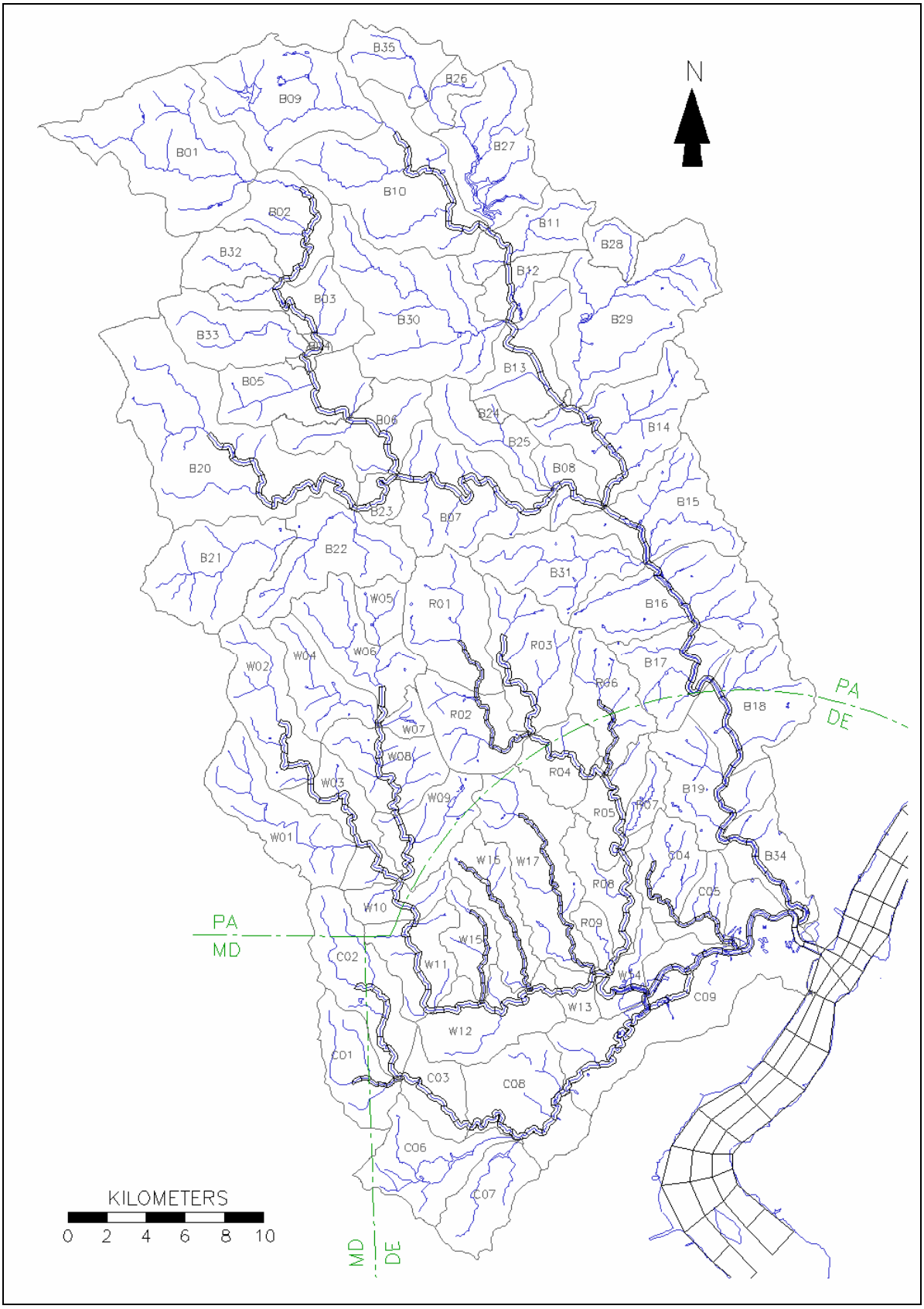
Summary Document
Proposed Bacteria and Established Sediment TMDLs
Christina River Basin
Pennsylvania, Delaware and Maryland

EPA is providing notice of proposed revisions to existing Total Maximum Daily Loads (TMDLs) for the Christina River watershed, which includes Brandywine Creek, Red Clay Creek, and White Clay Creek in Delaware and Pennsylvania. These proposed revisions are being made to the Christina River Basin high-flow nutrient/low dissolved oxygen TMDLs and high-flow bacteria TMDLs, in light of factors such as the availability of recent data and review of the computer model used to develop the original TMDLs.

EPA welcomes input from interested parties and the general public on the proposed changes. The comment period opened on January 20, 2005, and closes on March 6, 2006. Please refer to the public notice regarding the information meeting, to submit written comments, or for any other questions regarding the proposed revisions.

The bacteria TMDLs comment period ends March 6, 2006. The sediment TMDLs are not open for comment but are included here for completeness.

The following summary includes a basin map and waterbody lists, maps of bacteria and sediment impairments, and tables containing TMDLs and allocations. Wastewater treatment plants and industrial discharges are not affected by the revised TMDLs and are not included in this summary, see Section 2 of the bacteria/sediment TMDL report.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Subbasin	Stream Name	Area (mi2)
Brandywine Creek Watershed		
B01	Upper Brandywine Creek West Br.	18.39
B02	Brandywine Creek West Branch	7.38
B03	Brandywine Creek West Branch	6.76
B04	Brandywine Creek West Branch	0.80
B05	Brandywine Creek West Branch	8.82
B06	Brandywine Creek West Branch	8.06
B07	Brandywine Creek West Branch	13.46
B08	Brandywine Creek West Branch	3.62
B09	Upper Brandywine Creek East Br.	14.68
B10	Brandywine Creek East Branch	18.31
B11	Brandywine Creek East Branch	6.31
B12	Brandywine Creek East Branch	3.70
B13	Brandywine Creek East Branch	7.94
B14	Brandywine Creek East Branch	12.92
B15	Brandywine Creek East Branch	10.36
B16	Brandywine Creek East Branch	14.06
B17	Brandywine Creek East Branch	7.51
B18	Brandywine Creek East Branch	10.37
B19	Brandywine Creek East Branch	8.64
B20	Upper Buck Run	25.54
B21	Upper Doe Run	11.05
B22	Lower Doe Run	10.96
B23	Lower Buck Run	1.95
B24	Tributary to Broad Run	0.60
B25	Broad Run	5.83
B26	Marsh Creek	2.61
B27	Marsh Creek	11.54
B28	Tributary to Valley Creek	2.40
B29	Valley Creek	18.21
B30	Beaver Creek	18.08
B31	Pocopson Creek	9.19
B32	Birch Run	4.66
B33	Rock Run	8.03
B34	Brandywine Creek East Branch	6.05
B35	Upper Marsh Creek	5.80

Subbasin	Stream Name	Area (mi2)
White Clay Creek Watershed		
W01	White Clay Creek West Br.	10.23
W02	Upper White Clay Creek Middle Br.	9.51
W03	White Clay Creek Middle Br.	6.35
W04	Trib. to White Clay Creek East Br.	6.20
W05	Trib. to White Clay Creek East Br.	2.65
W06	Upper White Clay Creek East Br.	8.57
W07	Trout Run	1.37
W08	White Clay Creek East Branch	7.47
W09	White Clay Creek East Branch	6.85
W10	White Clay Creek	3.58
W11	White Clay Creek	6.53
W12	White Clay Creek	8.76
W13	White Clay Creek	2.08
W14	White Clay Creek	3.41
W15	Muddy Run	3.89
W16	Pike Creek	6.65
W17	Mill Creek	13.00
Red Clay Creek Watershed		
R01	Upper Red Clay Creek West Branch	10.08
R02	Red Clay Creek West Branch	7.39
R03	Red Clay Creek East Branch	9.90
R04	Red Clay Creek	5.11
R05	Red Clay Creek	5.24
R06	Burroughs Run	7.10
R07	Hoopes Reservoir	2.10
R08	Red Clay Creek	5.38
R09	Red Clay Creek	1.72
Christina River Watershed		
C01	Christina River West Branch	6.70
C02	Upper Christina River	9.73
C03	Christine River	4.47
C04	Upper Little Mill Creek	5.37
C05	Little Mill Creek	3.84
C06	Muddy Run	8.64
C07	Belltown Run	6.37
C08	Christina River	10.70
C09	Lower Christina River	21.90

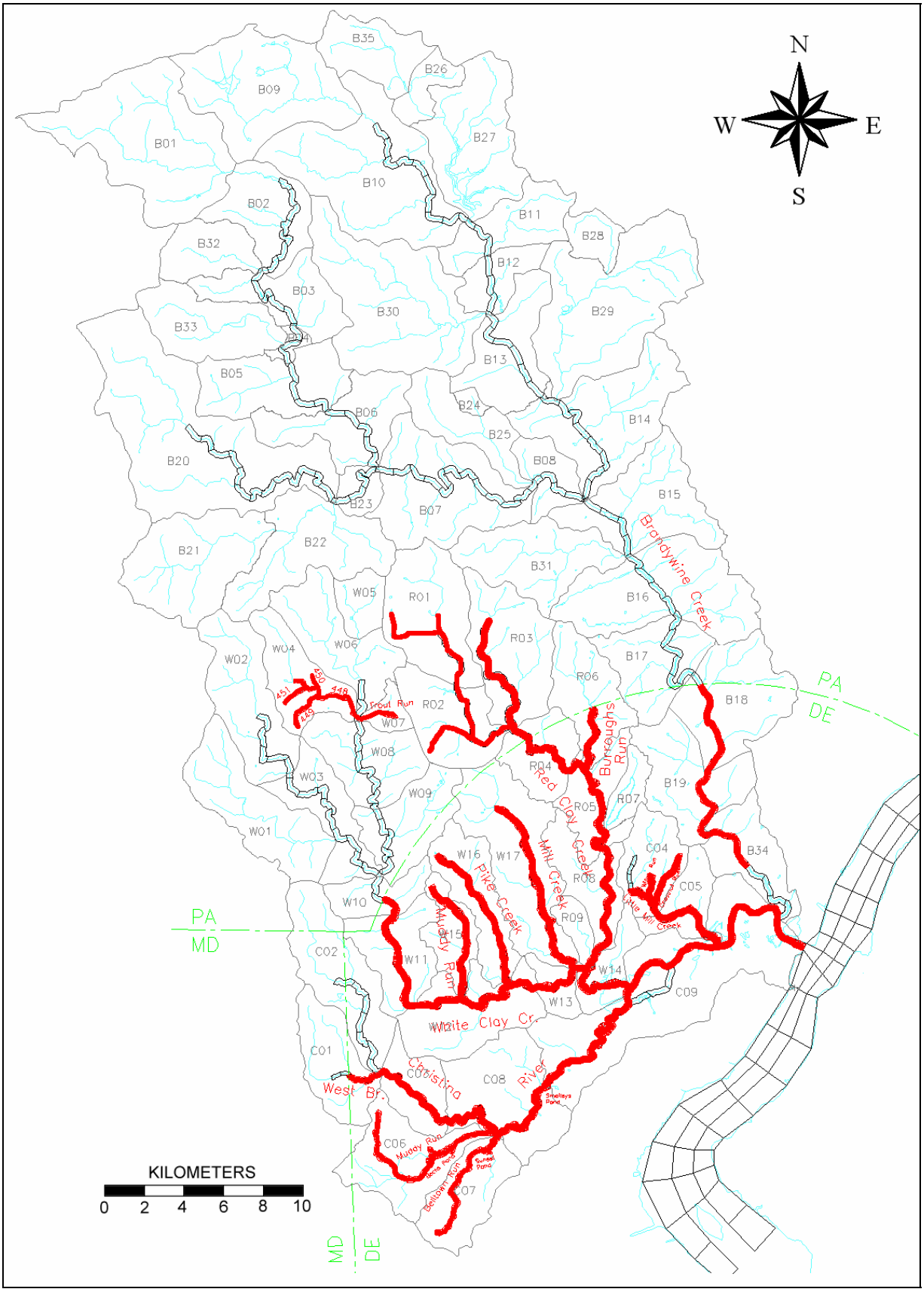

Figure 4-1. Locations of stream segments impaired by bacteria

Table 4-1. Fecal coliform bacteria TMDL allocations for the Christina River Basin

Subbasin	Baseline Load (cfu/season)			TMDL Allocation (cfu/season)					Percent Reduction
	PS	NPS	Total	WLA	MS4 WLA	LA	MOS	TMDL	
Swimming Season (May 1 - Sep 30)									
Red Clay (R01)	1.872E+12	2.914E+15	2.916E+15	8.734E+10	2.139E+14		1.126E+13	2.252E+14	92.28%
Red Clay (R02)	6.037E+12	1.319E+15	1.325E+15	1.274E+12	1.133E+14		6.031E+12	1.206E+14	90.90%
Red Clay (R03)	1.304E+12	1.435E+15	1.437E+15	1.738E+11	1.206E+14		6.359E+12	1.272E+14	91.15%
White Clay (W04)		1.726E+15	1.726E+15		1.040E+14		5.478E+12	1.095E+14	93.66%
White Clay (W07)	7.529E+10	3.140E+13	3.148E+13	7.529E+10	2.885E+12		1.557E+11	3.115E+12	90.10%
Non-swimming Season (Oct 1 - Apr 30)									
Red Clay (R01)	1.872E+12	6.404E+15	6.406E+15	8.734E+11	2.895E+15		1.524E+14	3.049E+15	52.40%
Red Clay (R02)	6.037E+12	3.406E+15	3.412E+15	1.274E+13	1.571E+15		8.338E+13	1.668E+15	51.12%
Red Clay (R03)	1.304E+12	3.704E+15	3.705E+15	1.738E+12	1.720E+15		9.062E+13	1.812E+15	51.08%
White Clay (W04)		2.499E+15	2.499E+15		2.370E+15		1.249E+14	2.495E+15	0.16%
White Clay (W07)	1.043E+11	6.899E+13	6.910E+13	7.529E+11	6.475E+13		3.450E+12	6.899E+13	0.15%

Table 4-2. Fecal coliform TMDL allocations for MS4 municipalities

Town	Sub-Watershed	Swimming Season Baseline (cfu/season)	Swimming Season TMDL (cfu/season)	Percent Reduction
East Marlborough TWP	Red Clay	2.61E+15	2.06E+14	92.09%
Kennett Square Boro	Red Clay	2.35E+14	1.88E+13	91.98%
Kennett TWP	Red Clay	1.44E+15	1.24E+14	91.38%
New Garden TWP	Red Clay	1.12E+15	9.38E+13	91.60%
Avondale Boro	White Clay	3.81E+13	2.42E+12	93.64%
London Grove TWP	White Clay	1.54E+15	9.27E+13	93.99%
New Garden TWP	White Clay	3.00E+13	2.76E+12	90.82%
West Grove Boro	White Clay	8.48E+13	5.09E+12	93.99%

Town	Sub-Watershed	Non-Swimming Season Baseline (cfu /season)	Non-Swimming Season TMDL (cfu/season)	Percent Reduction
East Marlborough TWP	Red Clay	5.95E+15	2.85E+15	52.08%
Kennett Square Boro	Red Clay	5.45E+14	2.62E+14	51.95%
Kennett TWP	Red Clay	3.65E+15	1.78E+15	51.26%
New Garden TWP	Red Clay	2.76E+15	1.34E+15	51.52%
Avondale Boro	White Clay	5.83E+13	5.53E+13	5.06%
London Grove TWP	White Clay	2.23E+15	2.12E+15	5.04%
New Garden TWP	White Clay	6.59E+13	6.25E+13	5.15%
West Grove Boro	White Clay	1.23E+14	1.17E+14	5.04%

