

TABLES

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Table 1.—Number of archaeological sites within the Black River drainage listed by county, township, and range.

County	Township	Number of sites
Lapeer	T. 07 N, R. 11 E	4
	T. 07 N, R. 12 E	2
	T. 08 N, R. 11 E	6
	T. 08 N, R. 12 E	18
	T. 09 N, R. 12 E	6
Sanilac	T. 09 N, R. 14 E	2
	T. 09 N, R. 15 E	2
	T. 09 N, R. 16 E	2
	T. 10 N, R. 13 E	4
	T. 10 N, R. 14 E	17
	T. 10 N, R. 15 E	3
	T. 10 N, R. 16 E	2
	T. 11 N, R. 14 E	1
	T. 11 N, R. 15 E	2
	T. 12 N, R. 15 E	1
	T. 13 N, R. 15 E	2
	T. 14 N, R. 14 E	8
	T. 14 N, R. 15 E	1
St. Clair	T. 06 N, R. 17 E	5
	T. 07 N, R. 13 E	3
	T. 07 N, R. 16 E	2
	T. 07 N, R. 17 E	7
	T. 08 N, R. 13 E	4
	T. 08 N, R. 14 E	2

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Table 2.—Mean annual discharge, drainage area, and yield at six United States Geological Survey gauge sites in the Black River watershed. Discharge units are cubic feet per second (cfs).

Gauge site	Gauge number	Period of record	Drainage area (mi ²)	Mean annual discharge (cfs)	Yield (cfs/mi ²)	Mean daily flow in August (cfs)
Silver Creek near Jeddo	4159488	1978–82	21	14.5	0.69	3.2
Black River near Jeddo	4159492	1944–06	464	301.5	0.65	63.2
Black River near Fargo	4159500	1944–91	480	262.8	0.55	58.5
Mill Creek near Avoca	4159900	1963–06	169	96.7	0.57	16.5
Mill Creek near Abbottsford	4160000	1947–64	208	96.9	0.47	18.8
Black River near Port Huron	4160050	1932–43	684	284.9	0.42	3.2

Table 3.—Period of record maximum and minimum daily discharges (year of occurrence in parentheses) at United States Geological Survey gauging stations on the Black River. Data from United States Geological Survey. Discharge units are cubic feet per second (cfs).

Gauge site	Gauge number	Largest	Smallest	Largest	Smallest	Full years of data in record
		Maximum flow (cfs)	Minimum flow (cfs)	Minimum flow (cfs)	Maximum flow (cfs)	
Silver Creek near Jeddo	4159488	701 (1981)	348 (1979)	0.7 (1979)	0.1 (1978)	4
Black River near Jeddo	4159492	10,100 (1947)	387 (1964)	36.0 (1997)	2.0 (1948)	63
Black River near Fargo	4159500	10,100 (1947)	387 (1964)	13.0 (1952)	2.0 (1948)	22
Mill Creek near Avoca	4159900	3,940 (1975)	64 (1964)	13.0 (1992)	0.9 (1964)	31
Mill Creek near Abbottsford	4160000	2,870 (1962)	350 (1958)	8.3 (1953)	2.9 (1963)	16
Black River near Port Huron	4160050	10,600 (1942)	2,250 (1941)	17.0 (1943)	4.6 (1941)	11

Table 4.—Cover type in the Black River watershed in acres. Presettlement data were taken from Michigan Department of Natural Resources, Michigan Resource Inventory System (MIRIS). Land cover in 1992 was determined from the United States Geological Survey (USGS) National Land Cover Data (NLCD).

Cover type	Presettlement (c. 1800)	Current 1992	Percent change 1800–1992
Commercial	0	1,625	+100
Cultivated	0	358,642	+100
Emergent herbaceous wetland	10,370	692	-87
Forested	442,885	84,694	-68
Open water	1,342	2,085	+22
Gravel pit	0	176	+100
Residential	0	6,546	+100
Transitional	0	130	+100

Table 5.—Dams in the Black River watershed, sorted by county. Date is the year of construction; location is provided by township (T.), range (R.), and section (Sec.); Owner indicates ownership as private, state, or local government; question marks indicate data are missing. Data from L. Szabo Kraft (Michigan Department of Natural Resources Spatial Information Resource Center).

Dam name	Water body	Date	T.	R.	Sec.	Owner	Head (ft)	Pond area (acres)	Storage (acre-ft)
Sanilac									
Croswell Dam	Black River	1902	10N	16E	29	Private	8	42	300
Donovan Dam	Unnamed tributary	?	09N	16E	5	Private	?	3	?
Lapeer									
N. Br. Mill Creek Dam	N. Br. Mill Creek	1965	08N	12E	29	Local	18	250	2,965
Baggerly Dam	Madison Drain	?	09N	12E	33	Private	?	4	?
St. Clair									
Ford's (Wingford) Dam	Black River	1930	07N	16E	8	Private	17	93	3,000
Port Huron SGA No. 4	Walker Flats flooding	1966	07N	16E	16	State	7	45	180
Yale Woolen Mill Dam	Mill Creek	?	08N	14E	10	Local	1	20	?
Cade Road Dam	South Branch Drain	?	07N	13E	6	Private	3	1	?

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Table 6.–National Pollution Discharge Elimination System permits issued in the Black River watershed. Data from Michigan Department of Environmental Quality, Surface Water Quality Division.

Valley segment or subwatershed City	Receiving water	Designated name	Permit type	ID number
Segment 1				
Carsonville	Black River	Waste Management of Michigan, Incorporated	Industrial storm water	45
		Waste Management of Michigan, Incorporated	Industrial storm water	46
Deckerville	Grandy Drain	Plastacoat, Incorporated	Industrial storm water	33
		Trim Trends Company LLC	Individual	44
Minden City	Black River	Bay Houston Towing Company, Incorporated	Industrial storm water	2
Carsonville	Black River	Black River Hardwoods	General seasonal	5
Deckerville	Pelton Drain	Deckerville WWSL	Industrial storm water	16
	Flannigan Drain	Midwest Rubber Company	Industrial storm water	28
Segment 2				
Crowell	Black River	Conveyor Components Company	Industrial storm water	12
		Cotterman Company	General seasonal	13
	Unnamed	Country Hill Pines MHP	Individual	14
	Black River	City of Crowell	Industrial storm water	15
		Jay & Kay Manufacturing Incorporated	Individual	21
		Michigan Sugar Company	Industrial storm water	25
	Unnamed tributary to Black River	Paramount Industries Incorporated	Industrial storm water	31
		Theut Concrete Products, Incorporated	General seasonal	42
Carsonville	Unnamed Carsonville Drain	Carsonville WWSL	Industrial storm water	10
		Randy's Auto Salvage	Industrial storm water	37
Segment 3				
Jeddo	Black River	Mid-Michigan Materials Incorporated	General seasonal	26
Brown City	Elk Creek	Brown City WWSL	General seasonal	8
Segment 4				
Fort Gratiot	Unnamed	Port Huron Area Schools	Industrial storm water	36
Kimball	Black River	Black River Concrete	General seasonal	4
Port Huron	Black River	Port Huron Area School District	Industrial storm water	35
		Acheson Colloids Company	Industrial storm water	1
		Desmond Marine, LLC	Industrial storm water	18
		Mueller Brass Company	General seasonal	29

Table 6.–Continued.

