MINUTES

North Fork Rivanna River Watershed Cleanup Plan/Implementation Plan

2nd Community Engagement Meeting

WHEN: September 24th, 2024; 1:00 – 3:00 p.m.

WHERE: Greene County Public Library

ATTENDEES:

- Bethany Houchens, Rivanna Solid Waste Authority (RSWA)
- Department of Environmental Quality
    - Kaitlin King – NPS Coordinator, Central Office/NRO
    - Madison Whitehurst – NPS Coordinator, Central Office/VRO
- Greg Wichelns, Culpeper Soil and Water Conservation District
- Isabelle O'Brien, Thomas Jefferson Planning District Commission
- John McCloskey, Greene County Planning Commission
- Joy Taylor, Twin Lakes Homeowners Association
- Laurel Williamson, Albemarle County
- Linda Copeland, Greene County
- Lisa Wittenborn, Rivanna Conservation Alliance
- Robert Runkle, Culpeper Soil and Water Conservation District
- Thomas Jefferson Soil and Water Conservation District
    - Courtney Harlow-Humphreys
    - Matt Carroll
- Wetland Studies and Solutions
    - Jacob Bellinger
    - Katie Shoemaker

Meeting purpose: To get feedback on the proposed BMPs and the associated implementation timeline for the North Fork Rivanna River Watershed's bacteria, sediment, and phosphorus impairments. The goal is to discuss the most reasonable timeline to stage BMPs, the number of BMPs needed, outreach/education, and partnerships to address these impairment sources and discuss the next steps with the community.

Each participant introduced themselves. Madison Whitehurst (DEQ) gave a brief introduction of the meeting purpose, gave an overview of Virginia's water quality process and the two TMDLs approved in the North Fork Rivanna River Watershed (approved in 2008 for bacteria and 2018 for benthic (sediment and phosphorous)) (see PowerPoint Presentation). After the project overview, the group discussed the

data on septic, pet waste, and agricultural best management practices to reduce the watershed's bacteria, phosphorus, and sediment loads. The discussions are below, with reference to the corresponding PowerPoint slide.

MEETING NOTES:

- Introductions (Slide 1)
- Overview of Cleanup Plan Development Process (Slide 3)
- Review of the TMDLs (Slides 4-8)
    - 2008 Bacteria TMDL
    - 2018 Benthic TMDL
        - Phosphorus and sediment impairments
- **Residential Septic** (Slides 10 – 13)
    - Overview:
        - Within the North Fork Rivanna River watershed, estimated totals (TMDL, 2019)
            - Slide 10: We do not have an accessible database on the age of the houses (the most recent is the US Census 1990), so to get failing systems, we used a geospatial analysis (3.3% failure rate).

Watershed	Total Septic Systems	Houses with Failing Septic Systems	Houses with Straight Pipes
Blue Run	409	14	0
Marsh Run	452	15	0
Preddy Creek	699	24	0
Preddy Creek North Branch	1775	60	0
Quarter Creek	905	31	0
NF Rivanna	2,341	80	0
Swift Run	700	23	0
Stanardsville Run	118	4	0
X Trib to Flat Branch	20	1	0

        - Proposed BMPs:
            - Slide 11: Add RB-2 (Connection to public sewer) because sewer systems are available in some neighborhoods in the watershed. There is already a sewer system in the watershed, Greene County Service Authority.
        - ? Around 50/50 on Replacements vs. Repairs
            - Slide 11: The community agreed with the 50/50 split on replacements and repairs.
        - ? Should any alternative systems be implemented, and if so, how much (10%)?
            - Slide 11: 10% isn't a bad estimate for alternative septic systems. In order to reach 100% reductions, we have to repair all failing septic systems within the watershed. In terms of RB-5, we should look at soil health. If there is a large area with non-percolating soil, we would want to prioritize RB-5s in those areas.

? How many septic pumpouts should we call for 1/3 of the households in each watershed?

- Slide 11: Front-weight the pump-outs in the first 2 stages but keep them throughout. The more pump-outs, the more effectively we can address the needed Excel bacteria reductions.

