

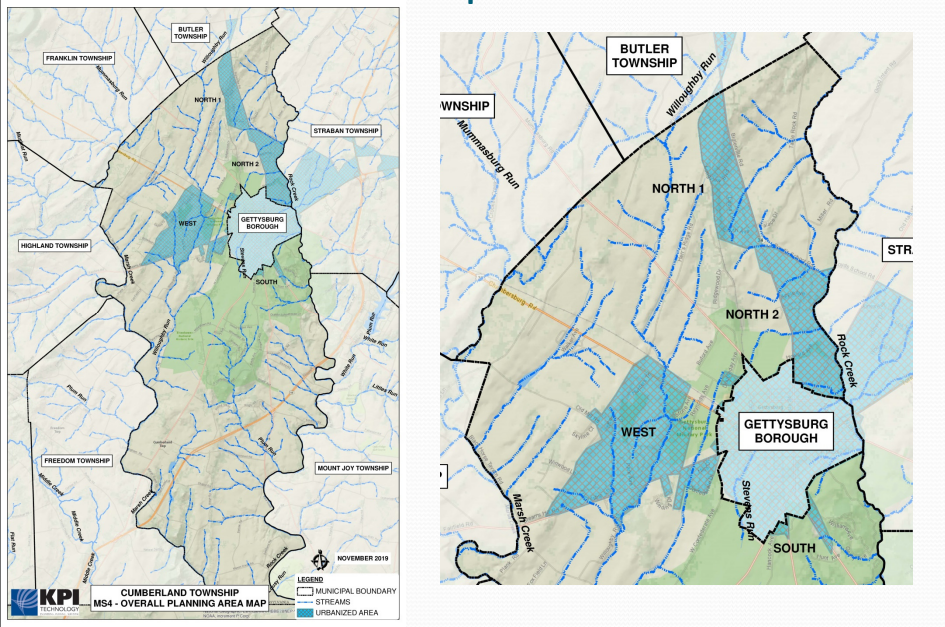
Cumberland Township Municipal Separate Storm Sewer System (MS4) Chesapeake Bay Pollutant Reduction Plan

Public Meeting
November 26, 2019

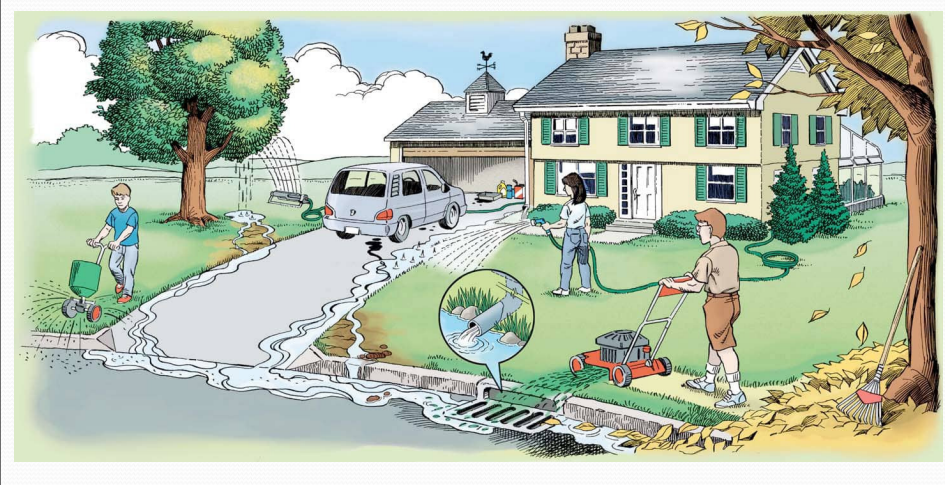
What is an MS4?

- Urbanized Area – DEP
- Based on 2010 Census
- Permit Coverage Required

Cumberland Township Urbanized Area



Why is it important?



Permit Application Requirements

- Notice of Intent (NOI)
- Minimum Control Measures (MCMs)
- Pollutant Reduction Plan (PRP)
- Mapping

- Permit issued April 30, 2018
- Expires March 15, 2023
- Annual Reports due September 30 for reporting period July 1 – June 30.

