

**PRP Report and Strategy Plan for Thornbury Township
MS4 Individual Permit Application 2024**

APPENDIX A

**Extract from the Christina Basin Land Use Loading Rates Calculation Tool,
for Brandywine Creek, 2012**

**Brandywine-Christina Watershed (HUC # 02040205)
EPA TMDL MS4 Baseline Pollutant Loadings, MS4 Allocations, and Reductions**

MUNICIPALITIES LISTED IN TMDL REPORTS	Sediment (tons/year)			Total Nitrogen (kg/day)			Total Phosphorus (kg/day)				
	Baseline MS4 Load ^{1b}	MS4 Load Allocation ^{1c}	MS4 Load Reduction ^{1e}	Baseline MS4 Load ^{2g}	MS4 Allocation ^{2a}	MS4 Load Reduction ^{2m}	Baseline MS4 Load ^{2j}	MS4 Allocation ^{2d}	MS4 Load Reduction ^{2m}	% Reduction ²ⁿ	
	% Reduction ^{1b}	% Reduction ^{1c}	% Reduction ^{1e}	% Reduction ^{2g}	% Reduction ^{2a}	% Reduction ^{2m}	% Reduction ^{2j}	% Reduction ^{2d}	% Reduction ^{2m}	% Reduction ²ⁿ	
Brandywine Creek Watershed											
BIRMINGHAM TWP	310.81	130.35	180.46	16.08	10.86	5.22	3.015	2.031	0.984	32.64%	
COATESVILLE CITY	231.29	86.06	145.23	54.19	44.44	9.75	0.826	0.677	0.149	18.04%	
EAST BRADFORD TWP	1185.00	467.17	717.83	110.54	75.74	34.80	22.365	15.348	7.017	31.37%	
EAST BRANDYWINE TWP											
EAST FALLOWFIELD TWP	803.23	426.42	376.81	9.61	5.76	3.85	0.184	0.11	0.074	40.22%	
EAST MARLBOROUGH TWP	366.70	139.44	227.26	421.64	279.02	142.62	7.599	4.956	2.643	34.76%	
HIGHLAND TWP	384.80	238.86	145.94	2.38	2.22	0.16	0.213	0.198	0.015	7.04%	
HONEY BROOK BORO	20.56	13.23	7.35	4.80	3.25	1.55	0.966	0.656	0.31	32.09%	
HONEY BROOK TWP	813.84	558.76	255.08	6.53	4.57	1.96	1.337	0.936	0.401	29.99%	
KENNETT TWP											
MODENA BORO	27.96	12.46	15.50	47.00	43.71	3.29	4.206	3.911	0.295	7.01%	
NEWLIN TWP	144.16	59.59	84.59	3.05	2.26	0.79	0.329	0.205	0.124	37.69%	
PARKESBURG BORO	52.11	32.35	19.76	10.92	8.96	1.96	0.166	0.137	0.029	17.47%	
PENNSBURG TWP	113.98	43.48	70.50	57.57	43.75	13.82	6.941	4.726	2.215	31.91%	
POCOFSON TWP	821.21	320.79	500.42	126.53	103.76	22.77	1.929	1.582	0.347	17.99%	
SADSBURY TWP	289.73	172.13	117.60	17.25	12.08	5.17	3.532	2.473	1.059	29.98%	
THORNBUARY TWP	82.17	34.46	47.71	136.01	104.78	31.23	9.63	8.344	1.286	13.35%	
UPPER UWCHLAN TWP				183.72	149.26	34.46	9.95	8.649	1.301	13.08%	
VALLEY TWP	485.14	164.64	320.50								
WALLACE TWP	21.74	17.41	4.33								
WEST BRADFORD TWP	283.22	121.6	161.62								
WEST BRANDYWINE TWP											
WEST CALN TWP	68.28	43.07	25.21								
WEST GOSHEN TWP	461.32	180.51	280.81								

Red Clay Creek Watershed	Sediment (tons/year)			Total Nitrogen (kg/day)			Total Phosphorus (kg/day)			
	Baseline MS4 Load ^{1c}	MS4 Load Allocation ^{1c}	MS4 Load Reduction ^{1e}	Baseline MS4 Load ^{2h}	MS4 Allocation ^{2b}	MS4 Load Reduction ^{2m}	Baseline MS4 Load ^{2k}	MS4 Allocation ^{2e}	MS4 Load Reduction ^{2m}	% Reduction ²ⁿ
	% Reduction ^{1c}	% Reduction ^{1c}	% Reduction ^{1e}	% Reduction ^{2h}	% Reduction ^{2b}	% Reduction ^{2m}	% Reduction ^{2k}	% Reduction ^{2e}	% Reduction ^{2m}	% Reduction ²ⁿ
EAST MARLBOROUGH TWP	8791.41	4,193.24	4598.17	137.13	68.56	68.57	2.742	1.372	1.37	49.96%
KENNETT SQUARE BORO	840.10	405.41	434.69	13.26	6.63	6.63	0.452	0.151	0.301	66.59%
KENNETT TWP	6751.63	3,312.06	3439.57	157.97	97.83	60.14	21.517	3.731	17.786	82.66%
NEW GARDEN TWP	4709.65	2,118.72	2590.93	77.03	38.52	38.51	27.708	2.87	24.838	89.64%
PENNSBURG TWP				4.32	4.32	0.00	0.082	0.082	0.00	0.00%

