

Table E.1: Lebanon County Stormwater Consortium Proposed Projects Revised 8/1/2017

ID#	Projects: Snitz Creek-Quittapahilla Creek Watershed	Participant	Map Grid	Cost ¹	TSS Reduction	Cost/lb reduced
SQ1	Streambank restoration on the Quittapahilla Creek mainstem upstream of the 22nd St bridge (1,700 ft)	NCT	A5	\$510,000.00	72,846	7.00
SQ2	Stormwater wetland basin between the Quittapahilla Creek and Chestnut Street	NCT	A5	\$285,000.00	23,489	12.13
SQ3	Streambank restoration on the Quittapahilla Creek mainstem upstream of the Chestnut St bridge (850 ft)	NCT	A4	\$255,000.00	35,041	7.28
SQ4	Streambank restoration on the Quittapahilla Creek mainstem from Chestnut Street to Reigle Auto (1640 ft)	NCT	A4	\$492,000.00	65,077	7.56
SQ5	Stormwater wetland basin south of the Chestnut Street bridge	NCT	A4	\$100,000.00	6,953	14.38
SQ6	Streambank restoration on the Quittapahilla Creek mainstem from Mill Street to Dairy Road (4,510 ft)	Cleona/NCT	B3/B3	\$1,353,000.00	197,350	6.86
SQ7	Streambank restoration on the Brandywine Creek mainstem at Stoever's Dam Park/Mt. Lebanon Cemetery (2,460 ft.)	City	B4	\$738,000.00	107,274	6.88
SQ8	Streambank restoration on the Snitz Creek mainstem in and upstream of Creekside and Fieldcrest (3,290 ft.)	NCT	D6	\$987,000.00	141,737	6.96
SQ9	Streambank restoration on an UNT to the Brandywine Creek between Mechanic Street and Reinhol Street (1,710 ft.)	NLT/City	E7/B2	\$513,000.00	73,657	6.96
SQ10	Streambank restoration on the Quittapahilla Creek mainstem from the Annville Township line to Clift Auto sales (860 ft)	Annville	-	\$258,000.00	37,504	6.88
SQ11	Streambank restoration on the Quittapahilla Creek mainstem from Clift Auto Sales to the Annville Township line (1,800 ft)	Annville	-	\$540,000.00	78,335	6.89
SQ12	Streambank restoration on an UNT to the Quittapahilla Creek between the RR tracks and N. 11th Ave (620 ft)	NLT	G10	\$186,000.00	27,419	6.78
SQ13	Streambank restoration on the Quittapahilla Creek mainstem between Lincoln Avenue and 4th St (1,500 ft)	City	D4	\$588,000.00	65,649	8.96
SQ14	Streambank restoration on the Snitz Creek mainstem along the Hershey property on the Snitz Creek (1,200 ft)	NCT	B4	\$360,000.00	50,552	7.12
SQ15	Riparian Buffer Restoration at Northeast Park	City	B5	\$26,200.00	2,917	8.98
SQ16	Basin retrofit at the Quentin Circle shopping plaza	NCT	E8	\$22,500.00	15,010	1.50
SQ17	Basin retrofit at Hauck Manufacturing	Cleona	B1	\$15,000.00	10,316	1.45
SQ18	Basin retrofit at Sholley Ave/Kappa Ave	NLT	D7	\$20,000.00	12,799	1.56
SQ19	Basin retrofit east of Tanglewood Court	NCT	E2	\$25,000.00	15,779	1.58
SQ20	Basin retrofit between Catherine Court and Colebrook Road	NCT	D7	\$15,000.00	8,645	1.74
SQ21	Basin retrofit at the Oak Hills northern basin	NCT	B5	\$15,000.00	8,526	1.76
SQ22	Basin retrofit at Horseshoe Circle	SLT	C4	\$40,000.00	19,933	2.01
SQ23	Basin retrofit in Walnut Mill-northwest basin	Cleona	B2	\$15,000.00	6,535	2.30
SQ24	Basin Retrofit at Stone Hedge Court	SLT	F3	\$12,500.00	5,518	2.27
SQ25	Basin retrofit in Walnut Mill-southeast basin	Cleona	C2	\$12,000.00	5,292	2.27
SQ26	Basin retrofit at Hickory Blvd	SLT	E4	\$40,000.00	17,225	2.32
SQ27	Basin retrofit at Bently Court	NCT	D5	\$17,500.00	7,127	2.46
SQ28	Basin Retrofit at Clover Drive	SLT	G5	\$20,000.00	6,666	3.00
SQ29	Basin retrofit east of Millbridge Drive	NCT	C1	\$20,000.00	6,510	3.07
SQ30	Basin retrofit at Comcast	NLT	F11	\$15,000.00	4,385	3.42
SQ31	Basin retrofit at Todd Court	Annville	-	\$17,500.00	4,950	3.54
SQ32	Basin retrofit in Runnymede East	NCT	D4	\$16,000.00	4,313	3.71
SQ33	Basin retrofit at Wal-Mart	NLT	G10	\$75,000.00	13,904	5.39
SQ34	Basin retrofits at the Lebanon Rails Business Park (4 basins)	NLT	G3, G4, H3	\$50,000.00	7,376	6.78