Minimum Control Measures (MCM)

- MCM #1 – Public Education & Outreach
- MCM #2 – Public Participation & Involvement
- MCM #3 – Illicit Discharge Detection & Elimination
- MCM #4 – Construction Sites Stormwater Runoff Control
- MCM #5 – Post-Construction Stormwater Management in New Development & Redevelopment
- MCM #6 – Pollution Prevention & Good Housekeeping

MCM#1 – Public Education & Outreach

- Distribute education materials
- Public participation
- Education program
- Annual Public meeting



MCM#2 – Public Participation & Involvement

- Develop a public involvement plan
- Hold public meetings for the program
- Start a volunteer program
 - Storm Drain Stenciling
 - Stream/Street Clean-ups
 - School Partnerships



MCM#3 – Illicit Discharge Detection & Elimination

- Develop and Implement a written program
- Setup a Storm Water reporting mechanism
- Develop and maintain a map with outfalls, inlet, piping, swales, watershed boundaries.



MCM#4 – Construction Sites Stormwater Runoff Control

- Develop and implement a program for permitting, inspecting, enforcing the installation of E&S controls.



MCM#5 – Post Construction Stormwater Management in New Development and Re-Development

- Ensure controls are installed to minimize water quality impacts
- Ensure adequate O&M of all BMPs
- Encourage low impact development



MCM#6 – Pollution Prevention & Good Housekeeping

- Develop and implement an employee training program
- Identify and document all activities and facilities with potential impact



Why Are We Here Today?

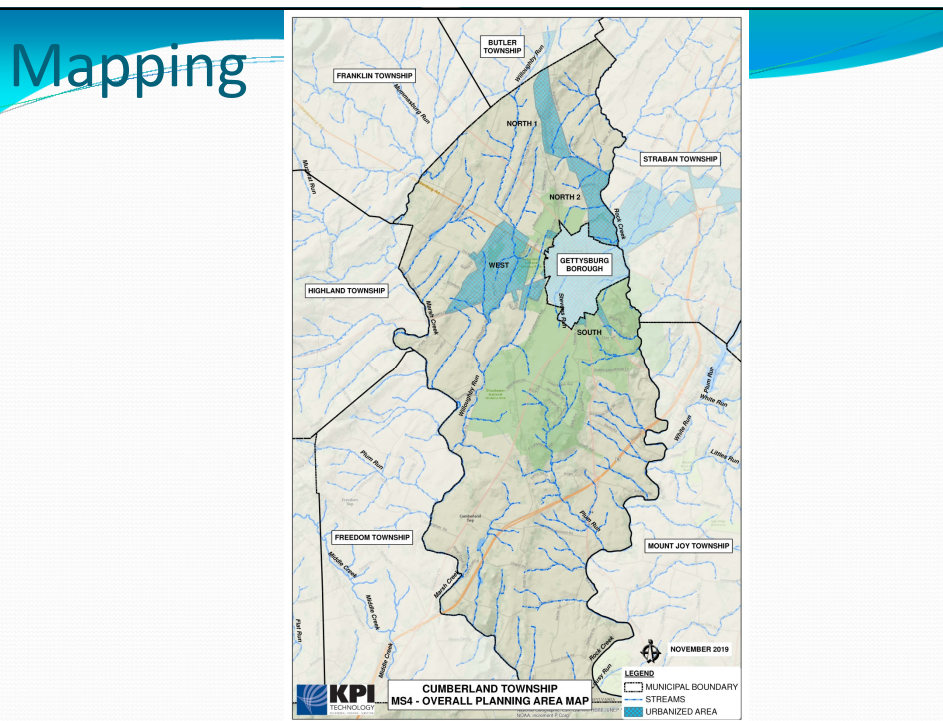


Chesapeake Bay Pollutant Reduction Plan

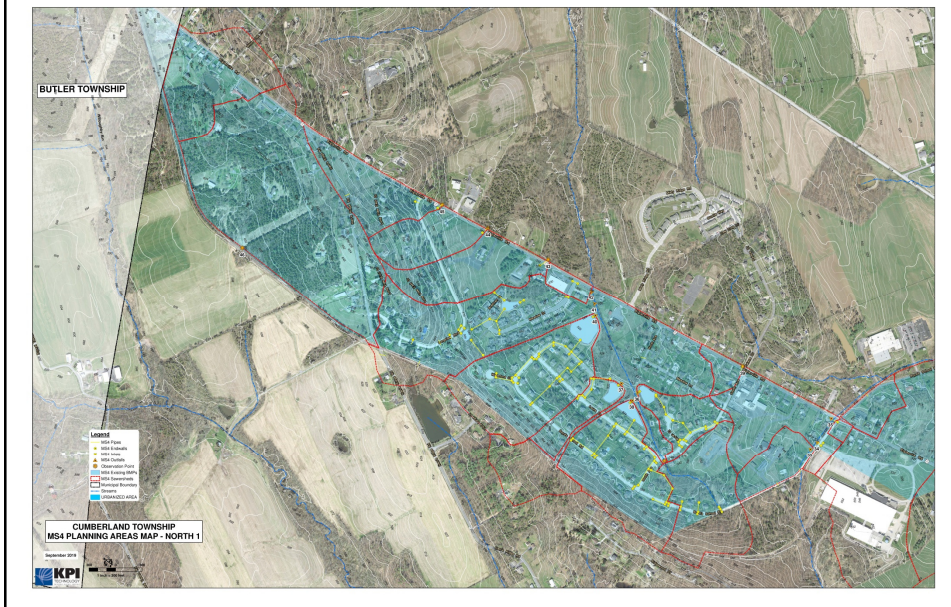
- Components
 - Public Participation ✓
 - Mapping
 - Pollutants of Concern
 - Funding Mechanisms
 - BMP Operation & Maintenance
 - Implementation Schedule
 - GOAL – Sediment/Nutrient Load Reduction within 5 years