Table 4-3. Septic system TMDL allocations of fecal coliform bacteria

Sub-Watershed	Estimated number of septic systems	Swimming Season Baseline (cfu/season)	Swimming Season TMDL (cfu/season)	Percent Reduction
Red Clay (R01)	553	6.13E+13	1.26E+11	99.79%
Red Clay (R02)	460	5.09E+13	1.05E+11	99.79%
Red Clay (R03)	779	8.63E+13	1.77E+11	99.79%
White Clay (W04)	224	2.48E+13	5.10E+10	99.79%
White Clay (W07)	42	4.69E+12	9.63E+09	99.79%
Sub-Watershed	**Estimated number of septic systems**	**Non Swimming Season Baseline (cfu/season)**	**Non Swimming Season TMDL (cfu/season)**	**Percent Reduction**
Red Clay (R01)	553	8.79E+13	1.75E+11	99.80%
Red Clay (R02)	460	7.31E+13	1.45E+11	99.80%
Red Clay (R03)	779	1.24E+14	2.46E+11	99.80%
White Clay (W04)	224	3.56E+13	7.06E+10	99.80%
White Clay (W07)	42	6.72E+12	1.33E+10	99.80%

Table 4-4. State line allocations for Christina River Basin *enterococci* bacteria TMDL

Location	Baseline (cfu/yr)	Allocation (cfu/yr)	Reduction
Allocations at the Pennsylvania-Delaware State Line			
Brandywine Cr. (at PA-DE Line)	3.12E+15	2.01E+14	93.56%
White Clay Cr. (at PA-DE Line)	6.86E+14	2.06E+14	70.03%
Red Clay Cr. (at PA-DE Line)	2.58E+14	1.08E+14	58.05%
Burroughs Run (at PA-DE Line)	1.85E+13	1.30E+13	29.32%
Allocations at the Maryland-Delaware State Line			
Christina River (at MD-DE Line)	1.86E+13	7.73E+12	58.40%

Table 4-5. Summary of CSO enterococci baseline loads and WLA TMDL

Location	CSO ID Numbers	Baseline (cfu/yr)	WLA (cfu/yr)	Reduction
Little Mill Creek (C05)	27, 28, 29	1.56E+14	3.69E+13	76.32%
Christina River (C09)	5, 6, 7, 9a, 9c, 10, 11, 12, 13, 14, 15, 16, 17, 30	3.54E+14	9.75E+13	72.47%
Brandywine Creek (B34)	3, 4a, 4b, 4c, 4d, 4e, 4f, 18, 19, 20, 21a, 21b, 21c, 22b, 22c, 23, 24, 25, 26, RR	6.89E+14	2.55E+14	63.07%

Location	CSO ID Numbers	Baseline (cfu/yr)	WLA (cfu/yr)	Reduction
Total CSO Loads	-	1.20E+15	3.89E+14	67.57%

Table 4-6. Allocations for Christina River Basin *enterococci* bacteria TMDL

Location	Baseline (cfu/yr)	WLA (cfu/yr)	LA (cfu/yr)	MOS (cfu/yr)	TMDL (cfu/yr)	Reduction
Brandywine Creek in Delaware						
Brandywine Cr. (B18)	1.11E+14	0.00E+00	5.55E+12	2.92E+11	5.85E+12	94.75%
Brandywine Cr. (B19)	5.57E+13	3.45E+10	6.31E+12	3.32E+11	6.68E+12	88.00%
White Clay Creek in Delaware						
White Clay Cr. (W11)	4.07E+13	0.00E+00	9.96E+12	5.24E+11	1.05E+13	74.23%
White Clay Cr. (W12)	1.49E+14	4.15E+10	1.79E+13	9.44E+11	1.89E+13	87.31%
White Clay Cr. (W13)	3.01E+13	0.00E+00	3.91E+12	2.06E+11	4.11E+12	86.34%
White Clay Cr. (W14)	3.82E+13	0.00E+00	3.99E+12	2.10E+11	4.20E+12	89.00%
White Clay Cr. (W15)	2.85E+13	0.00E+00	8.95E+12	4.71E+11	9.42E+12	66.90%
White Clay Cr. (W16)	1.02E+14	0.00E+00	1.32E+13	6.95E+11	1.39E+13	86.41%
White Clay Cr. (W17)	2.41E+14	0.00E+00	3.34E+13	1.76E+12	3.52E+13	85.43%
Red Clay Creek in Delaware						
Red Clay Cr. (R04)	5.89E+13	3.00E+12	8.52E+12	4.48E+11	1.20E+13	79.67%
Red Clay Cr. (R05)	2.25E+13	2.07E+10	7.90E+12	4.16E+11	8.34E+12	63.01%
Red Clay Cr. (R06)	1.51E+13	6.22E+08	1.01E+13	5.34E+11	1.07E+13	29.32%
Red Clay Cr. (R07)	6.05E+12	0.00E+00	1.74E+12	9.16E+10	1.83E+12	69.75%
Red Clay Cr. (R08)	7.61E+13	4.84E+11	7.83E+12	4.12E+11	8.73E+12	88.54%
Red Clay Cr. (R09)	2.88E+13	0.00E+00	2.89E+12	1.52E+11	3.04E+12	89.44%
Christina River and Tidal Brandywine Creek						
Christina River (C01)	3.51E+13	0.00E+00	1.27E+13	6.69E+11	1.34E+13	61. 90%
Christina River (C02)	8.16E+13	0.00E+00	2.47E+13	1.30E+12	2.60E+13	68.15%
Christina River (C03)	6.64E+13	0.00E+00	9.35E+12	4.92E+11	9.84E+12	85.18%
Christina River (C04)	8.69E+13	0.00E+00	6.73E+12	3.54E+11	7.09E+12	91.84%
Christina River (C05) *	2.21E+14	3.69E+13	4.84E+12	2.55E+11	4.20E+13	81.01%
Christina River (C06)	7.45E+13	0.00E+00	1.65E+13	8.70E+11	1.74E+13	76.66%
Christina River (C07)	7.16E+13	0.00E+00	1.08E+13	5.70E+11	1.14E+13	84.08%
Christina River (C08)	1.28E+14	0.00E+00	1.67E+13	8.79E+11	1.76E+13	86.29%
Christina River (C09) *	6.84E+14	9.75E+13	3.54E+13	1.87E+12	1.35E+14	80.30%
Tidal Brandywine Cr. (B34) *	8.23E+14	2.55E+14	1.33E+13	6.98E+11	2.68E+14	67.38%
Sunset Lake	6.39E+13	0.00E+00	1.41E+13	7.46E+11	1.49E+13	76.66%
Beck's Pond	6.27E+13	0.00E+00	9.45E+12	4.99E+11	9.98E+12	84.08%
Smalley's Pond	1.28E+14	0.00E+00	1.67E+13	8.79E+11	1.76E+13	86.29%
* CSO loads are included in the Baseline and WLA in these subbasins.						

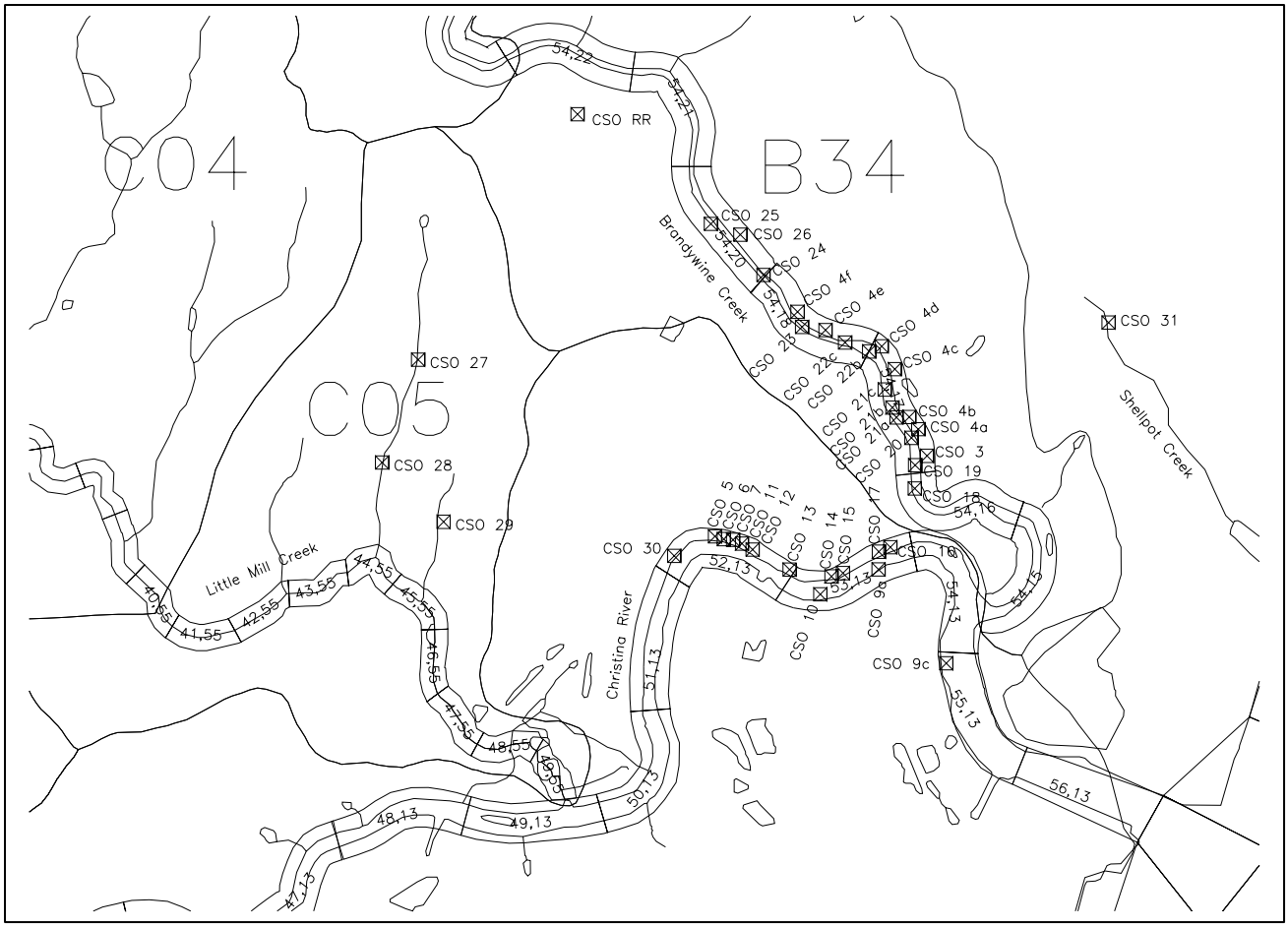

Figure 4-2. Location of CSO discharges in relation to EFDC model grid cells

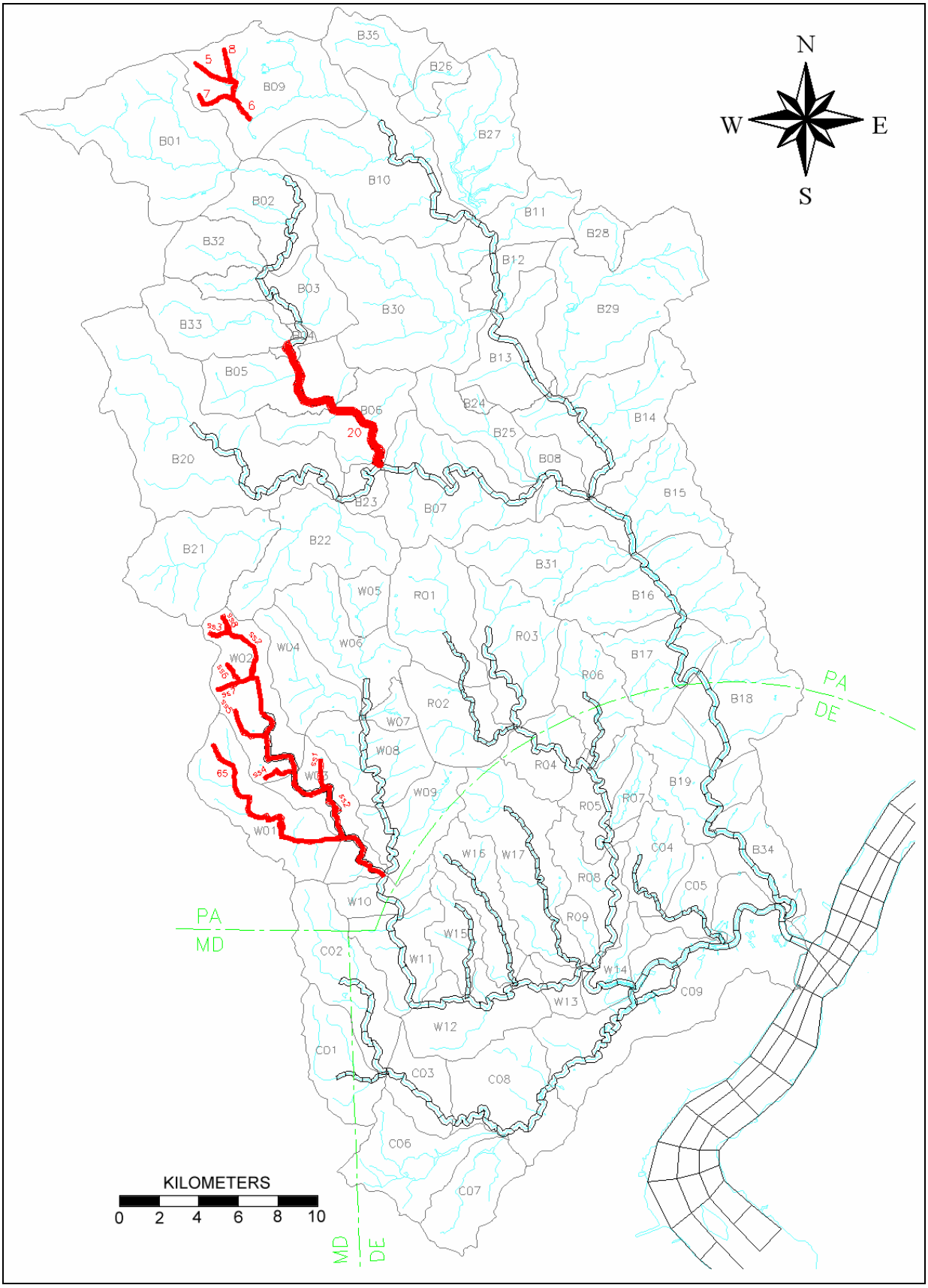

Figure 4-3. Stream segments impaired by sediment on Pennsylvania 1996 Section 303(d) list

