pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PAI130512**
Facility Type	**MS4**	APS ID	**951615**
Permit Type	**Individual**	Authorization ID	**1200767**

NPDES PERMIT FACT SHEET
MS4s

Applicant and Facility Information

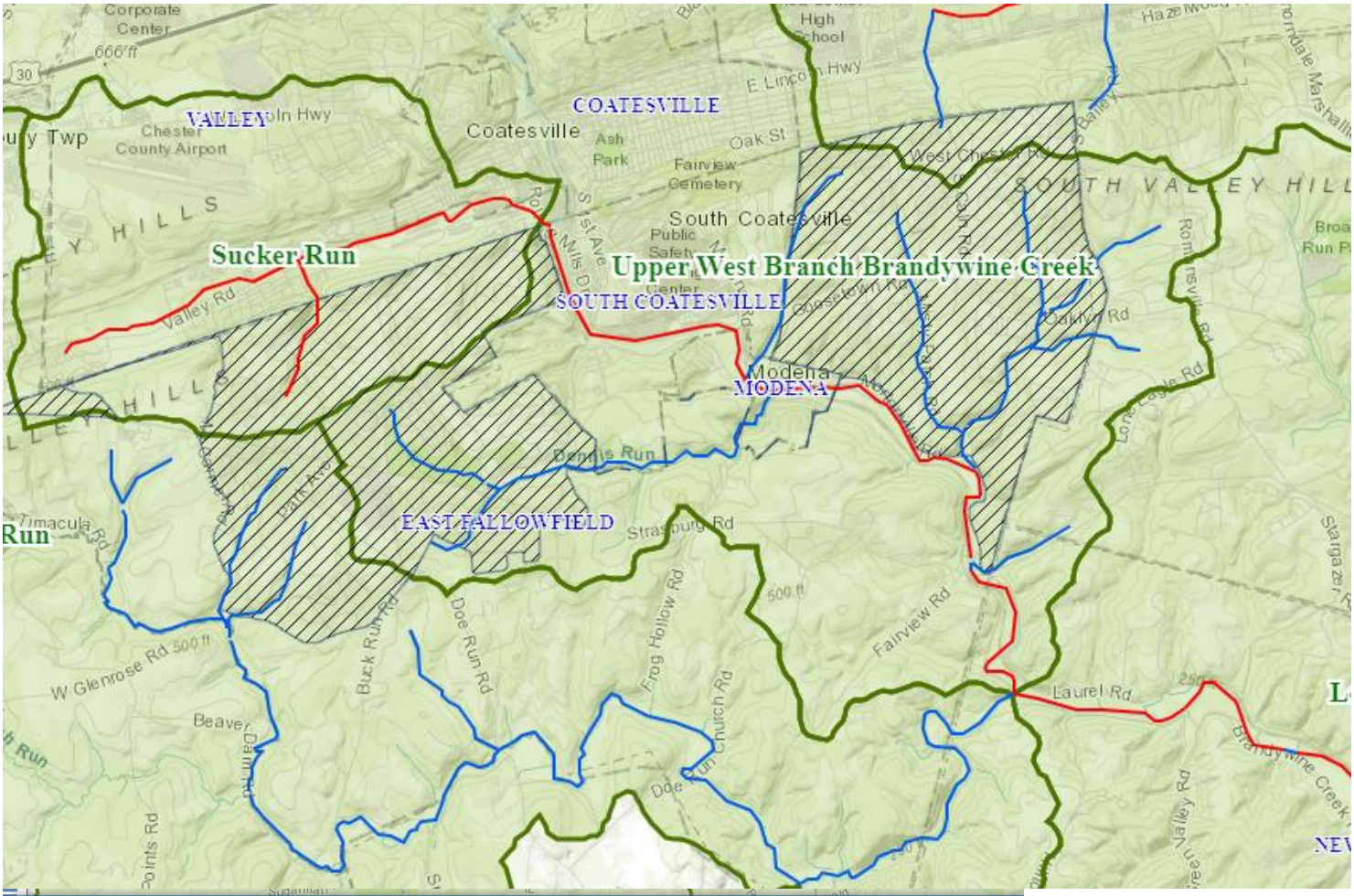
Applicant Name	**East Fallowfield Township Chester County**	Facility Name	**East Fallowfield Township MS4 UA**
Applicant Address	2264 Strasburg Road	Facility Address	2264 Strasburg Road
	East Fallowfield, PA 19320-4437		East Fallowfield, PA 19320
Applicant Contact	Lisa Valaitis	Facility Contact	Lisa Valaitis
Applicant Phone	(610) 384-7144	Facility Phone	(610) 384-7144
Client ID	94956	Site ID	613597
SIC Code	4900	Municipality	East Fallowfield Township
SIC Description	Electric, Gas And Sanitary Services	County	Chester
Date Application Received	September 15, 2017		
Date Application Accepted	August 2, 2022		
Purpose of Application	Permit Renewal.		