SQ35	Basin retrofit at ManorCare Health Services	NCT	E9	\$35,000.00	5,464	6.41
SQ36	Basin retrofits at Eagle Graphics (2 basins)	Annville	-	\$45,000.00	5,417	8.31
SQ37	Basin retrofits in Creekside (4 basins)	NCT	D6, E6	\$100,000.00	21,159	4.73
SQ38	Stormwater wetland basin at the Quittapahilla Creek headwaters	SLT	C3	\$360,000.00	21,566	16.69
SQ39	Continuing the current weekly street sweeping program for the next 5 years ³	City	All	\$375,000.00	21,325	17.59
SQ40	Stormwater wetland basin and riparian buffer south of Lancaster Street	Annville	-	\$100,000.00	7,437	13.45
SQ41	Bioretention basins at South Hills Park	SLT	F2	\$75,000.00	5,258	14.26
SQ42	Stormwater wetland basin at Optimist Park	City	F11	\$80,000.00	5,020	15.94
SQ43	Bioretention Basins at the Cleona Playground and the Borough Hall	Cleona	B2, B3	\$45,000.00	3,620	12.43
SQ44	Basin Retrofit at the North Cornwall Township Building	NCT	B6	\$20,000.00	1,318	15.17
SQ45	Increased street sweeping program ³	City	All	\$300,000.00	17,603	17.04
SQ46	Stormwater wetland basin downstream of Lehman Street	City	D1	\$175,000.00	11,787	14.85
SQ47	Basin retrofit/expansion behind Kmart/Lowe's	NCT	F8	\$300,000.00	24,201	12.40
SQ48	Landscape Restoration and Tree Planting at 3 City properties	City	C2, D2, E5	\$61,500.00	545	112.84

**WATERSHED
TOTAL: 1,318,330 lb/yr**

ID#	Projects: Reeds Run-Swatara Creek Watershed	Municipality	Map Grid	Cost ¹	TSS Reduction	Cost/lb reduced
RS1	Shoreline Stabilization at Lion's Lake (1,285 linear feet)	NLT	E4	\$150,000.00	55,812	2.60
RS2	Basin retrofit at Ebenezer Elementary School	NLT	C6	\$40,000.00	20,810	2.10
RS3	Basin retrofit at Lake Drive/Water Street	NLT	E4	\$12,000.00	3,874	3.29
RS4	Basin retrofit at St. Stephen's Church	NLT	B6	\$10,000.00	2,558	4.04
RS5	Riparian Buffer along an UNT to the Swatara Creek north of East Brookfield Drive	NLT	C4	\$40,000.00	6,311	6.34
RS6	Rain Garden in open space between Ebenezer and Old Ebenezer Road	NLT	F4	\$20,000.00	1,289	13.88

**WATERSHED
TOTAL: 90,654 lb/yr**

ID#	Projects: Lower Little Swatara Creek Watershed	Municipality	Map Grid	Cost ¹	TSS Reduction	Cost/lb reduced
LS1	Bioswale along North Lebanon Township property at North 8th Ave/PA Route 343 ⁴	NLT	C8	\$15,000.00	4,129	7.58
LS2	Basin retrofit at Oakridge Court	NLT	C8	\$12,500.00	2,765	4.74