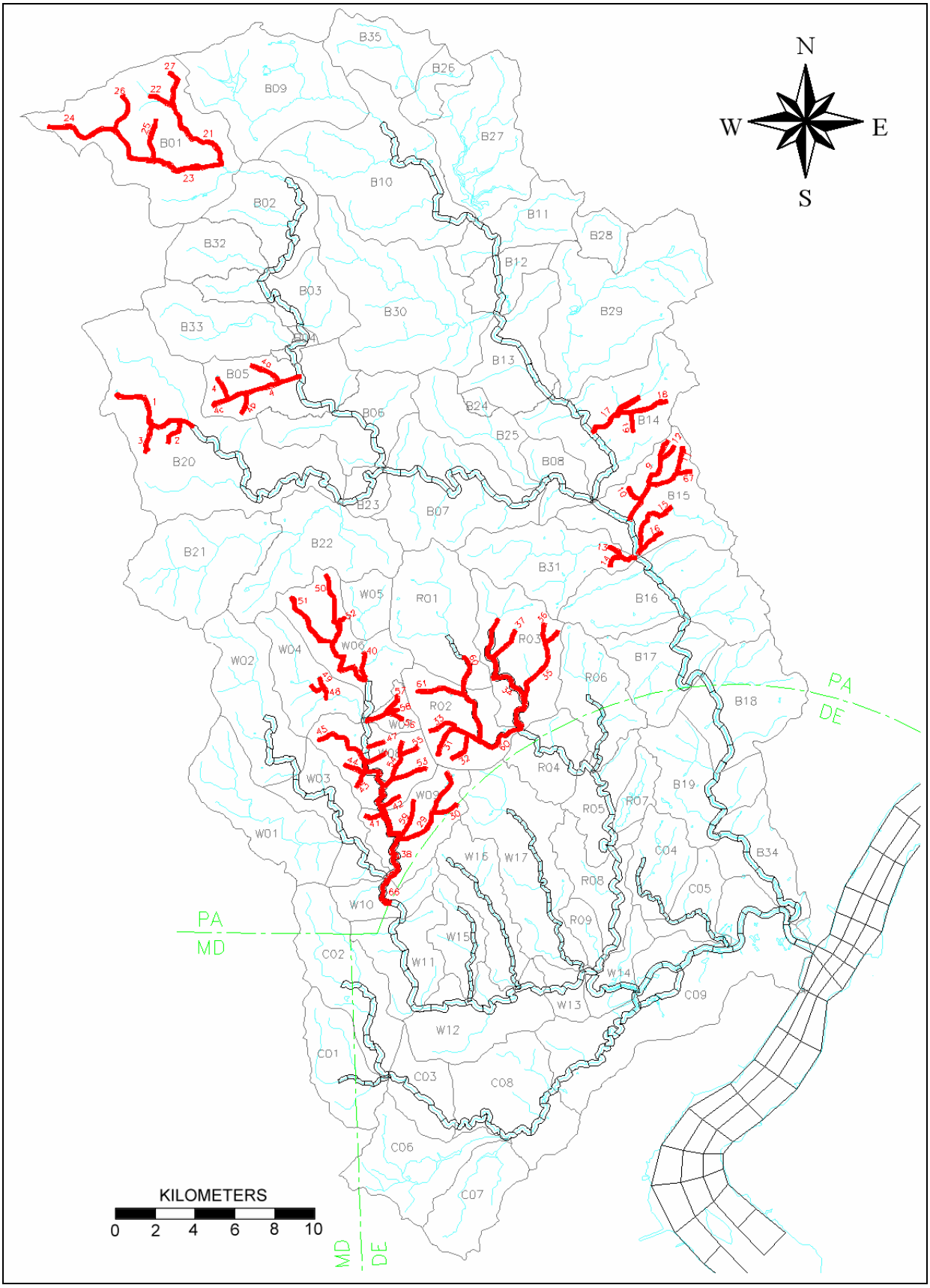

Figure 4-4. Stream segments impaired by sediment on Pennsylvania 1998 Section 303(d) list

Table 4-7. Allocations for Christina River Basin sediment TMDL

Subbasin	Baseline Load (ton/yr)			TMDL Allocation (ton/yr)				Percent Reduction
	PS	NPS	Total	WLA	MS4 WLA	MOS	TMDL	
Brandywine Creek								
B01	29.80	776.03	805.83	29.80	498.98	27.83	556.61	30.9%
B04	0.00	42.63	42.63	0.00	21.77	1.15	22.92	46.2%
B05	246.02	1278.65	1524.67	246.02	421.74	35.15	702.91	53.9%
B06	0.08	340.20	340.28	0.08	219.34	11.55	230.97	32.1%
B09	0.04	498.86	498.89	0.04	399.50	21.03	420.57	15.7%
B14	79.81	1637.50	1717.31	79.81	631.82	37.45	749.08	56.4%
B15	9.19	1214.60	1223.79	9.19	509.37	27.29	545.85	55.4%
B20	1.68	1119.58	1121.26	1.68	694.97	36.67	733.31	34.6%
B31	0.04	1189.38	1189.42	0.04	452.25	23.80	476.09	60.0%
White Clay Creek								
W01	0.30	5353.56	5353.87	0.30	2940.17	154.76	3095.23	42.2%
W02	11.42	7999.18	8010.60	11.42	2732.68	144.43	2888.53	63.9%
W03	0.00	3168.54	3168.54	0.00	1825.04	96.05	1921.10	39.4%
W04	0.00	5187.94	5187.94	0.00	1781.23	94.49	1875.72	63.8%
W06	2.83	8114.08	8116.92	2.83	2462.94	129.78	2595.55	68.0%
W07	2.97	1414.61	1417.58	2.97	393.60	20.87	417.44	70.6%
W08	2.19	4606.80	4609.00	2.19	2146.83	113.11	2262.13	50.9%
W09	0.05	2808.89	2808.95	0.05	1968.74	103.62	2072.42	26.2%
Red Clay Creek								
R01	8.45	8424.04	8432.49	8.45	3829.70	201.96	4040.11	52.1%
R02	50.26	6252.12	6302.38	50.26	2805.45	150.30	3006.01	52.3%
R03	6.85	7218.12	7224.97	6.85	3761.33	198.33	3966.51	45.1%

Table 4-8. Sediment allocations for towns in Brandywine Creek Watershed

Township	Baseline (ton/yr)	TMDL (ton/yr)	Percent Reduction
BIRMINGHAM TWP	310.81	130.35	58.06%
COATESVILLE CITY	231.29	79.76	65.52%
EAST BRADFORD TWP	1185.00	467.17	60.58%
EAST FALLOWFIELD TWP	803.23	426.42	46.91%
EAST MARLBOROUGH TWP	366.70	139.44	61.98%
HIGHLAND TWP	384.80	238.86	37.93%
HONEY BROOK BORO	20.58	13.23	35.70%
HONEY BROOK TWP	813.84	558.76	31.34%
MODENA BORO	27.96	12.46	55.43%
NEWLIN TWP	144.18	59.59	58.67%
PARKESBURG BORO	52.11	32.35	37.93%
PENNSBURY TWP	113.98	43.48	61.85%
POCOPSON TWP	821.21	320.79	60.94%
SADSBURY TWP	289.73	172.13	40.59%
THORNBURY TWP	82.17	34.46	58.06%
VALLEY TWP	485.14	164.64	66.06%
WALLACE TWP	21.74	17.41	19.92%
WEST BRADFORD TWP	283.22	121.60	57.07%
WEST CALN TWP	68.28	43.07	36.92%
WEST GOSHEN TWP	461.32	180.51	60.87%

Table 4-9. Sediment allocations for towns in Red Clay Creek Watershed

Township	Baseline (ton/yr)	TMDL (ton/yr)	Percent Reduction
EAST MARLBOROUGH TWP	8791.41	4193.24	52.30%
KENNETT SQUARE BORO	840.10	405.41	51.74%
KENNETT TWP	6751.63	3312.06	50.94%
NEW GARDEN TWP	4709.65	2118.72	55.01%

Table 4-10. Preliminary sediment allocations for towns in White Clay Creek Watershed

Township	Baseline (ton/yr)	TMDL (ton/yr)	Percent Reduction
AVONDALE BORO	463.65	140.02	69.80%
FRANKLIN TWP	4220.43	2305.87	45.36%
LONDON BRITAIN TWP	2634.66	1620.44	38.50%
LONDON GROVE TWP	13616.33	4842.81	64.43%
NEW GARDEN TWP	6746.50	2986.66	55.73%
NEW LONDON TWP	1913.97	1008.60	47.30%
PENN TWP	3584.76	1410.29	60.66%
WEST GROVE BORO	562.29	192.63	65.74%

Appendix C

Land Use Areas and Allocations for MS4 Municipalities in Cristina River Basin

Appendix C

Land Use Areas and Allocations for MS4 Municipalities in Christina River Basin

Table C-1. Land Use Areas (acres) for MS4 Municipalities in Brandywine Creek Watershed

HSPF Subbasin	MS4 Municipality	Residential	Agriculture	Open Land	Forest	Water	Urban	MS4 Total	Subbasin Total	MS4 Ratio
B01	HONEY BROOK BORO	175.55	117.03	0.00	0.00	0.00	19.51	312.08	11766.82	0.0265
B01	HONEY BROOK TWP	429.11	6612.23	0.00	1501.89	19.51	370.60	8933.33	11766.82	0.7592
B01	WEST CALN TWP	78.02	0.00	0.00	370.60	0.00	19.51	468.12	11766.82	0.0398
B02	HONEY BROOK TWP	253.57	78.02	0.00	819.21	0.00	19.51	1170.31	4720.88	0.2479
B02	WEST BRANDYWINE TWP	448.62	663.17	0.00	741.19	19.51	78.02	1950.51	4720.88	0.4132
B02	WEST CALN TWP	351.09	624.16	19.51	585.15	19.51	19.51	1618.92	4720.88	0.3429
B03	COATESVILLE CITY	0.00	0.00	0.00	39.01	0.00	0.00	39.01	4324.94	0.0090
B03	VALLEY TWP	19.51	58.52	0.00	58.52	0.00	58.52	195.05	4324.94	0.0451
B03	WEST BRANDYWINE TWP	760.70	702.18	0.00	663.17	0.00	19.51	2145.56	4324.94	0.4961
B03	WEST CALN TWP	253.57	487.63	19.51	643.67	19.51	39.01	1462.88	4324.94	0.3382
B04	COATESVILLE CITY	19.51	0.00	0.00	175.55	0.00	39.01	234.06	519.99	0.4501
B04	VALLEY TWP	19.51	39.01	0.00	234.06	0.00	19.51	312.08	519.99	0.6002
B05	COATESVILLE CITY	487.63	0.00	19.51	117.03	0.00	312.08	936.24	5644.14	0.1659
B05	EAST FALLOWFIELD TWP	136.54	331.59	0.00	565.65	0.00	156.04	1189.81	5644.14	0.2108
B05	MODENA BORO	19.51	0.00	0.00	39.01	19.51	0.00	78.02	5644.14	0.0138
B05	SADSBURY TWP	19.51	58.52	0.00	19.51	0.00	19.51	117.03	5644.14	0.0207
B05	VALLEY TWP	331.59	585.15	19.51	604.66	19.51	468.12	2028.53	5644.14	0.3594
B06	EAST FALLOWFIELD TWP	916.74	1404.37	39.01	1443.38	0.00	136.54	3940.03	5159.73	0.7636
B06	MODENA BORO	19.51	39.01	0.00	39.01	0.00	58.52	156.04	5159.73	0.0302
B06	NEWLIN TWP	0.00	58.52	0.00	175.55	0.00	39.01	273.07	5159.73	0.0529
B06	WEST BRADFORD TWP	136.54	351.09	0.00	234.06	0.00	0.00	721.69	5159.73	0.1399
B07	EAST MARLBOROUGH TWP	39.01	429.11	0.00	156.04	0.00	0.00	624.16	8616.54	0.0724
B07	NEWLIN TWP	292.58	2867.25	0.00	2594.18	97.53	273.07	6124.60	8616.54	0.7108
B07	POCOPSON TWP	39.01	195.05	0.00	117.03	0.00	19.51	370.60	8616.54	0.0430
B07	WEST BRADFORD TWP	195.05	507.13	0.00	546.14	0.00	175.55	1423.87	8616.54	0.1652
B08	EAST BRADFORD TWP	78.02	429.11	0.00	214.56	19.51	0.00	741.19	2314.42	0.3203
B08	POCOPSON TWP	0.00	526.64	0.00	195.05	19.51	0.00	741.19	2314.42	0.3203
B08	WEST BRADFORD TWP	136.54	487.63	0.00	195.05	0.00	39.01	858.22	2314.42	0.3708
B09	HONEY BROOK TWP	292.58	2711.21	0.00	916.74	273.07	39.01	4232.60	9397.55	0.4504
B09	WALLACE TWP	39.01	97.53	0.00	234.06	0.00	39.01	409.61	9397.55	0.0436
B10	EAST BRANDYWINE TWP	819.21	819.21	19.51	819.21	19.51	19.51	2516.16	11721.04	0.2147
B10	HONEY BROOK TWP	58.52	19.51	0.00	58.52	39.01	39.01	214.56	11721.04	0.0183
B10	UPPER UWCHLAN TWP	97.53	195.05	0.00	195.05	0.00	19.51	507.13	11721.04	0.0433
B10	WALLACE TWP	702.18	1794.47	58.52	2633.19	0.00	175.55	5363.90	11721.04	0.4576
B10	WEST BRANDYWINE TWP	409.61	819.21	19.51	741.19	19.51	78.02	2087.04	11721.04	0.1781
B11	EAST BRANDYWINE TWP	214.56	331.59	0.00	546.14	0.00	0.00	1092.29	4039.89	0.2704
B11	UPPER UWCHLAN TWP	0.00	19.51	0.00	78.02	0.00	0.00	97.53	4039.89	0.0241
B11	UWCHLAN TWP	663.17	916.74	39.01	936.24	0.00	253.57	2808.73	4039.89	0.6952
B12	DOWNINGTOWN BORO	156.04	39.01	39.01	39.01	19.51	58.52	351.09	2369.53	0.1482
B12	EAST BRANDYWINE TWP	156.04	58.52	0.00	136.54	19.51	19.51	390.10	2369.53	0.1646
B12	EAST CALN TWP	195.05	39.01	0.00	292.58	0.00	19.51	546.14	2369.53	0.2305
B12	UWCHLAN TWP	312.08	0.00	0.00	331.59	0.00	19.51	663.17	2369.53	0.2799