Sub-watershed	Practice	Cost-share code	Unit	Unit Cost	Stage 1	Stage 2	Stage 3	Stage 4	Cost
Blue Run	Septic Tank Pumpout	RB-1	Pump-out	$375	2	0	0	0	$750
	Septic Tank Repair	RB-3	Repair	$5,000	4	3	0	0	$35,000
	Septic System Replacement	RB-4	Systems	$8,000	4	3	0	0	$56,000
Marsh Run	Septic Tank Pumpout	RB-1	Pump-out	$375	2	0	0	0	$750
	Septic Tank Repair	RB-3	Repair	$5,000	4	4	0	0	$40,000
	Septic System Replacement	RB-4	Systems	$8,000	3	4	0	0	$56,000
Preddy Creek	Septic Tank Pumpout	RB-1	Pump-out	$375	7	8	0	0	$5,625
	Septic Tank Repair	RB-3	Repair	$5,000	6	6	0	0	$60,000
	Septic System Replacement	RB-4	Systems	$8,000	6	6	0	0	$96,000
Preddy Creek North Branch	Septic Tank Pumpout	RB-1	Pump-out	$375	7	8	0	0	$5,625
	Septic Tank Repair	RB-3	Repair	$5,000	15	15	0	0	$150,000
	Septic System Replacement	RB-4	Systems	$8,000	15	15	0	0	$240,000
								Total Cost	$745,750

Sub-watershed	Practice	Cost-share code	Unit	Unit Cost	Stage 1	Stage 2	Stage 3	Stage 4	Cost
Quarter Creek	Septic Tank Pumpout	RB-1	Pump-out	$375	25	26	17	17	$31,875
	Septic Tank Repair	RB-3	Repair	$5,000	8	8	0	0	$80,000
	Septic System Replacement	RB-4	Systems	$8,000	8	7	0	0	$120,000
North Fork Rivanna	Septic Tank Pumpout	RB-1	Pump-out	$375	18	19	29	29	$35,625
	Septic Tank Repair	RB-3	Repair	$5,000	20	20	0	0	$200,000
	Septic System Replacement	RB-4	Systems	$8,000	20	20	0	0	$320,000
Swift Run	Septic Tank Pumpout	RB-1	Pump-out	$375	25	25	0	0	$18,750
	Septic Tank Repair	RB-3	Repair	$5,000	6	6	0	0	$60,000
	Septic System Replacement	RB-4	Systems	$8,000	5	6	0	0	$88,000
Stanardsville Run	Septic Tank Pumpout	RB-1	Pump-out	$375	6	0	0	0	$2,250
	Septic Tank Repair	RB-3	Repair	$5,000	2	0	0	0	$10,000
	Septic System Replacement	RB-4	Systems	$8,000	2	0	0	0	$16,000
X Trib to Flat Branch	Septic Tank Pumpout	RB-1	Pump-out	$375	2	0	0	0	$750
	Septic Tank Repair	RB-3	Repair	$5,000	1	0	0	0	$5,000
								Total Cost	$988,250

- Overall Summary of BMPs Needed:

Practice	Cost-share code	Unit	Unit Cost	Total	Cost
Septic Tank Pumpout	RB-1	Pump-out	$375	272	$102,000
Septic Tank Repair	RB-3	Repair	$5,000	128	$640,000
Septic System Replacement	RB-4	Systems	$8,000	124	$992,000
				Total Cost	**$1,734,000**

- **Pet Waste** (Slides 14-16)
  - Proposed BMPs:
    - Pet Waste Management Plan is applied throughout each stage.

    ? Should there be more disposal stations and composters? Or should there be less?

    - Slide 14: Putting more into pet disposal stations than the composters were suggested. Stakeholders mentioned that the composters don't work well, and disposal stations will likely be the more practical route. Also, increased education programs around pet waste and proper disposal was requested.