**WATERSHED
TOTAL: 6,894 lb/yr**

ID#	Projects: Headwaters Tulpehocken Creek Watershed	Municipality	Map Grid	Cost ¹	TSS Reduction	Cost/lb reduced
T1	Basin retrofit at Union Canal Elementary school	NLT	D12	\$50,000.00	8,082	6.19
T2	Basin retrofit east of Cider Lane	NLT	C11	\$16,000.00	3,718	4.52
T3	Roadside swales along N Mine Road and Birch Road	SLT	D7	\$25,000.00	2,223	11.25
T4	Storm Sewer Filter Bags in inlets along Mallard Lane and associated maintenance ⁵	NLT	E11	\$40,000.00	4,826	8.29

**WATERSHED
TOTAL: 18,849 lb/yr**

¹Cost estimates were derived from data in the PA Stormwater BMP Manual, Quittapahilla Watershed Association 2006 Watershed Assessment, and SESI data on construction costs for past projects.

²Reduction values derived from DEP's "BMP Effectiveness Values Table"

³Street sweeping must be conducted 25 times/year.

⁴Assumes no retrofit at Oakridge Court

⁵Estimate only, actual reductions will be determined by the weighing of material collected per DEP guidelines

Table E.2: Proposed Project Load Reduction Calculations

Impervious cover loading rate: 1948.53 lb/yr
 Pervious cover loading rate: 269.81 lb/yr

ID#	Projects:	Within An Existing Sewershed(s)		Outside An Existing Sewershed		Proposed Percent TSS Reduction ^a	Proposed Raw TSS Reduction (lb/yr)	Addtl. Required Reduction (lb/yr) ^b	10% of Existing Reduction (lb/yr) ^c	Net TSS Reduction (lb/yr) ^d
		Drainage Area (ac)	Percent Impervious	Drainage Area (ac)	Percent Impervious					
SQ1	Streambank restoration on the Quittapahilla Creek mainstem upstream of the 22nd St bridge (1,700 ft)	0.0	0.0	28.9	55.0	N/A	76,296	3,450	0	72,846
SQ2	Stormwater wetland basin between the Quittapahilla Creek and Chestnut Street	51.5	29.0	0.3	38.0	60.0	23,513	24	0	23,489
SQ3	Streambank restoration on the Quittapahilla Creek mainstem upstream of the Chestnut St bridge (850 ft)	0.0	0.0	18.3	85.0	N/A	38,148	3,107	0	35,041
SQ4	Streambank restoration on the Quittapahilla Creek mainstem from Chestnut Street to Reigle Auto (1640 ft)	0.0	0.0	76.9	50.0	N/A	73,603	8,526	0	65,077
SQ5	Stormwater wetland basin south of the Chestnut Street bridge	0.0	0.0	26.7	15.0	60.0	8,344	1,391	0	6,953
SQ6	Streambank restoration on the Quittapahilla Creek mainstem from Mill Street to Dairy Road (4,510 ft)	0.0	0.0	143.0	5.0	N/A	202,409	5,059	0	197,350
SQ7	Streambank restoration on the Brandywine Creek mainstem at Stoever's Dam Park/Mt. Lebanon Cemetery (2,460 ft.)	0.0	0.0	71.5	10.0	N/A	110,405	3,131	0	107,274
SQ8	Streambank restoration on the Snitz Creek mainstem in and upstream of Creekside and Fieldcrest (3,290 ft.)	0.0	0.0	92.6	22.0	N/A	147,655	5,918	0	141,737
SQ9	Streambank restoration on an UNT to the Brandywine Creek between Mechanic Street and Reinhol Street (1,710 ft.)	0.0	0.0	26.3	54.0	N/A	76,745	3,088	0	73,657
SQ10	Streambank restoration on the Quittapahilla Creek mainstem from the Annville Township line to Clift Auto sales (860 ft)	0.0	0.0	13.0	34.0	N/A	38,597	1,093	0	37,504
SQ11	Streambank restoration on the Quittapahilla Creek mainstem from Clift Auto Sales to the Annville Township line (1,800 ft)	0.0	0.0	29.1	34.0	N/A	80,784	2,449	0	78,335
SQ12	Streambank restoration on an UNT to the Quittapahilla Creek between the RR tracks and N. 11th Ave (620 ft)	0.0	0.0	5.9	25.0	N/A	27,826	406	0	27,419
SQ13	Streambank restoration on the Quittapahilla Creek mainstem between Lincoln Avenue and 4th St (1,500 ft)	0.0	0.0	14.2	54.0	N/A	67,320	1,672	0	65,648
SQ14	Streambank restoration on the Snitz Creek mainstem along the Hershey property on the Snitz Creek (1,200 ft)	0.0	0.0	56.4	22.0	N/A	53,856	3,607	0	50,249
SQ15	Riparian Buffer Restoration at Northeast Park	0.0	0.0	11.8	20.8	50.0	3,646	729	0	2,917
SQ16	Basin retrofit at the Quentin Circle shopping plaza	53.2	29.0	5.7	72.6	33.0	16,079	847	222	15,010
SQ17	Basin retrofit at Hauck Manufacturing	15.3	52.0	0.0	0.0	60.0	10,490	0	174	10,316
SQ18	Basin retrofit at Sholley Ave/Kappa Ave	28.1	22.9	6.1	22.0	60.0	13,354	388	167	12,799
SQ19	Basin retrofit east of Tanglewood Court	42.4	12.6	11.6	22.2	60.0	16,729	746	204	15,779
SQ20	Basin retrofit between Catherine Court and Colebrook Road	21.3	24.0	1.0	5.9	60.0	8,827	38	144	8,645
SQ21	Basin retrofit at the Oak Hills northern basin	18.1	51.4	1.7	20.0	40.8	8,769	104	139	8,526
SQ22	Basin retrofit at Horseshoe Circle	44.9	27.6	2.2	12.0	60.0	20,366	103	329	19,933
SQ23	Basin retrofit in Walnut Mill-northwest basin	14.3	29.0	0.9	4.5	60.0	6,674	30	109	6,535
SQ24	Basin Retrofit at Stone Hedge Court	10.8	27.0	1.6	50.0	60.0	5,777	180	79	5,518
SQ25	Basin retrofit in Walnut Mill-southeast basin	9.8	30.0	2.1	30.0	60.0	5,532	165	75	5,292