HSPF Subbasin	MS4 Municipality	Residential	Agriculture	Open Land	Forest	Water	Urban	MS4 Total	Subbasin Total	MS4 Ratio
B13	DOWNINGTOWN BORO	253.57	136.54	0.00	117.03	0.00	234.06	741.19	5084.19	0.1458
B13	EAST BRADFORD TWP	39.01	136.54	0.00	409.61	19.51	0.00	604.66	5084.19	0.1189
B13	EAST CALN TWP	273.07	234.06	117.03	351.09	0.00	214.56	1189.81	5084.19	0.2340
B13	WEST BRADFORD TWP	702.18	253.57	0.00	1404.37	0.00	156.04	2516.16	5084.19	0.4949
B14	EAST BRADFORD TWP	1072.78	1931.00	97.53	1131.30	97.53	156.04	4486.17	8268.16	0.5426
B14	WEST BRADFORD TWP	97.53	526.64	0.00	487.63	0.00	78.02	1189.81	8268.16	0.1439
B14	WEST GOSHEN TWP	663.17	214.56	19.51	838.72	19.51	195.05	1950.51	8268.16	0.2359
B15	BIRMINGHAM TWP	546.14	741.19	117.03	136.54	19.51	136.54	1696.94	6631.34	0.2559
B15	EAST BRADFORD TWP	526.64	604.66	19.51	351.09	0.00	117.03	1618.92	6631.34	0.2441
B15	PENNSBURY TWP	0.00	19.51	0.00	0.00	0.00	0.00	19.51	6631.34	0.0029
B15	POCOPSON TWP	136.54	663.17	0.00	234.06	97.53	58.52	1189.81	6631.34	0.1794
B15	THORNBURY TWP	0.00	331.59	0.00	97.53	0.00	19.51	448.62	6631.34	0.0677
B15	WEST GOSHEN TWP	253.57	0.00	58.52	78.02	0.00	19.51	409.61	6631.34	0.0618
B16	BIRMINGHAM TWP	585.15	780.20	0.00	780.20	39.01	58.52	2243.09	8996.74	0.2493
B16	KENNETT TWP	351.09	214.56	0.00	117.03	0.00	58.52	741.19	8996.74	0.0824
B16	PENNSBURY TWP	975.25	760.70	0.00	1228.82	39.01	78.02	3081.80	8996.74	0.3425
B16	THORNBURY TWP	0.00	0.00	0.00	19.51	0.00	0.00	19.51	8996.74	0.0022
B17	KENNETT TWP	78.02	0.00	0.00	58.52	0.00	0.00	136.54	4804.91	0.0284
B17	PENNSBURY TWP	370.60	936.24	0.00	1326.35	58.52	0.00	2691.70	4804.91	0.5602
B18	PENNSBURY TWP	0.00	19.51	0.00	19.51	19.51	0.00	58.52	6636.33	0.0088
B18	New Castle Co., DE	541.70	906.34	622.35	1630.53	47.00	518.45	4266.37	6636.33	0.6429
B19	Wilmington, DE	3.59	0.00	7.18	14.36	1.80	3.59	30.53	5534.18	0.0055
B19	New Castle Co., DE	1152.14	228.80	2220.40	898.84	54.03	949.45	5503.65	5534.18	0.9945
B20	EAST FALLOWFIELD TWP	585.15	2165.07	0.00	1111.79	19.51	117.03	3998.54	16344.14	0.2446
B20	HIGHLAND TWP	136.54	3744.98	0.00	1482.39	19.51	234.06	5617.47	16344.14	0.3437
B20	PARKESBURG BORO	429.11	97.53	0.00	97.53	0.00	136.54	760.70	16344.14	0.0465
B20	SADSBURY TWP	507.13	2048.03	0.00	975.25	0.00	312.08	3842.50	16344.14	0.2351
B20	WEST CALN TWP	58.52	273.07	0.00	195.05	0.00	19.51	546.14	16344.14	0.0334
B21	HIGHLAND TWP	78.02	2594.18	0.00	253.57	19.51	58.52	3003.78	7074.39	0.4246
B22	EAST FALLOWFIELD TWP	0.00	19.51	0.00	0.00	0.00	0.00	19.51	7013.14	0.0028
B22	EAST MARLBOROUGH TWP	0.00	234.06	0.00	97.53	0.00	0.00	331.59	7013.14	0.0473
B23	EAST FALLOWFIELD TWP	0.00	351.09	0.00	273.07	0.00	0.00	624.16	1245.87	0.5010
B23	NEWLIN TWP	0.00	331.59	0.00	292.58	0.00	0.00	624.16	1245.87	0.5010
B24	WEST BRADFORD TWP	390.10	19.51	0.00	0.00	0.00	0.00	409.61	383.68	1.0676
B25	NEWLIN TWP	39.01	39.01	0.00	0.00	0.00	0.00	78.02	3733.70	0.0209
B25	WEST BRADFORD TWP	936.24	1443.38	19.51	1111.79	0.00	175.55	3686.46	3733.70	0.9873
B26	WALLACE TWP	78.02	97.53	0.00	273.07	0.00	39.01	487.63	1673.35	0.2914
B27	UPPER UWCHLAN TWP	1404.37	1306.84	78.02	1599.42	565.65	273.07	5227.36	6837.84	0.7645
B27	UWCHLAN TWP	0.00	0.00	0.00	39.01	0.00	0.00	39.01	6837.84	0.0057
B27	WALLACE TWP	175.55	195.05	0.00	292.58	19.51	19.51	702.18	6837.84	0.1027
B28	UWCHLAN TWP	741.19	19.51	39.01	136.54	0.00	58.52	994.76	1537.60	0.6470
B29	EAST BRADFORD TWP	526.64	448.62	39.01	1228.82	0.00	97.53	2340.61	11653.36	0.2009
B29	EAST CALN TWP	39.01	39.01	78.02	214.56	39.01	273.07	682.68	11653.36	0.0586
B29	UWCHLAN TWP	156.04	19.51	0.00	78.02	0.00	19.51	273.07	11653.36	0.0234
B29	WEST GOSHEN TWP	409.61	78.02	0.00	195.05	0.00	39.01	721.69	11653.36	0.0619
B30	DOWNINGTOWN BORO	214.56	19.51	0.00	39.01	0.00	19.51	292.58	11568.11	0.0253
B30	EAST BRANDYWINE TWP	936.24	1404.37	0.00	780.20	0.00	136.54	3257.35	11568.11	0.2816
B30	EAST FALLOWFIELD TWP	39.01	117.03	0.00	39.01	0.00	19.51	214.56	11568.11	0.0185
B30	WEST BRADFORD TWP	273.07	214.56	0.00	546.14	0.00	39.01	1072.78	11568.11	0.0927

HSPF Subbasin	MS4 Municipality	Residential	Agriculture	Open Land	Forest	Water	Urban	MS4 Total	Subbasin Total	MS4 Ratio
B30	WEST BRANDYWINE TWP	351.09	1287.34	39.01	507.13	0.00	39.01	2223.58	11568.11	0.1922
B31	EAST MARLBOROUGH TWP	663.17	799.71	78.02	253.57	0.00	19.51	1813.97	5883.50	0.3083
B31	NEWLIN TWP	39.01	468.12	0.00	97.53	0.00	19.51	624.16	5883.50	0.1061
B31	PENNSBURY TWP	58.52	351.09	0.00	136.54	0.00	0.00	546.14	5883.50	0.0928
B31	POCOPSON TWP	780.20	1365.36	0.00	741.19	19.51	78.02	2984.28	5883.50	0.5072
B32	WEST CALN TWP	429.11	1033.77	0.00	1599.42	0.00	58.52	3120.81	2981.99	1.0466
B33	SADSBURY TWP	39.01	19.51	0.00	19.51	0.00	0.00	78.02	5139.05	0.0152
B33	VALLEY TWP	214.56	331.59	19.51	487.63	0.00	175.55	1228.82	5139.05	0.2391
B33	WEST CALN TWP	643.67	1794.47	97.53	1014.26	117.03	117.03	3783.99	5139.05	0.7363
B34	Wilmington, DE	817.01	0.00	360.92	154.42	98.76	1086.4	2517.46	3873.14	0.6500
B34	New Castle Co., DE	152.60	60.27	9.58	222.06	1.52	909.65	1355.68	3873.14	0.3500
B35	WALLACE TWP	58.52	156.04	0.00	351.09	0.00	39.01	604.66	3713.47	0.1628

Note: MS4 Total = total land area in MS4 municipality
Subbasin Total = total land area of HSPF subbasin
MS4 Ratio = MS4 Total / Subbasin Total

Table C-2. Land Use Areas (acres) for MS4 Municipalities in Red Clay Creek Watershed

HSPF Subbasin	MS4 Municipality	Residential	Agriculture	Open Land	Forest	Water	Urban	MS4 Total	Subbasin Total	MS4 Ratio
R01	EAST MARLBOROUGH TWP	565.65	2847.74	39.01	838.72	19.51	156.04	4466.67	6448.43	0.6927
R01	KENNETT SQUARE BORO	136.54	97.53	19.51	0.00	0.00	97.53	351.09	6448.43	0.0544
R01	KENNETT TWP	58.52	78.02	19.51	78.02	0.00	97.53	331.59	6448.43	0.0514
R01	NEW GARDEN TWP	117.03	331.59	0.00	156.04	0.00	97.53	702.18	6448.43	0.1089
R02	KENNETT SQUARE BORO	0.00	19.51	0.00	0.00	0.00	0.00	19.51	4727.00	0.0041
R02	KENNETT TWP	585.15	624.16	0.00	643.67	0.00	0.00	1852.98	4727.00	0.3920
R02	NEW GARDEN TWP	234.06	1891.99	0.00	604.66	0.00	136.54	2867.25	4727.00	0.6066
R03	EAST MARLBOROUGH TWP	546.14	1345.85	234.06	312.08	0.00	156.04	2594.18	6333.99	0.4096
R03	KENNETT SQUARE BORO	175.55	39.01	0.00	58.52	0.00	39.01	312.08	6333.99	0.0493
R03	KENNETT TWP	643.67	1677.44	0.00	916.74	19.51	136.54	3393.89	6333.99	0.5358
R04	KENNETT TWP	195.05	195.05	0.00	292.58	0.00	0.00	682.68	3272.23	0.2086
R04	New Castle Co., DE	1042.15	379.99	257.52	637.52	26.44	245.93	2589.55	3272.23	0.7914
R05	New Castle Co., DE	1153.92	492.06	199.56	1266.25	40.64	200.64	3353.07	3353.07	1.0000
R06	KENNETT TWP	624.16	916.74	19.51	897.23	0.00	97.53	2555.17	4543.71	0.5624
R06	PENNSBURY TWP	78.02	78.02	0.00	58.52	0.00	78.02	292.58	4543.71	0.0644
R06	New Castle Co., DE	313.61	933.77	213.39	184.51	6.01	44.67	1695.96	4543.71	0.3733
R07	New Castle Co., DE	350.82	97.20	39.98	596.30	192.37	66.92	1343.59	1343.59	1.0000
R08	New Castle Co., DE	1268.17	54.61	475.64	464.55	47.93	1132.1	3442.99	3442.99	1.0000
R09	New Castle Co., DE	501.89	0.00	41.68	112.89	4.86	441.99	1103.31	1103.31	1.0000

Note: MS4 Total = total land area in MS4 municipality
Subbasin Total = total land area of HSPF subbasin
MS4 Ratio = MS4 Total / Subbasin Total

Table C-3. Land Use Areas (acres) for MS4 Municipalities in White Clay Creek Watershed

HSPF Subbasin	MS4 Municipality	Residential	Agriculture	Open Land	Forest	Water	Urban	MS4 Total	Subbasin Total	MS4 Ratio
W01	FRANKLIN TWP	331.59	1423.87	0.00	955.75	0.00	136.54	2847.74	6537.83	0.4356
W01	LONDON BRITAIN TWP	78.02	136.54	0.00	214.56	0.00	0.00	429.11	6537.83	0.0656
W01	NEW LONDON TWP	507.13	1014.26	0.00	409.61	0.00	156.04	2087.04	6537.83	0.3192
W01	PENN TWP	175.55	682.68	0.00	214.56	0.00	19.51	1092.29	6537.83	0.1671
W02	LONDON GROVE TWP	468.12	1618.92	19.51	507.13	19.51	19.51	2652.69	6089.44	0.4356
W02	NEW LONDON TWP	39.01	58.52	0.00	58.52	0.00	0.00	156.04	6089.44	0.0256
W02	PENN TWP	273.07	1306.84	0.00	409.61	19.51	39.01	2048.03	6089.44	0.3363
W02	WEST GROVE BORO	156.04	19.51	0.00	0.00	0.00	58.52	234.06	6089.44	0.0384
W03	FRANKLIN TWP	234.06	838.72	0.00	585.15	0.00	0.00	1657.93	4063.37	0.4080
W03	LONDON BRITAIN TWP	448.62	624.16	0.00	682.68	19.51	0.00	1774.96	4063.37	0.4368
W03	LONDON GROVE TWP	195.05	253.57	0.00	195.05	0.00	19.51	663.17	4063.37	0.1632
W04	AVONDALE BORO	39.01	19.51	0.00	19.51	0.00	0.00	78.02	3971.00	0.0196
W04	LONDON GROVE TWP	312.08	2145.56	19.51	916.74	19.51	136.54	3549.93	3971.00	0.8940
W04	WEST GROVE BORO	58.52	39.01	19.51	39.01	0.00	39.01	195.05	3971.00	0.0491
W05	LONDON GROVE TWP	0.00	136.54	0.00	58.52	0.00	0.00	195.05	1705.95	0.1143
W06	AVONDALE BORO	58.52	0.00	0.00	58.52	0.00	0.00	117.03	5484.38	0.0213
W06	LONDON GROVE TWP	39.01	1891.99	0.00	351.09	0.00	39.01	2321.11	5484.38	0.4232
W06	NEW GARDEN TWP	58.52	448.62	136.54	273.07	0.00	97.53	1014.26	5484.38	0.1849
W07	AVONDALE BORO	19.51	58.52	0.00	19.51	0.00	19.51	117.03	877.92	0.1333
W07	NEW GARDEN TWP	136.54	546.14	0.00	97.53	19.51	39.01	838.72	877.92	0.9553
W08	FRANKLIN TWP	117.03	351.09	0.00	136.54	0.00	0.00	604.66	4776.15	0.1266
W08	LONDON GROVE TWP	214.56	624.16	39.01	702.18	0.00	19.51	1599.42	4776.15	0.3349
W08	NEW GARDEN TWP	390.10	1306.84	0.00	780.20	0.00	58.52	2535.66	4776.15	0.5309
W09	FRANKLIN TWP	0.00	19.51	0.00	0.00	0.00	0.00	19.51	4386.93	0.0044
W09	LONDON BRITAIN TWP	273.07	468.12	0.00	643.67	19.51	0.00	1404.37	4386.93	0.3201
W09	NEW GARDEN TWP	546.14	877.73	0.00	604.66	39.01	195.05	2262.59	4386.93	0.5158
W10	LONDON BRITAIN TWP	292.58	429.11	0.00	604.66	0.00	19.51	1345.85	2303.61	0.5842
W10	New Castle Co., DE	208.24	305.42	0.00	430.36	0.00	13.82	957.84	2303.61	0.4158
W11	LONDON BRITAIN TWP	58.52	117.03	0.00	156.04	0.00	19.51	351.09	4175.09	0.0841
W11	Newark, DE	308.85	114.92	122.10	251.39	8.98	111.33	917.56	4175.09	0.2198
W11	New Castle Co., DE	25.21	415.38	175.09	1882.36	24.17	384.21	2906.43	4175.09	0.6961
W12	Newark, DE	470.45	197.52	156.22	125.69	14.36	673.36	1637.60	5610.56	0.2919
W12	New Castle Co., DE	881.65	329.92	391.80	476.03	38.16	1855.4	3972.96	5610.56	0.7081
W13	New Castle Co., DE	92.06	149.15	95.56	152.54	20.96	828.58	1338.85	1338.85	1.0000
W14	New Castle Co., DE	232.26	0.00	473.83	304.83	314.16	859.76	2184.84	2184.84	1.0000
W15	Newark, DE	7.18	0.00	0.00	0.00	0.00	0.00	7.18	2489.61	0.0029
W15	New Castle Co., DE	354.20	734.14	81.03	1050.46	0.00	262.60	2482.43	2489.61	0.9971
W16	New Castle Co., DE	1656.07	357.50	387.82	547.53	0.00	1300.9	4249.78	4249.78	1.0000
W17	KENNETT TWP	19.51	175.55	0.00	19.51	0.00	0.00	214.56	8320.77	0.0258
W17	NEW GARDEN TWP	0.00	58.52	0.00	0.00	0.00	0.00	58.52	8320.77	0.0070
W17	New Castle Co., DE	2847.08	672.52	844.32	952.36	0.03	2731.4	8047.68	8320.77	0.9672

Note: MS4 Total = total land area in MS4 municipality
Subbasin Total = total land area of HSPF subbasin
MS4 Ratio = MS4 Total / Subbasin Total

Table C-4. Land Use Areas (acres) for MS4 Municipalities in Christina River Watershed

