Fairfax County 2018 MS4 Program Plan and Annual Report

Appendix R22

TMDL Action Plan Implementation Updates Other Than Chesapeake Bay

VSMP Permit Number VA0088587
9-28-2018

Local TMDL Action Plan Implementation

Benthic TMDL Action Plan

The Benthic TMDL Action Plan includes Stream Restoration Projects and Stormwater Retrofit Projects. Construction was completed on the Colvin Run Phase 1 stream restoration project on August 9, 2017. See the updated TMDL Action Plan tables in Appendix 22.1 for detail about this project. In addition, the Wolftrap Creek Phase 2 stream restoration project is currently in construction. All projects listed in the Benthic TMDL Action Plan will have been fulfilled once the Wolftrap Creek Phase 2 stream restoration is completed.

The County continues to implement projects within the affected watersheds in addition to those listed in the Benthic TMDL Action Plan. These are also listed in the updated TMDL Action Plan tables see Appendix 22.1.

The status of other implementation items from the Benthic TMDL Action Plan are summarized below:

Implementation Item	Description	Implementation Status
MS4 Program Plan	The County will continue to implement the MS4 Program Plan, including elements related to sediment, in accordance with the schedule provided for in the MS4 Program Plan.	The County continues to implement its MS4 Program Plan.
Chesapeake Bay TMDL Action Plan	The County will continue to leverage the projects selected to meet the Chesapeake Bay TMDL Action Plan to reduce sediment in the benthic TMDL watersheds. The County's project selection SOP includes a prioritization criteria for local TMDLs.	The County continues to implement the Chesapeake Bay TMDL Action Plan.
County Owned or Operated Property	The County will consider retrofits to County owned or operated property during the development of its annual list of potential projects. Projects may be drawn from the watershed management plans, assessment of County owned or operated property, or other sources as appropriate.	The project identification and assessment process occurs annually in accordance with the County's Stormwater Planning Project Selection SOP. Projects on County property currently in construction: • Flatlick Phase III stream restoration in the Cub Run watershed • Brittenford Drive stream restoration in the Difficult Run watershed

Implementation Item	Description	Implementation Status
Watershed-Specific Project Implementation	The County will implement at least one project in each of the TMDL watersheds from the summary of potential projects contained in Appendix P2 of the County's 2016 MS4 Program Plan and Annual Report.	Bull Run: The County has implemented the Flatlick Phase I project from Appendix P2. Difficult Run: The County has implemented the Penderbrook constructed wetland project from Appendix P2. Popes Head Creek: The County has initiated the design on two projects for implementation in this watershed.
Enhanced Education, Outreach, and Training	The County will continue to implement enhanced education, outreach, and training for sediment in accordance with the MS4 permit and the MS4 Program Plan.	The County is implementing its enhanced education, outreach and training for sediment in accordance with the MS4 Program Plan.

Bacteria TMDL Action Plan

The status of implementation items from the Bacteria TMDL Action Plan are summarized below:

Implementation Item	Description	Implementation Status
Dog Park Site Assessment	Conduct a walk-through of the dog parks at Baron Cameron and Mason District parks to assess the effectiveness of implemented pet waste management strategies.	The dog parks were assessed on June 1, 2018. The dog parks had few isolated pet waste deposits, indicating that most pet owners were cleaning up after their pet. The parks were well-signed with respect to pet waste disposal. Options for locations of the waste disposal bins at the Reston Dog Park will be discussed with FCPA to better facilitate proper disposal.
Educational inserts in dog license renewal mailers	Include educational inserts about proper disposal of pet waste in dog license renewal mailers.	The insert has been prepared and is sent annually with the dog license renewals in November.