Valley segment or subwatershed City	Receiving water	Designated name	Permit type	ID number
Berry Drain				
Sandusky	Stoney Creek Drain	Jensen Bridge & Supply Company	General seasonal	22
	Unnamed	Sunset Mobile Home Park WWSL Trelleborg YSH, Incorporated	Individual Individual	41 43
	Potts Drain	Bay Houston Towing Company, Incorporated	Industrial storm water	3
	Berry Drain	Fred J. Breiten Lumber Company Numatics, Incorporated	Industrial storm water Industrial storm water	20 30
	Black Drain	Sandusky Concrete & Supply Incorporated	Individual	39
	Unnamed	City of Sandusky	Industrial storm water	40
Elk Creek				
Crosswell	Unnamed	Buel Hill MHP WWSL	General seasonal	9
Brown City	Unnamed	Brown City Camp	General seasonal	6
Peck	Unnamed	Peck WWSL	General seasonal	32
Brown City	Unnamed	Brown City Water Treatment Plant	Industrial storm water	7
	Lapeer Sanilac Drain	Frank Industries, Incorporated Link Technologies	Industrial storm water Industrial storm water	19 24
Black Creek				
Yale	Mill Creek	Redall Industries Incorporated	General seasonal	38
	Unnamed	Parkview Property Management Incorporated	General seasonal	48
	Mill Creek	City of Yale	General seasonal	50
Silver Creek				
Avoca	Unnamed	Detroit Edison Company	Industrial storm water	17
Plum Creek				
Avoca	Unnamed	Plum Creek Estates, LLC	Individual	34
Mill Creek				
Attica	Unnamed	Lapeer County Education and Technology Center	General seasonal	47
Yale	Mill Creek	Yale Industries	Industrial storm water	49
		Yale Steel Incorporated	Groundwater	11
Imlay City	Unnamed	Champion Bus Incorporated	General seasonal	51
Avoca	Mills Creek	City of Yale	Individual	27
Capac	Unnamed	Mid-Michigan Gas Storage Company	Groundwater	23

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Table 7.—Designated drain names, length (mi), and establishment date (Est.) in the Black River watershed by valley segment. Information provided by each county drain office.

Drain	Length (mi)	Est.	Drain	Length (mi)	Est.
<u>Main Stem Valley Segment 1</u>					
<i>Sanilac County</i>			<i>Sanilac County—continued</i>		
• <i>Bridgehampton Township</i>			• <i>Minden Township—continued</i>		
Black River	4.469		Darlington	3.606	1903
Dwight	1.364	1969	Duggan	0.947	
Leonard	0.999	1913	McManus	1.080	1914
Lux	0.394		Swercz Relief	1.151	1914
McDonald	4.293	1888	• <i>Washington Township</i>		
Pyette	1.571	1893	Gordon	2.516	1887
Shrapnel	3.454	1910	McDonald	0.886	1888
Southworth	1.114		• <i>Watertown Township</i>		
Unknown McDonald connector	1.237		Gordon	0.950	1990
• <i>Custer Township</i>			• <i>Wheatland Township</i>		
Anderson	1.121	1904	Bishop	5.408	1895
Black River	3.355	1957	Black River	6.821	1957
Custer Twp Hwy	1.534	1901	Burget	1.414	1906
Dwight	1.082	1894	Carroll Cut-Off	2.184	1914
Freel	1.005		Churchill	0.249	1887
Kirkpatrick	0.900	1910	Flannigan	0.940	1907
Laughren	1.189	1938	Hewitt	2.270	1894
Nichol	5.670	1904	McMannus	3.335	1914
O'Connell	0.833	1916	Merriman	0.858	1907
Pyette	0.717	1893	Paige	1.413	1906
Wilkins	5.022		Pelton	2.715	1885
• <i>Marion Township</i>			Ritchie	5.544	1911
Deckerville	0.202		Sherwood	0.415	1902
Flannigan	0.115	1907	Smith	2.582	1911
Grandy	3.957	1895	Terpenning	0.561	1907
Pelton	1.078	1885	Theyer	2.180	1912
• <i>Minden Township</i>			Thompson	1.976	1893
Bishop	1.407	1895			
Black River & Swercz	7.182	1957			
<u>Berry Drain Subwatershed</u>					
<i>Sanilac County</i>			<i>Sanilac County—continued</i>		
• <i>Bridgehampton Township</i>			• <i>Custer Township—continued</i>		
Berry	0.651	1910	Kenny	6.493	1890
Fry	0.630	1892	Rich	1.517	
• <i>Custer Township</i>			Stone	2.283	1910
Badgero	1.921	1896	• <i>Watertown Township</i>		
Baerwolf	4.684	1913	Berry	1.926	1910
Berry	5.091	1910	Black	2.185	1912
Custer County	5.945	1901	Gauge	1.458	1911
Dwight	9.140	1894	Howse	1.409	1912
Fye	4.106	1892	Sandusky	1.452	1905
Graves	2.176	1914	Stone	1.130	1901
House	0.101	1912			

Table 7.–Continued.

Drain	Length (mi)	Est.	Drain	Length (mi)	Est.
<u>Main Stem Valley Segment 2</u>					
<i>Sanilac County</i>			<i>Sanilac County–continued</i>		
• <i>Bridgehampton Township</i>			• <i>Lexington Township–continued</i>		
Kelley	0.663		Herk	0.791	
• <i>Buel Township</i>			Jenny	1.069	
Arnot	5.004		Johnston	2.154	
May	0.830		Kott	0.613	
Mclelland	5.597		Mclelland	1.900	
Mills	6.063		Mills	2.249	
P. O. E. Perry	0.696		No. 2 County Road	0.483	
Pabst	2.306		No. 3 County Road	0.453	
Smyth	1.955		Rosenstil	0.858	
Taylor	4.211		Wagner	0.346	
Vincent	0.557	1883	• <i>Worth Township</i>		
Wagner	1.915	1889	Achenson	0.529	
Watson	2.161		• <i>Washington Township</i>		
• <i>Lexington Township</i>			Black River Intercounty	9.593	
Black River	1.942		Carsonville	1.966	1923
Chenson	0.476		Kelly	3.228	
Croswell	1.578		Murray	2.917	
Freeman	2.348		Pabst	5.065	1895
<u>Elk Creek Subwatershed</u>					
<i>Lapeer County</i>			<i>Sanilac County–continued</i>		
• <i>Burnside Township</i>			• <i>Elk Township–continued</i>		
Ellis "Relief"	0.379	1898	Cowley	0.997	1907
Lapeer & Sanilac	2.675	1908	Elk & Buel	0.404	1889
Setter	4.247	1899	Elk Creek	7.228	1899
<i>Sanilac County</i>			Elk, Flynn & Maple Valley	1.841	1889
• <i>Buel Township</i>			Elk-Speaker	1.578	1909
Baum	1.472	1889	Elsholz	0.688	1916
County Rd. drain No. 1	0.658	1929	Engle	1.178	1913
Engle	1.146	1913	Fletcher	0.698	1894
French	7.089	1892	Jones	1.058	1896
Hunt	1.133	1897	Maedel	0.233	1913
Maedel	0.501	1913	McCauley	1.434	1907
Miller	3.270	1938	McDonald	3.207	1894
Oak & Buel	1.037		McElhenney	6.637	1890
Potts	8.333	1894	Mullen	1.624	1902
Rickett	2.524	1889	Omard	1.034	1906
Roskey	5.744	1897	Parks	1.286	1894
Siefert	0.552	1892	Phillips	1.776	1924
Thomas	0.534	1899	Potts	4.583	1894
Topping	4.387	1894	Powers	2.673	1906
Wannamaker	0.539	1910	Rickett	1.594	1889
• <i>Elk Township</i>			Rowe	2.204	
Barr	1.258	1897	Ryland	2.877	1892
Bowers	1.101	1913	Shell	0.888	

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Table 7.–Continued.