Sub-watershed	Practice	Unit	Unit Cost	Stage 1	Stage 2	Stage 3	Stage 4	Cost
Blue Run	Pet Waste Disposal Station	System	$2,000	2	0	0	0	$4,000
	Pet Waste Composter	System	$400	3	0	0	0	$1,200
Marsh Run	Pet Waste Disposal Station	System	$2,000	3	0	0	0	$6,000
	Pet Waste Composter	System	$400	3	0	0	0	$1,200
Preddy Creek	Pet Waste Management Plan	Program	$4,000		1			$16,000
	Pet Waste Disposal Station	System	$2,000	2	0	0	0	$4,000
	Pet Waste Composter	System	$400	4	0	0	0	$1,600
Preddy Creek North Branch	Pet Waste Disposal Station	System	$2,000	4	4	0	0	$16,000
	Pet Waste Composter	System	$400	5	5	0	0	$4,000
							Total Cost	$54,000

Sub-watershed	Practice	Unit	Unit Cost	Stage 1	Stage 2	Stage 3	Stage 4	Cost
Quarter Creek	Pet Waste Disposal Station	System	$2,000	2	0	0	0	$4,000
	Pet Waste Composter	System	$400	4	0	0	0	$1,600
North Fork Rivanna	Pet Waste Management Plan	Program	$4,000		1			$16,000
	Pet Waste Disposal Station	System	$2,000	5	5	0	0	$20,000
	Pet Waste Composter	System	$400	6	6	0	0	$4,800
Swift Run	Pet Waste Disposal Station	System	$2,000	4	0	0	0	$8,000
	Pet Waste Composter	System	$400	7	0	0	0	$2,800
Stanardsville Run	Pet Waste Disposal Station	System	$2,000	1	0	0	0	$2,000
	Pet Waste Composter	System	$400	2	0	0	0	$800
X Trib to Flat Branch	Pet Waste Disposal Station	System	$2,000	1	0	0	0	$2,000
	Pet Waste Composter	System	$400	2	0	0	0	$800
							Total Cost	$62,800

  - Overall Summary of BMPs Needed

Practice	Unit	Unit Cost	Total	Cost
Pet Waste Disposal Station	System	$2,000	33	$66,000
Pet Waste Composter		$400	47	$18,800
Pet Waste Management Plan	Program	$4,000	2	$32,000
			Total Cost	**$116,800**

- **Agricultural** (Slides 17-27)
  - Proposed BMPs:
    - Exclusion practices were distributed evenly over Stages 1 and 2, or 60% were in Stages 1 and 2, and 40% were in Stages 3 and 4.
    - Fencing needs include what has been done since the TMDL was completed in 2018.
  - Slide 17: Albemarle County has an ordinance of 100 feet for a buffer. The SL-6N has a maximum buffer of 25 feet, and the SL-6W is 35 feet or greater. VACS and the NPS program never go wider than a 50-foot buffer.
  - Slide 27: They would like to add FR-3 (Tree Planting) and streambank stabilization. Also, the WQ-12 (Roof Runoff Management) BMP number is low. One SL-6 system equals 2200 linear feet.

? What percentage of the fencing should be SL-6N? 5%? 10%?

Sub-watershed	Approximate fencing installed to date (feet)	Fencing Still Needed			
		Stage 1	Stage 2	Stage 3	Stage 4
Blue Run	0	2939	2938	0	0
Marsh Run	6201	1044	1043	0	0
Preddy Creek	11117	8198	8197	0	0
Preddy Creek North Branch	0	2017	2016	0	0
Quarter Creek	0	1302	1302	0	0
North Fork Rivanna	6057	22967	22967	15312	15312
Swift Run	40214	4749	4749	0	0
Stanardsville Run	0	760	0	0	0
X Trib to Flat Branch	0	0	0	0	0

Sub-watershed	SL-6W or CRSL-6	
	feet	systems
Blue Run	5877	2.7
Marsh Run	2087	0.95
Preddy Creek	16395	7.4
Preddy Creek North Branch	4033	1.8
Quarter Creek	2604	1.2
North Fork Rivanna	76558	34.8
Swift Run	9498	4.3
Stanardsville Run	760	0.35