PCB TMDL Action Plan

The status of implementation items from the PCB TMDL Action Plan are summarized below:

Implementation Item	Description	Implementation Status
IHRR facility identification modification	The process of identifying IHRR facilities for inspection will be modified in PY3 to include SIC codes from Virginia DEQ's 2016 document titled "The Relationship between Polychlorinated Biphenyls (PCBs), VPDES Wastewater/Stormwater Facilities, Stormwater Industrial General Permitted Facilities (ISWGPs), and the Standard Industrial Classification System (SIC)".	Virginia DEQ's 2016 document titled "The Relationship between Polychlorinated Biphenyls (PCBs), VPDES Wastewater/Stormwater Facilities, Stormwater Industrial General Permitted Facilities (ISWGPs), and the Standard Industrial Classification System (SIC)" identifies specific SIC codes that are more likely to be associated with the presence of PCBs. An analysis was performed in the reporting period to identify facilities in the county MS4 associated with these SIC codes. The analysis identified those facilities that are already included on the IHRR facility inspection list, those not currently on the IHRR list, and those that are specifically located in the PCB TMDL direct drainage areas. Program staff are in the process of reviewing standard operating procedures and considering modifications to address the facilities identified.
Enhanced training on recognition and reporting of illicit discharges by field personnel	Existing training material will be revised in PY3 to include information relevant to PCB discharges. The training will be implemented in PY4 as part of the ongoing biennial training program.	The on-line Employee University training material was revised in the reporting year to include information related to PCB discharges. The revised slides are provided in Appendix 22.2.
Enhanced training on good housekeeping and pollution prevention practices	Training materials will be revised in PY3 to include information relevant to potential PCB sources and steps to take if a source of PCBs is discovered at a county property. The training will be implemented in PY4 as part of the ongoing biennial training program.	The on-line Employee University training material was revised in the reporting year to include information related to PCB discharges. The revised slides are provided in Appendix 22.2.

Appendix 22.1 - Projects

Fairfax County Benthic TMDL Status Update
(July 1, 2017 - June 30, 2018)

Fairfax County Sediment TMDL Tracking Ledger

Bull Run Stream Restoration	TSS lbs/year	
Constructed	1,731,497.09	
Bull Run		
Cub Run	1,731,497.09	
Johnny Moore Creek		
Little Rocky Run		
Popes Head Creek		
Under Construction	0	
Bull Run		
Cub Run	-	
Johnny Moore Creek		
Little Rocky Run		
Popes Head Creek		
Total	1,731,497.09	Credit Sharing
Fairfax	1,731,497.09	100.0%
Herndon	-	0.0%
Vienna	-	0.0%

Bull Run Structural Retrofits	TSS lbs/year	
Constructed	192,669.77	
Bull Run	20,236.29	
Cub Run	131,420.34	
Johnny Moore Creek		
Little Rocky Run		
Popes Head Creek	41,013.14	
Under Construction	-	
Bull Run	-	
Cub Run	-	
Johnny Moore Creek		
Little Rocky Run		
Popes Head Creek	-	
Total	192,669.77	Credit Sharing
Fairfax	192,669.77	100.0%
Herndon	-	0.0%
Vienna	-	0.0%

Bull Run Total	TSS lbs/year	
Constructed	1,924,166.86	
Bull Run	20,236.29	
Cub Run	1,862,917.43	
Johnny Moore Creek	-	
Little Rocky Run	-	
Popes Head Creek	41,013.14	
Under Construction	-	
Bull Run	-	
Cub Run	-	
Johnny Moore Creek	-	
Little Rocky Run	-	
Popes Head Creek	-	
Total	1,924,166.86	Credit Sharing
Fairfax	1,924,166.86	100.0%
Herndon	-	0.0%
Vienna	-	0.0%

Difficult Run Stream Restoration	TSS lbs/year	
Constructed	1,040,856.08	
Under Construction	252,914.92	
Total	1,293,771.00	Credit Sharing
Fairfax	1,104,880.43	85.4%
Herndon	-	0.0%
Vienna	188,890.57	14.6%

Difficult Run Structural Retrofits	TSS lbs/year	
Constructed	160,830.30	
Under Construction	-	
Total	160,830.30	Credit Sharing
Fairfax	137,349.08	85.4%
Herndon	-	0.0%
Vienna	23,481.22	14.6%