Drain	Length (mi)	Est.	Drain	Length (mi)	Est.
<i>Sanilac County—continued</i>			<i>Sanilac County—continued</i>		
<i>• Elk Township—continued</i>			<i>• Maple Valley Township—continued</i>		
Siefert	1.003	1892	Payne	0.554	
Smafield	1.468	1913	Scott	1.621	1926
Speaker & Maple Valley	3.803		Setter	3.534	1894
Spring Creek	2.360	1889	Shoemaker	2.390	1908
Squires	1.307	1912	Speaker & Maple Valley	2.881	
Tenniswood	2.141		Valley Center	2.738	1912
Thomas	1.736	1899	Varney	3.477	1909
<i>• Elmer Township</i>			Willoughby & Toman	0.083	
Beals & Frizzle	4.113	1883	Windsor	0.660	1912
Cummer	2.787	1894	Winters	4.701	1889
Hale	3.788	1883	Witmer	3.456	1903
McElhinney	0.367	1890	York	2.430	1910
Severance	0.217	1889	<i>• Speaker Township</i>		
<i>• Flynn Township</i>			Beemer	2.553	1907
Brown	0.936	1954	Cline	2.915	1908
Campbell	0.615		Cork	4.418	1911
Eagle	2.495	1918	Elk-Speaker (Donnelly 1892)	3.097	1909
Elk Creek	1.618	1909	Fletcher	3.332	1894
Elk, Flynn & Maple Valley	4.984	1889	Kern	1.067	
Hector	0.425	1893	Lord	0.981	
Jones	2.597	1896	Macklem	1.584	1906
Large	2.968	1905	Melvin	1.826	1951
McElhinney	0.324	1890	Mullaney	3.315	1907
Omar	2.165	1906	Potts	4.265	1894
Phillips	0.396	1924	Putney	2.703	1953
Rumble	0.786	1893	Shell	0.787	
Setter	17.677	1894	Solan	2.084	1910
Simson	1.059		Speaker & Maple Valley	3.994	1905
Stimson	0.791	1889	Spring Creek	3.311	1991
Tuer	0.991		Utter Branch	1.189	
Welch	4.020	1909	Weston	0.990	
<i>• Fremont Township</i>			<i>• Washington Township</i>		
Hunt	1.777	1897	Alexander		1893
Lord	3.962	1898	Crow		
<i>• Maple Valley Township</i>			Elk Creek		1899
Brown	0.324		Hayes	0.503	1906
Brown City	0.685		McPherson	2.770	1889
Elk Creek	7.448	1899	Methven	2.430	
Elk, Flynn & Maple Valley	1.115	1889	Meyers (Myers)	1.670	
Hydorn	3.508	1909	Potts	0.752	1894
Laidlaw	1.314	1899	Recor	1.944	1890
Langdon	4.425	1902	Rickett	0.483	1889
Lapeer & Sanilac	5.799	1889	Roskey	0.135	1897
Macklem	3.951	1906	Washington	0.704	1912
McElroy	1.121	1906			

Table 7.–Continued.

Drain	Length (mi)	Est.	Drain	Length (mi)	Est.
<u>Elk Creek Subwatershed</u>					
<i>Sanilac County—continued</i>			<i>Sanilac County—continued</i>		
• <i>Watertown Township</i>			• <i>Watertown Township—continued</i>		
Adams	0.979	1891	McElhinney	0.890	1890
Beals & Frizzle	7.710	1883	McPherson	1.782	1889
Cloclough	1.684		Methven	0.873	
Cummer	0.492	1894	Mullen	1.382	1902
Eggert	5.370	1904	Murphy	1.830	1895
Elholz	1.220	1916	Parkinson	1.670	1888
Elk Creek	5.071	1899	Parks	1.455	1894
Hale	2.550	1883	Ricket	0.862	1889
Harneck	0.992	1915	Severance	3.190	1889
Hayes	0.298	1906	Smalldon	4.306	1899
Johnson-Barrett	1.804	1915	Walker	1.189	1888
Maitland	0.326		Watertown State	3.753	1904
<u>Main Stem Valley Segment 3</u>					
<i>Sanilac County</i>			<i>Sanilac County—continued</i>		
• <i>Fremont Township</i>			• <i>Worth Township—continued</i>		
Barnes	0.170		VanSickle	0.111	
Ratray	0.580		<i>St. Clair County</i>		
• <i>Worth Township</i>			• <i>Clyde Township</i>		
Barnes	0.366		Glyshaw	1.458	1915
Coats	1.647		Kingsley	0.536	1964
Mason	1.601		No. 208	0.399	1920
Ratray	0.320		O'Dette	0.763	1912
<u>Black Creek Subwatershed</u>					
<i>St. Clair County</i>			<i>Sanilac County—continued</i>		
• <i>Brockway Township</i>			• <i>Fremont Township—continued</i>		
Brennan	0.111	1914	Coon	1.474	
Jackson Creek	2.655	1909	Crouce	1.686	
Livergood & Ext.	2.330	1906	Jackson Creek	6.543	
Teets	1.473	1914	Lawson	2.328	
• <i>Greenwood Township</i>			Livergood	0.284	
Brennan	0.330	1914	Massacar (Bigger)	1.076	
Jackson Creek	1.128	1909	McIntyre & Willing	3.476	
Livergood & Ext.	3.972	1906	Nelson & Spencer	0.938	
Robertson	2.694	1909	Perry	3.002	
Teets	0.150	1914	Rector	0.783	
<i>Sanilac County</i>			Robertson	0.287	
• <i>Buel Township</i>			Seymore Creek	12.343	
Br. #1 Seymore Ck.	1.734		Sheridan	1.529	
• <i>Fremont Township</i>			Turner	2.310	
Allen	1.030		W. M. Doan	0.670	
Black Creek	5.508		Willey	3.995	
Bradley	0.788		• <i>Speaker Township</i>		
Burns	0.436		Black Creek	3.558	
Conroy & Ferriby	1.289		Jackson Creek	0.497	

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Table 7.–Continued.

Drain	Length (mi)	Est.	Drain	Length (mi)	Est.
<i>Sanilac County—continued</i>			<i>Sanilac County—continued</i>		
• <i>Speaker Township—continued</i>			• <i>Worth Township</i>		
Lavell	0.069		William Doan	1.734	
Rector	0.386				
Silver Creek Subwatershed			St. Clair County—continued		
<i>St. Clair County</i>			• <i>Greenwood Township—continued</i>		
• <i>Brockway Township</i>			Vincent	1.326	1907
Eves	0.964	1906	Willey	0.325	1963
• <i>Greenwood Township</i>			Wilson	0.125	1914
Black	1.979	1929	• <i>Grant Township</i>		
Bricker	1.238	1907	Fuselein	0.109	1945
Butcher	0.435	1965	Neil	0.798	1914
Eves	13.949	1906	Wilson	0.583	1914
Furlong	1.043	1908	<i>Sanilac County</i>		
Fuselein	3.615	1945	• <i>Fremont Township</i>		
Gorman	1.489	1908	Preston	0.415	
Hayes	4.200	1908	Willey	1.402	
Holley	2.928	1948	Wilson	1.932	
Jackson	4.114	1907			
Neil	1.732	1914			
Plum Creek Subwatershed			St. Clair County—continued		
<i>St. Clair County</i>			• <i>Greenwood Township—continued</i>		
• <i>Grant Township</i>			Hill	1.592	1914
King	0.070		Plum Creek	4.244	
Youngs	0.817		Pohly	2.315	
• <i>Greenwood Township</i>			Todd	1.948	
Engles	1.743	1907			
Mill Creek Subwatershed			Lapeer County—continued		
<i>Lapeer County</i>			• <i>Attica Township—continued</i>		
• <i>Arcadia Township</i>			Fern	0.810	1908
Barber	0.368	1890	Lumbar	2.899	1903
Brant Lake	3.190	1904	Rogers & Swamp Corners	0.821	1892
Devall	1.889	1903	• <i>Burnside Township</i>		
Elgin	0.721	1925	Clarkson	0.243	1910
Lister	1.070	1917	Evans & McKillan	1.687	1910
Mud Lake	2.734	1908	• <i>Goodland Township</i>		
Rogers & Swamp Corners	2.943	1892	Anchor	1.069	1911
Simmons Lake	0.603	1905	Barnes	1.151	1941
Soper	0.784	1913	Black Segate & Reid	1.711	1899
Utley	0.070	1920	Clarkson	1.688	1910
Winn	1.475	1917	Courter	2.030	1911
• <i>Attica Township</i>			Crow	2.584	1898
Barber	0.979	1890	East Goodland	2.702	1904
Booth	1.538	1905	Evans & McKillan	1.458	1910
Cadillac	0.303	1908			

Table 7.–Continued.