- **Blue Run**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Livestock Exclusion	Stream Exclusion With Grazing Land Management	SL-6W, CRSL-6	System	$34,000	1.4	1.3	0	0	2.7	$91,800
Cropland	Long Term Vegetative Cover on Cropland	SL-1	Acres	$150	2	3	0	0	5	$750
	Cover Crop	SL-8B/8H		$80	3	4	0	0	7	$560
	Sediment Retention , Erosion, or Water Control Structures	WP-1	System	$150	2	3	0	0	5	$750
Pasture	Afforestation of erodible pasture	FR-1	Acres Treated	$500	9	9	12	12	42	$21,000
	Permanent vegetative cover on critical areas	SL-11		$1,800	40	40	60	60	200	$360,000
	Improved pasture management	SL-10		$75	120	120	80	80	400	$30,000
	Extensions of Watering System	SL-7		$20,000	6	6	8	8	28	$560,000
	Sediment Retention , Erosion, or Water Control Structures	WP-1		$150	75	75	112.5	112.5	375	$56,250
	Animal waste control facilities	WP-4	System	$300,000	1	0	0	0	1	$300,000
	Roof Runoff Management	WQ-12		$1,450	1	0	0	0	1	$1,450
Stream Bank	Stream Restoration	N/A	Feet	$1,000	125	0	0	0	125	$125,000
									Total Cost	$1,547,560

- **Marsh Run**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Livestock Exclusion	Stream Exclusion With Grazing Land Management	SL-6W, CRSL-6	Systems	$34,000	0.47	0.47	0	0	0.94	$31,960
Pasture	Afforestation of erodible pasture	FR-1	Acres Treated	$500	6	6	8	8	28	$14,000
	Permanent vegetative cover on critical areas	SL-11		$1,800	13	14	20	20	67	$120,600
	Improved pasture management	SL-10		$75	135	135	90	90	450	$33,750
	Extension of Watering System	SL-7		$20,000	10	11	7	7	35	$700,000
	Sediment Retention , Erosion, or Water Control Structures	WP-1		$150	80	80	120	120	400	$60,000
	Animal waste control facilities	WP-4	Systems	$300,000	1	0	0	0	1	$300,000
	Roof Runoff Management	WQ-12		$1,450	1	0	0	0	1	$1,450
Stream Bank	Stream Restoration	N/A	Feet	$1,000	70	0	0	0	70	$70,000
									Total Cost	$1,331,760

- **Preddy Creek**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Livestock Exclusion	Stream Exclusion With Grazing Land Management	SL-6W, CRSL-6	Systems	$34,000	3.7	3.7	0	0	7.4	$251,600
Cropland	Long Term Vegetative Cover on Cropland	SL-1	Acres Treated	$150	4	4	5	5	18	$2,700
	Cover Crop	SL-8B/8H		$80	5	5	7.5	7.5	25	$2,000
	Sediment Retention, Erosion, or Water Control Structures	WP-1		$150	6.5	6.5	10	10	33	$4,950
	Afforestation of erodible cropland	FR-1		$500	5.2	0	0	0	5.2	$2,600
Pasture	Afforestation of erodible pasture	FR-1	Acres Treated	$500	115	115	172.5	172.5	575	$287,500
	Permanent vegetative cover on critical areas	SL-11		$1,800	83	83	124	124	414	$745,200
	Improved pasture management	SL-10		$75	810	810	540	540	2700	$202,500
	Extension of Watering System	SL-7		$20,000	5	5	0	0	10	$200,000
	Sediment Retention , Erosion, or Water Control Structures	WP-1		$150	346	346	519	519	1730	$259,500
	Animal waste control facilities	WP-4	Systems	$300,000	1	0	0	0	1	$300,000
	Roof Runoff Management	WQ-12		$1,450	1	0	0	0	1	$1,450
Harvested	Afforestation of Crop, Hay, and Pasture	FR-1	Acres	$500	3.6	3.6	5.3	5.3	17.8	$8,900
Barren	Farm Road or Heavy Animal Travel Lane Stabilization	SL-11B	Acres	?	0.01	0	0	0	0.01	?
Stream Bank	Stream Restoration	N/A	Feet	$1,000	424	424	283	283	1414	$1,414,000
									Total Cost	$3,682,900