Difficult Run Total	TSS lbs/year	
Constructed	1,201,686.38	
Under Construction	252,914.92	
Total	1,454,601.30	Credit Sharing
Fairfax	1,242,229.51	85.4%
Herndon	-	0.0%
Vienna	212,371.79	14.6%

Popes Head Creek Stream Restoration	TSS lbs/year	
Constructed	0	
Under Construction	0	
Total	0.00	Credit Sharing
Fairfax	0.00	100.0%
Herndon	0.00	0.0%
Vienna	0.00	0.0%

Popes Head Creek Structural Retrofits	TSS lbs/year	
Constructed	41,013.14	
Under Construction	-	
Total	41,013.14	Credit Sharing
Fairfax	41,013.14	100.0%
Herndon	-	0.0%
Vienna	-	0.0%

Popes Head Creek Total	TSS lbs/year	
Constructed	41,013.14	
Under Construction	-	
Total	41,013.14	Credit Sharing
Fairfax	41,013.14	100.0%
Herndon	-	0.0%
Vienna	-	0.0%

NOTES
Popes Head Creek projects are included in both the Bull Run TMDL and Popes Head Creek TMDL since the TMDLs overlap.

Fairfax County Benthic TMDL Status Update
(July 1, 2017 - June 30, 2018)

Stream Restoration Projects

PRJ_ID	#	Project Name	Substantial Completion	Longitude	Latitude	Type of Project or BMP	Acres Treated (Ac)	Impervious Acres Treated (Ac)	Pervious Acres Treated (Ac)	Estimated Cost ($)	Restored Length (LF)	Estimated Amount of TSS Reduction (lbs/yr)		Pollutant Reduction Calculation Method	Watershed
												With Sediment Delivery Ratio	Without Sediment Delivery Ratio*		
Benthic Action Plan Project Completion Status - Stream Restoration															
CU9206	2	Big Rocky Tributary	5/26/2010	-77.441575	38.849032	Urban Stream Restoration	99.95	29.21	70.74	$191,600	336	7,307.04	40,370.40	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 336 LF, Average Stream Bank Height: 4.5 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 6.4 ft	Cub Run
CU9211A	4	Flatlick Confluence Stream Restoration	5/18/2011	-77.477458	38.862985	Urban Stream Restoration	5,016.42	1,938.97	3,077.45	$633,530	1400	62,832.00	347,138.12	CBP Urban Stream Restoration Interim Approved Removal Rates; Sediment Delivery Ratio:0.181	Cub Run
CU9218A	5	Schneider Branch Stream Restoration	5/31/2011	-77.467084	38.893042	Urban Stream Restoration	1,022.20	627.48	394.72	$631,100	1000	9,037.15	49,929.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 1000 LF, Average Stream Bank Height: 1.87 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 10 ft	Cub Run
DF9143C46	8	Government Center Stormwater Retrofit	6/29/2012	-77.353374	38.854106	Urban Stream Restoration	148.14	74.73	73.41	$275,000	1000	22,713.69	125,490.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 1000 LF, Average Stream Bank Height: 4.7 ft, Sediment Delivery Ratio: 0.181	Difficult Run
DF82-0015	14	Wolftrap Creek	10/19/2013	-77.250652	38.902473	Urban Stream Restoration	755.57	350.97	404.60	$1,749,434	2089	31,296.08	172,906.52	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 2089 LF, Average Stream Bank Height: 3.1 ft, Sediment Delivery Ratio: 0.181	Difficult Run
CU9207	20	Big Rocky Run Phase II	6/25/2014	-77.438891	38.848568	Urban Stream Restoration	4,400.40	1,809.78	2,590.63	$2,457,798	2550	73,191.24	404,371.49	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 2330 LF, Average Stream Bank Height: 6.5 ft, Sediment Delivery Ratio: 0.181	Cub Run
DF83-0002	22	Miller Heights Outfall	8/7/2014	-77.325369	38.888489	Outfall Restoration	23.83	5.34	18.49	$209,803	233	11,728.80	64,800.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 64.8 tons/yr, Sediment Delivery Ratio: 0.181	Difficult Run
DF82-0001	23	South Lakes Stream Restoration	10/1/2014	-77.336585	38.932076	Urban Stream Restoration	37.23	19.79	17.43	$646,509	660	4,401.62	24,318.36	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 660 LF, Average Stream Bank Height: 1.38 ft, Sediment Delivery Ratio: 0.181	Difficult Run
DF9045E	25	Difficult Run Tributary at Oakton Estates (DF9045)	6/26/2015	-77.350268	38.877995	Urban Stream Restoration	55.97	10.65	45.33	$337,000	300	6,524.14	36,045.00	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 300 LF, Average Stream Bank Height: 4.5 ft, Sediment Delivery Ratio: 0.181	Difficult Run
CU9214A	34	Flatlick Phase I	12/8/2016	-77.423793	38.887072	Urban Stream Restoration	2,417.60	831.78	1,585.82	$1,725,604	1772	69,107.61	381,809.99	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 2600 LF, Average Stream Bank Height: 5.5 ft, Sediment Delivery Ratio: 0.181	Cub Run
DF82-0008	38	Colvin Run Ph I	8/9/2017	-77.311688	38.965054	Urban Stream Restoration	2,776.83	947.96	1,828.63	$3,041,000	2175	106,626.99	589,099.39	CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 846 tons/yr, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 30.8 ft	Difficult Run
				-77.314909	38.963992	Urban Stream Restoration					110			CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 17 tons/yr, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 4.6 ft	
				-77.313468	38.964642	Urban Stream Restoration					350			CBP Urban Stream Restoration Expert Panel: Protocol 1 -BANCS Sediment Load Estimate: 63 tons/yr, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 4 ft	
	42	Wolftrap Creek Phase 2	N/A	-77.246262	38.905770	Urban Stream Restoration	693.74	268.15	425.59	$890,000	1020	45,777.60	252,914.92	CBP Urban Stream Restoration Interim Approved Removal Rates; Sediment Delivery Ratio:0.181	Difficult Run
						Subtotal:	**17,447.89**	**6,914.80**	**10,532.85**	**$ 12,788,378**	**14,995**	**450,543.97**	**2,489,193.18**		