Internal Review and Recommendations

Attached.

Approve	Deny	Signatures	Date
X		Ian Quinlan/ Environmental Engineering Specialist	August 2, 2022
X		*Elizabeth Mahoney* Elizabeth Mahoney/Environmental Group Manager	08/04/2022

Internal Review and Recommendations



MS4 Urban Area Report
EAST FALLOWFIELD TWP, Chester County

INDIVIDUAL PERMIT REQUIRED: Yes	**REASON:** TMDL Plan, SP, IP	**NPDES ID:** PAI130512

IMPAIRED DOWNSTREAM WATERS	REQUIREMENTS	OTHER CAUSES OF IMPAIRMENT
Christina River Basin Nutrients	TMDL Plan-Nutrients Organic Enrichment/Low D.O. (4a)	
Beaver Creek		Cause Unknown (4a) Other Habitat Alterations Water/Flow Variability (4c)
West Branch Brandywine Creek	Appendix C-PCB (4a)	Water/Flow Variability (4c)
East Branch Brandywine Creek		Cause Unknown (4a) Other Habitat Alterations Water/Flow Variability (4c)
Christina River Basin Sediment	TMDL Plan-Siltation Suspended Solids (4a)	
Sucker Run		Water/Flow Variability (4c)

Internal Review and Recommendations

Table 3 - 1995 Land Use Baseline Load Calculations.

1995 LOAD CALCULATION							
SOURCE	AREA	TOTAL SEDIMENT LOADING RATE	TOTAL SEDIMENT	TOTAL NITROGEN LOADING RATE	TOTAL NITROGEN	TOTAL PHOSPHORUS LOADING RATE	TOTAL PHOSPHORUS
UNITS	ACRES	LBS/ACRE	LBS	LBS/ACRE	LBS	LBS/ACRE	LBS
Hay/Past		153.18		1.52		0.38	
Cropland	773.04	1,727.47	1,335,403.41	6.98	5,395.82	1.81	1,399.20
Forest	387.92	136.22	52,842.46	0.15	58.19	0.03	11.64
Wetland	0.49	121.42	59.13	0.30	0.15	0.03	0.01
Disturbed	16.67	164.73	2,746.05	0.19	3.17	0.07	1.17
Turfgrass							
Open_Land	63.14	296.97	18,750.69	1.15	72.61	0.16	10.10
Bare_Rock							
Sandy_Areas							
Unpaved_Road							
Ld_Mixed							
Md_Mixed	13.18	1,741.77	22,948.90	6.20	81.69	0.87	11.46
Hd_Mixed	6.04	2,492.67	15,055.73	6.81	41.13	1.02	6.16
Ld_Residential	915.42	730.55	668,760.08	1.69	1,547.06	0.27	247.16
Md_Residential	2.05	1,741.36	3,574.89	6.16	12.65	0.87	1.79
Hd_Residential	1.29	2,495.94	3,217.90	6.61	8.52	1.01	1.30
TOTAL	**2179.23**		**2,123,359.23**		**7,220.98**		**1,690.00**

Table 4 - 2012 Land Use Load Calculations.

2012 LOAD CALCULATION							
SOURCE	AREA	TOTAL SEDIMENT LOADING RATE	TOTAL SEDIMENT	TOTAL NITROGEN LOADING RATE	TOTAL NITROGEN	TOTAL PHOSPHORUS LOADING RATE	TOTAL PHOSPHORUS
UNITS	ACRES	LBS/ACRE	LBS	LBS/ACRE	LBS	LBS/ACRE	LBS
Hay/Past		185.06	-	1.70	-	0.42	-
Cropland	310.13	1,818.62	564,008.67	7.27	2,254.65	1.91	592.35
Forest	352.24	174.45	61,449.09	0.17	59.88	0.05	17.61
Wetland	3.61	158.47	571.61	0.32	1.15	0.04	0.14
Disturbed	122.79	228.93	28,110.78	0.26	31.93	0.10	12.28
Turfgrass	24.05	202.10	4,860.55	0.78	18.76	0.43	10.34
Open_Land		220.20	-	0.92	-	0.09	-
Bare_Rock		-	-	-	-	-	-
Sandy_Areas		-	-	-	-	-	-
Unpaved_Road		-	-	-	-	-	-
Ld_Mixed		680.65	-	1.62	-	0.25	-
Md_Mixed	15.79	1,548.50	24,448.91	7.42	117.15	0.95	15.00
Hd_Mixed	26.71	2,184.96	58,360.38	7.87	210.21	1.09	29.11
Ld_Residential	1,301.39	686.92	893,954.12	1.66	2,160.31	0.26	338.36
Md_Residential	21.06	1,547.69	32,594.45	7.40	155.84	0.95	20.01
Hd_Residential	1.46	2,182.85	3,195.11	7.69	11.26	1.07	1.57
TOTAL	**2,179.23**		**1,671,553.68**		**5,021.13**		**1,036.77**