- **Preddy Creek North Branch**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Livestock Exclusion	Stream Exclusion With Grazing Land Management	SL-6W, CRSL-6	System	$34,000	0.91	0.91	0	0	1.82	$61,880
Cropland	Long Term Vegetative Cover on Cropland	SL-1	Acres Treated	$150	2	2	0	0	4	$600
	Cover Crop	SL-8B/8H		$80	2	2	0	0	4	$320
	Sediment Retention, Erosion, or Water Control Structures	WP-1		$150	3.5	0	0	0	3.5	$525
Pasture	Afforestation of erodible pasture	FR-1	Acres Treated	$500	59	59.5	89	89	296.5	$148,250
	Permanent vegetative cover on critical areas	SL-11		$1,800	21	21	32	32	106	$190,800
	Improved pasture management	SL-10								
	Extension of Watering System	SL-7		$75	135	135	90	90	450	$33,750
	Sediment Retention, Erosion, or Water Control Structures	WP-1		$20,000	5	0	0	0	5	$100,000
				$150	70	70	105	105	350	$52,500
	Animal waste control facilities	WP-4	Systems	$300,000	1	0	0	0	1	$300,000
	Roof Runoff Management	WQ-12		$1,450	1	0	0	0	1	$1,450
Harvested	Afforestation of Crop, Hay, and Pasture	FR-1	Acres	$500	31	31	46	46	154	$77,000
Barren	Farm Road or Heavy Animal Travel Lane Stabilization	SL-11B	Acres	?	0.31	0	0	0	0.31	?
Stream Bank	Stream Restoration	N/A	Feet	$1,000	391	392	261	261	1305	$1,305,000
									Total Cost	$2,272,075

- **Quarter Creek**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Livestock Exclusion	Stream Exclusion With Grazing Land Management	SL-6W, CRSL-6	Systems	$34,000	0.6	0.6	0	0	1.2	$40,800
Pasture	Afforestation of erodible pasture	FR-1	Acres Treated	$500	7	8	12	12	39	$19,500
	Permanent vegetative cover on critical areas	SL-11		$1,800	16	16	24	24	80	$144,000
	Improved pasture management	SL-10		$75	78	78	52	52	260	$19,500
	Extension of Watering System	SL-7		$20,000	6	6	0	0	12	$240,000
	Sediment Retention, Erosion, or Water Control Structures	WP-1		$150	50	50	75	75	250	$37,500
	Animal waste control facilities	WP-4	Systems	$300,000	1	0	0	0	1	$300,000
	Roof Runoff Management	WQ-12		$1,450	1	0	0	0	1	$1,450
Harvested	Afforestation of erodible pasture	FR-1	Acres	$500	3.5	0	0	0	3.5	$1,750
Stream Bank	Stream Restoration	N/A	Feet	$1,000	285	0	0	0	285	$285,000
									Total Cost	$1,089,500

- **NF Rivanna**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Livestock Exclusion	Stream Exclusion With Grazing Land Management	SL-6W, CRSL-6	Systems	$34,000	10.4	10.4	7	7	34.8	$1,183,200
Cropland	Long Term Vegetative Cover on Cropland	SL-1	Acres Treated	$150	5	5	7.5	7.5	25	$3,750
	Cover Crop	SL-8B/8H		$80	20	20	30	30	100	$8,000
	Sediment Retention, Erosion, or Water Control Structures	WP-1		$150	20	20	30	30	100	$15,000
	Afforestation of erodible pasture	FR-1		$500	3	3	4.5	4.5	15	$7,500
Pasture	Afforestation of erodible pasture	FR-1	Acres Treated	$500	140	140	210	210	700	$350,000
	Permanent vegetative cover on critical areas	SL-11		$1,800	160	160	240	240	800	$1,440,000
	Improved pasture management	SL-10		$75	1485	1485	990	990	4950	$371,250
	Extension of Watering System	SL-7		$20,000	13.5	13.5	9	9	45	$900,000
	Sediment Retention , Erosion, or Water Control Structures	WP-1		$150	730.5	730.5	1097	1097	3655	$548,250
	Animal waste control facilities	WP-4	Systems	$300,000	4	0	0	0	4	$1,200,000
	Roof Runoff Management	WQ-12		$1,450	3	0	0	0	3	$4,350
									Total Cost	$6,031,300