White Clay Creek Watershed	Sediment (tons/year)			Total Nitrogen (kg/day)			Total Phosphorus (kg/day)			
	Baseline MS4 Load ^{1d}	MS4 Load Allocation ^{1d}	MS4 Load Reduction ^{1e}	Baseline MS4 Load ²ⁱ	MS4 Allocation ^{2c}	MS4 Load Reduction ^{2m}	Baseline MS4 Load ^{2l}	MS4 Allocation ^{2f}	MS4 Load Reduction ^{2m}	% Reduction ²ⁿ
	% Reduction ^{1d}	% Reduction ^{1d}	% Reduction ^{1e}	% Reduction ²ⁱ	% Reduction ^{2c}	% Reduction ^{2m}	% Reduction ^{2l}	% Reduction ^{2f}	% Reduction ^{2m}	% Reduction ²ⁿ
AVONDALE BORO	463.65	140.02	323.63	9.16	4.58	4.58	0.322	0.135	0.187	58.07%
FRANKLIN TWP	4220.43	2,305.87	1914.56	122.01	61.01	61	15.219	5.557	9.662	63.49%
KENNETT TWP				2.17	2.17	0.00	0.055	0.055	0	0.00%
LONDON BRITAIN TWP	2634.66	1,620.44	1014.22	96.47	49.9	46.57	15.732	7.333	8.399	53.39%
LONDON GROVE TWP	13616.33	4,842.81	8773.52	262.76	128.47	134.29	25.875	7.965	17.91	69.22%
NEW GARDEN TWP	6746.50	2,986.66	3759.84	167.06	83.83	83.23	41.916	13.374	28.542	68.09%
NEW LONDON TWP	1913.97	1,008.60	905.37	53.56	26.61	26.95	0.65	0.292	0.358	55.08%
PENN TWP	3584.76	1,410.29	2174.47	71.23	33.36	37.87	0.798	0.359	0.439	55.01%
WEST GROVE BORO	562.29	192.63	369.66	9.24	4.36	4.88	0.112	0.05	0.062	55.36%

(1) U.S. EPA Region III, 8 April 2005, Total Maximum Daily Loads for Bacteria and Sediment in the Christina River Basin Watershed Pennsylvania, Delaware, and Maryland, Philadelphia, PA.
 (2) U.S. EPA Region III, 26 September 2006, Revisions to Total Maximum Daily Loads for Nutrient and Low Dissolved Oxygen under High-flow Conditions: Christina River Basin Watershed, Pennsylvania, Delaware, and Maryland, Philadelphia, PA.
 a. Table 4.2 Fecal coliform TMDL allocations for MS4 municipalities, p. 4-5
 b. Table 4.8 Sediment allocations for towns in Brandywine Creek Watershed, p. 4-16
 c. Table 4.9 Sediment allocations for towns in Red Clay Creek Watershed, p. 4-16
 d. Table 4.10 Preliminary sediment allocations for towns in White Clay Creek Watershed, p. 4-14
 e. Calculated by CCWRA using Tables listed in 1a-1d, listed above.
 MS4 Reduction = (Baseline MS4 Load) - (MS4 Load Allocation)
 f. Appendix C, Table C-10b, Total phosphorus MS4 allocations for White Clay Creek watershed (kg/day) p. C-13
 g. Appendix C, Table C-5a, Total nitrogen MS4 baseline loads for Brandywine Creek watershed (kg/day) p. C-5
 %Reduction = (MS4 Load Reduction) / (MS4 Baseline Load)
 h. Appendix C, Table C-7a, Total nitrogen MS4 baseline loads for Red Clay Creek watershed (kg/day) p. C-8
 i. Appendix C, Table C-9a, Total nitrogen MS4 baseline loads for White Clay Creek watershed (kg/day) p. C-10
 j. Appendix C, Table C-6a, Total phosphorus MS4 baseline loads for Brandywine Creek watershed (kg/day) p. C-7
 k. Appendix C, Table C-8a, Total phosphorus MS4 baseline loads for Red Clay Creek watershed (kg/day) p. C-9
 l. Appendix C, Table C-10a, Total phosphorus MS4 baseline loads for White Clay Creek watershed (kg/day) p. C-12
 m. Calculated by CCWRA using Tables listed in 2a-2l, listed above. MS4 Reduction = (MS4 Baseline Load) - (MS4 Allocation);
 %Reduction = (MS4 Load Reduction) / (MS4 Baseline Load)