Drain	Length (mi)	Est.	Drain	Length (mi)	Est.
<i>Lapeer County—continued</i>			<i>St. Clair County—continued</i>		
• <i>Goodland Township—continued</i>			• <i>Emmett Township—continued</i>		
Flansberg	0.416	1914	Sheehy	1.131	1905
Franklin	1.468	1908	White	3.858	1907
Galley	0.963	1889	• <i>Kenockee Township</i>		
Madison	3.615	1893	Gleason	1.390	1953
N. Br. Mill Creek	8.289	1963	No. 211	0.575	1922
Stevenson	3.653	1870	• <i>Lynn Township</i>		
Stoney Creek	4.386	1908	Black – Seagate & Reid	3.824	
Utlely	0.887	1920	Dowling	1.189	
Willoughby & Toman	0.628	1808	Flansburg	2.265	
• <i>Imlay Township</i>			Franklin	1.766	
Brandy run	3.407	1896	Fraser	5.770	
Bunde	1.135	1900	Galley	2.937	
Cadillac	1.294	1908	Kaufman	2.046	
Hughes	1.199	1914	Kenney	1.772	
Jurn	2.906	1940	Kolb	0.906	
Marrosvet	0.521	1948	Lovejoy	4.001	
Mudcat State	0.163	1900	Lynn	1.918	
South Branch Mill Creek	2.736	1894	Lynn – Mussey State	1.510	
<i>Sanilac County</i>			Lynn County	2.107	
• <i>Maple Valley Township</i>			Meharg	1.596	
Willoughby & Toman	4.735		North Branch Mill Creek	6.313	
• <i>Speaker Township</i>			Ostrander	1.400	
Cole	1.747		Raymo – No. 2	1.152	
Downey	2.796		Root	4.298	
Sanilac & St. Clair Intercounty	3.837		Sanilac – St. Clair	3.302	
Sloat	3.480		South Branch Mill Creek	5.957	
<i>St. Clair County</i>			Stuever	1.457	
• <i>Brockway Township</i>			Wait	2.148	
Lovejoy	1.137	1901	Weese	1.629	
McLane	0.838	1904	Willoughby – Toman	4.277	
Meharg	3.858	1916	• <i>Mussey Township</i>		
Middleton	3.253	1913	Benke	1.749	
Ohmer	1.703	1909	Cannis	3.738	
Sanilac – St. Clair	1.208	1889	Dowling	1.103	
Sec. 27	0.752	1954	Franklin	0.775	1906
Sheehy	2.496	1905	Hughes	0.117	1914
South Branch Mill Creek	3.615	1893	Kaufman	1.633	1890
Thody	2.868	1909	Kriesch	1.861	1905
Thompson	1.383	1913	Lynn - Mussey State	2.550	1882
• <i>Clyde Township</i>			Molb	0.139	
Ditchler	0.532	1898	Mudcat State	1.051	1900
• <i>Emmett Township</i>			Seidel	3.625	1940
Benke	1.176	1908	South Branch Mill Creek	2.693	1893
Gleason	4.987	1953	Sprotberry	3.744	1905
Lovejoy Ext.	1.700	1901	Weitzig	2.082	1908
			Wendt	1.941	1905

Black River Assessment

Table 7.–Continued.

Drain	Length (mi)	Est.	Drain	Length (mi)	Est.
<u>Main Stem Valley Segment 4</u>					
<i>St. Clair County</i>			<i>St. Clair County – continued</i>		
• <i>Clyde Township</i>			• <i>Fort Gratiot Township–continued</i>		
Brandymore	1.605		Routley	1.091	1914
• <i>Fort Gratiot Township</i>			Stimson Storm Sewer	0.178	1966
Black River Canal	1.087		Warner	1.629	1917
Brandymore	3.641		• <i>Port Huron Township</i>		
Collins	1.127	1958	Baldwin	1.791	1868
Gossman	2.386	1927	Blackney	1.626	1919
Howe	2.400	1890	Hopps	1.045	1962
Moore	1.244	1931	Price	3.080	1893

Table 8.—List of fish species historically found in the Black River watershed. Origin: N=Native, C=Colonized, I=Introduced; Status: P=Considered present in 2008, U=Unknown. Species that are state-listed are labeled endangered (SE), threatened (ST), and special concern (SC).

Common name	Scientific name	Origin	Status
Lampreys	Petromyzontidae		
northern brook lamprey	<i>Ichthyomyzon fossor</i>	N	P
silver lamprey	<i>Ichthyomyzon unicuspis</i>	N	P
American brook lamprey	<i>Lampetra appendix</i>	N	P
sea lamprey	<i>Petromyzon marinus</i>	C	P
Sturgeons	Acipenseridae		
lake sturgeon (ST)	<i>Acipenser fulvescens</i>	N	U
Gars	Lepisosteidae		
longnose gar	<i>Lepisosteus osseus</i>	N	P
Bowfins	Amiidae		
bowfin	<i>Amia calva</i>	N	P
Herrings	Clupeidae		
alewife	<i>Alosa pseudoharengus</i>	C	P
gizzard shad	<i>Dorosoma cepedianum</i>	N	P
Carp and minnows	Cyprinidae		
central stoneroller	<i>Campostoma anomalum</i>	N	P
goldfish	<i>Carassius auratus</i>	I	P
spotfin shiner	<i>Cyprinella spiloptera</i>	N	P
common carp	<i>Cyprinus carpio</i>	I	P
brassy minnow	<i>Hybognathus hankinsoni</i>	N	P
striped shiner	<i>Luxilus chrysocephalus</i>	N	P
common shiner	<i>Luxilus cornutus</i>	N	P
redfin shiner	<i>Lythrurus umbratilis</i>	N	P
hornyhead chub	<i>Nocomis biguttatus</i>	N	P
river chub	<i>Nocomis micropogon</i>	N	P
golden shiner	<i>Notemigonus crysoleucas</i>	N	P
pugnose shiner (SE)	<i>Notropis anogenus</i>	N	P
emerald shiner	<i>Notropis atherinoides</i>	N	P
ghost shiner	<i>Notropis buchanani</i>	N	P
silverjaw minnow	<i>Notropis buccatus</i>	N	P
blackchin shiner	<i>Notropis heterodon</i>	N	P
blacknose shiner	<i>Notropis heterolepis</i>	N	P
spottail shiner	<i>Notropis hudsonius</i>	N	P
rosyface shiner	<i>Notropis rubellus</i>	N	P
sand shiner	<i>Notropis stramineus</i>	N	P
mimic shiner	<i>Notropis volucellus</i>	N	P
bluntnose minnow	<i>Pimephales notatus</i>	N	P
fathead minnow	<i>Pimephales promelas</i>	N	P
blacknose dace	<i>Rhinichthys obtusus</i>	N	P
creek chub	<i>Semotilus atromaculatus</i>	N	P

Table 8.—Continued.

Common name	Scientific name	Origin	Status
Suckers	Catostomidae		
quillback	<i>Carpionodes cyprinus</i>	N	P
white sucker	<i>Catostomus commersonii</i>	N	P
lake chubsucker	<i>Erimyzon sucetta</i>	N	P
northern hog sucker	<i>Hypentelium nigricans</i>	N	P
black buffalo	<i>Ictiobus niger</i>	N	P
spotted sucker	<i>Minytrema melanops</i>	N	P
silver redhorse	<i>Moxostoma anisurum</i>	N	P
black redhorse	<i>Moxostoma duquesnei</i>	N	P
golden redhorse	<i>Moxostoma erythrurum</i>	N	P
shorthead redhorse	<i>Moxostoma macrolepidotum</i>	N	P
greater redhorse	<i>Moxostoma valenciennesi</i>	N	P
Bullhead catfishes	Ictaluridae		
black bullhead	<i>Ameiurus melas</i>	N	P
yellow bullhead	<i>Ameiurus natalis</i>	N	P
brown bullhead	<i>Ameiurus nebulosus</i>	N	P
channel catfish	<i>Ictalurus punctatus</i>	N	P
stonecat	<i>Noturus flavus</i>	N	P
tadpole madtom	<i>Noturus gyrinus</i>	N	P
Pikes	Esocidae		
grass pickerel	<i>Esox americanus</i>	N	P
northern pike	<i>Esox lucius</i>	N	P
Mudminnows	Umbridae		
central mudminnow	<i>Umbra limi</i>	N	P
Trouts	Salmonidae		
rainbow trout	<i>Oncorhynchus mykiss</i>	I	P
brown trout	<i>Salmo trutta</i>	I	P
Trout-perches	Percopsidae		
trout-perch	<i>Percopsis omiscomaycus</i>	N	P
Silversides	Atherinidae		
brook silverside	<i>Labidesthes sicculus</i>	N	P
Sticklebacks	Gasterosteidae		
brook stickleback	<i>Culaea inconstans</i>	N	P
Sculpins	Cottidae		
mottled sculpin	<i>Cottus bairdii</i>	I	P
Striped basses	Moronidae		
white perch	<i>Morone americana</i>	C	P
white bass	<i>Morone chrysops</i>	N	P

Table 8.—Continued.

