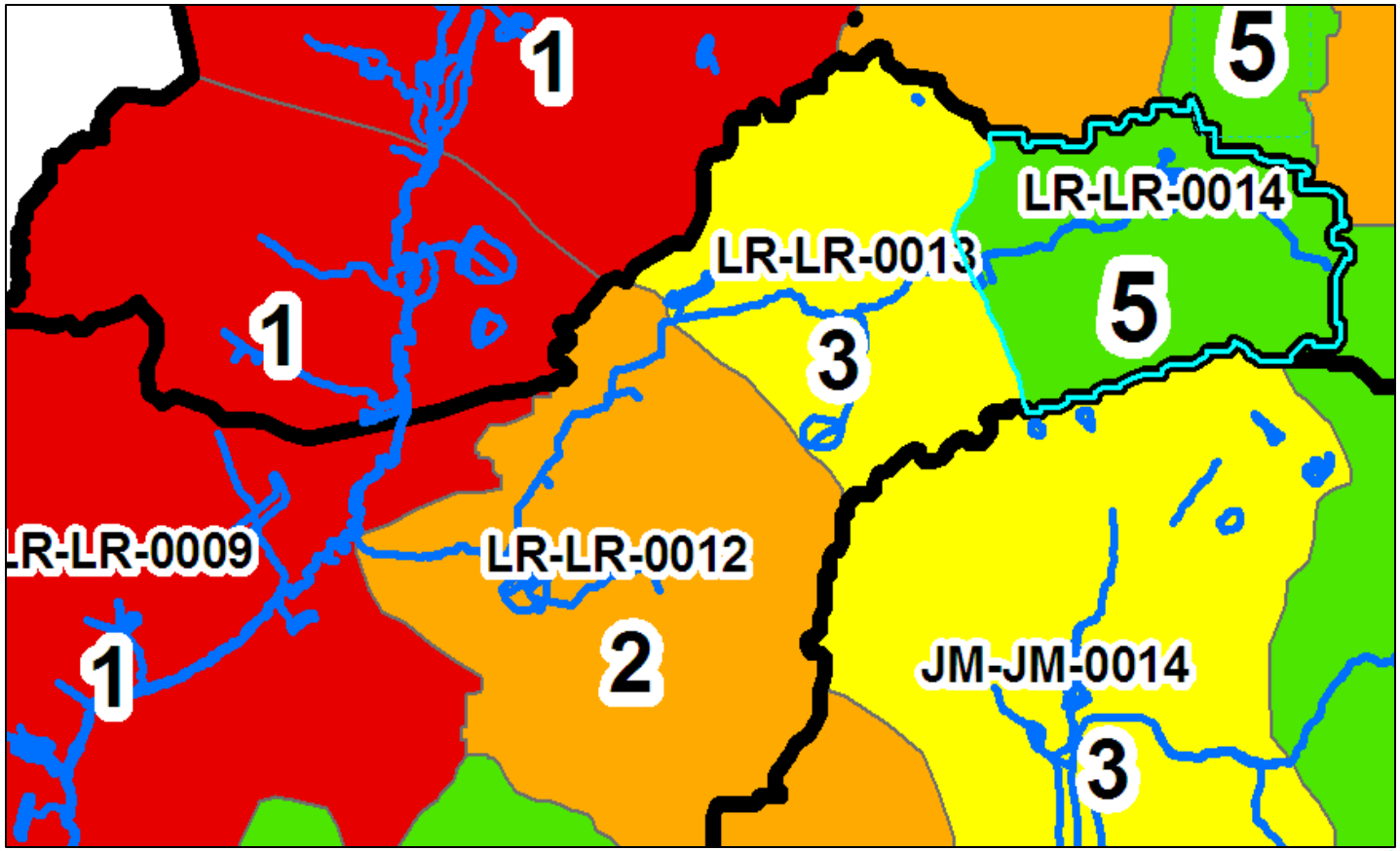
Project Number	Project Type	Subwatershed	Channelized/Piped Streams	Directly Connected Impervious Area	Impervious Surface	Stormwater Outfalls	Streambank Buffer Deficiency	TSS Concentration	TN Concentration	TP Concentration	Sum	Score
JM9200L	2	JM-JM-0001	-	-	-	-	-	5	5	5	15	5.00
JM9203L	2	JM-JM-0005	-	-	-	-	-	5	5	5	15	5.00
LR9520L	5	LR-LR-0012	-	4	5	5	-	3	3	3	23	3.83
LR9104L	1	LR-LR-0011	-	4	5	5	-	1	3	4	22	3.67
LR9105L	1	LR-LR-0009	-	4	5	5	-	2	3	3	22	3.67
LR9106L	1	LR-LR-0009	-	4	5	5	-	2	3	3	22	3.67
LR9108L	1	LR-LR-0012	-	4	5	5	-	3	3	2	22	3.67
LR9506L	5	LR-LR-0006	-	4	5	5	-	4	1	3	22	3.67
LR9508L	5	LR-LR-0007	-	5	5	5	-	3	2	2	22	3.67
LR9523L	5	LR-LR-0016	-	5	5	5	-	3	2	2	22	3.67
LR9117L	1	LR-LR-0020	-	4	5	5	-	2	3	2	21	3.50
LR9121L	1	LR-WS-0004	-	2	2	5	-	2	5	5	21	3.50
LR9503L	5	LR-LR-0004	-	4	5	5	-	3	2	2	21	3.50
LR9513L	5	LR-LR-0011	-	4	5	5	-	3	2	2	21	3.50
LR9515L	5	LR-LR-0009	-	4	5	5	-	3	2	2	21	3.50
LR9516L	5	LR-LR-0011	-	4	5	5	-	2	2	3	21	3.50
JM9500L	5	JM-PC-0002	-	2	2	1	-	5	5	5	20	3.33
LR9010S	0	LR-WS-0005	-	2	2	1	-	5	5	5	20	3.33
LR9113L	**1**	**LR-LR-0014**	**-**	**2**	**2**	**5**	**-**	**1**	**5**	**5**	**20**	**3.33**