HSPF Subbasin	MS4 Municipality	Residential	Agriculture	Open Land	Forest	Water	Urban	MS4 Total	Subbasin Total	MS4 Ratio
C01	Newark, DE	28.73	39.50	12.57	23.34	0.00	168.79	272.93	4288.78	0.0636
C01	New Castle Co., DE	94.94	357.76	90.37	255.93	0.00	38.18	837.18	4288.78	0.1952
C02	Newark, DE	1095.33	0.00	174.18	165.20	0.00	253.18	1687.88	6227.34	0.2710
C02	New Castle Co., DE	27.32	523.32	6.57	258.56	1.32	139.09	956.18	6227.34	0.1535
C03	Newark, DE	360.92	98.76	122.10	122.10	10.77	569.21	1283.87	2903.23	0.4422
C03	New Castle Co., DE	277.57	164.73	95.85	402.58	5.23	673.40	1619.36	2903.23	0.5578
C04	Wilmington, DE	3.59	0.00	1.80	0.00	0.00	1.80	7.18	3443.61	0.0021
C04	New Castle Co., DE	1012.41	48.63	315.16	627.61	8.45	1424.17	3436.43	3443.61	0.9979
C05	Wilmington, DE	333.99	0.00	52.07	30.53	0.00	86.19	502.77	2459.29	0.2044
C05	New Castle Co., DE	181.40	0.00	319.94	183.63	27.03	1244.51	1956.51	2459.29	0.7956
C06	Newark, DE	0.00	0.00	0.00	10.77	0.00	0.00	10.77	5532.47	0.0019
C06	New Castle Co., DE	786.46	817.40	564.42	2025.95	59.89	1037.13	5291.24	5532.47	0.9564
C07	New Castle Co., DE	843.87	344.68	328.54	1398.69	34.25	1127.56	4077.59	4077.59	1.0000
C08	New Castle Co., DE	1716.70	357.44	476.20	1843.67	36.71	2706.49	7137.21	7137.21	1.0000
C09	Newport, DE	48.48	0.00	17.96	0.00	16.16	210.09	292.69	14002.93	0.0209
C09	Wilmington, DE	628.47	0.00	518.93	0.00	254.98	1203.06	2605.44	14002.93	0.1861
C09	New Castle Co., DE	836.12	251.48	2265.00	1746.20	329.18	5676.83	11104.80	14002.93	0.7930

Note: MS4 Total = total land area in MS4 municipality
Subbasin Total = total land area of HSPF subbasin
MS4 Ratio = MS4 Total / Subbasin Total

Table C-5a. Sediment MS4 load allocations in Brandywine Creek Watershed

Township	Subbasin	Residential (ton/yr)	Agricultural (ton/yr)	Open (ton/yr)	Forested (ton/yr)	Wetland (ton/yr)	Urban (ton/yr)	Sub-Total (ton/yr)	Total (ton/yr)
BIRMINGHAM TWP	B15	15.64	104.33	3.35	3.11	0.00	3.91	130.35	130.35
COATESVILLE CITY	B04	1.00	0.00	0.00	13.88	0.00	1.00	15.88	86.06
COATESVILLE CITY	B05	33.82	0.00	1.60	9.25	0.00	25.52	70.19	
EAST BRADFORD TWP	B14	33.05	279.61	3.00	29.47	0.03	4.81	349.98	467.17
EAST BRADFORD TWP	B15	16.23	87.61	0.60	9.15	0.00	3.61	117.19	
EAST FALLOWFIELD TWP	B05	2.57	28.10	0.00	6.69	0.00	2.94	40.30	426.42
EAST FALLOWFIELD TWP	B06	17.27	124.29	0.73	17.08	0.00	2.57	161.94	
EAST FALLOWFIELD TWP	B20	11.02	197.79	0.00	13.15	0.00	2.20	224.17	
EAST MARLBOROUGH TWP	B31	19.09	111.14	2.25	6.40	0.00	0.56	139.44	139.44
HIGHLAND TWP	B20	1.66	224.63	0.00	9.71	0.00	2.85	238.86	238.86
HONEY BROOK BORO	B01	2.98	9.93	0.00	0.00	0.00	0.33	13.23	13.23
HONEY BROOK TWP	B01	4.94	377.82	0.00	8.39	0.00	4.26	395.42	558.76
HONEY BROOK TWP	B09	3.37	154.39	0.00	5.12	0.02	0.45	163.34	
MODENA BORO	B05	0.13	0.00	0.00	1.14	0.01	0.00	1.27	12.46
MODENA BORO	B06	0.76	7.00	0.00	1.14	0.00	2.29	11.19	
NEWLIN TWP	B06	0.00	4.42	0.00	2.99	0.00	0.82	8.24	59.59
NEWLIN TWP	B31	0.82	48.45	0.00	1.66	0.00	0.41	51.35	
PARKESBURG BORO	B20	12.78	13.93	0.00	1.56	0.00	4.07	32.35	32.35
PENNSBURY TWP	B15	0.00	2.17	0.00	0.00	0.00	0.00	2.17	43.48
PENNSBURY TWP	B31	1.30	37.36	0.00	2.65	0.00	0.00	41.31	
POCOPSON TWP	B15	3.80	88.92	0.00	5.56	0.02	1.63	99.93	320.79
POCOPSON TWP	B31	21.72	179.34	0.00	17.61	0.00	2.17	220.85	
SADSBURY TWP	B05	0.29	4.23	0.00	0.16	0.00	0.29	4.96	172.13
SADSBURY TWP	B20	7.45	147.10	0.00	8.03	0.00	4.58	167.17	
THORNBURY TWP	B15	0.00	32.50	0.00	1.56	0.00	0.39	34.46	34.46
VALLEY TWP	B04	0.75	1.67	0.00	8.89	0.00	0.75	12.07	164.64
VALLEY TWP	B05	12.82	97.94	0.75	22.96	0.01	18.10	152.58	
WALLACE TWP	B09	1.06	12.67	0.00	2.64	0.00	1.06	17.41	17.41
WEST BRADFORD TWP	B06	3.36	40.65	0.00	4.47	0.00	0.00	48.48	121.60
WEST BRADFORD TWP	B14	2.40	59.48	0.00	9.32	0.00	1.92	73.12	
WEST CALN TWP	B01	0.14	0.00	0.00	4.88	0.00	0.49	5.51	43.07
WEST CALN TWP	B20	1.46	33.06	0.00	2.57	0.00	0.49	37.57	
WEST GOSHEN TWP	B14	46.26	44.49	1.36	49.84	0.01	13.61	155.57	180.51
WEST GOSHEN TWP	B15	14.87	0.00	4.08	4.64	0.00	1.36	24.94	

Table C-5b. Sediment baseline MS4 loads in Brandywine Creek Watershed

Township	Subbasin	Residential (ton/yr)	Agricultural (ton/yr)	Open (ton/yr)	Forested (ton/yr)	Wetland (ton/yr)	Urban (ton/yr)	Sub-Total (ton/yr)	Total (ton/yr)
BIRMINGHAM TWP	B15	37.30	253.09	7.99	3.11	0.00	9.32	310.81	310.81
COATESVILLE CITY	B04	4.63	0.00	0.00	13.88	0.00	9.25	27.75	231.29
COATESVILLE CITY	B05	115.65	0.00	4.63	9.25	0.00	74.01	203.54	
EAST BRADFORD TWP	B14	83.84	754.59	7.62	29.47	0.03	12.20	887.74	1185.00
EAST BRADFORD TWP	B15	41.16	236.28	1.52	9.15	0.00	9.15	297.26	
EAST FALLOWFIELD TWP	B05	4.85	58.84	0.00	6.69	0.00	5.54	75.92	803.23
EAST FALLOWFIELD TWP	B06	32.54	249.21	1.38	17.08	0.00	4.85	305.05	
EAST FALLOWFIELD TWP	B20	20.77	384.19	0.00	13.15	0.00	4.15	422.27	

Township	Subbasin	Residential (ton/yr)	Agricultural (ton/yr)	Open (ton/yr)	Forested (ton/yr)	Wetland (ton/yr)	Urban (ton/yr)	Sub-Total (ton/yr)	Total (ton/yr)
EAST MARLBOROUGH TWP	B31	50.21	302.72	5.91	6.40	0.00	1.48	366.70	366.70
HIGHLAND TWP	B20	2.68	367.81	0.00	9.71	0.00	4.60	384.80	384.80
HONEY BROOK BORO	B01	4.63	15.44	0.00	0.00	0.00	0.51	20.58	20.58
HONEY BROOK TWP	B01	7.19	554.14	0.00	8.39	0.00	6.21	575.94	813.84
HONEY BROOK TWP	B09	4.90	227.21	0.00	5.12	0.02	0.65	237.91	
MODENA BORO	B05	1.71	0.00	0.00	1.14	0.01	0.00	2.86	27.96
MODENA BORO	B06	1.71	17.12	0.00	1.14	0.00	5.14	25.10	
NEWLIN TWP	B06	0.00	14.95	0.00	2.99	0.00	1.99	19.93	144.18
NEWLIN TWP	B31	1.99	119.60	0.00	1.66	0.00	1.00	124.25	
PARKESBURG BORO	B20	20.59	23.40	0.00	1.56	0.00	6.55	52.11	52.11
PENNSBURY TWP	B15	0.00	5.68	0.00	0.00	0.00	0.00	5.68	113.98
PENNSBURY TWP	B31	3.41	102.24	0.00	2.65	0.00	0.00	108.30	
POCOPSON TWP	B15	9.73	236.35	0.00	5.56	0.02	4.17	255.83	821.21
POCOPSON TWP	B31	55.61	486.59	0.00	17.61	0.00	5.56	565.38	
SADSBURY TWP	B05	0.48	7.23	0.00	0.16	0.00	0.48	8.36	289.73
SADSBURY TWP	B20	12.53	253.09	0.00	8.03	0.00	7.71	281.37	
THORNBURY TWP	B15	0.00	79.67	0.00	1.56	0.00	0.94	82.17	82.17
VALLEY TWP	B04	2.22	22.22	0.00	8.89	0.00	2.22	35.55	485.14
VALLEY TWP	B05	37.77	333.30	2.22	22.96	0.01	53.33	449.59	
WALLACE TWP	B09	1.32	16.47	0.00	2.64	0.00	1.32	21.74	21.74
WEST BRADFORD TWP	B06	7.83	100.62	0.00	4.47	0.00	0.00	112.92	283.22
WEST BRADFORD TWP	B14	5.59	150.93	0.00	9.32	0.00	4.47	170.31	
WEST CALN TWP	B01	3.08	0.00	0.00	4.88	0.00	0.77	8.73	68.28
WEST CALN TWP	B20	2.31	53.91	0.00	2.57	0.00	0.77	59.56	
WEST GOSHEN TWP	B14	118.22	191.25	3.48	49.84	0.01	34.77	397.57	461.32
WEST GOSHEN TWP	B15	45.20	0.00	10.43	4.64	0.00	3.48	63.75	

Table C-5c. Sediment MS4 reductions for Brandywine Creek Watershed

Township	Subbasin	Residential	Agricultural	Open	Forested	Wetland	Urban	Sub-Total	Total
BIRMINGHAM TWP	B15	58.06%	58.78%	58.06%	0.00%	0.00%	58.06%	58.06%	58.06%
COATESVILLE CITY	B04	78.38%			0.00%		89.19%	42.79%	62.79%
COATESVILLE CITY	B05	70.76%		65.52%	0.00%		65.52%	65.52%	
EAST BRADFORD TWP	B14	60.58%	62.94%	60.58%	0.00%	0.00%	60.58%	60.58%	60.58%
EAST BRADFORD TWP	B15	60.58%	62.92%	60.58%	0.00%		60.58%	60.58%	
EAST FALLOWFIELD TWP	B05	46.91%	52.25%		0.00%		46.91%	46.91%	46.91%
EAST FALLOWFIELD TWP	B06	46.91%	50.13%	46.91%	0.00%		46.91%	46.91%	
EAST FALLOWFIELD TWP	B20	46.91%	48.52%		0.00%	0.00%	46.91%	46.91%	
EAST MARLBOROUGH TWP	B31	61.98%	63.29%	61.98%	0.00%		61.98%	61.98%	61.98%
HIGHLAND TWP	B20	37.93%	38.93%		0.00%	0.00%	37.93%	37.93%	37.93%
HONEY BROOK BORO	B01	35.70%	35.70%				35.70%	35.70%	35.70%
HONEY BROOK TWP	B01	31.34%	31.82%		0.00%	0.00%	31.34%	31.34%	31.34%
HONEY BROOK TWP	B09	31.34%	32.05%		0.00%	0.00%	31.34%	31.34%	
MODENA BORO	B05	92.57%			0.00%	0.00%		55.43%	55.43%
MODENA BORO	B06	55.43%	59.13%		0.00%		55.43%	55.43%	
NEWLIN TWP	B06		70.41%		0.00%		58.67%	58.67%	58.67%
NEWLIN TWP	B31	58.67%	59.49%		0.00%		58.67%	58.67%	
PARKESBURG BORO	B20	37.93%	40.45%		0.00%		37.93%	37.93%	37.93%
PENNSBURY TWP	B15		61.85%					61.85%	61.85%
PENNSBURY TWP	B31	61.85%	63.46%		0.00%			61.85%	

Township	Subbasin	Residential	Agricultural	Open	Forested	Wetland	Urban	Sub-Total	Total
POCOPSON TWP	B15	60.94%	62.38%		0.00%	0.00%	60.94%	60.94%	60.94%
POCOPSON TWP	B31	60.94%	63.14%		0.00%	0.00%	60.94%	60.94%	
SADSBURY TWP	B05	40.59%	41.49%		0.00%		40.59%	40.59%	40.59%
SADSBURY TWP	B20	40.59%	41.88%		0.00%		40.59%	40.59%	
THORNBURY TWP	B15		59.20%		0.00%		58.06%	58.06%	58.06%
VALLEY TWP	B04	66.06%	92.49%		0.00%		66.06%	66.06%	66.06%
VALLEY TWP	B05	66.06%	70.62%	66.06%	0.00%	0.00%	66.06%	66.06%	
WALLACE TWP	B09	19.92%	23.10%		0.00%		19.92%	19.92%	19.92%
WEST BRADFORD TWP	B06	57.07%	59.60%		0.00%			57.07%	57.07%
WEST BRADFORD TWP	B14	57.07%	60.59%		0.00%		57.07%	57.07%	
WEST CALN TWP	B01	95.38%			0.00%		36.92%	36.92%	36.92%
WEST CALN TWP	B20	36.92%	38.68%		0.00%		36.92%	36.92%	
WEST GOSHEN TWP	B14	60.87%	76.74%	60.87%	0.00%	0.00%	60.87%	60.87%	60.87%
WEST GOSHEN TWP	B15	67.11%		60.87%	0.00%		60.87%	60.87%	

Table C-6a. Sediment MS4 load allocations in Red Clay Creek Watershed

Township	Subbasin	Residential (ton/yr)	Agricultural (ton/yr)	Open (ton/yr)	Forested (ton/yr)	Wetland (ton/yr)	Urban (ton/yr)	Sub-Total (ton/yr)	Total (ton/yr)
EAST MARLBOROUGH TWP	R01	87.56	2616.45	6.04	54.44	0.01	24.15	2788.652	4193.24
EAST MARLBOROUGH TWP	R03	84.54	1239.40	36.23	20.26	0.00	24.15	1404.588	
KENNETT SQUARE BORO	R01	39.09	167.52	5.58	0.00	0.00	27.92	240.1189	405.41
KENNETT SQUARE BORO	R02	0.00	33.50	0.00	0.00	0.00	0.00	33.50496	
KENNETT SQUARE BORO	R03	50.26	63.42	0.00	6.94	0.00	11.17	131.7862	
KENNETT TWP	R01	12.00	92.70	4.00	6.52	0.00	20.01	135.2348	3312.06
KENNETT TWP	R02	120.03	740.77	0.00	53.83	0.00	0.00	914.6353	
KENNETT TWP	R03	132.03	2025.47	0.00	76.67	0.02	28.01	2262.19	
NEW GARDEN TWP	R01	17.61	293.66	0.00	10.44	0.00	14.68	336.3886	2118.72
NEW GARDEN TWP	R02	35.22	1686.11	0.00	40.45	0.00	20.55	1782.331	