Public Participation

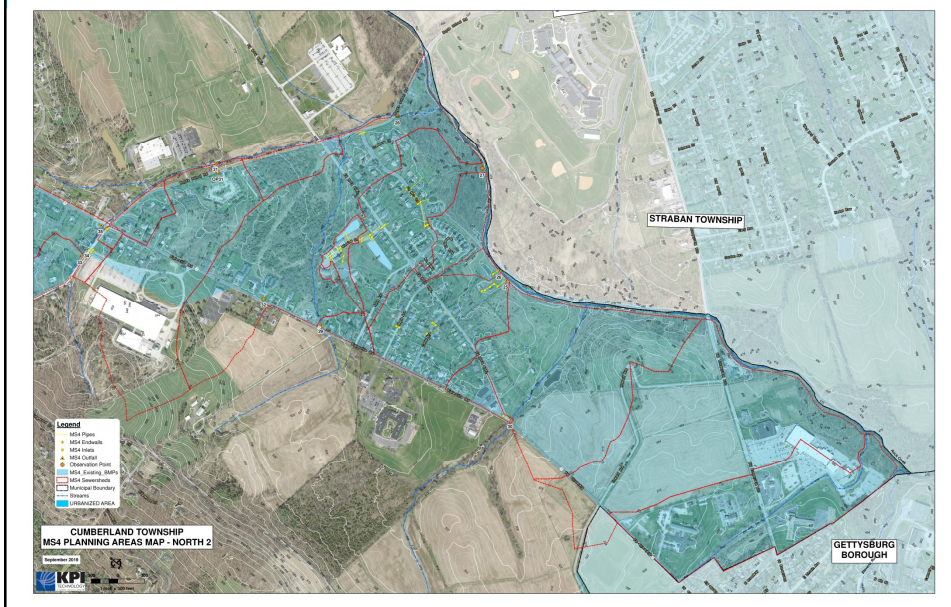
- Publish a legal notice in the newspaper
- Accept public comments for a minimum of 30-days
- Hold a public meeting to accept any public comments regarding the plan
- Documentation of public participation must be included
- Public comment period going through December 26