PRJ_ID	#	Project Name	Substantial Completion	Longitude	Latitude	Type of Project or BMP	Acres Treated (Ac)	Impervious Acres Treated (Ac)	Pervious Acres Treated (Ac)	Estimated Cost ($)	Restored Length (LF)	Estimated Amount of TSS Reduction (lbs/yr)		Pollutant Reduction Calculation Method	Watershed
												With Sediment Delivery Ratio	Without Sediment Delivery Ratio*		
Projects Completed in Addition to Action Plan Projects															
	54	Stone Mill Court Reach 2	4/24/2018	-77.342058	38.879321	Outfall Restoration	32.96	7.76	25.20	$360,874	262.8	5,023.25	27,752.77	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 263 LF, Average Stream Bank Height: 4 ft, Sediment Delivery Ratio: 0.181	Difficult Run
CU-9214	55	Flatlick Ph II	4/26/2018	-77.434525	38.881297	Urban Stream Restoration	3,331.06	1,117.71	2,213.35	$4,874,194	3560	91,925.93	507,878.09	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 4400 LF, Average Stream Bank Height: 5.5 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 46 ft	Cub Run
						Urban Stream Restoration					340			CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 346 LF, Average Stream Bank Height: 5 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 15 ft	
						Urban Stream Restoration					175			CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 285 LF, Average Stream Bank Height: 5.5 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 14 ft	
						Urban Stream Restoration					200			CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 225 LF, Average Stream Bank Height: 5 ft, Sediment Delivery Ratio: 0.181; Protocol 2 - Average Stream Bank Width: 28 ft	
DF82-03	56	Robinson, PCL 19 @ 0723DP (DF82-03)	5/22/2018	-77.293272	38.970800	Outfall Restoration	34.33	5.08	29.25	$395,000	260	80.37	444.04	CBP Urban Stream Restoration Expert Panel: Protocol 1 -Existing Length: 260 LF,	Difficult Run
						Subtotal:	**3,398.35**	**1,130.55**	**2,267.81**	**$ 5,630,068**	**4,797.8**	**97,029.56**	**536,074.90**		