SQ26	Basin retrofit at Hickory Blvd	36.1	30.6	2.9	5.6	60.0	17,612	105	283	17,225
SQ27	Basin retrofit at Bently Court	18.6	21.5	1.3	3.0	60.0	7,277	41	109	7,127
SQ28	Basin Retrofit at Clover Drive	13.8	32.0	0.9	0.0	60.0	6,800	23	111	6,666
SQ29	Basin retrofit east of Millbridge Drive	14.3	26.0	2.7	8.7	60.0	6,721	110	101	6,510
SQ30	Basin retrofit at Comcast	7.0	47.0	0.0	0.0	60.0	4,460	0	75	4,385
SQ31	Basin retrofit at Todd Court	12.9	37.9	0.0	0.0	43.2	5,034	0	84	4,950
SQ32	Basin retrofit in Runnymede East	10.0	24.6	1.5	6.7	60.0	4,438	57	68	4,313
SQ33	Basin retrofit at Wal-Mart	0.0	0.0	40.9	51.0	40.2	18,508	4,604	0	13,904
SQ34	Basin retrofits at the Lebanon Rails Business Park (4 basins)	14.5	18.0	14.2	8.0	60.0	8,411	572	463	7,376
SQ35	Basin retrofit at ManorCare Health Services	9.0	45.0	0.0	0.0	60.0	5,555	0	91	5,464
SQ36	Basin retrofits at Eagle Graphics (2 basins)	9.2	43.0	0.0	0.0	60.0	5,474	0	57	5,417
SQ37A	Basin retrofits at Little Pond Lane	7.1	31.1	0.0	0.0	60.0	3,364	0	144	3,220
SQ37B	Basin retrofit at Waterside Circle	4.0	27.4	10.3	21.9	60.0	5,697	655	102	4,940
SQ37C	Basin retrofit at Cross Creek Court	24.9	14.3	4.6	7.3	60.0	8,692	179	207	8,306
SQ37D	Basin retrofit at Hearthside Lane	13.5	19.0	0.0	0.0	60.0	4,773	0	80	4,693
SQ38	Stormwater wetland basin at the Quittapahilla Creek headwaters	0.0	0.0	61.1	26.0	60.0	25,879	4,313	0	21,566
SQ39	Continuing the current weekly street sweeping program for the next 5 years ³	121.6	100.0	0.0	0.0	9.0	21,325	0	0	21,325
SQ40	Stormwater wetland basin and riparian buffer south of Lancaster Street	7.9	51.3	1.5	0.0	80.0	7,478	41	0	7,437
SQ41	Bioretention basins at South Hills Park	8.1	27.0	0.0	0.0	90.0	5,258	0	0	5,258
SQ42	Stormwater wetland basin at Optimist Park	21.6	7.0	0.0	0.0	60.0	5,020	0	0	5,020
SQ43	Bioretention Basins at the Cleona Playground and the Borough Hall	3.2	60.0	0.0	0.0	90.0	3,620	0	0	3,620
SQ44	Basin Retrofit at the North Cornwall Township Building	1.1	67.0	0.0	0.0	90.0	1,318	0	0	1,318
SQ45	Increased street sweeping program ³	100.4	100.0	0.0	0.0	9.0	17,603	0	0	17,603
SQ46	Stormwater wetland basin downstream of Lehman Street	0.0	0.0	26.5	36.9	60.0	14,145	2,357	0	11,787
SQ47	Basin retrofit/expansion behind Kmart/Lowe's	0.0	0.0	32.4	73.0	60.0	29,041	4,840	0	24,201
SQ48A	Landscape Restoration at 12th and Cumberland Streets	0.1	0.0	0.0	0.0	85.0	16	0	0	16
SQ48A	Tree Planting at 12th and Cumberland Streets	0.3	0.0	0.0	0.0	20.0	14	0	0	14
SQ48B	Landscape Restoration at the Greenwaste Recycling Facility Property	0.0	0.0	1.6	0.0	85.0	367	43	0	324
SQ48B	Tree Planting at the Greenwaste Recycling Facility Property	0.0	0.0	1.1	0.0	20.0	60	30	0	30