Table C-6b. Sediment baseline MS4 loads for Red Clay Creek Watershed

Township	Subbasin	Residential (ton/yr)	Agricultural (ton/yr)	Open (ton/yr)	Forested (ton/yr)	Wetland (ton/yr)	Urban (ton/yr)	Sub-Total (ton/yr)	Total (ton/yr)
EAST MARLBOROUGH TWP	R01	183.58	5545.26	12.66	54.44	0.01	50.64	5846.59	8791.40
EAST MARLBOROUGH TWP	R03	177.25	2620.70	75.96	20.26	0.00	50.64	2944.81	
KENNETT SQUARE BORO	R01	81.00	347.15	11.57	0.00	0.00	57.86	497.58	840.09
KENNETT SQUARE BORO	R02	0.00	69.43	0.00	0.00	0.00	0.00	69.43	
KENNETT SQUARE BORO	R03	104.14	138.86	0.00	6.94	0.00	23.14	273.09	
KENNETT TWP	R01	24.47	195.75	8.16	6.52	0.00	40.78	275.68	6751.62
KENNETT TWP	R02	244.68	1565.97	0.00	53.83	0.00	0.00	1864.48	
KENNETT TWP	R03	269.15	4208.54	0.00	76.67	0.02	57.09	4611.46	
NEW GARDEN TWP	R01	39.15	665.54	0.00	10.44	0.00	32.62	747.75	4709.65
NEW GARDEN TWP	R02	78.30	3797.47	0.00	40.45	0.00	45.67	3961.90	

Table C-6c. Sediment MS4 reductions for Red Clay Creek Watershed

Township	Subbasin	Residential	Agricultural	Open	Forested	Wetland	Urban	Sub-Total	Total
EAST MARLBOROUGH TWP	R01	52.30%	52.82%	52.30%	0.00%	0.00%	52.30%	52.30%	52.30%
EAST MARLBOROUGH TWP	R03	52.30%	52.71%	52.30%	0.00%		52.30%	52.30%	
KENNETT SQUARE BORO	R01	51.74%	51.74%	51.74%			51.74%	51.74%	51.74%

Township	Subbasin	Residential	Agricultural	Open	Forested	Wetland	Urban	Sub-Total	Total
KENNETT SQUARE BORO	R02		51.74%					51.74%	
KENNETT SQUARE BORO	R03	51.74%	54.33%		0.00%		51.74%	51.74%	
KENNETT TWP	R01	50.94%	52.64%	50.94%	0.00%		50.94%	50.94%	50.94%
KENNETT TWP	R02	50.94%	52.70%		0.00%			50.94%	
KENNETT TWP	R03	50.94%	51.87%		0.00%	0.00%	50.94%	50.94%	
NEW GARDEN TWP	R01	55.01%	55.88%		0.00%		55.01%	55.01%	55.01%
NEW GARDEN TWP	R02	55.01%	55.60%		0.00%		55.01%	55.01%	

Table C-7a. Sediment MS4 load allocations in White Clay Creek Watershed

Township	Subbasin	Residential (ton/yr)	Agricultural (ton/yr)	Open (ton/yr)	Forested (ton/yr)	Wetland (ton/yr)	Urban (ton/yr)	Sub-Total (ton/yr)	Total (ton/yr)
AVONDALE BORO	W04	8.75	24.23	0.00	2.90	0.00	0.00	35.88	140.02
AVONDALE BORO	W06	7.06	0.00	0.00	8.69	0.00	0.00	15.75	
AVONDALE BORO	W07	4.38	76.74	0.00	2.90	0.00	4.38	88.39	
FRANKLIN TWP	W01	45.10	1140.37	0.00	47.58	0.00	18.57	1251.62	2305.87
FRANKLIN TWP	W03	31.83	671.22	0.00	29.13	0.00	0.00	732.19	
FRANKLIN TWP	W08	15.92	283.43	0.00	6.80	0.00	0.00	306.14	
FRANKLIN TWP	W09	0.00	15.92	0.00	0.00	0.00	0.00	15.92	
LONDON BRITAIN TWP	W01	14.91	151.40	0.00	13.33	0.00	0.00	179.63	1620.44
LONDON BRITAIN TWP	W03	85.72	699.22	0.00	42.42	0.01	0.00	827.36	
LONDON BRITAIN TWP	W09	52.18	521.26	0.00	39.99	0.01	0.00	613.44	
LONDON GROVE TWP	W02	54.92	1117.97	2.29	33.46	0.01	2.29	1210.93	4842.81
LONDON GROVE TWP	W03	22.88	170.19	0.00	12.87	0.00	2.29	208.23	
LONDON GROVE TWP	W04	36.61	1471.25	2.29	60.48	0.01	16.02	1586.66	
LONDON GROVE TWP	W06	4.58	1316.82	0.00	23.16	0.00	4.58	1349.14	
LONDON GROVE TWP	W08	25.17	409.49	4.58	46.32	0.00	2.29	487.85	
NEW GARDEN TWP	W06	8.29	371.53	19.34	17.47	0.00	13.81	430.45	2986.66
NEW GARDEN TWP	W07	19.34	460.67	0.00	6.24	0.01	5.53	491.79	
NEW GARDEN TWP	W08	55.26	1082.84	0.00	49.93	0.00	8.29	1196.32	
NEW GARDEN TWP	W09	77.36	724.39	0.00	38.69	0.02	27.63	868.10	
NEW LONDON TWP	W01	70.72	838.41	0.00	21.68	0.00	21.76	952.57	1008.60
NEW LONDON TWP	W02	5.44	47.50	0.00	3.10	0.00	0.00	56.03	
PENN TWP	W01	19.70	452.17	0.00	12.24	0.00	2.19	486.29	1410.29
PENN TWP	W02	30.64	865.61	0.00	23.36	0.01	4.38	924.00	
WEST GROVE BORO	W02	43.53	32.65	0.00	0.00	0.00	16.32	92.51	192.63
WEST GROVE BORO	W04	16.32	61.12	5.44	6.35	0.00	10.88	100.12	

Table C-7b. Sediment baseline MS4 loads for White Clay Creek Watershed

Township	Subbasin	Residential (ton/yr)	Agricultural (ton/yr)	Open (ton/yr)	Forested (ton/yr)	Wetland (ton/yr)	Urban (ton/yr)	Sub-Total (ton/yr)	Total (ton/yr)
AVONDALE BORO	W04	28.98	86.93	0.00	2.90	0.00	0.00	118.81	463.65
AVONDALE BORO	W06	43.47	0.00	0.00	8.69	0.00	0.00	52.16	
AVONDALE BORO	W07	14.49	260.80	0.00	2.90	0.00	14.49	292.67	
FRANKLIN TWP	W01	82.54	2126.73	0.00	47.58	0.00	33.99	2290.84	4220.43
FRANKLIN TWP	W03	58.27	1252.73	0.00	29.13	0.00	0.00	1340.13	
FRANKLIN TWP	W08	29.13	524.40	0.00	6.80	0.00	0.00	560.33	
FRANKLIN TWP	W09	0.00	29.13	0.00	0.00	0.00	0.00	29.13	

Township	Subbasin	Residential (ton/yr)	Agricultural (ton/yr)	Open (ton/yr)	Forested (ton/yr)	Wetland (ton/yr)	Urban (ton/yr)	Sub-Total (ton/yr)	Total (ton/yr)
LONDON BRITAIN TWP	W01	24.24	254.50	0.00	13.33	0.00	0.00	292.06	2634.66
LONDON BRITAIN TWP	W03	139.37	1163.41	0.00	42.42	0.01	0.00	1345.21	
LONDON BRITAIN TWP	W09	84.83	872.56	0.00	39.99	0.01	0.00	997.40	
LONDON GROVE TWP	W02	154.41	3203.99	6.43	33.46	0.01	6.43	3404.73	13616.33
LONDON GROVE TWP	W03	64.34	501.83	0.00	12.87	0.00	6.43	585.47	
LONDON GROVE TWP	W04	102.94	4246.25	6.43	60.48	0.01	45.04	4461.14	
LONDON GROVE TWP	W06	12.87	3744.42	0.00	23.16	0.00	12.87	3793.31	
LONDON GROVE TWP	W08	70.77	1235.27	12.87	46.32	0.00	6.43	1371.67	
NEW GARDEN TWP	W06	18.72	861.25	43.69	17.47	0.00	31.20	972.34	6746.50
NEW GARDEN TWP	W07	43.69	1048.48	0.00	6.24	0.01	12.48	1110.90	
NEW GARDEN TWP	W08	124.82	2508.86	0.00	49.93	0.00	18.72	2702.33	
NEW GARDEN TWP	W09	174.75	1685.06	0.00	38.69	0.02	62.41	1960.93	
NEW LONDON TWP	W01	134.20	1610.46	0.00	21.68	0.00	41.29	1807.64	1913.97
NEW LONDON TWP	W02	10.32	92.91	0.00	3.10	0.00	0.00	106.33	
PENN TWP	W01	50.07	1168.21	0.00	12.24	0.00	5.56	1236.08	3584.76
PENN TWP	W02	77.88	2236.30	0.00	23.36	0.01	11.13	2348.68	
WEST GROVE BORO	W02	127.07	95.31	0.00	0.00	0.00	47.65	270.03	562.29
WEST GROVE BORO	W04	47.65	190.61	15.88	6.35	0.00	31.77	292.27	

Table C-7c. Sediment MS4 reductions for White Clay Creek Watershed

Township	Subbasin	Residential	Agricultural	Open	Forested	Wetland	Urban	Sub-Total	Total
AVONDALE BORO	W04	69.80%	72.13%		0.00%			69.80%	69.80%
AVONDALE BORO	W06	83.76%			0.00%			69.80%	
AVONDALE BORO	W07	69.80%	70.58%		0.00%		69.80%	69.80%	
FRANKLIN TWP	W01	45.36%	46.38%		0.00%		45.36%	45.36%	45.36%
FRANKLIN TWP	W03	45.36%	46.42%		0.00%			45.36%	
FRANKLIN TWP	W08	45.36%	45.95%		0.00%			45.36%	
FRANKLIN TWP	W09		45.36%					45.36%	
LONDON BRITAIN TWP	W01	38.50%	40.51%		0.00%			38.50%	38.50%
LONDON BRITAIN TWP	W03	38.50%	39.90%		0.00%	0.00%		38.50%	
LONDON BRITAIN TWP	W09	38.50%	40.26%		0.00%	0.00%		38.50%	
LONDON GROVE TWP	W02	64.43%	65.11%	64.43%	0.00%	0.00%	64.43%	64.43%	64.43%
LONDON GROVE TWP	W03	64.43%	66.09%		0.00%		64.43%	64.43%	
LONDON GROVE TWP	W04	64.43%	65.35%	64.43%	0.00%	0.00%	64.43%	64.43%	
LONDON GROVE TWP	W06	64.43%	64.83%		0.00%		64.43%	64.43%	
LONDON GROVE TWP	W08	64.43%	66.85%	64.43%	0.00%		64.43%	64.43%	
NEW GARDEN TWP	W06	55.73%	56.86%	55.73%	0.00%		55.73%	55.73%	55.73%
NEW GARDEN TWP	W07	55.73%	56.06%		0.00%	0.00%	55.73%	55.73%	
NEW GARDEN TWP	W08	55.73%	56.84%		0.00%		55.73%	55.73%	
NEW GARDEN TWP	W09	55.73%	57.01%		0.00%	0.00%	55.73%	55.73%	
NEW LONDON TWP	W01	47.30%	47.94%		0.00%		47.30%	47.30%	47.30%
NEW LONDON TWP	W02	47.30%	48.88%		0.00%			47.30%	
PENN TWP	W01	60.66%	61.29%		0.00%		60.66%	60.66%	60.66%
PENN TWP	W02	60.66%	61.29%		0.00%	0.00%	60.66%	60.66%	
WEST GROVE BORO	W02	65.74%	65.74%				65.74%	65.74%	65.74%
WEST GROVE BORO	W04	65.74%	67.93%	65.74%	0.00%		65.74%	65.74%	

Table C-8a. Fecal coliform allocations during swimming season in White Clay Creek Basin

Township	Subbasin	Residential (cfu/season)	Agricultural (cfu/season)	Open (cfu/season)	Forested (cfu/season)	Wetland (cfu/season)	Urban (cfu/season)	Sub-Total (cfu/season)	Total load (cfu/season)
AVONDALE BORO	W04	2.99E+09	5.89E+11	0.00E+00	9.97E+09	0.00E+00	0.00E+00	6.02E+11	2.42E+12
AVONDALE BORO	W07	1.50E+09	1.79E+12	0.00E+00	9.97E+09	0.00E+00	1.99E+10	1.82E+12	
LONDON GROVE TWP	W04	3.36E+10	9.18E+13	7.00E+08	6.58E+11	1.40E+10	1.96E+11	9.27E+13	9.27E+13
NEW GARDEN TWP	W07	1.72E+09	2.74E+12	0.00E+00	8.19E+09	1.64E+09	6.55E+09	2.76E+12	2.76E+12
WEST GROVE BORO	W04	1.84E+10	4.82E+12	2.04E+09	8.16E+10	0.00E+00	1.63E+11	5.09E+12	5.09E+12

Table C-8b. Fecal coliform baseline loads during swimming season in White Clay Creek Basin

Township	Subbasin	Residential (cfu/season)	Agricultural (cfu/season)	Open (cfu/season)	Forested (cfu/season)	Wetland (cfu/season)	Urban (cfu/season)	Sub-Total (cfu/season)	Total load (cfu/season)
AVONDALE BORO	W04	1.80E+10	9.45E+12	0.00E+00	9.97E+09	0.00E+00	0.00E+00	9.48E+12	3.81E+13
AVONDALE BORO	W07	8.98E+09	2.84E+13	0.00E+00	9.97E+09	0.00E+00	2.19E+11	2.86E+13	
LONDON GROVE TWP	W04	2.02E+11	1.53E+15	7.00E+09	6.58E+11	1.40E+10	2.16E+12	1.54E+15	1.54E+15
NEW GARDEN TWP	W07	1.03E+10	2.99E+13	0.00E+00	8.19E+09	1.64E+09	7.20E+10	3.00E+13	3.00E+13
WEST GROVE BORO	W04	1.10E+11	8.28E+13	2.04E+10	8.16E+10	0.00E+00	1.80E+12	8.48E+13	8.48E+13

Table C-8c. Fecal coliform percent reductions during swimming season in White Clay Creek Basin

Township	Subbasin	Residential	Agricultural	Open	Forested	Wetland	Urban	Sub-Total	Total load
AVONDALE BORO	W04	83.33%	93.77%		0.00%			93.65%	93.65%
AVONDALE BORO	W07	83.33%	93.70%		0.00%		90.91%	93.65%	
LONDON GROVE TWP	W04	83.33%	94.02%	90.00%	0.00%	0.00%	90.91%	93.97%	93.97%
NEW GARDEN TWP	W07	83.33%	90.82%		0.00%	0.00%	90.91%	90.79%	90.79%
WEST GROVE BORO	W04	83.33%	94.17%	90.00%	0.00%		90.91%	93.99%	93.99%

Table C-9a. Fecal coliform allocation, non-swimming season in White Clay Creek Basin

Township	Sub-basin	Residential (cfu/season)	Agricultural (cfu/season)	Open (cfu/season)	Forested (cfu/season)	Wetland (cfu/season)	Urban (cfu/season)	Sub-Total (cfu/season)	Total load (cfu/season)
AVONDALE BORO	W04	4.48E+10	1.34E+13	0.00E+00	4.48E+10	0.00E+00	0.00E+00	1.35E+13	5.53E+13
AVONDALE BORO	W07	2.24E+10	4.03E+13	0.00E+00	4.48E+10	0.00E+00	1.34E+12	4.18E+13	
LONDON GROVE TWP	W04	5.10E+11	2.10E+15	6.37E+10	3.00E+12	6.37E+10	1.34E+13	2.12E+15	2.12E+15
NEW GARDEN TWP	W07	2.58E+10	6.20E+13	0.00E+00	3.69E+10	7.38E+09	4.43E+11	6.25E+13	6.25E+13
WEST GROVE BORO	W04	2.64E+11	1.06E+14	1.76E+11	3.52E+11	0.00E+00	1.06E+13	1.17E+14	1.17E+14