* Sediment delivery ratio does not apply to local TMDLs

Project completed during the reporting period

Credit Summary by Watershed (lb\yr)	With Sediment Delivery Ratio	Without Sediment Delivery Ratio*
Cub Run Complete	313,400.97	1,731,497.09
Cub Run Under Construction	-	-
Total Cub Run	**313,400.97**	**1,731,497.09**
Difficult Run Complete	188,394.95	1,040,856.08
Difficult Run Under Construction	45,777.60	252,914.92
Total Difficult Run	**234,172.55**	**1,293,771.00**

Fairfax County Benthic TMDL Status Update
(July 1, 2017 - June 30, 2018)

Stormwater Retrofit Projects

PRJ_ID	#	Project Name	Substantial Completion	Longitude	Latitude	Type of Project or BMP	Acres Treated (Ac)	Impervious Acres Treated (Ac)	Pervious Acres Treated (Ac)	Estimated Cost ($)	Estimated Total TSS Reduction (lbs/yr)*	Pollutant Reduction Calculation Method	Watershed
Benthic TMDL Action Plan Project Completion Status - Stormwater Retrofits													
CU9124	1	Willoughby's Ridge Pond Retrofit(0944DP)	9/4/2009	-77.429377	38.845618	Extended Detention Pond	17.03	7.82	9.21	$277,100	5,389.42	CBP Established Efficiency, Dry Extended Detention Ponds	Bull Run
CU9125	2	Englewood Mews Pond Retrofit(1396DP)	9/4/2009	-77.428622	38.846256	Extended Detention Pond	46.42	21.63	24.79	$297,300	14,846.87	CBP Established Efficiency, Dry Extended Detention Ponds	Bull Run
CU9143	5	Fair Ridge Richmond American Pond	12/15/2009	-77.374687	38.871101	Constructed Wetland	41.50	31.22	10.28	$390,400	18,053.73	CBP Retrofits Expert Panel, ST, 0.42 inches of runoff treated	Cub Run
CU9193	6	Foxfield Pond D	12/15/2009	-77.405292	38.89487	Extended Detention Pond	111.00	22.77	88.23	$271,800	21,090.90	CBP Established Efficiency, Dry Extended Detention Ponds	Cub Run
CU9142	7	Fair Ridge Pond A	12/15/2009	-77.370964	38.870001	Constructed Wetland	65.04	53.08	11.96	$366,800	32,138.12	CBP Established Efficiency, Wet Ponds and Wetlands	Cub Run
PH9890	16	University Square	12/22/2010	-77.323737	38.838279	Extended Detention Pond	18.40	5.80	12.60	$178,100	4,504.37	CBP Established Efficiency, Dry Extended Detention Ponds	Popes Head Creek
BN9105	21	Springhill Rec Center	7/15/2011	-77.227473	38.940809	Filtering Practices	0.10	0.10	-	$39,000	93.71	CBP Established Efficiency, Filtering Practices	Difficult Run
				-77.22833554	38.94065008	Permeable Pavement	0.40	0.40	-	$76,100	345.80	CBP Retrofits Expert Panel, RR, 0.95 inches of runoff treated	Difficult Run
				-77.227463	38.942894	Extended Detention Pond	14.10	8.04	6.06	$56,200	5,239.89	CBP Established Efficiency, Dry Extended Detention Ponds	Difficult Run
CU81-0003	22	Sequoia Section 2 Pond 1	8/1/2011	-77.440837	38.850177	Extended Detention Pond	92.25	30.00	62.25	$486,264	23,041.58	CBP Established Efficiency, Dry Extended Detention Ponds	Cub Run
PH81-0001	25	Barton Place Pond Retrofit (DEL 2011)	12/13/2011	-77.33245	38.806626	Wet Pond	65.92	24.39	41.53	$192,000	18,946.16	CBP Retrofits Expert Panel, ST, 0.51 inches of runoff treated	Popes Head Creek
DF9143C46	29	Government Center Stormwater Retrofit	6/29/2012	-77.353366	38.853269	Constructed Wetland	4.28	3.12	1.16	$50,000	3,071.89	CBP Retrofits Expert Panel, ST, 2.5 inches of runoff treated	Difficult Run
				-77.355078	38.852334	Constructed Wetland	45.35	25.85	19.50	$275,000	25,193.45	CBP Retrofits Expert Panel, ST, 1.39 inches of runoff treated	Difficult Run
DF87-0003	32	Great Falls Nike Park #4	11/1/2012	-77.324875	38.992132	Infiltration	0.95	0.90	0.05	$41,954	1,009.83	CBP Established Efficiency, Infiltration Practices w/o Sand, Veg.	Difficult Run