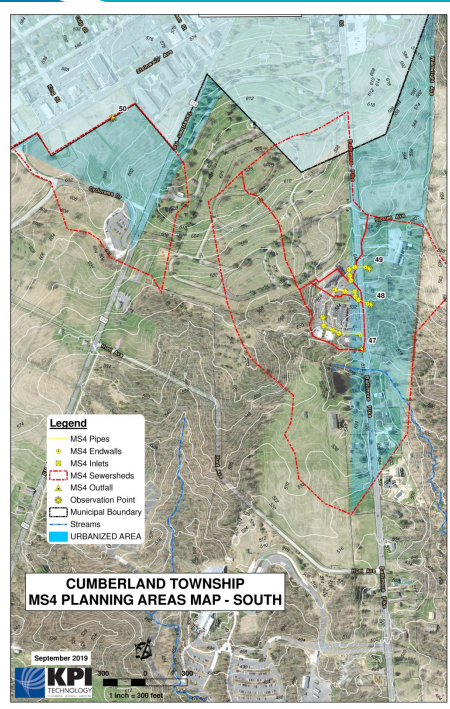
Mapping – North 1



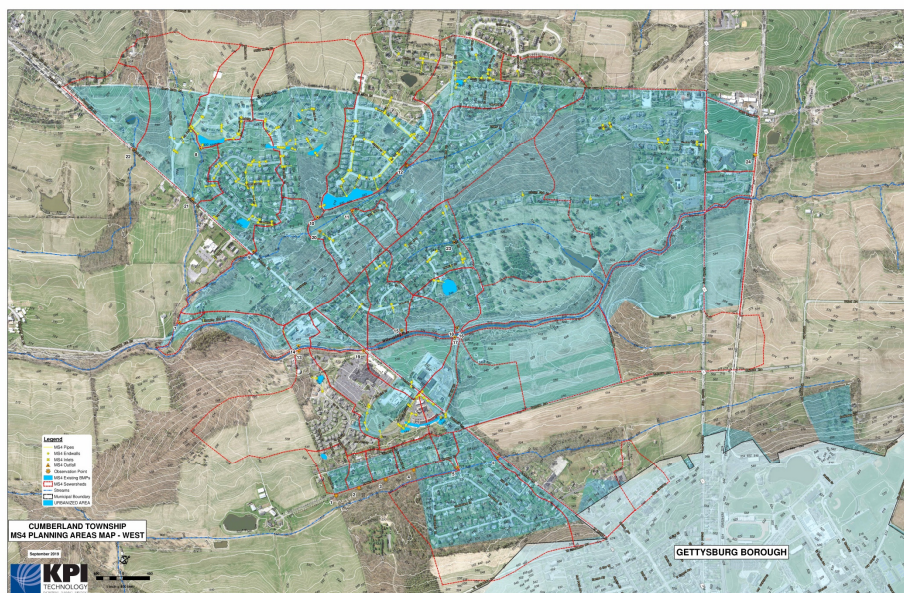
Mapping – North 2



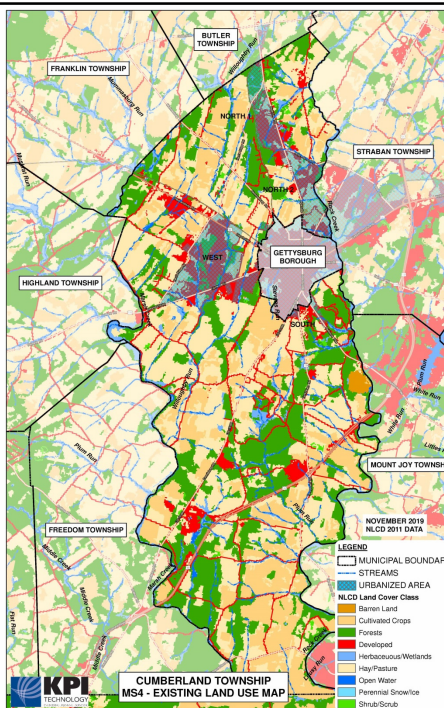
Mapping – South



Mapping – West



Mapping – Land Use



Pollutants of Concern

- Three (3) Pollutants of Concern
 - Total Nitrogen (TN) – 3%
 - Total Phosphorus (TP) – 5%
 - Total Suspended Solids (TSS) – Sediment – 10%

MS4 Name	NPDES ID	Individual Permit Required?	Reason	Impaired Downstream Waters or Applicable TMDL Name	Requirements	Other Cause(s) of Impairment
Adams County						
Cumberland Township		No		Chesapeake Bay Nutrients/Sediment	Appendix D-Nutrients, Siltation (4a)	
				Willoughby Run	Appendix E-Organic Enrichment/Low D.O., Siltation (5)	Other Habitat Alterations (4c)
				Unnamed Tributaries to Rock Creek	Appendix E-Siltation	Water/Flow Variability (4c)
				Rock Creek	Appendix E-Nutrients (5)	

Existing Loading

Total Existing Base Load		
Marsh Creek Watershed		
West	516,407	lbs sediment/year
Rock Creek Watershed		
North 1	154,413	lbs sediment/year
North 2	207,746	lbs sediment/year
South	42,275	lbs sediment/year
Total	404,435	lbs sediment/year