Table C-9b. Fecal coliform baseline loads, non-swimming season in White Clay Creek Basin

Township	Subbasin	Residential (cfu/season)	Agricultural (cfu/season)	Open (cfu/season)	Forested (cfu/season)	Wetland (cfu/season)	Urban (cfu/season)	Sub-Total (cfu/season)	Total load (cfu/season)
AVONDALE BORO	W04	4.48E+10	1.42E+13	0.00E+00	4.48E+10	0.00E+00	0.00E+00	1.43E+13	5.83E+13
AVONDALE BORO	W07	2.24E+10	4.26E+13	0.00E+00	4.48E+10	0.00E+00	1.34E+12	4.40E+13	
LONDON GROVE TWP	W04	5.10E+11	2.21E+15	6.37E+10	3.00E+12	6.37E+10	1.34E+13	2.23E+15	2.23E+15
NEW GARDEN TWP	W07	2.58E+10	6.54E+13	0.00E+00	3.69E+10	7.38E+09	4.43E+11	6.59E+13	6.59E+13
WEST GROVE BORO	W04	2.64E+11	1.12E+14	1.76E+11	3.52E+11	0.00E+00	1.06E+13	1.23E+14	1.23E+14

Table C-9c. Fecal coliform percent reductions, non-swimming season in White Clay Creek Basin

Township	Subbasin	Residential	Agricultural	Open	Forested	Wetland	Urban	Sub-Total	Total load
AVONDALE BORO	W04	0.00%	5.28%		0.00%			5.25%	5.06%
AVONDALE BORO	W07	0.00%	5.28%		0.00%		0.00%	5.11%	
LONDON GROVE TWP	W04	0.00%	5.05%	0.00%	0.00%	0.00%	0.00%	5.04%	5.04%
NEW GARDEN TWP	W07	0.00%	5.20%		0.00%	0.00%	0.00%	5.15%	5.15%
WEST GROVE BORO	W04	0.00%	5.37%	0.00%	0.00%		0.00%	5.04%	5.04%

Table C-10a. Fecal coliform allocations during swimming season in Red Clay Creek Basin

Township	Subbasin	Residential (cfu/season)	Agricultural (cfu/season)	Open (cfu/season)	Forested (cfu/season)	Wetland (cfu/season)	Urban (cfu/season)	Sub-Total (cfu/season)	Total load (cfu/season)
EAST MARLBOROUGH TWP	R01	7.56E+10	1.53E+14	1.45E+09	1.32E+12	0.00E+00	2.62E+11	1.55E+14	2.06E+14
EAST MARLBOROUGH TWP	R03	4.49E+10	5.11E+13	5.35E+09	3.02E+11	0.00E+00	1.43E+11	5.16E+13	
KENNETT SQUARE BORO	R01	4.10E+10	1.18E+13	1.63E+09	0.00E+00	0.00E+00	3.27E+11	1.22E+13	1.88E+13
KENNETT SQUARE BORO	R03	5.82E+10	5.77E+12	0.00E+00	2.28E+11	0.00E+00	1.45E+11	6.20E+12	
KENNETT SQUARE BORO	R02	0.00E+00	4.73E+11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.73E+11	
KENNETT TWP	R01	2.06E+10	1.08E+13	1.91E+09	3.23E+11	0.00E+00	3.84E+11	1.15E+13	1.24E+14
KENNETT TWP	R03	5.55E+10	6.63E+13	0.00E+00	9.30E+11	0.00E+00	1.50E+11	6.74E+13	
KENNETT TWP	R02	9.12E+10	4.36E+13	0.00E+00	1.18E+12	0.00E+00	0.00E+00	4.49E+13	
NEW GARDEN TWP	R01	2.10E+10	2.38E+13	0.00E+00	3.29E+11	0.00E+00	1.96E+11	2.43E+13	9.38E+13
NEW GARDEN TWP	R02	1.87E+10	6.88E+13	0.00E+00	5.67E+11	0.00E+00	1.22E+11	6.95E+13	

Table C-10b. Fecal coliform baseline loads during swimming season in Red Clay Creek Basin

Township	Subbasin	Residential (cfu/season)	Agricultural (cfu/season)	Open (cfu/season)	Forested (cfu/season)	Wetland (cfu/season)	Urban (cfu/season)	Sub-Total (cfu/season)	Total load (cfu/season)

Township	Subbasin	Residential (cfu/season)	Agricultural (cfu/season)	Open (cfu/season)	Forested (cfu/season)	Wetland (cfu/season)	Urban (cfu/season)	Sub-Total (cfu/season)	Total load (cfu/season)
EAST MARLBOROUGH TWP	R01	7.56E+11	2.01E+15	1.59E+10	1.32E+12	0.00E+00	2.62E+12	2.02E+15	2.61E+15
EAST MARLBOROUGH TWP	R03	4.49E+11	5.86E+14	5.88E+10	3.02E+11	0.00E+00	1.43E+12	5.88E+14	
KENNETT SQUARE BORO	R01	4.10E+11	1.55E+14	1.79E+10	0.00E+00	0.00E+00	3.27E+12	1.59E+14	2.35E+14
KENNETT SQUARE BORO	R03	5.82E+11	6.85E+13	0.00E+00	2.28E+11	0.00E+00	1.45E+12	7.07E+13	
KENNETT SQUARE BORO	R02	0.00E+00	5.44E+12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.44E+12	
KENNETT TWP	R01	2.06E+11	1.45E+14	2.10E+10	3.23E+11	0.00E+00	3.84E+12	1.50E+14	1.44E+15
KENNETT TWP	R03	5.55E+11	7.66E+14	0.00E+00	9.30E+11	0.00E+00	1.50E+12	7.69E+14	
KENNETT TWP	R02	9.12E+11	5.15E+14	0.00E+00	1.18E+12	0.00E+00	0.00E+00	5.17E+14	
NEW GARDEN TWP	R01	2.10E+11	3.15E+14	0.00E+00	3.29E+11	0.00E+00	1.96E+12	3.17E+14	1.12E+15
NEW GARDEN TWP	R02	1.87E+11	7.98E+14	0.00E+00	5.67E+11	0.00E+00	1.22E+12	8.00E+14	

Table C-10c. Fecal coliform percent reductions during swimming season in Red Clay Creek Basin

Township	Subbasin	Residential	Agricultural	Open	Forested	Wetland	Urban	Sub-Total	Total load
EAST MARLBOROUGH TWP	R01	90.00%	92.40%	90.91%	0.00%		90.00%	92.34%	92.09%
EAST MARLBOROUGH TWP	R03	90.00%	91.28%	90.91%	0.00%		90.00%	91.23%	
KENNETT SQUARE BORO	R01	90.00%	92.39%	90.91%			90.00%	92.34%	91.98%
KENNETT SQUARE BORO	R03	90.00%	91.57%		0.00%		90.00%	91.23%	
KENNETT SQUARE BORO	R02		91.31%					91.31%	
KENNETT TWP	R01	90.00%	92.61%	90.91%	0.00%		90.00%	92.34%	91.38%
KENNETT TWP	R03	90.00%	91.34%		0.00%		90.00%	91.23%	
KENNETT TWP	R02	90.00%	91.53%		0.00%			91.31%	
NEW GARDEN TWP	R01	90.00%	92.45%		0.00%		90.00%	92.34%	91.60%
NEW GARDEN TWP	R02	90.00%	91.38%		0.00%		90.00%	91.31%	

Table C-11a. Fecal coliform allocations, non-swimming season in Red Clay Creek Basin

Township	Subbasin	Residential (cfu/season)	Agricultural (cfu/season)	Open (cfu/season)	Forested (cfu/season)	Wetland (cfu/season)	Urban (cfu/season)	Sub-Total (cfu/season)	Total load (cfu/season)
EAST MARLBOROUGH TWP	R01	8.54E+11	2.10E+15	2.26E+10	4.65E+12	0.00E+00	3.70E+12	2.11E+15	2.85E+15
EAST MARLBOROUGH TWP	R03	5.96E+11	7.37E+14	9.81E+10	1.25E+12	0.00E+00	2.38E+12	7.42E+14	
KENNETT SQUARE BORO	R01	4.66E+11	1.61E+14	2.56E+10	0.00E+00	0.00E+00	4.65E+12	1.66E+14	2.62E+14
KENNETT SQUARE BORO	R03	7.75E+11	8.51E+13	0.00E+00	9.49E+11	0.00E+00	2.40E+12	8.92E+13	
KENNETT SQUARE BORO	R02	0.00E+00	6.86E+12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.86E+12	
KENNETT TWP	R01	2.35E+11	1.50E+14	3.01E+10	1.15E+12	0.00E+00	5.46E+12	1.57E+14	1.78E+15
KENNETT TWP	R03	7.37E+11	9.63E+14	0.00E+00	3.86E+12	0.00E+00	2.49E+12	9.70E+14	
KENNETT TWP	R02	1.21E+12	6.45E+14	0.00E+00	4.89E+12	0.00E+00	0.00E+00	6.51E+14	
NEW GARDEN TWP	R01	2.38E+11	3.28E+14	0.00E+00	1.16E+12	0.00E+00	2.77E+12	3.32E+14	1.34E+15
NEW GARDEN TWP	R02	2.48E+11	1.00E+15	0.00E+00	2.35E+12	0.00E+00	2.02E+12	1.01E+15	

Table C-11b. Fecal coliform baseline loads, non-swimming season in Red Clay Creek Basin

Township	Subbasin	Residential (cfu/season)	Agricultural (cfu/season)	Open (cfu/season)	Forested (cfu/season)	Wetland (cfu/season)	Urban (cfu/season)	Sub-Total (cfu/season)	Total load (cfu/season)

Township	Subbasin	Residential (cfu/season)	Agricultural (cfu/season)	Open (cfu/season)	Forested (cfu/season)	Wetland (cfu/season)	Urban (cfu/season)	Sub-Total (cfu/season)	Total load (cfu/season)
EAST MARLBOROUGH TWP	R01	2.13E+12	4.43E+15	4.98E+10	4.65E+12	0.00E+00	3.70E+12	4.44E+15	5.95E+15
EAST MARLBOROUGH TWP	R03	1.49E+12	1.51E+15	2.16E+11	1.25E+12	0.00E+00	2.38E+12	1.52E+15	
KENNETT SQUARE BORO	R01	1.17E+12	3.43E+14	5.63E+10	0.00E+00	0.00E+00	4.65E+12	3.49E+14	5.45E+14
KENNETT SQUARE BORO	R03	1.94E+12	1.77E+14	0.00E+00	9.49E+11	0.00E+00	2.40E+12	1.82E+14	
KENNETT SQUARE BORO	R02	0.00E+00	1.41E+13	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E+13	
KENNETT TWP	R01	5.87E+11	3.22E+14	6.61E+10	1.15E+12	0.00E+00	5.46E+12	3.29E+14	3.65E+15
KENNETT TWP	R03	1.84E+12	1.98E+15	0.00E+00	3.86E+12	0.00E+00	2.49E+12	1.98E+15	
KENNETT TWP	R02	3.02E+12	1.33E+15	0.00E+00	4.89E+12	0.00E+00	0.00E+00	1.33E+15	
NEW GARDEN TWP	R01	5.94E+11	6.93E+14	0.00E+00	1.16E+12	0.00E+00	2.77E+12	6.97E+14	2.76E+15
NEW GARDEN TWP	R02	6.19E+11	2.06E+15	0.00E+00	2.35E+12	0.00E+00	2.02E+12	2.07E+15	

Table C-11c. Fecal coliform percent reductions, non-swimming season in Red Clay Creek Basin

Township	Subbasin	Residential	Agricultural	Open	Forested	Wetland	Urban	Sub-Total	Total load
EAST MARLBOROUGH TWP	R01	60.00%	52.52%	54.55%	0.00%		0.00%	52.42%	52.08%
EAST MARLBOROUGH TWP	R03	60.00%	51.21%	54.55%	0.00%		0.00%	51.10%	
KENNETT SQUARE BORO	R01	60.00%	53.11%	54.55%			0.00%	52.42%	51.95%
KENNETT SQUARE BORO	R03	60.00%	51.97%		0.00%		0.00%	51.10%	
KENNETT SQUARE BORO	R02		51.21%					51.21%	
KENNETT TWP	R01	60.00%	53.48%	54.55%	0.00%		0.00%	52.42%	51.26%
KENNETT TWP	R03	60.00%	51.26%		0.00%		0.00%	51.10%	
KENNETT TWP	R02	60.00%	51.38%		0.00%			51.21%	
NEW GARDEN TWP	R01	60.00%	52.71%		0.00%		0.00%	52.42%	51.52%
NEW GARDEN TWP	R02	60.00%	51.32%		0.00%		0.00%	51.21%	

Table C-12a. Enterococci allocations for MS4 municipalities in New Castle County

Town	Subbasin	Residential (cfu/yr)	Agricultural (cfu/yr)	Open (cfu/yr)	Forested (cfu/yr)	Wetland (cfu/yr)	Urban (cfu/yr)	Sub-Total (cfu/yr)	Total (cfu/yr)
Newark	C02	2.19E+11	0.00E+00	2.61E+10	2.48E+10	0.00E+00	1.90E+11	4.60E+11	1.28E+13
Newark	C01	5.75E+09	9.88E+10	1.89E+09	3.50E+09	0.00E+00	1.27E+11	2.36E+11	
Newark	C03	7.22E+10	2.47E+11	1.83E+10	1.83E+10	1.62E+09	4.27E+11	7.84E+11	
Newark	C06	0.00E+00	0.00E+00	0.00E+00	1.62E+09	0.00E+00	0.00E+00	1.62E+09	
Newark	W15	1.62E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E+09	
Newark	W12	1.06E+11	5.93E+12	3.09E+10	5.34E+10	2.41E+09	1.35E+12	7.46E+12	
Newark	W11	6.95E+10	3.45E+12	2.41E+10	1.07E+11	1.50E+09	2.23E+11	3.87E+12	
Newport	C09	9.70E+09	0.00E+00	2.69E+09	0.00E+00	2.42E+09	1.58E+11	1.72E+11	1.72E+11
Wilmington	C04	5.39E+08	0.00E+00	2.02E+08	0.00E+00	0.00E+00	1.01E+09	1.75E+09	3.01E+12
Wilmington	C05	4.96E+10	0.00E+00	5.79E+09	4.58E+09	0.00E+00	4.79E+10	1.08E+11	
Wilmington	C09	1.26E+11	0.00E+00	7.78E+10	0.00E+00	3.82E+10	9.02E+11	1.14E+12	
Wilmington	B19	9.67E+08	0.00E+00	1.98E+09	4.07E+09	3.88E+08	4.36E+09	1.18E+10	
Wilmington	B34	2.20E+11	0.00E+00	9.93E+10	4.37E+10	2.14E+10	1.36E+12	1.74E+12	
New Castle County	*	1.06E+13	1.56E+14	5.60E+12	2.35E+13	1.13E+12	9.11E+13	2.87E+14	2.87E+14

* Including New Castle County within the Christina River Basin, excluding Newark, Newport, and Wilmington. Subbasins include B17, B18, B19, B34, R04, R05, R06, R07, R08, R09, W09, W10, W11, W12, W13, W14, W15, W16, W17, C01, C02, C03, C04, C05, C06, C07, C08, and C09

Table C-12b. Enterococci baseline loads for MS4 municipalities in New Castle County.