Internal Review and Recommendations

Table 7 – Revised Required Load Reduction Calculation

Revised Load Reduction Calculation					
Revised (1995) Baseline Load	Required Reduction	TMDL Load Reduction Required	Existing Load	Land Conversion Reduction	TMDL Reduction Required after Land Conversion
lbs./yr.	Percent	lbs./yr.	lbs./yr.	lbs./yr.	lbs./yr.
2,123,359.23	46.91%	996,067.81	1,671,553.68	451,805.55	**544,262.26**

No Existing BMPs being used at this time

F. Analysis of TMDL Objectives.

1. Long-Term Reduction – According to the analysis above the long-term reduction requirement equals **544,262 lbs./yr**. That is not possible to achieve in the first 5-year permit cycle.

2. Short-Term Reduction – East Fallowfield Township has determined that 544,262 lbs./yr. of sediment cannot be reduced during the next permit period, so it elects to pursue BMPs for the reduction of 167,153 lbs./yr. as its short term TMDL Objective. The required reduction, 10% of the Existing Load (1,671,534 lbs./yr.) or **167,153 lbs./yr**. of sediment, would need to be removed by proposed BMPs constructed over the five-year permit cycle.

Table 9 – Proposed BMP Estimated Load Reduction.

PROPOSED BMP LOAD REDUCTION CALCULATION													
FACILITY_ID	TYPE	Soil Hydro. Group	BMP Drainage Area ID	BMP Effective.	Crop	Disturb.	Forest	HD Mixed Res.	LD Res.	Turf Golf	Water	Sediment Load	Load Reduction
pBMP-1	Riparian Buffer	C/D	15	50%	0.004		0.126		0.015	3.773	0	802.09	401.04
pBMP-2	Infiltration Basin	B	4	95%	1.382	2.237			8.108		0.163	8,620.84	8,189.80
pBMP-3	Infiltration Basin	B	2	95%		2.422			8.358		0.197	6,326.98	6,010.63
pBMP-4	Infiltration Trench	B	3	95%		1.987			1.252			1,314.90	1,249.16
pBMP-5	Riparian Buffer	B/D, B	20	50%			4.384		2.818			2,700.55	1,350.27
pBMP-6	Vegetated Swale	B	6	70%			4.117	1.171	0.326			3,500.75	2,450.52
pBMP-7	Vegetated Swale	B	5	70%			3.99		1.212			1,528.61	1,070.03
pBMP-8	Extended Detention	B, C/D	7	60%			4.652		21.59			15,642.21	9,385.33
pBMP-9	Vegetated Swale	B	12	70%	0.028	3.312	2.23	1.542	7.824			9,941.85	6,959.30
pBMP-10	Vegetated Swale	B	13	70%	0.379		3.059	1.498	4.262			7,423.65	5,196.55
pBMP-11	Infiltration Trench	B	10	95%	0.042		0.41		14.994			10,447.62	9,925.24
pBMP-12	Vegetated Swale	C/D	11	70%			0.942		6.096			4,351.81	3,046.27
pBMP-13	Rain Garden	B	16	90%			3.207	0.112	2.711			2,666.43	2,399.79
pBMP-14	Rain Garden	B	18	90%		0.306	0.801		0.752			726.35	653.72
pBMP-15	Infiltration Trench	B	17	95%			3.426	1.17	1.992			4,522.43	4,296.31
pBMP-16	Infiltration Basin	B	19	95%		1.095	2.492		0.482			1,016.51	965.68
pBMP-17	Riparian Buffer	B, C/D	8	50%	48.028		0.416		24.326			104,127.34	52,063.67
pBMP-18	Riparian Buffer	C/D	14	50%		3.862	0.234	0.713	1.752		0	3,686.30	1,843.15
pBMP-19	Riparian Buffer	B, C/D	9	50%	87.502	8.297	12.112		22.123			178,342.06	89,171.03
pBMP-20	Riparian Buffer	B	1	50%	5.527		1.091		1.26			11,107.36	5,553.68
												Total	**212,181.17**

Internal Review and Recommendations

Table 10 – Cost Estimates for Proposed BMP implementation.