BMP Claimed Credits

BMP Identifier	BMP No.	BMP Type	BMP Effective Values			Location			Installation		OBM		Drainage Area			Pollutant Reduction Calculations (lb/yr)		
			TN	TP	TSS	Latitude	Longitude	Map Location	Date	APDES Permit #	Is the BMP still functioning to design? (Yes or No)	Responsible person/agency for inspections	Previous (acres)	Impervious (acres)	Soil Class	TN	TP	TSS
Marsh Creek Watershed																		
Deatrick Commons Basin North	1	Dry Extended Detention Basin	20%	20%	60%	39.824799	-77.254322	West	2006	PA8100138	Yes	Owner	1.13	1.09	C/D	352	352	1,056
Deatrick Commons Basin South	2	Dry Extended Detention Basin	20%	20%	60%	39.824273	-77.253753	West	2006	PA8100138	Yes	Owner	0.45	0.43	C/D	139	139	417
Deatrick Commons Pavement	3	Permeable Pavement	10%	20%	50%	39.825488	-77.254280	West	2006	PA8100138	Yes	Owner	0.14	0.53	C/D	77	154	424
Deatrick Village Basin 2	4	Dry Extended Detention Basin	20%	20%	60%	39.821333	-77.252209	West	2003		Yes	Owner	2.27	1.50	C/D	514	514	1,542
Deatrick Village Basin 1	5	Dry Detention Basin	5%	10%	10%	39.822817	-77.250933	West	2003		Yes	Owner	8.49	1.49	C/D	337	664	664
Reynolds Avenue	6	Forest Buffers	25%	50%	50%	39.834635	-77.255061	West			Yes	National Park Service (NPS)	106.64	7.55	C/D	8,177	36,353	36,353
Old Mill Road	7	Forest Buffers	25%	50%	50%	39.827150	-77.258851	West			Yes	Owner	22.80	6.47	C/D	3,446	6,892	6,892
Country Club	8	Forest Buffers	25%	50%	50%	39.834258	-77.255727	West			Yes	National Park Service (NPS)	79.20	35.14	C/D	9,756	49,512	49,512
Twin Lakes	9	Dry Detention Basin	5%	10%	10%	39.823349	-77.268324	West	2009		Yes	HDA	23.96	4.45	C/D	570	1,140	1,140
Cumberland Village Basin 1	11	Dry Detention Basin	5%	10%	10%	39.828957	-77.266961	West	2006		Yes	HDA	46.20	15.00	C/D	1,526	3,056	3,056
Cumberland Village Basin 2A	12	Dry Detention Basin	5%	10%	10%	39.827666	-77.266685	West	2008		Yes	HDA	6.33	0.13	C/D	77	154	154
Cumberland Village Basin 2B	13	Dry Detention Basin	5%	10%	10%	39.827476	-77.271354	West	2008		Yes	HDA	1.77	0.13	C/D	27	55	55
Cumberland Village Basin 3A/3B	14	Dry Detention Basin	5%	10%	10%	39.828261	-77.270961	West	2008		Yes	HDA	1.69	0.29	C/D	29	59	119
Cumberland Village Basin 4	15	Dry Detention Basin	5%	10%	10%	39.827205	-77.273011	West	2008		Yes	HDA	24.41	0.42	C/D	283	566	566
Cannon Ridge Phase 1 Basin 1	16	Dry Extended Detention Basin	20%	20%	60%	39.834937	-77.268658	West	2005		Yes	HDA	0.39	1.38	C/D	402	402	1,207
Cannon Ridge Phase 1 Basin 2	17	Dry Extended Detention Basin	5%	10%	10%	39.834841	-77.269920	West	2005		Yes	HDA	1.41	2.14	C/D	364	329	329
Camelot	18	Dry Extended Detention Basin	20%	20%	60%	39.833896	-77.268889	West	2004		Yes	HDA	5.71	4.71	C/D	1,555	1,555	4,664
															Total	27,469	51,909	56,133

BMP Claimed Credits (cont'd)