Town	Subbasin	Residential (cfu/yr)	Agricultural (cfu/yr)	Open (cfu/yr)	Forested (cfu/yr)	Wetland (cfu/yr)	Urban (cfu/yr)	Sub-Total (cfu/yr)	Total (cfu/yr)
Newark	C02	2.19E+11	0.00E+00	2.61E+10	2.48E+10	0.00E+00	1.90E+12	2.17E+12	4.34E+13
Newark	C01	5.75E+09	6.91E+12	1.89E+09	3.50E+09	0.00E+00	1.27E+12	8.19E+12	
Newark	C03	7.22E+10	1.73E+13	1.83E+10	1.83E+10	1.62E+09	4.27E+12	2.17E+13	
Newark	C06	0.00E+00	0.00E+00	0.00E+00	1.62E+09	0.00E+00	0.00E+00	1.62E+09	
Newark	W15	1.62E+09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E+09	
Newark	W12	1.06E+11	5.93E+12	3.09E+10	5.34E+10	2.41E+09	1.35E+12	7.46E+12	
Newark	W11	6.95E+10	3.45E+12	2.41E+10	1.07E+11	1.50E+09	2.23E+11	3.87E+12	
Newport	C09	9.70E+09	0.00E+00	2.69E+09	0.00E+00	2.42E+09	1.58E+11	1.72E+11	1.72E+11
Wilmington	C04	7.18E+08	0.00E+00	2.69E+08	0.00E+00	0.00E+00	1.35E+09	2.33E+09	3.09E+12
Wilmington	C05	6.68E+10	0.00E+00	7.81E+09	4.58E+09	0.00E+00	6.46E+10	1.44E+11	
Wilmington	C09	1.26E+11	0.00E+00	7.78E+10	0.00E+00	3.82E+10	9.02E+11	1.14E+12	
Wilmington	B19	9.96E+08	0.00E+00	2.03E+09	4.07E+09	3.88E+08	4.62E+09	1.21E+10	
Wilmington	B34	2.27E+11	0.00E+00	1.02E+11	4.37E+10	2.14E+10	1.40E+12	1.79E+12	
New Castle County	*	1.83E+13	2.28E+15	1.36E+13	2.35E+13	1.13E+12	1.72E+15	4.05E+15	4.05E+15

* Including New Castle County within the Christina River Basin, excluding Newark, Newport, and Wilmington. Subbasins include B17, B18, B19, B34, R04, R05, R06, R07, R08, R09, W09, W10, W11, W12, W13, W14, W15, W16, W17, C01, C02, C03, C04, C05, C06, C07, C08, and C09

Table C-12c. Enterococci percent reductions for MS4 municipalities in New Castle County

Town	Subbasin	Residential	Agricultural	Open	Forested	Wetland	Urban	Sub-Total	Total
Newark	C02	0.00%		0.00%	0.00%		90.00%	78.80%	70.43%
Newark	C01	0.00%	98.57%	0.00%	0.00%		90.00%	97.11%	
Newark	C03	0.00%	98.57%	0.00%	0.00%	0.00%	90.00%	96.38%	
Newark	C06				0.00%			0.00%	
Newark	W15	0.00%						0.00%	
Newark	W12	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Newark	W11	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Newport	C09	0.00%		0.00%		0.00%	0.00%	0.00%	0.00%
Wilmington	C04	25.00%		25.00%			0.00%	0.00%	2.60%
Wilmington	C05	25.82%		25.82%	0.00%		25.82%	0.00%	
Wilmington	C09	0.00%		0.00%		0.00%	0.00%	0.00%	
Wilmington	B19	2.91%		2.91%	0.00%	0.00%	5.72%	2.91%	
Wilmington	B34	2.91%		2.91%	0.00%	0.00%	3.05%	2.91%	
New Castle County	*	41.92%	93.17%	58.80%	0.00%	0.00%	94.70%	92.91%	92.91%

* Including New Castle County within the Christina River Basin, excluding Newark, Newport, and Wilmington. Subbasins include B17, B18, B19, B34, R04, R05, R06, R07, R08, R09, W09, W10, W11, W12, W13, W14, W15, W16, W17, C01, C02, C03, C04, C05, C06, C07, C08, and C09

Table C-13a. MS4 enterococci baseline loads for New Castle County, DE

Location	Residential (cfu/yr)	Agricultural (cfu/yr)	Open (cfu/yr)	Forested (cfu/yr)	Wetland (cfu/yr)	Urban (cfu/yr)	Total (cfu/yr)
Brandywine Cr. (B18)	3.55E+11	9.42E+13	4.04E+11	1.06E+12	2.33E+10	1.53E+13	1.11E+14
Brandywine Cr. (B19)	7.68E+11	2.42E+13	1.47E+12	5.99E+11	2.78E+10	2.86E+13	5.56E+13
Tidal Brandywine Cr. (B34)	1.41E+12	9.37E+12	1.02E+11	4.77E+11	5.30E+10	1.21E+14	1.32E+14

Location	Residential (cfu/yr)	Agricultural (cfu/yr)	Open (cfu/yr)	Forested (cfu/yr)	Wetland (cfu/yr)	Urban (cfu/yr)	Total (cfu/yr)
Red Clay Cr. (R04)	1.34E+12	4.14E+13	2.35E+11	7.48E+11	2.06E+10	1.21E+13	5.59E+13
Red Clay Cr. (R05)	5.87E+11	1.67E+13	8.58E+10	4.80E+11	1.49E+10	4.65E+12	2.25E+13
Red Clay Cr. (R06)	1.19E+11	1.41E+13	2.16E+10	9.32E+10	4.76E+08	7.51E+11	1.51E+13
Red Clay Cr. (R07)	2.02E+11	3.74E+12	1.95E+10	2.56E+11	8.01E+10	1.76E+12	6.05E+12
Red Clay Cr. (R08)	1.68E+12	4.81E+12	5.31E+11	4.57E+11	4.57E+10	6.81E+13	7.56E+13
Red Clay Cr. (R09)	6.96E+11	0.00E+00	4.88E+10	1.17E+11	4.87E+09	2.79E+13	2.88E+13
White Clay Cr. (W11)	4.71E+10	2.22E+13	5.34E+10	1.18E+12	5.83E+09	1.33E+13	3.68E+13
White Clay Cr. (W12)	5.72E+11	2.93E+13	2.10E+11	5.16E+11	1.72E+10	1.11E+14	1.42E+14
White Clay Cr. (W13)	2.95E+10	6.38E+12	2.69E+10	9.25E+10	5.01E+09	2.36E+13	3.01E+13
White Clay Cr. (W14)	1.14E+11	0.00E+00	2.05E+11	2.83E+11	1.15E+11	3.75E+13	3.82E+13
White Clay Cr. (W15)	8.16E+10	2.26E+13	1.64E+10	4.57E+11	0.00E+00	5.36E+12	2.85E+13
White Clay Cr. (W16)	1.02E+12	2.94E+13	2.10E+11	6.37E+11	0.00E+00	7.10E+13	1.02E+14
White Clay Cr. (W17)	1.88E+12	7.92E+13	4.86E+11	1.20E+12	1.46E+07	1.59E+14	2.41E+14
Christina River (C01)	1.05E+12	4.03E+13	5.36E+11	9.92E+10	0.00E+00	2.54E+12	4.45E+13
Christina River (C02)	2.08E+12	7.27E+13	1.00E+12	1.11E+11	3.65E+08	3.51E+12	7.94E+13
Christina River (C03)	1.40E+12	2.00E+13	1.62E+11	2.11E+11	1.01E+09	2.29E+13	4.47E+13
Christina River (C04)	1.31E+12	1.57E+13	3.06E+11	6.07E+11	8.18E+09	6.90E+13	8.69E+13
Christina River (C05)	5.95E+11	0.00E+00	3.51E+11	2.02E+11	2.60E+10	6.41E+13	6.52E+13
Christina River (C06)	1.24E+12	6.00E+13	1.03E+12	4.61E+11	1.36E+10	1.18E+13	7.45E+13
Christina River (C07)	1.46E+12	4.60E+13	3.35E+11	5.75E+11	1.41E+10	2.32E+13	7.16E+13
Christina River (C08)	2.13E+12	5.77E+13	4.36E+11	9.12E+11	1.82E+10	6.69E+13	1.28E+14
Christina River (C09)	2.36E+12	6.01E+13	3.00E+12	1.29E+12	4.04E+11	2.62E+14	3.29E+14

Table C-13b. MS4 enterococci allocations for New Castle County, DE

Location	Residential (cfu/yr)	Agricultural (cfu/yr)	Open (cfu/yr)	Forested (cfu/yr)	Wetland (cfu/yr)	Urban (cfu/yr)	Total (cfu/yr)
Brandywine Cr. (B18)	1.26E+11	3.63E+12	1.48E+11	1.06E+12	2.33E+10	5.62E+11	5.55E+12
Brandywine Cr. (B19)	5.39E+11	2.01E+12	1.06E+12	5.99E+11	2.78E+10	2.06E+12	6.30E+12
Tidal Brandywine Cr. (B34)	2.89E+10	1.23E+12	8.81E+10	4.77E+11	5.30E+10	9.64E+12	1.15E+13
Red Clay Cr. (R04)	2.04E+11	5.67E+12	3.58E+10	7.48E+11	2.06E+10	1.85E+12	8.52E+12
Red Clay Cr. (R05)	2.06E+11	5.54E+12	3.01E+10	4.80E+11	1.49E+10	1.63E+12	7.90E+12
Red Clay Cr. (R06)	8.00E+10	9.45E+12	1.45E+10	9.32E+10	4.76E+08	5.04E+11	1.01E+13
Red Clay Cr. (R07)	5.82E+10	8.35E+11	5.60E+09	2.56E+11	8.01E+10	5.05E+11	1.74E+12
Red Clay Cr. (R08)	1.51E+11	6.94E+10	5.49E+10	4.57E+11	4.57E+10	7.05E+12	7.83E+12
Red Clay Cr. (R09)	6.99E+10	0.00E+00	4.90E+09	1.17E+11	4.87E+09	2.69E+12	2.89E+12
White Clay Cr. (W11)	2.13E+10	4.68E+12	2.98E+09	1.18E+12	5.83E+09	1.97E+11	6.09E+12
White Clay Cr. (W12)	1.47E+11	6.87E+12	5.92E+10	5.16E+11	1.72E+10	2.86E+12	1.05E+13
White Clay Cr. (W13)	1.30E+10	2.75E+12	1.18E+10	9.25E+10	5.01E+09	1.04E+12	3.91E+12
White Clay Cr. (W14)	1.02E+11	0.00E+00	1.82E+11	2.83E+11	1.15E+11	3.31E+12	3.99E+12
White Clay Cr. (W15)	2.99E+10	8.25E+12	6.20E+09	4.57E+11	0.00E+00	2.04E+11	8.95E+12
White Clay Cr. (W16)	3.51E+11	9.69E+12	7.22E+10	6.37E+11	0.00E+00	2.45E+12	1.32E+13
White Clay Cr. (W17)	6.36E+11	2.60E+13	1.64E+11	1.20E+12	1.46E+07	5.39E+12	3.34E+13
Christina River (C01)	3.77E+11	1.58E+13	2.37E+11	9.92E+10	0.00E+00	2.27E+12	1.88E+13
Christina River (C02)	1.34E+12	2.01E+13	1.31E+11	1.11E+11	3.65E+08	2.60E+12	2.42E+13
Christina River (C03)	5.79E+11	3.29E+12	1.56E+11	2.11E+11	1.01E+09	4.33E+12	8.56E+12
Christina River (C04)	8.93E+11	4.89E+11	2.08E+11	6.07E+11	8.18E+09	4.69E+12	6.89E+12

Location	Residential (cfu/yr)	Agricultural (cfu/yr)	Open (cfu/yr)	Forested (cfu/yr)	Wetland (cfu/yr)	Urban (cfu/yr)	Total (cfu/yr)
Christina River (C05)	3.68E+11	0.00E+00	2.21E+11	2.02E+11	2.60E+10	3.98E+12	4.79E+12
Christina River (C06)	7.70E+11	1.11E+13	4.14E+11	4.61E+11	1.36E+10	3.81E+12	1.65E+13
Christina River (C07)	8.54E+11	4.86E+12	2.49E+11	5.75E+11	1.41E+10	4.28E+12	1.08E+13
Christina River (C08)	1.58E+12	4.49E+12	3.29E+11	9.12E+11	1.82E+10	9.36E+12	1.67E+13
Christina River (C09)	1.39E+12	3.21E+12	2.04E+12	1.29E+12	4.04E+11	2.58E+13	3.41E+13

Table C-13c. MS4 enterococci percent reductions for New Castle County, DE

Location	Residential	Agricultural	Open	Forested	Wetland	Urban	Total
Brandywine Cr. (B18)	64.39%	96.14%	63.32%	0.00%	0.00%	96.33%	95.01%
Brandywine Cr. (B19)	29.83%	91.68%	27.72%	0.00%	0.00%	92.78%	88.67%
Tidal Brandywine Cr. (B34)	97.95%	86.87%	13.91%	0.00%	0.00%	92.00%	91.27%
Red Clay Cr. (R04)	84.75%	86.32%	84.75%	0.00%	0.00%	84.75%	84.75%
Red Clay Cr. (R05)	64.92%	66.84%	64.92%	0.00%	0.00%	64.92%	64.92%
Red Clay Cr. (R06)	32.85%	33.07%	32.85%	0.00%	0.00%	32.85%	32.85%
Red Clay Cr. (R07)	71.26%	77.67%	71.26%	0.00%	0.00%	71.26%	71.26%
Red Clay Cr. (R08)	90.96%	98.56%	89.65%	0.00%	0.00%	89.65%	89.65%
Red Clay Cr. (R09)	89.97%		89.97%	0.00%	0.00%	90.36%	89.97%
White Clay Cr. (W11)	54.82%	78.90%	94.42%	0.00%	0.00%	98.52%	83.46%
White Clay Cr. (W12)	74.23%	76.55%	71.83%	0.00%	0.00%	97.42%	92.60%
White Clay Cr. (W13)	56.12%	56.98%	56.12%	0.00%	0.00%	95.60%	87.03%
White Clay Cr. (W14)	10.85%		10.85%	0.00%	0.00%	91.17%	89.55%
White Clay Cr. (W15)	63.37%	63.40%	62.14%	0.00%		96.20%	68.56%
White Clay Cr. (W16)	65.59%	67.01%	65.59%	0.00%		96.55%	87.09%
White Clay Cr. (W17)	66.14%	67.15%	66.14%	0.00%	0.00%	96.60%	86.16%
Christina River (C01)	64.27%	60.75%	55.78%	0.00%		10.43%	57.77%
Christina River (C02)	35.76%	72.42%	86.94%	0.00%	0.00%	26.11%	69.50%
Christina River (C03)	58.64%	83.57%	3.34%	0.00%	0.00%	81.14%	80.85%
Christina River (C04)	31.87%	96.89%	32.11%	0.00%	0.00%	93.21%	92.07%
Christina River (C05)	38.11%		37.18%	0.00%	0.00%	93.80%	92.66%
Christina River (C06)	37.85%	81.57%	59.71%	0.00%	0.00%	67.70%	77.83%
Christina River (C07)	41.62%	89.45%	25.60%	0.00%	0.00%	81.55%	84.88%
Christina River (C08)	25.73%	92.22%	24.35%	0.00%	0.00%	86.01%	86.97%
Christina River (C09)	41.01%	94.66%	31.89%	0.00%	0.00%	90.15%	89.63%