						Dry Swale	0.40	0.09	0.31	$37,495	133.07	CBP Retrofits Expert Panel, RR, 2 inches of runoff treated	Difficult Run
						Infiltration	1.89	1.79	0.10	$190,736	2,008.53	CBP Established Efficiency, Infiltration Practices w/o Sand, Veg.	Difficult Run
PH9190	33	Marymead Section 1 & 2	12/14/2012	-77.362382	38.84276	Constructed Wetland	50.20	6.53	43.67	$427,000	9,723.70	CBP Retrofits Expert Panel, ST, 0.75 inches of runoff treated	Popes Head Creek
DF9143D47	34	Fairfax County Landbay C, Pond #4	3/20/2013	-77.355287	38.852875	Constructed Wetland	16.99	9.25	7.74	$110,000	9,722.55	CBP Retrofits Expert Panel, ST, 2.31 inches of runoff treated	Difficult Run
CU9138	35	Fair Woods, Section 9, Pond 2	4/10/2013	-77.38609	38.877209	Extended Detention Pond	26.99	14.91	12.08	$401,550	9,794.02	CBP Established Efficiency, Dry Extended Detention Ponds	Cub Run
PH9180B	36	Brentwood West	6/19/2013	-77.365386	38.837887	Extended Detention Pond	35.27	9.52	25.75	$345,158	7,838.91	CBP Established Efficiency, Dry Extended Detention Ponds	Popes Head Creek
DF9031A7	38	Regional SWM Pond D-31	6/24/2013	-77.314594	38.892094	Extended Detention Pond	331.11	116.20	214.91	$655,815	86,944.28	CBP Established Efficiency, Dry Extended Detention Ponds	Difficult Run
DF81-0006	45	Towlston Meadow (0371DP)	4/4/2014	-77.265751	38.949846	Constructed Wetland	26.00	8.00	18.00	$266,751	6,267.48	CBP Established Efficiency, Wet Ponds and Wetlands	Difficult Run
DF87-0006	48	Oak Marr Rec Center Stormwater	8/1/2014	-77.316279	38.874842	Bioretention	0.95	0.75	0.20	$128,366	441.28	CBP Retrofits Expert Panel, RR, 0.4 inches of runoff treated	Difficult Run
DF87-0001	51	Oakton Library	9/15/2014	-77.302299	-77.302299	Permeable Pavement	0.37	0.25	0.12	$239,841	267.78	CBP Retrofits Expert Panel, RR, 2.5 inches of runoff treated	Difficult Run
				-77.30182	38.883805	Bioretention	0.91	0.67	0.24	$67,545	454.84	CBP Established Efficiency, Bioretention C/D soils, underdrain	Difficult Run
				-77.301959	38.883783	Infiltration	0.50	0.42	0.08	$37,113	480.72	CBP Established Efficiency, Infiltration Practices w/o Sand, Veg.	Difficult Run
CU87-0002	53	Fire and Rescue Training Academy II	9/27/2014	-77.37489023	38.85455732	Permeable Pavement	0.82	0.65	0.17	$89,210	660.28	CBP Retrofits Expert Panel, RR, 1.94 inches of runoff treated	Cub Run
CU9186	55	Armfield Sec 5	11/15/2014	-77.418565	38.895334	Constructed Wetland	78.79	27.43	51.36	$317,413	19,507.74	CBP Retrofits Expert Panel, ST, 0.43 inches of runoff treated	Cub Run
DF9045A6	62	Oakton Swim and Racquet Club (DF9045A6)	5/22/2015	-77.350396	-77.350396	Bioretention	22.70	3.74	18.96	$90,120	4,242.65	CBP Established Efficiency, Bioretention C/D soils, underdrain	Difficult Run
				-77.350679	-77.350679	Bioretention	18.87	2.47	16.40	$90,120	3,176.95	CBP Established Efficiency, Bioretention C/D soils, underdrain	Difficult Run
				-77.350653	-77.350653	Bioretention	5.32	2.18	3.14	$90,120	1,708.02	CBP Established Efficiency, Bioretention C/D soils, underdrain	Difficult Run
DF9045F	66	Penderbrook (DF9045/0691DP)	3/8/2016	-77.362336	38.87771	Constructed Wetland	22.53	2.60	19.93	$105,021	4,239.05	CBP Retrofits Expert Panel, ST, 0.79 inches of runoff treated	Difficult Run
CU9214A	69	Flatlick Phase I	12/8/2016	-77.422712	38.887882	Constructed Wetland	8.39	3.59	4.80	$325,765	3,912.75	CBP Retrofits Expert Panel, ST, 1.87 inches of runoff treated	Cub Run
						Subtotal:	**1,171.74**	**446.16**	**725.58**	**$ 7,013,155**	**344,490.32**		