Common name	Scientific name	Origin	Status
Sunfishes	Centrarchidae		
rock bass	<i>Ambloplites rupestris</i>	N	P
green sunfish	<i>Lepomis cyanellus</i>	N	P
pumpkinseed	<i>Lepomis gibbosus</i>	N	P
bluegill	<i>Lepomis macrochirus</i>	N	P
northern longear sunfish	<i>Lepomis peltastes</i>	N	P
redeer sunfish	<i>Lepomis microlophus</i>	I	P
smallmouth bass	<i>Micropterus dolomieu</i>	N	P
largemouth bass	<i>Micropterus salmoides</i>	N	P
white crappie	<i>Pomoxis annularis</i>	N	P
black crappie	<i>Pomoxis nigromaculatus</i>	N	P
Perches	Percidae		
eastern sand darter (ST)	<i>Ammocrypta pellucida</i>	N	
greenside darter	<i>Etheostoma blennioides</i>	N	P
rainbow darter	<i>Etheostoma caeruleum</i>	N	P
Iowa darter	<i>Etheostoma exile</i>	N	P
fantail darter	<i>Etheostoma flabellare</i>	N	P
least darter	<i>Etheostoma microperca</i>	N	P
johnny darter	<i>Etheostoma nigrum</i>	N	P
yellow perch	<i>Perca flavescens</i>	N	P
logperch	<i>Percina caprodes</i>	N	P
blackside darter	<i>Percina maculata</i>	N	P
walleye	<i>Sander vitreus</i>	N	P
Drums	Sciaenidae		
freshwater drum	<i>Aplodinotus grunniens</i>	N	P
Gobies	Gobiidae		
round goby	<i>Neogobius melanostomus</i>	I	P

Table 9.—Types of fish surveys conducted by the Michigan Department of Natural Resources in the Black River watershed. Sites are individual locations on the river which were normally accessed at road crossings. Area sampled is an estimate of the total water surface surveyed by each gear type. Impoundment gear included trap and fyke nets (usually trap nets) which were used in reservoirs above dams and human-made ponds close to the Black River.

Gear type	Number sites surveyed	Area sampled (acres)	Number years
Backpack shocker	13	4.3	4
Stream shocker	40	80.9	9
Boom shocker	6	43.5	4
Rotenone	11	12.5	1
Impoundment gear	8	20.9	7

Table 10.—Total catch of fish during all Michigan Department of Natural Resources fisheries surveys conducted in the Black River watershed during 1972–2006 ordered from most to least abundant. Species that are state-listed are labeled endangered (SE), threatened (ST), and special concern (SC).

Species	Total caught	Sample occurrences
mimic shiner	2,665	18
common shiner	2,334	40
bluntnose minnow	2,121	44
bluegill	1,860	36
white sucker	1,686	53
golden redhorse	1,669	36
creek chub	1,396	36
rock bass	1,333	61
johnny darter	1,325	46
greenside darter	1,025	24
blackside darter	934	49
common carp	875	49
sand shiner	856	11
pumpkinseed	826	42
stonecat	772	30
central stoneroller	743	18
spotfin shiner	714	27
northern hog sucker	713	34
green sunfish	626	31
rainbow darter	480	18
smallmouth bass	377	37
white crappie	321	14
gizzard shad	315	14
mudminnow	275	4
rosyface shiner	275	11
freshwater drum	270	10
blacknose shiner	260	8
black bullhead	241	27
channel catfish	241	20
golden shiner	223	12
logperch	210	11
yellow bullhead	207	21
largemouth bass	185	21
northern pike	164	38
central mudminnow	143	16
striped shiner	129	5
pugnose shiner (SE)	128	2
redeer sunfish	124	1
emerald shiner	111	10
silver redhorse	109	18
brassy minnow	85	4
hornyhead chub	71	14
shorthead redhorse	69	8
quillback	63	8
redfin shiner	62	9

Table 10.–Continued.

Species	Total caught	Sample occurrences
yellow perch	61	19
greater redhorse	60	9
brown bullhead	45	6
black crappie	44	14
longear sunfish	44	8
Iowa darter	43	8
round goby	39	2
blacknose dace	36	4
white bass	36	8
river chub	33	5
walleye	32	8
hybrid sunfish	29	4
fantail darter	24	9
spotted sucker	24	5
fathead minnow	22	5
spottail shiner	19	4
tadpole madtom	18	6
brook stickleback	17	4
alewife	14	1
black redhorse	13	3
brook silverside	9	4
black buffalo	8	1
goldfish	8	2
grass pickerel	8	3
least darter	7	2
blackchin shiner	6	1
white perch	4	2
trout-perch	3	1
brown trout	2	1
bowfin	1	1
creek chubsucker	1	1
eastern sand darter (ST)	1	1
longnose gar	1	1
silver lamprey	1	1

Table 11.—Percent of Michigan Department of Natural Resources Fisheries Division site surveys that captured each species of fish during 1972–2006 analyzed within major segments of the Black River watershed. The number of site surveys was used to calculate percent. Species that are state-listed are labeled endangered (SE), threatened (ST), and special concern (SC).

Species common name	River segment 1	River segment 2	River segment 3	River segment 4	Lower Mill Creek	Upper Mill Creek	Elk Creek	Black Creek	Silver Creek
Number of site surveys	14	11	20	11	14	3	3	1	1
black bullhead	42.9	45.5	20.0	18.2	42.9	66.7	100.0		
black crappie		18.2	25.0	36.4	14.3	33.3			
black redhorse	7.1				7.1				
blacknose shiner	7.1	9.1	30.0		7.1		33.3	100.0	100.0
blackside darter	92.9	54.5	70.0	9.1	64.3	33.3	100.0	100.0	100.0
bluegill	21.4	18.2	65.0	63.6	42.9	66.7	100.0		
bluntnose minnow	42.9	36.4	50.0	27.3	100.0	66.7	100.0	100.0	100.0
brassy minnow	7.1						100.0		
brook silverside			10.0	9.1	7.1				
brook stickleback	7.1	9.1	5.0				33.3		
brown bullhead	14.3			18.2	7.1				
central mudminnow	57.1	36.4	5.0	9.1		100.0	100.0		
central stoneroller	14.3	27.3	30.0		28.6				100.0
channel catfish	7.1	36.4	35.0	45.5	21.4				
common carp	57.1	72.7	80.0	54.5	42.9	66.7	66.7	100.0	100.0
common shiner	64.3	36.4	45.0	18.2	71.4	100.0	33.3	100.0	100.0
creek chub	85.7	36.4	40.0		50.0		100.0	100.0	100.0
eastern sand darter (ST)		9.1							
emerald shiner			25.0	36.4	7.1				
fantail darter	14.3				35.7				
fathead minnow		9.1	5.0				33.3	100.0	100.0
freshwater drum			20.0	27.3	21.4				
gizzard shad			25.0	63.6	14.3				
golden redhorse	35.7	81.8	70.0	54.5	85.7		33.3		
golden shiner	14.3	18.2	20.0		7.1		100.0		
grass pickerel	14.3					33.3			
greater redhorse		18.2	5.0	18.2					
green sunfish	42.9	27.3	35.0	36.4	42.9	66.7	100.0		

Table 11.–Continued.