Planning Level Unit Cost Development for Stormwater Best Management Practices (BMPs)[1]
PART 1: Initial Costs Per Impervious Acre Treated

BMP	Acres	Sediment Reduction	Impervious acres treated	Pre-Construction Costs[2]	Construction Costs[3]	Total Unit Costs	Land Costs[4]	Total Costs Including Land	Annualized Initial Costs[5]	Cost per pound of sediment removed
Riparian Buffers[6]	7.39	143,478.90	8.81	$406	$4,062	$33,023	$36,950	$69,973	$4,703	$0.49
Vegetated Swales	1.2	12,155.85	3.49	$4,000	$20,000	$83,760	$6,000	$89,760	$6,033	$7.38
Rain Gardens	0.21	3,053.50	0.99	$9,375	$37,500	$46,406	$1,050	$47,456	$3,190	$15.54
Infiltration Trenches	0.27	14,221.60	3.08	$16,700	$41,750	$180,026	$1,350	$181,376	$12,191	$12.75
Infiltration Basin	0.18	965.70	0.67	$16,700	$41,750	$39,162	$900	$40,062	$2,693	$41.48
Totals		173,875.55						$428,627	$28,810	$2.47

[1] Most costs are expressed per acre of impervious area treated, not per acre of BMP. Initial costs are assumed to take place in year T=0; annual costs are incurred from year T= 1 through year T= 20.
[2] Includes cost of site discovery, surveying, design, planning, permitting, etc. which, for various BMPs tend to range from 10% to 40% of BMP construction costs.
[3] Includes capital, labor, material and overhead costs, but not land costs, and associated implementation.
[4] For all stormwater BMPs that require land it is assumed that an easement cost of $5000 per acre.
[5] Initial BMP costs, including preconstruction, construction, and land costs, are amortized over 20 years at 3% to arrive at annualized initial costs.
[6] Cost for Riparian Buffers is from Chesapeake Bay Assessment Scenario Tool - Pennsylvania BMP Cost and are based on BMP acres and not impervious area treated.

The total cost of the proposed BMP implementation is estimated to be $428,627. Funding sources for the proposed BMPs for this 5-year permit cycle is expected to be obtained from a combination of the grant opportunities and the Township's general fund budget. Trees required for the Riparian Buffer BMPs will be sought through grant applications to the TreeVitalize and Keystone 10 Million Trees Partnership. The proposed BMPs in the Newlinville area will include grant applications Through the American Rescue Plan (ARP) Funds or Bipartisan Infrastructure Law (BIL), and or PennDOT since much of the flood hazard is associated with drainage from the State highway. Other grant opportunities may include PennVest and Commonwealth Financing Authority (CFA). CFA was established in 2004 as an independent agency of the Department of Community and Economic Development (DCED), and includes the PA Small Water and Sewer Program

Internal Review and Recommendations

4.2 Operations and Maintenance

All of the proposed BMPs will have Operations and Maintenance (O&M) plans and will be the responsibility of the Township to enact those plans. Anticipated costs for O&M are presented in Table 11.

Planning Level Unit Cost Development for Stormwater Best Management Practices (BMPs)
PART 2: Annual Maintenance Costs

Stormwater BMP	Routine and Intermittent Maintenance Costs			Average Annual Municipal Implementation Costs[3]	Maintenance, Intermittent Repair, and Implementation Costs[4]	
	Annual Routine Maintenance[1]	Average Annual Intermittent Maintenance[2]	Total Annual Maintenance Costs		Total (Over 20 Years)	Average Annual (Over 20 Years)
Riparian Buffers	$81	$600	$681	$10	$13,832	$692
Vegetated Swales	$400	$400	$800	$10	$16,207	$810
Rain Gardens	$750	$750	$1,500	$31	$30,620	$1,531
Infiltration Trenches	$418	$418	$835	$31	$17,320	$866
Infiltration Basin	$418	$418	$835	$31	$17,320	$866
Totals			**$4,651**		**$95,299**	**$4,765**

[1] Annual routine maintenance costs over 20 years; assumes a 3% discount rate, but also a 3% annual increase in maintenance cost which washes out the effect of discounting resulting in a constant present value annual cost throughout the 20 year period.

[2] Intermittent/corrective maintenance tasks are those that accrue every 3 to 5 years; these are averaged here over the 20 year period.

[3] Average annual municipal cost of inspecting and monitoring stormwater BMPs and enforcing construction and maintanance standards.

[4] Combined annual operating, implementation, and maintenance costs.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.