BMP Identifier	BMP No.	BMP Type	BMP Effective Values			Location			Installation		OSM Is the BMP well functioning to design? (Yes or No)	Responsible person/Agency for Inspections	Drainage Area		Pollutant Reduction Calculations (lb/yr)					
			TN	TP	TSS	Latitude	Longitude	Map Location	Date	NPODES Permit #			PerVIOUS (acres)	Impervious (acres)	Soil Class	TN	TP	TSS		
Rock Creek Watershed																				
Hacc Basin 1	1	Dry Extended Detention Basin	20%	20%	60%	38.837887	-77.22822	North 2	2015		Yes	Owner	0.21	0.39	C/D	118	118	353		
Hacc Basin 2	2	Dry Extended Detention Basin	20%	20%	60%	38.837969	-77.22349	North 2	2015		Yes	Owner	1.06	1.10	C/D	352	352	1,055		
HACC pervious Pavement	3	Pervious Pavement w/o Sand or Veg. (C/D Soils w/underdrain)	10%	20%	50%	38.839563	-77.224911	North 2	2010		Yes	Owner	0.14	1.19	C/D	169	339	991		
HACC	4	Forest Buffer	25%	50%	50%	38.839754	-77.225620	North 2			Yes	Owner	12.81	3.37	C/D	1,844	3,687	3,687		
Howard Avenue	5	Forest Buffer	25%	50%	50%	38.847458	-77.225930	North 2			Yes	National Park Service (NPS)	42.51	7.37	C/D	4,784	9,568	9,568		
Boyd's School Road	6	Forest Buffer	25%	50%	50%	38.854377	-77.228547	North 2			Yes	Owner	45.15	5.62	C/D	5,708	11,416	11,416		
Cambridge Crossing Basin C-1	7	Bio-retention - Rain garden (C/D soils w/underdrain)	25%	45%	55%	38.854083	-77.232371	North 2	2008		Yes	HDA	0.32	0.04	C/D	31	55	67		
Cambridge Crossing Basin C-2	8	Bio-retention - Rain garden (C/D soils w/underdrain)	25%	45%	55%	38.853486	-77.232048	North 2	2008		Yes	HDA	5.59	3.90	C/D	1,654	2,977	3,639		
Cambridge Crossing Basin B-4	9	Dry Extended Detention Basin	20%	20%	60%	38.854759	-77.230222	North 2	2008		Yes	HDA	3.55	1.11	C/D	498	468	1,374		
Cambridge Crossing 1	10	Forest Buffer	25%	60%	50%	38.850584	-77.231268	North 2			Yes	Owner	14.82	0.25	C/D	857	1,724	1,724		
Cambridge Crossing 2	11	Forest Buffer	25%	50%	50%	38.848895	-77.231271	North 2			Yes	Owner	4.88	1.68	C/D	161	1,682	1,682		
Patriots Choice Basin 1	12	Dry Detention Basin	5%	10%	10%	38.864954	-77.241785	North 1	Summer 2005		Yes	HDA	6.23	2.86	C/D	265	529	529		
Patriots Choice Basin 2	13	Dry Extended Detention Basin	20%	20%	60%	38.864953	-77.242756	North 1	Summer 2005		Yes	HDA	21.71	6.45	C/D	2,789	2,789	8,368		
Patriots Choice Basin 3	14	Dry Detention Basin	5%	10%	10%	38.865623	-77.242649	North 1	Summer 2005		Yes	HDA	5.84	2.80	C/D	256	513	513		
Patriots Choice Basin 4	15	Dry Extended Detention Basin	20%	20%	60%	38.867544	-77.241451	North 1	Summer 2005		Yes	HDA	18.83	10.22	C/D	3,441	3,441	10,104		
Gary McCray Basin	16	Dry Detention Basin	5%	10%	10%	38.868883	-77.242580	North 1	Summer 2005		Yes	Owner	0.08	0.33	C/D	33	66	66		
Meadows - Phase 2	17	Dry Extended Detention Basin	20%	20%	60%	38.868883	-77.242618	North 1	Summer 2005		Yes	Owner	2.80	2.27	C/D	755	755	2,266		
Hagemeyer SWM Device #1	18	Dry Extended Detention Basin	20%	20%	60%	38.870079	-77.242187	North 1	Summer 2009		Yes	Owner	0.21	0.15	C/D	51	51	153		
Hagemeyer SWM Device #2	19	Dry Extended Detention Basin	20%	20%	60%	38.870150	-77.241817	North 1	Summer 2009		Yes	Owner	0.14	0.20	C/D	60	60	181		
Hagemeyer - Vegetated channel 2A	20	Vegetated Open Channel	10%	10%	50%	38.870464	-77.242439	North 1	Summer 2009		Yes	Owner	2.88	1.50	C/D	270	270	1,348		
Hagemeyer - Vegetated channel 2B	21	Vegetated Open Channel	10%	10%	50%	38.870464	-77.242439	North 1	Summer 2009		Yes	Owner	4.17	0.40	C/D	148	143	713		
Hagemeyer Pervious Pavement 1	22	Pervious Pavement w/o Sand or Veg. (C/D Soils w/underdrain)	10%	20%	50%	38.872740	-77.241898	North 1	Summer 2009		Yes	Owner	0.02	0.03	C/D	5	10	27		
Hagemeyer Pervious Pavement 2	23	Pervious Pavement w/o Sand or Veg. (C/D Soils w/underdrain)	10%	20%	50%	38.873857	-77.241316	North 1	Summer 2009		Yes	Owner	0.00	0.08	C/D	12	24	65		
Hagemeyer Pervious Pavement 3	24	Pervious Pavement w/o Sand or Veg. (C/D Soils w/underdrain)	10%	20%	50%	38.873884	-77.242069	North 1	Summer 2009		Yes	Owner	0.00	0.08	C/D	11	23	62		
Longview Blvd - Basin East	25	Dry Detention Basin	5%	10%	10%	38.873882	-77.242671	North 1			Yes	HDA	13.36	2.71	C/D	336	669	669		
Longview Blvd - Basin West	26	Dry Detention Basin	5%	10%	10%	38.870254	-77.246160	North 1			Yes	HDA	10.67	1.26	C/D	256	365	365		
Ziegler Rehabilitation	27	Forest Buffer	25%	50%	50%	38.868495	-77.238991	South	2016		Yes	National Park Service (NPS)	6.85	4.01	C/D	4,758	3,516	3,516		
Comfort Suites	28	Pervious Pavement w/o Sand or Veg. (C/D Soils w/underdrain)	10%	20%	50%	38.816951	-77.227065	South	2009		Yes	Owner	0.45	0.22	C/D	40	80	221		
Comfort Suites	29	Infiltration Practices	80%	80%	90%	38.818345	-77.227284	South	2009		Yes	Owner	0.41	0.26	C/D	382	382	436		
															Total	27,913			46,471	46,119