Species common name	River segment 1	River segment 2	River segment 3	River segment 4	Lower Mill Creek	Upper Mill Creek	Elk Creek	Black Creek	Silver Creek
greenside darter	35.7	27.3	35.0	9.1	35.7		33.3	100.0	100.0
hornyhead chub	7.1		10.0	9.1	57.1	66.7			
hybrid sunfish		9.1	10.0		7.1				
Iowa darter	14.3	9.1	5.0			33.3	100.0		
johnny darter	78.6	36.4	60.0	9.1	71.4	100.0	100.0	100.0	100.0
largemouth bass	7.1	18.2	30.0	63.6	21.4	66.7			
least darter								100.0	100.0
mimic shiner	21.4	27.3	25.0	27.3	28.6	33.3	33.3		
northern hog sucker	35.7	45.5	70.0	18.2	57.1				
northern logperch			30.0		35.7				
northern longear sunfish	7.1	27.3			21.4	33.3			
northern pike	71.4	72.7	30.0	36.4	50.0	33.3	66.7		
pugnose shiner (SE)				9.1	7.1				
pumpkinseed	35.7	72.7	40.0	54.5	71.4	100.0	66.7		
quillback			15.0	36.4	7.1				
rainbow darter	21.4	18.2	25.0		50.0				
redfin shiner	14.3	27.3	10.0		14.3				
river chub			15.0		14.3				
rock bass	92.9	100.0	75.0	45.5	85.7	100.0	33.3		
rosyface shiner	7.1	9.1	10.0		50.0				
round goby			5.0		7.1				
sand shiner	21.4	18.2	20.0		14.3				
shorthead redhorse		9.1	15.0	18.2	7.1				
silver redhorse	7.1	18.2	15.0	36.4	7.1				
smallmouth bass	28.6	63.6	60.0	36.4	71.4				
spotfin shiner	28.6	27.3	45.0	27.3	35.7				
spottail shiner			10.0	18.2					
spotted sucker			5.0	36.4					
stonecat	50.0	27.3	40.0	9.1	50.0	33.3		100.0	100.0
striped shiner	7.1				21.4			100.0	100.0
tadpole madtom	14.3					33.3			
walleye			15.0	36.4	7.1				

Table 11.–Continued.

Species common name	River segment 1	River segment 2	River segment 3	River segment 4	Lower Mill Creek	Upper Mill Creek	Elk Creek	Black Creek	Silver Creek
lake chubsucker			5.0						
white bass			15.0	36.4	7.1				
white crappie		36.4	35.0	9.1	14.3				
white perch			5.0			33.3			
white sucker	92.9	81.8	60.0	27.3	64.3	100.0		100.0	100.0
yellow bullhead		45.5	20.0	27.3	42.9	66.7			
yellow perch	14.3	18.2	35.0	54.5	14.3				

Table 12.—Relative abundance (fraction of total found) of native mussel species found in the Black River (St. Clair and Sanilac Counties) during summer 2003 by staff of Michigan Natural Features Inventory. Species that are state-listed are labeled endangered (SE), threatened (ST), and special concern (SC).

Common name	Scientific name	Relative abundance
elktoe (SC)	<i>Alasmidonta marginata</i>	0.041
slippershell (ST)	<i>Alasmidonta viridis</i>	0.003
threeridge	<i>Amblema plicata</i>	0.481
cylindrical papershell	<i>Anodontoides ferussacianus</i>	Shell only
spike	<i>Elliptio dilatata</i>	0.003
Wabash pigtoe	<i>Fusconaia flava</i>	0.012
wavy-rayed lampmussel (ST)	<i>Lampsilis fasciola</i>	Shell only
fatmucket	<i>Lampsilis siliquoidea</i>	0.076
pocketbook	<i>Lampsilis ventricosa</i>	0.021
white heelsplitter	<i>Lasmigona complanata</i>	0.228
creek heelsplitter	<i>Lasmigona compressa</i>	0.008
fluted-shell	<i>Lasmigona costata</i>	0.058
fragile papershell	<i>Leptodea fragilis</i>	0.008
round pigtoe (SC)	<i>Pleurobema sintoxia</i>	Shell only
pink heelsplitter	<i>Potamilus alatus</i>	0.005
kidney-shell	<i>Ptychobranthus fasciolaris</i>	0.001
giant floater	<i>Pyganodon grandis</i>	0.033
mapleleaf	<i>Quadrula quadrula</i>	0.003
salamander mussel (SE)	<i>Simpsonaias ambigua</i>	0.001
strange floater	<i>Strophitus undulatus</i>	0.018
deerto	<i>Truncilla truncata</i>	Shell only
rainbow (SC)	<i>Villosa iris</i>	Shell only

Table 13.—Number of native mussels per square meter at five locations in the Black River during summer 2005. Beard Road is the most downstream site and Applegate Road the most upstream. Data were taken from Sweet 2005. Species that are state-listed are labeled endangered (SE), threatened (ST), and special concern (SC); federal-listed endangered are labeled (Fed E).

Common name	Scientific name	South of Beard Road (3)	Comstock and Jeddo Road (2)	Galbraith Line Road (5)	Sheridan Line Road (4)	Applegate Road (6)
three-ridge	<i>Amblema plicata</i>	0.00	0.00	0.17	0.00	4.51
Wabash pigtoe	<i>Fusconaia flava</i>	0.00	0.00	0.22	0.00	3.17
white heelsplitter	<i>Lasmigona complanata</i>	0.15	0.00	0.50	0.27	0.25
giant floater	<i>Pyganodon grandis</i>	0.00	0.00	0.00	0.00	0.38
deertoe	<i>Truncilla truncata</i>	0.37	0.00	0.00	0.00	0.00
fragile papershell	<i>Leptodea fragilis</i>	0.30	0.00	0.00	0.00	0.00
elktoe (SC)	<i>Alasmidonta marginata</i>	0.00	0.00	0.22	0.27	0.06
pink heelsplitter	<i>Potamilus alatus</i>	0.22	0.00	0.00	0.00	0.00
fluted shell	<i>Lasmigona costata</i>	0.07	0.00	0.11	0.18	0.19
fatmucket	<i>Lampsilis siliquoidea</i>	0.00	0.00	0.17	0.09	0.19
plain pocketbook	<i>Lampsilis cardium</i>	0.15	0.00	0.00	0.00	0.00
rainbow (SC)	<i>Villosa iris</i>	0.00	0.00	0.00	0.09	0.00
mapleleaf	<i>Quadrula quadrula</i>	0.07	0.00	0.00	0.00	0.00
creeper	<i>Strophitus undulatus</i>	0.07	0.00	0.00	0.00	0.00
Total		1.41	0.00	1.39	0.89	8.76
creek heelsplitter	<i>Lasmigona compressa</i>			Live in qualitative sample		
northern riffleshell (SE; Fed E)	<i>Epioblasma torulosa</i>			Dead shells only		
kidneyshell	<i>Ptychobranchnus fasciolaris</i>			Dead shells only		
wavy-rayed lamp mussel (ST)	<i>Lampsilis fasciola</i>			Dead shells only		
round pigtoe (SC)	<i>Pleurobema sintoxia</i>			Dead shells only		
spike	<i>Elliptio dilatata</i>			Dead shells only		
slippershell (ST)	<i>Alasmidonta viridis</i>			Dead shells only		

Table 14.—List of reptiles and amphibians found in the Black River watershed (Harding 1997). Species that are state-listed are labeled endangered (SE), threatened (ST), and special concern (SC).

Common name	Scientific name
Turtles	
snapping turtle	<i>Chelydra serpentine</i>
common musk turtle	<i>Sternotherus odoratus</i>
spotted turtle (ST)	<i>Clemmys guttata</i>
Blanding's turtle	<i>Emydoidea blandingii</i>
common map turtle	<i>Graptemys geographica</i>
painted turtle	<i>Chrysemys picta</i>
spiny softshell	<i>Apalone spinifera</i>
Lizards	
five-lined skink	<i>Eumeces fasciatus</i>
Snakes	
northern water snake	<i>Nerodia sipedon</i>
queen snake	<i>Regina septemvittata</i>
brown snake	<i>Storeria dekayi</i>
northern red-bellied snake	<i>Storeria occipitomaculata occipitomaculata</i>
common garter snake	<i>Thamnophis sirtalis sirtalis</i>
Butler's garter snake	<i>Thamnophis butleri</i>
northern ribbon snake	<i>Thamnophis sauritus septentrionalis</i>
northern ringneck snake	<i>Diadophis punctatus edwardsi</i>
eastern hognose snake	<i>Heterodon platirhinos</i>
blue racer	<i>Coluber constrictor foxii</i>
eastern fox snake	<i>Elaphe vulpine gloydi</i>
eastern milk snake	<i>Lampropeltis triangulum triangulum</i>
eastern smooth green snake	<i>Opheodrys vernalis</i>
eastern massasauga rattlesnake	<i>Sistrurus catenatus catenatus</i>
Salamanders	
mudpuppy	<i>Necturus maculosus maculosus</i>
eastern newt	<i>Notophthalmus viridescens</i>
spotted salamander	<i>Ambystoma maculatum</i>
blue-spotted salamander	<i>Ambystoma laterale</i>
red-backed salamander	<i>Plethodon cinereus</i>
Frogs and Toads	
eastern American toad	<i>Bufo americanus americanus</i>
Blanchard's cricket frog (ST)	<i>Acris crepitans blanchardi</i>
striped chorus frog	<i>Pseudacris triseriata</i>
northern spring peeper	<i>Pseudacris crucifer crucifer</i>
gray treefrog	<i>Hyla versicolor</i>
bullfrog	<i>Rana catesbeiana</i>
green frog	<i>Rana clamitans melanota</i>
wood frog	<i>Rana sylvatica</i>
northern leopard frog	<i>Rana pipiens</i>
pickrel frog	<i>Rana palustris</i>