Project Profile – Priority Subwatersheds



Project Profile - Sequencing

LR-LR-0014 is a headwater subbasin in Lower Little Rocky Run



Project Profile - Implementability

- The pond is a County maintained facility based on the County's StormNet data
- Located on HOA property with a County easement
- Existing access – no other constraints identified in field
- Based on the scoring criteria – this project was scored a 5 for implementability – County maintained facility where no other land rights are required

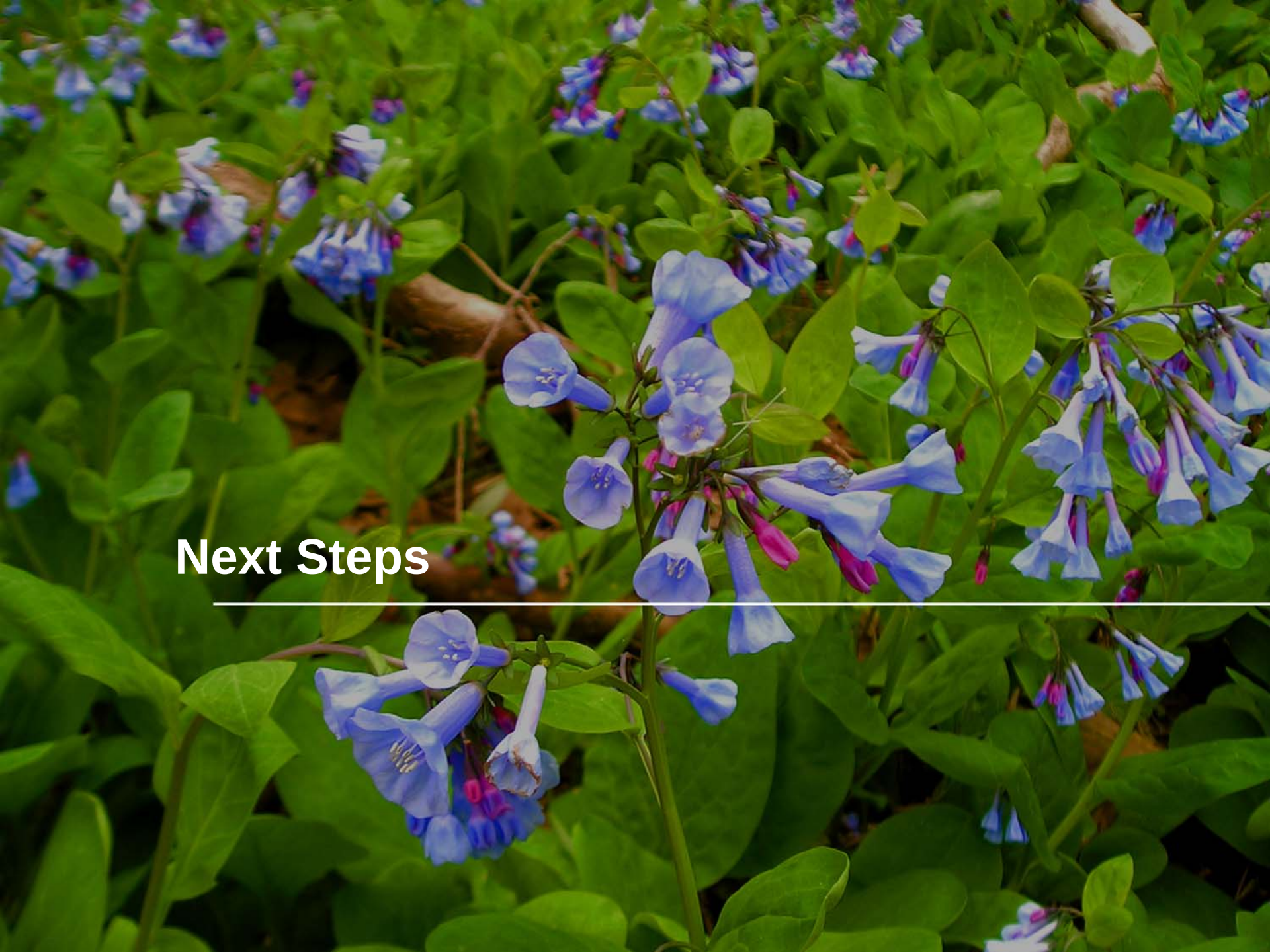
Project Profile – Project Score

Subwatershed	Project Number	Watershed Impact Indicators	Watershed Source Indicators	Location within Priority Subwatersheds	Sequencing	Implementability	Initial Ranking Composite Score	Project Rank
LR-LR-0007	LR9509L	4.40	5.00	4.00	5.00	3.00	4.52	1
LR-LR-0010	LR9512L	4.40	5.00	3.00	5.00	3.00	4.42	2
LR-LR-0021	LR9118L	4.71	3.83	3.00	5.00	5.00	4.36	3
LR-LR-0025	LR9529L	4.20	4.83	3.00	5.00	3.00	4.31	4
LR-LR-0010	LR9103L	3.86	4.33	3.00	5.00	5.00	4.26	5
LR-LR-0007	LR9510L	3.80	4.00	4.00	5.00	5.00	4.24	6
LR-LR-0010	LR9005S	4.43	5.00	3.00	5.00	1.00	4.23	7
LR-LR-0005	LR9504L	4.10	4.50	3.00	5.00	3.00	4.18	8