Existing BMP Reduction

Watersheds	Pollutant Load (lbs/yr)	BMP Pollutant Reduction	Adjusted Baseline
Marsh Creek	516,407	58,191	458,216
Rock Creek	404,435	66,119	338,316
Total	920,842	124,310	796,532

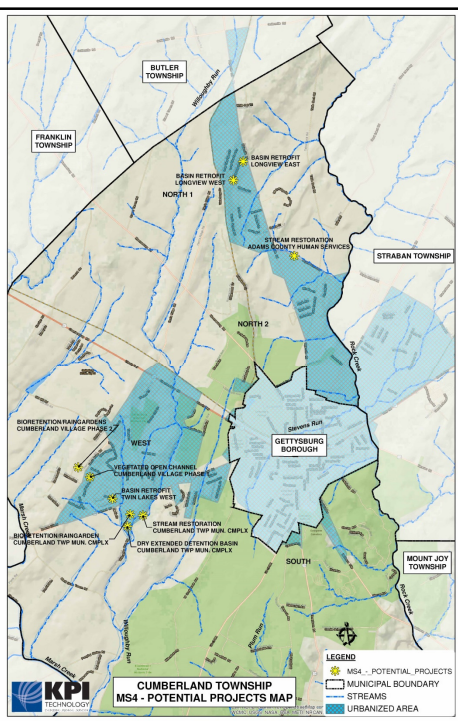
Watersheds	Adjusted Baseline Pollutant Loading	Required Reduction Percentage	Load Sediment Reduction Goal
Marsh Creek	458,216	10%	45,822
Rock Creek	338,316	10%	33,832
Load Sediment Reduction Goal	796,532		79,653

Proposed Projects

- Stream Restorations
- Existing Basin Retrofits
- Bioretention/Raingardens
- Dry Extended Detention Basin
- Vegetated Open Channel

Proposed Project Locations

Marsh Creek Watershed			
45,822 lb/yr		required sediment reduction	
Project	Achieved Sediment Reduction (lb/yr)	% Total Required Reduction	Estimated Construction Cost
Basin Retrofit at Twin Lakes West	5,130	11.2%	\$52,000
Bioretention/Raingarden at Cumberland Twp MC	1,277	2.8%	\$18,000
Dry Extended Detention Basin at Cumberland Twp MC	2,319	5.1%	\$24,000
Stream Restoration at Cumberland Twp MC	22,440	49.0%	\$100,000
Developer Projects			
Vegetated Open Channel at Cumberland Village P1	3,083	6.7%	\$0
Bioretention/Raingardens at Cumberland Village P2	15,918	34.7%	\$30,000
	50,167	109.5%	
*Township can pay cost to enhance.			Construction Subtotal \$224,000
Rock Creek Watershed			
33,832 lb/yr		required sediment reduction	
Project	Achieved Sediment Reduction (lb/yr)	% Total Required Reduction	Estimated Construction Cost
Longview Blvd West Basin	2,631	7.8%	\$22,000
Longview Blvd East Basin	3,010	8.9%	\$20,000
Stream Restoration at Adams County Human Services	31,416	92.9%	\$140,000
	37,057	109.5%	
			Construction Subtotal \$182,000
			Construction Total \$405,000
			Contingency (10%) \$40,500
			Engineering/Permitting (20%) \$81,000
			Year One Administrative Startup (5%) \$20,300
			Total Projects Cost \$548,100





Twin Lakes West Basin



Longview Blvd West Basin



Longview Blvd East Basin



Stream Restoration at Adams County Human Services

BMP Operation & Maintenance

- Responsibility of Township/Owner
- Varies with different BMPs
- Annual Inspection

Basin



Basin with Forebay



Funding Mechanisms

- Grant Funding
- Public Private Partnerships
- General Fund / Tax Revenue
- Stormwater Management (MS4) Fee
- Municipal Authority