Table 15–List of breeding birds in the Black River watershed arranged by frequency of observed nesting activity (data compiled from Breeding Bird Atlas Explorer 2008). Species that are state-listed are labeled endangered (SE), threatened (ST), and special concern (SC).

Common name	Scientific name	Frequency
Song Sparrow	<i>Melospiza melodia</i>	86
American Robin	<i>Turdus migratorius</i>	83
European Starling	<i>Sturnus vulgaris</i>	82
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	80
House Sparrow	<i>Passer domesticus</i>	79
Barn Swallow	<i>Hirundo rustica</i>	77
Mourning Dove	<i>Zenaida macroura</i>	77
Killdeer	<i>Charadrius vociferus</i>	74
Common Grackle	<i>Quiscalus quiscula</i>	73
American Goldfinch	<i>Carduelis tristis</i>	70
Savannah Sparrow	<i>Passerculus sandwichensis</i>	69
Brown-headed Cowbird	<i>Molothrus ater</i>	67
American Crow	<i>Corvus brachyrhynchos</i>	66
Eastern Kingbird	<i>Tyrannus tyrannus</i>	66
Chipping Sparrow	<i>Spizella passerine</i>	58
Eastern Meadowlark	<i>Sturnella magna</i>	58
Cedar Waxwing	<i>Bombycilla cedrorum</i>	57
Gray Catbird	<i>Dumetella carolinensis</i>	55
Horned Lark	<i>Eremophila alpestris</i>	55
Bobolink	<i>Dolichonyx oryzivorus</i>	54
Northern Cardinal	<i>Cardinalis cardinalis</i>	54
Yellow Warbler	<i>Dendroica petechia</i>	53
Common Yellowthroat	<i>Geothlypis trichas</i>	50
Tree Swallow	<i>Tachycineta bicolor</i>	50
Blue Jay	<i>Cyanocitta cristata</i>	49
Yellow-shafted Flicker	<i>Colaptes auratus</i>	47
House Wren	<i>Troglodytes aedon</i>	46
Ring-necked Pheasant	<i>Phasianus colchicus</i>	46
Rock Pigeon	<i>Columba livia</i>	44
Wood Thrush	<i>Hylocichla mustelina</i>	44
Northern Bobwhite	<i>Colinus virginianus</i>	42
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	42
Baltimore Oriole	<i>Icterus galbula</i>	41
Brown Thrasher	<i>Toxostoma rufum</i>	40
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	40
Turkey Vulture	<i>Cathartes aura</i>	40
Downy Woodpecker	<i>Picoides pubescens</i>	39
Black-capped Chickadee	<i>Parus atricapillus</i>	38
Indigo Bunting	<i>Passerina cyanea</i>	38
Red-tailed Hawk	<i>Buteo jamaicensis</i>	38
Red-eyed Vireo	<i>Vireo olivaceus</i>	37
Willow Flycatcher	<i>Empidonax traillii</i>	37
American Kestrel	<i>Falco sparverius</i>	35
Field Sparrow	<i>Spizella pusilla</i>	31
Mallard	<i>Anas platyrhynchos</i>	31
Warbling Vireo	<i>Vireo gilvus</i>	31

Table 15–Continued.

Common name	Scientific name	Frequency
Eastern Bluebird	<i>Sialia sialis</i>	29
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	29
Eastern Wood-pewee	<i>Contopus virens</i>	29
White-breasted Nuthatch	<i>Sitta carolinensis</i>	29
Vesper Sparrow	<i>Pooecetes gramineus</i>	28
Belted Kingfisher	<i>Ceryle alcyon</i>	27
Bank Swallow	<i>Riparia riparia</i>	26
Great Blue Heron	<i>Ardea herodias</i>	25
Eastern Phoebe	<i>Sayornis phoebe</i>	24
Northern Harrier (SC)	<i>Circus cyaneus</i>	24
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	23
Green Heron	<i>Butorides striatus</i>	22
Tufted Titmouse	<i>Parus bicolor</i>	21
Eastern Screech-owl	<i>Otus asio</i>	20
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	20
Ovenbird	<i>Seiurus aurocapillus</i>	20
Chimney Swift	<i>Chaetura pelagica</i>	19
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	19
Canada Goose	<i>Branta canadensis</i>	18
House Finch	<i>Carpodacus mexicanus</i>	18
Spotted Sandpiper	<i>Actitis macularia</i>	18
Veery	<i>Catharus fuscescens</i>	18
American Redstart	<i>Setophaga ruticilla</i>	17
American Woodcock	<i>Scolopax minor</i>	17
Hairy Woodpecker	<i>Picoides villosus</i>	17
Wood Duck	<i>Aix sponsa</i>	17
Cliff Swallow	<i>Petrochelidon pyrrhonata</i>	16
Purple Martin	<i>Progne subis</i>	16
Least Flycatcher	<i>Epidonax minimus</i>	15
Northern Flicker	<i>Colaptes auratus</i>	15
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	15
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	12
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	12
Scarlet Tanager	<i>Piranga olivacea</i>	12
Wild Turkey	<i>Meleagris gallopavo</i>	12
Mourning Warbler	<i>Oporornis philadelphia</i>	11
Blue-winged Warbler	<i>Vermivora pinus</i>	10
Alder Flycatcher	<i>Empidonax alnorum</i>	9
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	8
Grasshopper Sparrow (SC)	<i>Ammodramus savannarum</i>	8
Great Horned Owl	<i>Bubo virginianus</i>	8
Purple Finch	<i>Carpodacus purpureus</i>	8
Ruffed Grouse	<i>Bonasa umbellus</i>	8
Swamp Sparrow	<i>Melospiza georgiana</i>	8
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	8
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	7
Cooper's Hawk (SC)	<i>Accipiter cooperii</i>	7
Black-and-white Warbler	<i>Mniotilta varia</i>	6

Table 15–Continued.

