

Portage and Arcadia Creeks Watershed Transition/Implementation
Project Tracking Code: 2003-0028

Table 1-4. 2002 Baseline Loading from Eroding Streambanks (Task 1.1.3)

Eroding streambanks identified during the Version I WMP planning process were revisited in 2004 (Transition Grant) so measurements could be taken and changes, if any, could be observed. (Changes were noted in Table 4.1, New Project Table.) The geometry of each site was measured or estimated from GIS maps. Estimations of erosion severity, based on observed characteristics of the erosion site, and of soil type were made for each site. The lateral recession rate in the MDEQ Pollutants Controlled Manual (1999) was used to estimate annual sediment loading from each site. Phosphorus loading was estimated based on an average concentration (1.028 lb/ton soil) measured along Kalamazoo River Watershed streambanks for a Clean Michigan Initiative-funded study (2002).

Location (Stream Stretch)	Dimensions	Severity and Soil Type	Annual TSS Loading (tons/year)	Annual TP Loading (pounds/year)*	Notes or changes identified during 2004 surveys
Arcadia Creek					
Stretch 3, Meadow View Mobile Home Park	1,600' x 10' (1 side)	Slight, with 40' x 8' severe area, silt	13.6 + 5.44 = 19	19.22	steep banks vegetated, with exception of severe area
Stretch 8, KCHS stream banks	1,172' x 3' x 2 sides	Very severe, silt	150	154	
Stretch 8, KCHS pond	590' x 1'	Moderate, silt	1.5	1.5	
Stretch 11, WMU Power Plant at fence	35' x 6'	Very severe, gravel	5.3	5.4	
Stretch 12, WMU Power Plant	704' x 1.5' x 2 sides	Moderate with severe areas at bridge, silt	11.7	12	No mow zone in 2004
Stretch 14, behind Munchie Mart, downstream of Lovell Street	790' x 3' x 2 sides	Severe, silt and clay	80	82	Partially vegetated (downstream end) in 2004
TOTAL LOAD			267	273	
Axtell Creek					
Stretch 2, corner of Crosstown and Maple	25' x 0.5'	Slight, gravel	0.02	0.02	exposed corner noted during 2002 survey, vegetated in 2004
Stretch 3	870' x 1' x 1 side + area in front of Senior Apartment, 100' x 1'	Moderate, silt	4.81 + 0.553 = 5.4	5.5	Bare streambanks converted to no mow after 2002, eroding area under pine trees in front of senior apartments remains

Stretch 4, behind National City Drive-thru	5.5' in height	Severe, 75% silt, 25% clay	13.8	14.2	Vertical banks
Stretch 5, along parking lots	803' x 2' x 2 sides	Severe, 75% silt, 25% clay	12.9, estimated for COK S. Pond project options	13.3	Overland runoff from parking lots across bare banks
Stretch 5, South Pond			7.6, estimated for COK S. Pond project options	7.8	Improvements in 2004
Stretch 6, behind Youth Development Center	North side outfall at beginning of stretch: 19' x 4', remainder of stretch is 2' tall on west side, 3.5' tall on east side, whole stretch is 267' long	Severe area: low end of severe, remainder: moderate, 80% silt, 10% sand, 10% organic matter	severe area 0.93 east side 2.62 west side 4.93 total 8.5	8.7	Severe area on north side of outfall, remainder of stretch is consistent to mouth
TOTAL			48.22	49.52	
Portage Creek					
Stretch 2, Golf Course and residences, north side of creek	Golf course 4,038' x 2' Residences (3 lawns) x 1' (not included in erosion estimate, due to seawall)	Slight, primarily sand with some silt	8.9	9.1	Residences have seawall, so minimal erosion, but no habitat Golf course mown to edge, transport of fertilizers to creek, no exposed banks, but slumping
Stretch 5, Centre Street	Gully on downstream side, see last column, residence on upstream side 840' x 1'	Moderate, clay and silt	8.5 at residence, rate needed for gully	8.7	Gully on downstream side begins as 1' deep x 6" at bottom, within 8' fans out to 3' wide and 6" at bottom, 1' deep and drops downhill to spread to 20' wide, gully is well vegetated, but quite evident, cinder blocks at residence mark where creek banks were formerly located
Stretch 6, City of Portage Band Shell	Gully at downstream end 34' long; 4" wide at water; 3.5' deep, 9' across top and 1' across bottom at widest point.	Gully is very severe, remainder of park slumping, gully is gravelly	30 tons total from gully (for rate, assume has doubled in size since observed in 2002, 15 tons in 2 years, 7.5/year)	7.71	gully at downstream end, remainder is low banks mowed to edge, quantified in 2004
Stretch 7, creek at South Westnedge	1,685' x 2' x 2 sides	Moderate, silt	37.2	38.2	Parking lot/development to edge of bare streambanks, current stormwater project being constructed
Stretch 10, Milham Park stream banks	673' x 2' x 2 sides	Very severe, silt	57.21	58.8	Waterfowl grazing and foot traffic, no riparian vegetation

Stretch 10, Milham Park parking lot	44,000 square feet		0.47	3.0**	Quantification is for stormwater runoff, but runoff also causes erosion of yard area, contributing more sediment
Stretch 14-15, Stockbridge to Crosstown	2550' x 3' x 2 sides	Moderate, some severe areas, silt	84.5	86.9	Severe areas at road crossings
TOTAL			204.3	210	
West Fork Portage Creek					
Stretch 4, Angling Road area	414' x 1' x 2 sides	Slight, silt	0.7	0.7	
Stretch 5-7, east of Oakland Drive to Well Field	2100' x 1'	Slight, silt	1.8	1.9	Quantification based on residential areas, On going construction close to creek south of well field, loading will change based on imperviousness, current loads not quantified
Stretch 9, Pratt Road	120' x 1.5' x 2 sides	Moderate, silt	3.7	3.8	December 2003 measurements,
Stretch 10, Burdick Street Culvert	15' x 5' x 2 sides	Severe, gravel	2.3	2.4	Erosion on each side of large culvert, downstream side
TOTAL			8.5	8.8	

*TP load derived from Kalamazoo River streambank average TP concentration of 1.028 pounds/ton soil.

**EMCs for major roads used to derive TSS and TP loads.

EMC-event mean concentration
 KCHS-Kalamazoo Christian High School
 WMU-Western Michigan University