SQ48C	Landscape Restoration at Jadell Drive	0.0	0.0	0.8	0.0	85.0	172	20	0	152
SQ48C	Tree Planting at Jadell Drive	0.0	0.0	0.4	0.0	20.0	19	9	0	9
RS1	Shoreline Stabilization at Lion's Lake (1,285 linear feet)	0.0	0.0	27.0	25.0	N/A	57,671	1,859	0	55,812
RS2	Basin retrofit at Ebenezer Elementary School	39.1	18.0	24.0	27.6	57.0	22,764	1,760	214	20,810
RS3	Basin retrofit at Lake Drive/Water Street	10.8	20.0	0.0	0.0	60.0	3,939	0	65	3,874
RS4	Basin retrofit at St. Stephen's Church	2.7	37.0	3.0	30.0	60.0	2,814	232	24	2,558
RS5	Riparian Buffer along an UNT to the Swatara Creek north of East Brookfield Drive	0.0	0.0	44.6	5.0	50.0	7,889	1,578	0	6,311
RS6	Rain Garden in open space between Ebenezer and Old Ebenezer Road	0.0	0.0	2.2	25.0	95.0	1,441	152	0	1,289
LS1	Bioswale along North Lebanon Township property at North 8th Ave/PA Route 343	7.0	26.1	2.1	15.0	70.0	4,236	107	0	4,129
LS2	Basin retrofit at Oakridge Court	5.0	29.0	2.1	15.0	60.0	2,910	107	38	2,765
T1	Basin retrofit at Union Canal Elementary school	0.0	0.0	18.5	36.0	60.0	9,698	1,616	0	8,082
T2	Basin retrofit east of Cider Lane	8.1	22.0	3.0	10.0	60.0	3,902	131	52	3,718
T3	Roadside swales along N Mine Road and Birch Road	0.0	0.0	15.0	6.0	50.0	2,779	556	0	2,223
T4	Storm Sewer Filter Bags in inlets along Mallard Lane and associated maintenance	7.8	30.0	0.0	0.0	80.0	4,826	0	0	4,826

NOTES:

^aFrom DEP's "BMP Effectiveness Values" document

^bNew load reduction requirements are from treating areas outside an existing MS4 sewershed. These areas were not included in the Base Pollutant Loading Calculations and need to be included in the proposed BMP calculation.

^cTen percent of the baseline load reduction claimed by original, unconverted basin in the Existing Pollutant Reduction Calculations. This value was claimed to reduce the baseline load, and must be removed from the proposed reduction calculations so it is not counted twice.

^dNet TSS Reduction = Raw TSS Reduction - Additional Required Reduction - 10% of Existing Claimed Reduction