Stormwater Retrofit Projects

PRJ_ID	#	Project Name	Substantial Completion	Longitude	Latitude	Type of Project or BMP	Acres Treated (Ac)	Impervious Acres Treated (Ac)	Pervious Acres Treated (Ac)	Estimated Cost ($)	Estimated Total TSS Reduction (lbs/yr)*	Pollutant Reduction Calculation Method	Watershed
Projects Completed in Addition to Action Plan Projects													
DF87-0005	74	Sunrise Valley ES	9/1/2015	-77.3213	38.941291	Permeable Pavement	0.21	0.14	0.07	$532,290	150.38	CBP Retrofits Expert Panel, RR, 2.5 inches of runoff treated	Difficult Run
				-77.320802	38.941418	Permeable Pavement	0.55	0.39	0.16		413.66	CBP Retrofits Expert Panel, RR, 2.5 inches of runoff treated	Difficult Run
				-77.319947	38.941094	Dry Swale	0.33	0.19	0.14		197.73	CBP Established Efficiency, Bioswale	Difficult Run
				-77.318977	38.939997	Infiltration	2.72	1.43	1.29		1,797.22	CBP Established Efficiency, Infiltration Practices w/o Sand, Veg.	Difficult Run
CU9807	76	Stringfellow Road - Park & Ride Stormwater Enhancements	5/11/2016	-77.40506	38.853782	Permeable Pavement	0.83	0.75	0.08	$612,337	760.96	CBP Retrofits Expert Panel RR, 2.5 inches of runoff treated	Cub Run
				-77.404792	38.854064	Permeable Pavement	0.32	0.29	0.03		292.55	CBP Retrofits Expert Panel RR, 2.5 inches of runoff treated	Cub Run
				-77.405645	38.853421	Permeable Pavement	0.97	0.83	0.15		847.34	CBP Retrofits Expert Panel RR, 2.5 inches of runoff treated	Cub Run
				-77.405548	38.854177	Permeable Pavement	0.41	0.36	0.05		370.04	CBP Retrofits Expert Panel RR, 2.5 inches of runoff treated	Cub Run
				-77.405226	38.854651	Permeable Pavement	0.46	0.44	0.02		444.48	CBP Retrofits Expert Panel RR, 2.5 inches of runoff treated	Cub Run
				-77.40434	38.853796	Filtering Practices	0.03	0.03	0.00		23.73	CBP Retrofits Expert Panel RR, 2.5 inches of runoff treated	Cub Run
				-77.404202	38.853338	Filtering Practices	0.03	0.03	0.00		28.40	CBP Retrofits Expert Panel RR, 2.5 inches of runoff treated	Cub Run
CU87-0001	81	West Ox Bus Operations Center Expansion (CU87-0001)	7/21/2017	-77.377953	38.84816	Permeable Pavement	0.08	0.08	-	$5,501	73.26	CBP Retrofits Expert Panel RR, 1.21 inches of runoff treated	Cub Run
						Permeable Pavement	0.42	0.42	-	$83,249	380.46	CBP Retrofits Expert Panel RR, 1.17 inches of runoff treated	Cub Run
	87	Public Safety Headquarters Building Stormwater Enhancements	8/30/2017	-77.362589	38.857386	Dry Swale	2.75	2.23	0.52	$231,238	2,162.77	CBP Established Efficiency, Bioswale	Difficult Run
						Permeable Pavement	0.24	0.24	-		212.94	CBP Retrofits Expert Panel RR, 1.04 inches of runoff treated	Difficult Run
						Vegetated Roof	0.31	0.31	-		275.08	CBP Retrofits Expert Panel, RR, 1.05 inches of runoff treated	Difficult Run
						Rainwater Harvesting	0.61	0.61	-		578.75	CBP Retrofits Expert Panel, RR, 1.26 inches of runoff treated	Difficult Run
						Subtotal:	**11.28**	**8.76**	**2.52**	**$ 2,038,123**	**9,009.75**		