- **Swift Run**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Livestock Exclusion	Stream Exclusion With Grazing Land Management	SL-6W, CRSL-6	Systems	$34,000	2.15	2.15	0	0	4.3	$146,200
Cropland	Long Term Vegetative Cover on Cropland	SL-1	Acres Treated	$150	7.5	7.5	0	0	15	$2,250
	Cover Crop	SL-8B/8H		$80	14.5	14.5	21	21	71	$5,680
	Sediment Retention , Erosion, or Water Control Structures	WP-1		$150	12.5	12.5	20	20	65	$9,750
Pasture	Afforestation of erodible pasture	FR-1	Acres Treated	$500	67	67	100.5	100.5	335	$167,500
	Permanent vegetative cover on critical areas	SL-11		$1,800	78	78	117	117	390	$702,000
	Improved pasture management	SL-10		$75	450	450	300	300	1500	$112,500
	Extension of Watering System	SL-7		$20,000	6	6	0	0	12	$240,000
	Sediment Retention , Erosion, or Water Control Structures	WP-1		$150	220	220	330	330	1100	$165,000
	Animal waste control facilities	WP-4	Systems	$300,000	1	0	0	0	1	$300,000
	Roof Runoff Management	WQ-12		$1,450	1	0	0	0	1	$1,450
Harvested	Afforestation of erodible pasture	FR-1	Acres	$500	1.94	0	0	0	1.94	$970
Stream Bank	Stream Restoration	N/A	Feet	$1,000	701	701	468	468	2338	$2,338,000
									Total Cost	$4,191,300

- **Standardsville Run**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Livestock Exclusion	Stream Exclusion With Grazing Land Management	SL-6W, CRSL-6	Systems	$34,000	0.35	0	0	0	0.35	$11,900
Cropland	Long Term Vegetative Cover on Cropland	SL-1	Acres	$150	0.2	0.1	0	0	0.3	$45
	Cover Crop	SL-8B/8H		$80	0.1	0	0	0	0.1	$8
Pasture	Afforestation of erodible pasture	FR-1	Acres Treated	$500	5	5	7.5	7.5	25	$12,500
	Permanent vegetative cover on critical areas	SL-11		$1,800	8.5	8.5	13	13	43	$77,400
	Improved pasture management	SL-10		$75	33	33	22	22	110	$8,250
	Extension of Watering System	SL-7		$20,000	7	7	4.5	4.5	23	$460,000
	Sediment Retention , Erosion, or Water Control Structures	WP-1		$150	26	26	39	39	130	$19,500
	Animal waste control facilities	WP-4	Systems	$300,000	1	0	0	0	1	$300,000
	Roof Runoff Management	WQ-12		$1,450	1	0	0	0	1	$1,450
Stream Bank	Stream Restoration	N/A	Feet	$1,000	49	0	0	0	49	$49,000
									Total Cost	$940,053

- **X Trib to Flat Branch**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Pasture	Afforestation of erodible pasture	FR-1	Acres Treated	$500	0.2	0.2	0	0	0.4	$200
	Permanent vegetative cover on critical areas	SL-11		$1,800	0.65	0	0	0	0.65	$1,170
	Improved pasture management	SL-10		$75	1.7	0	0	0	1.7	$128
	Extension of watering system	SL-7		$20,000	0.7	0	0	0	0.7	$14,000
	Animal waste control facilities	WP-4	Systems	$300,000	1	0	0	0	1	$300,000
	Roof Runoff Management	WQ-12		$1,450	1	0	0	0	1	$1,450
Barren	Farm Road or Heavy Animal Travel Lane Stabilization	SL-11B	Acres	?	0.01	0	0	0	0.01	?
Stream Bank	Stream Restoration	N/A	Feet	$1,000	21	0	0	0	21	$21,000
									Total Cost	$337,948

- Overall Summary of BMPs Needed:

BMP Type	Description	BMP Code	Units	Unit Cost	Total	Cost
Livestock Exclusion	Stream Exclusion With Grazing Land Management	SL-6W, CRSL-6	Systems	$34,000	53.51	$1,819,340
Cropland	Long Term Vegetative Cover on Cropland	SL-1	Acres Treated	$150	67.3	$10,095
	Cover Crop	SL-8B/8H		$80	207.1	$16,568
	Sediment Retention , Erosion, or Water Control Structures	WP-1		$150	206.5	$30,975
	Afforestation of erodible cropland	FR-1		$500	20.2	$10,100
Pasture	Afforestation of erodible pasture	FR-1	Acres Treated	$500	2040.9	$1,020,450
	Permanent vegetative cover on critical areas	SL-11		$1,800	2100.65	$3,781,170
	Improved pasture management	SL-10		$75	10821.7	$811,628
	Extension of Watering System	SL-7		$20,000	170.7	$3,414,000
	Sediment Retention , Erosion, or Water Control Structures	WP-1		$150	7990	$1,198,500
	Animal waste control facilities	WP-4	Systems	$300,000	12	$3,600,000
	Roof Runoff Management	WQ-12		$1,450	11	$15,950
Harvested	Afforestation of Crop, Hay, and Pasture Land	FR-1	Acres	$500	177.24	$88,620
Stream Bank	Stream Restoration	N/A	Feet	$1,000	5607	$5,607,000
					Total Cost	**$21,424,396**