Cumberland Township MS4 Cost Summary

Estimated Yearly O&M Budget (Permit Term 2018-2023)

1. Facilities Maintenance	\$ 12,000
2. MCMs – Program Cost	\$ 7,500
3. Engineering Services	\$ 7,500
(Annual Report, Training, Outfall Inspections)	
4. Accounting	\$ 5,000
5. Administrative	\$ 3,000
6. Legal	\$ 5,000
Total Annual O&M Budget:	\$ 40,000

Projects (Construction Costs, Engineering/Administrative, Financing)

1. Basin Retrofit (Longview West)	\$ 22,000
2. Basin Retrofit (Longview East)	\$ 20,000
3. Stream Restoration (ACHS)	\$140,000
4. Basin Retrofit (Twin Lakes West)	\$ 52,000
5. Bioretention/Raingarden (CT Mun. Cmplx)	\$ 18,000
6. Dry Extended Detention Basin (CT Mun. Cmplx)	\$ 24,000
7. Stream Restoration (CT Mun. Cmplx)	\$100,000
<i>Developer Projects</i>	
8. Vegetated Open Channel (Cumberland Village Phase 1)	\$ 0
9. Bioretention/Raingarden (Cumberland Village Phase 2)	\$ 30,000
Total Construction Costs:	\$406,000
Contingency (10%)	\$ 40,600
Engineering/Permitting (20%)	\$ 81,200
Year One Administrative Startup (5%)	\$ 20,300
Total Projects Budget:	\$548,100
Total Annual Projects Budget:	\$ 43,981* (@ 5%/20 years)

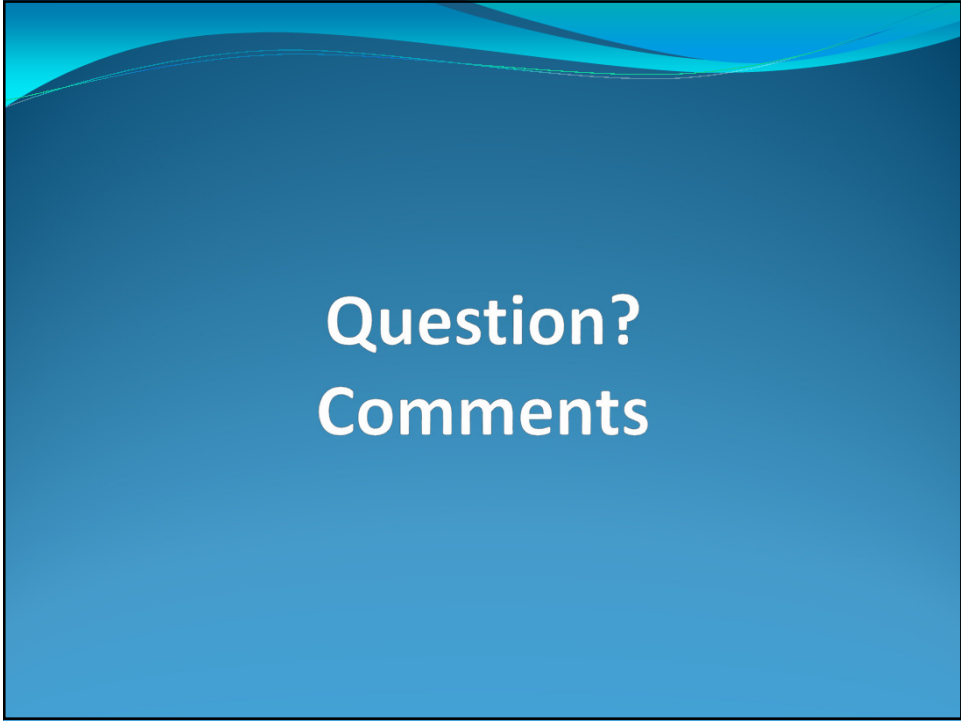
Total Estimated Yearly Cost:	\$ 83,981
Estimated # of ERUs:	1,500
Total Estimated Yearly Cost Per ERU:	\$ 56.00

*Assumes no grant funding

Implementation Schedule

<u>Task</u>	<u>Implementation Date</u>
MS4 Permit Authorization	April 30, 2018
BMP Selection / MCM Compliance	April 2018 – June 2019 – Year 1
Design/Funding Programs / BMP Implementation	July 2019 – June 2022 – Yrs 2-4
Complete BMP, Installation, Review/ O&M Implementation to Achieve Compliance	July 2022 – June 2023 – Year 5

Progress reports along with review of the status for implementation of the PRP will be provided annually in conjunction with submission of the annual report to PA DEP.



Question?
Comments