* Adjustments for baseline do not apply to local TMDLs

Project completed during the reporting period

Note 1: Some or all of the total Baseline for unregulated areas accounted for by another project with an overlapping drainage area

Total Credit Summary by Watershed	Estimated TSS Reduction (lb/yr)*
Bull Run Complete	20,236.29
Bull Run Under Construction	-
Total Bull Run	**20,236.29**
Cub Run Complete	131,420.34
Cub Run Under Construction	-
Total Cub Run	**131,420.34**
Difficult Run Complete	160,830.30
Difficult Run Under Construction	-
Total Difficult Run	**160,830.30**
Popes Head Creek Complete	41,013.14
Popes Head Creek Under Construction	-
Total Popes Head Creek	**41,013.14**

Appendix 22.2- PCB Training Slides

Section 2 – Basic Good Housekeeping and Pollution Prevention Measures

Solid Waste Management

- Keep dumpster lids closed when not actively disposing of waste.
- Locate dumpsters and other waste containers away from storm drains.
- Reduce solid waste through recycling and reuse when possible.
- Keep waste collection areas clean and free of pollutant buildup.
- Inspect waste containers for signs of damage that could cause spills and leaks. Repair any holes and replace leaky containers.
- Don't overfill dumpsters or pile waste alongside containers.
- Don't bury waste material on site.
- Don't hose down solid waste, waste containers or waste storage areas. As an alternative approach, apply kitty litter over spilled liquids in a waste container.
- Properly dispose of building materials including exterior caulking and fluorescent light ballast from **County properties constructed prior to 1979**, as they may contain PCBs.
- **Note: There are definitions available on this slide that are not narrated.**

Section 2 – Identification of Illicit Discharges

Spotting an Illicit Discharge

Sheen

Oily **sheens** on water surfaces may be a sign of petroleum spills or leaky vehicles.

Discoloration

Unusual color is a likely sign of polluted discharge. Detergents, automotive fluids, and industrial chemicals can cause discoloration and be highly toxic to aquatic life.

Sediment laden

Heavy sediment laden, or muddy runoff from construction sites or other areas where the surface is disturbed, is not permitted in the County's MS4.

Polychlorinated Biphenyls (PCBs)

PCBs are a carcinogenic, persistent pollutant, and are still found within the bed of the Potomac River. Potential sources include **leaking transformers** and debris from buildings built pre-1979.