- **Urban** (Slides 28-37)
  - Proposed BMPs:
    - <u>Slide 37:</u> Add urban tree planting and impervious surface removal BMPs. Separate bioretention and rain gardens; they are two separate categories. Conservation Landscaping includes a wide variety of BMPs. Stakeholders collectively agreed that it would be hard to meet the outlined goals.
      - **Blue Run**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Urban	Bioretention	N/A	Acres Treated	$10,000	14	14	21	21	70	$700,000
	Permeable Pavement	N/A		$240,000	4	4	7	7	22	$5,280,000
	Grass Channels	N/A		$18,150	3.9	3.9	2.6	2.6	13	$235,950
	Conservation Landscaping	N/A	Acres	$3,500	18	18	26	26	88	$308,000
	Rainwater Harvesting	N/A	Acres Treated	$100,000	2.8	2.9	4.2	4.2	14.1	$1,410,000
									Total Cost	$7,933,950

      - **Marsh Run**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Urban	Bioretention	N/A	Acres Treated	$10,000	5	5	7	7	24	$240,000
	Permeable Pavement	N/A		$240,000	2	2	3	3	10	$2,400,000
	Grass Channels	N/A		$18,150	5.5	0	0	0	5.5	$99,825
	Conservation Landscaping	N/A	Acres	$3,500	28	29	44	44	145	$507,500
	Rainwater Harvesting	N/A	Acres Treated	$100,000	3	0	0	0	3	$300,000
									Total Cost	$3,547,325

      - **Preddy Creek**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Urban	Bioretention	N/A	Acres Treated	$10,000	39.8	39.8	59.7	59.7	199	$1,990,000
	Permeable Pavement	N/A		$240,000	2	2	0	0	4	$960,000
	Grass Channels	N/A		$18,150	5	5	0	0	10	$181,500
	Bioswale	N/A		$42,000	5	5	0	0	10	$420,000
	Conservation Landscaping	N/A	Acres	$3,500	130	130	195	195	650	$2,275,000
	Rainwater Harvesting	N/A	Acres Treated	$100,000	1	1	0	0	2	$200,000
									Total Cost	$6,026,500

- **Preddy Creek North Branch**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Urban	Bioretention	N/A	Acres Treated	$10,000	70	70	165	165	470	$4,700,000
	Permeable Pavement	N/A		$240,000	7	7	11	11	36	$8,640,000
	Grass Channels	N/A		$18,150	3.5	3.5	2	2	11	$199,650
	Bioswale	N/A		$42,000	5	5	0	0	10	$420,000
	Conservation Landscaping	N/A	Acres	$3,500	150	150	225	225	750	$2,625,000
	Rainwater Harvesting	N/A	Acres Treated	$100,000	4.5	4.5	6	6	21	$2,100,000
									Total Cost	$18,684,650

- **Quarter Creek**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Urban	Bioretention	N/A	Acres Treated	$10,000	18	18	27	27	90	$900,000
	Permeable Pavement	N/A		$240,000	5	5	7	7	24	$5,760,000
	Grass Channels	N/A		$18,150	6.2	6.2	4	4	20.4	$370,260
	Conservation Landscaping	N/A	Acres	$3,500	40	40	60	60	200	$700,000
	Rainwater Harvesting	N/A	Acres Treated	$100,000	8	8	10	10	36	$3,600,000
									Total Cost	$11,330,260

- **NF Rivanna**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Urban	Bioretention	N/A	Acres Treated	$10,000	48	48	71	71	238	$2,380,000
	Grass Channels	N/A		$18,150	6	6	4	4	20	$363,000
	Conservation Landscaping	N/A	Acres	$3,500	180	180	270	270	900	$3,150,000
									Total Cost	$5,893,000