LR-LR-0011	LR9104L	3.57	3.67	5.00	5.00	5.00	4.17	9
LR-LR-0005	LR9100L	4.00	3.83	3.00	5.00	5.00	4.15	10
LR-LR-0014	**LR9113L**	**4.14**	**3.33**	**4.00**	**5.00**	**5.00**	**4.14**	**11**
LR-LR-0008	LR9102L	3.71	4.00	3.00	5.00	5.00	4.11	12
LR-LR-0012	LR9519L	4.20	4.83	5.00	2.00	5.00	4.11	13
LR-LR-0011	LR9516L	3.50	3.50	5.00	5.00	5.00	4.10	14
LR-LR-0013	LR9013S	4.71	4.83	5.00	3.00	1.00	4.06	15
JM-JM-0003	JM9202L	3.91	4.00	3.00	5.00	3.00	3.97	16
LR-LR-0024	LR9528L	3.20	3.33	5.00	5.00	5.00	3.96	17
LR-WS-0005	LR9010S	4.86	3.33	4.00	5.00	1.00	3.96	18
LR-WS-0002	LR9526L	4.30	4.83	5.00	2.00	3.00	3.94	19
LR-LR-0007	LR9201L	3.36	4.00	4.00	5.00	3.00	3.91	20

Project Comments: Breakout Groups

Project Comments

- Do you agree with the project ranking? Why or why not?
- Do you know of any conflicts that would prohibit certain projects?
- Do you and your community support the projects listed and if not, why not?



Next Steps

Next Steps

- Comments due to AMEC by March 1
- AMEC will prepare the draft watershed management plan
- Next meeting proposed for April or May to discuss the draft plan and to make plans for the Draft Watershed Management Plan forum

Thank you for attending!