- **Swift Run**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Urban	Bioretention	N/A	Acres Treated	$10,000	27	27	41	41	136	$1,360,000
	Permeable Pavement	N/A		$240,000	3.2	0	0	0	3.2	$768,000
	Grass Channels	N/A		$18,150	1.7	0	0	0	1.7	$30,855
	Conservation Landscaping	N/A	Acres	$3,500	70	70	105	105	350	$1,225,000
	Rainwater Harvesting	N/A	Acres Treated	$100,000	1.5	0	0	0	1.5	$150,000
									Total Cost	$3,533,855

- **Standardsville Run**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Urban	Bioretention	N/A		$10,000	14	14	22	22	72	$720,000
	Permeable Pavement	N/A	Acres Treated	$240,000	3	3	4	4	14	$3,360,000
	Grass Channels	N/A		$18,150	6	6	4	4	20	$363,000
	Conservation Landscaping	N/A	Acres	$3,500	28.5	28.5	44	44	145	$507,500
	Rainwater Harvesting	N/A	Acres Treated	$100,000	4	4	5	5	18	$1,800,000
									Total Cost	$6,750,500

- **X Trib to Flat Branch**

BMP Type	Description	BMP Code	Units	Unit Cost	Extent					Cost
					Stage 1	Stage 2	Stage 3	Stage 4	Total	
Urban	Bioretention	N/A		$10,000	6	6	10	10	32	$320,000
	Permeable Pavement	N/A	Acres Treated	$240,000	3	3	5	5	16	$3,840,000
	Grass Channels	N/A		$18,150	4	4	0	0	8	$145,200
	Conservation Landscaping	N/A	Acres	$3,500	12	13	19	19	63	$220,500
	Rainwater Harvesting	N/A	Acres Treated	$100,000	4.4	0	0	0	4.4	$440,000
									Total Cost	$4,965,700

- Overall Summary of BMP Needs:

BMP Type	Description	BMP Code	Units	Unit Cost	Total	Cost
Urban	Bioretention	N/A	Acres Treated	$10,000	1331	$13,310,000
	Permeable Pavement	N/A		$240,000	129.2	$31,008,000
	Grass Channels	N/A		$18,150	109.6	$1,989,240
	Bioswale	N/A		$42,000	20	$840,000
	Conservation Landscaping	N/A	Acres	$3,500	3291	$11,518,500
	Rainwater Harvesting	N/A	Acres Treated	$100,000	100	$10,000,000
					Total Cost	**$68,665,740**

- **Overall BMP Summary** (Slide 38)
    - Total BMP implementation costs by stage:

BMP Application	Cost by Stage				Total
	Stage 1 (Years 1-5)	Stage 2 (Years 6-10)	Stage 3 (Years 11-15)	Stage 4 (16-20)	
Agricultural	$9,026,310	$4,747,825	$3,825,130	$3,825,130	$21,424,396
Residential	$16,754,070	$14,903,390	$19,413,540	$19,445,540	$70,516,540
Total Estimated Cost	$25,780,381	$19,651,215	$23,238,670	$23,270,670	$91,940,936

- **TA Assistance** (Slide 39)
    - One (1) full-time employee (FTE) for each SWCD (2 total) for Ag BMPs?
    - Slide 39: Would need support for each sector: Ag, Septic, and Uban
    - One (1) full-time employee (FTE) for each SWCD (2 total) for Residential Septic/Pet Waste BMPs?
- **Questions:**
    - Contact: Madison Whitehurst, madison.whitehurst@deq.virginia.gov or 804-489-8796
- **Additional materials:**
    - Meeting materials will be posted here under the North Fork Rivanna River Watershed drop-down: Implementation Plans Under Development | Virginia DEQ.
    - Environmental Data Mapper, an interactive tool using DEQ data - Environmental Data Mapper (virginia.gov)
        - You can use this tool to determine where Implementation Plans have been developed. Where water quality monitoring is occurring and the most recent data. And look at developed TMDLs and where potential IPs can be implemented.
    - Information on DEQ's Nonpoint Source Management program - Nonpoint Source Management | Virginia DEQ