Common name	Scientific name	Frequency
Ring-billed Gull	<i>Larus delawarensis</i>	6
Sedge Wren	<i>Cistothorus platensis</i>	6
Upland Sandpiper	<i>Bartramia longicauda</i>	6
Clay-colored Sparrow	<i>Spizella pallida</i>	5
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	5
Sandhill Crane	<i>Grus canadensis</i>	5
Sora	<i>Porzana carolina</i>	5
Yellow-throated Vireo	<i>Vireo flavifrons</i>	5
Black-throated Green Warbler	<i>Dendroica virens</i>	4
Blue-winged Teal	<i>Anas discors</i>	4
Common Nighthawk	<i>Chordeiles minor</i>	4
Marsh Wren (SC)	<i>Cistothorus palustris</i>	4
Nashville Warbler	<i>Vermivora ruficapilla</i>	4
Acadian Flycatcher	<i>Empidonax virescens</i>	3
Broad-winged Hawk	<i>Buteo platypterus</i>	3
Henslow's Sparrow (SE)	<i>Ammodramus henslowii</i>	3
Lincoln's Sparrow	<i>Melospiza lincolni</i>	3
Orchard Oriole	<i>Icterus spurius</i>	3
Pied-billed Grebe	<i>Podilymbus podiceps</i>	3
Pileated Woodpecker	<i>Dryocopus pileatus</i>	3
Red-shouldered Hawk (ST)	<i>Buteo lineatus</i>	3
Whip-poor-will	<i>Caprimulgus vociferus</i>	3
Wilson's Snipe	<i>Gallinago gallinago</i>	3
American Coot	<i>Fulica americana</i>	2
Blackburnian Warbler	<i>Dendroica fusca</i>	2
Brown Creeper	<i>Certhia americana</i>	2
Cerulean Warbler (ST)	<i>Dendroica cerulean</i>	2
Dark-eyed Junco	<i>Junco hyemalis</i>	2
Dickcissel (SC)	<i>Spiza americana</i>	2
Magnolia Warbler	<i>Dendroica magnolia</i>	2
Northern Parula	<i>Parula americana</i>	2
Northern Shoveler	<i>Anas clypeata</i>	2
Northern Waterthrush	<i>Seiurus noveboracensis</i>	2
Pine Warbler	<i>Dendroica pinus</i>	2
Sharp-shinned Hawk	<i>Accipiter striatus</i>	2
White-throated Sparrow	<i>Zonotrichia albicollis</i>	2
Yellow-breasted Chat	<i>Icteria virens</i>	2
Yellow-rumped Warbler	<i>Dendroica coronata</i>	2
Bald Eagle	<i>Haliaeetus leucocephalus</i>	1
Barred Owl	<i>Strix varia</i>	1
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	1
Blue-headed Vireo	<i>Vireo solitarius</i>	1
Brewster's Warbler	<i>Vermivora sp. hybrid</i>	1
Canada Warbler	<i>Wilsonia canadensis</i>	1
Carolina Wren	<i>Thryothorus ludovicianus</i>	1
Common Merganser	<i>Mergus merganser</i>	1
Common Moorhen	<i>Gallinula chloropus</i>	1
Forster's Tern (ST)	<i>Sterna forsteri</i>	1

Table 15–Continued.

Common name	Scientific name	Frequency
Green-winged Teal	<i>Anas crecca</i>	1
Hooded Merganser	<i>Laphodytes cucullatus</i>	1
Hooded Warbler (SC)	<i>Wilsonia citrine</i>	1
Louisiana Waterthrush (SC)	<i>Seiurus motacilla</i>	1
Northern Mockingbird	<i>Mimus polyglottos</i>	1
Northern Pintail	<i>Anas acuta</i>	1
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	1
Olive-sided Flycatcher	<i>Contopus cooperi</i>	1
Palm Warbler	<i>Dendroica palmarum</i>	1
Redhead	<i>Aythya americana</i>	1
Ruddy Duck	<i>Oxyura jamaicensis</i>	1
Short-eared Owl (SE)	<i>Asio flammeus</i>	1
Virginia Rail	<i>Rallus limicola</i>	1
Winter Wren	<i>Troglodytes troglodytes</i>	1
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	1

Table 16.–List of 42 mammals found in the Black River watershed (Burt 1957). Species that are state-listed are labeled endangered (SE), threatened (ST), and special concern (SC).

Common name	Scientific name
opossum	<i>Didelphis marsupialis</i>
eastern mole	<i>Scalopus aquaticus</i>
starnose mole	<i>Condylura cristata</i>
masked shrew	<i>Sorex cinereus</i>
least shrew (ST)	<i>Cryptotis parva</i>
shorttail shrew	<i>Blarina brevicauda</i>
little brown bat	<i>Myotis lucifugus</i>
Indiana bat (SE)	<i>Myotis sodalis</i>
keen myotis	<i>Myotis keeni</i>
silver-haired bat	<i>Lasionycteris noctivagans</i>
big brown bat	<i>Eptesicus fuscus</i>
red bat	<i>Lasiurus borealis</i>
hoary bat	<i>Lasiurus cinereus</i>
raccoon	<i>Procyon lotor</i>
longtail weasel	<i>Mustela frenata</i>
least weasel	<i>Mustela nivalis</i>
mink	<i>Mustela vison</i>
river otter	<i>Lutra canadensis</i>
badger	<i>Taxidea taxus</i>
striped skunk	<i>Mephitis mephitis</i>
red fox	<i>Vulpes fulva</i>
gray fox	<i>Urocyon cinereoargenteus</i>
coyote	<i>Canis latrans</i>
woodchuck	<i>Marmota monax</i>
thirteen-lined ground squirrel	<i>Citellus tridecemlineatus</i>
eastern chipmunk	<i>Tamias striatus</i>
red squirrel	<i>Tamiascirus hudsonicus</i>
eastern gray squirrel	<i>Sciurus carolinensis</i>
eastern fox squirrel	<i>Sciurus niger</i>
southern flying squirrel	<i>Glaucomys volans</i>
beaver	<i>Castor canadensis</i>
deer mouse	<i>Peromyscus maniculatus</i>
white-footed mouse	<i>Peromyscus leucopus</i>
southern bog lemming	<i>Synaptomys cooperi</i>
meadow vole	<i>Microtus pennsylvanicus</i>
woodland (pine) vole	<i>Pitymys pinetorum</i>
muskrat	<i>Ondatra zibethica</i>
Norway rat	<i>Rattus norvegicus</i>
house mouse	<i>Mus musculus</i>
meadow jumping mouse	<i>Zapus hudsonius</i>
eastern cottontail	<i>Sylvilagus floridanus</i>
whitetail deer	<i>Odocoileus virginianus</i>

Table 17.—Numbers of eight fish species stocked each year in the Black River watershed by the Michigan Department of Natural Resources. These fish were stocked in the lower section of Mill Creek, three sections of the Black River, and 40th Street Pond to boost their local populations and improve sport fishing success.

Year stocked	Species	Number stocked	River section	Number of sites
1992	Black crappie	75	Section 2	1
1980	Bluegill	18,000	Section 4	1
1980	Channel catfish	44	Section 4	1
1982	Channel catfish	91	Section 2	2
1983	Channel catfish	70	Section 2	1
1986	Channel catfish	44,000	Section 2	5
1986	Channel catfish	52,017	Section 3	5
1987	Channel catfish	14,390	Section 2	4
1987	Channel catfish	23,860	Section 3	5
1988	Channel catfish	17,070	Section 2	4
1988	Channel catfish	23,860	Section 3	5
1979	Largemouth bass	3,600	Section 4	1
1980	Largemouth bass	1,560	Section 4	1
1991	Largemouth bass	67	Section 4	1
1992	Largemouth bass	39	Section 4	1
2001	Largemouth bass	48	Section 4	1
1980	Northern pike	66,250	Section 4	1
1986	Northern pike	16,500	Section 2	4
1986	Northern pike	17,500	Section 3	5
1987	Northern pike	4,870	Section 2	2
1987	Northern pike	3,350	Section 3	1
1988	Northern pike	1,000	Section 2	1
1988	Northern pike	4,310	Section 3	2
1991	Northern pike	3,000	Section 2	1
1991	Northern pike	4,500	Section 4	1
1993	Northern pike	1,500	Section 2	1
1993	Northern pike	2,250	Section 4	1
1993	Redear sunfish	20,979	40 th Street Pond	1
1994	Redear sunfish	10,000	40 th Street Pond	1
1995	Redear sunfish	20,912	40 th Street Pond	1
1984	Smallmouth bass	5,442	Lower Mill Creek	10
1986	Smallmouth bass	262	Section 2	2
1986	Smallmouth bass	262	Section 3	2
1986	Walleye	600	Section 2	1
1986	Walleye	22	Section 3	1
1987	Walleye	2,558	Section 2	3

Table 18.—Number of rainbow trout stocked each year in the Black River watershed by the Michigan Department of Natural Resources. These fish were stocked in the lower section of Mill Creek and Black River to encourage their use of suitable habitat in the St. Clair River and southern Lake Huron.

Year stocked	Number stocked	River section	Number of sites
1981	30,000	Lower Mill Creek	1
1982	20,000	Lower Mill Creek	2
1983	20,000	Lower Mill Creek	1
1984	10,000	Lower Mill Creek	1
1985	15,000	Lower Mill Creek	1
1986	20,000	Lower Mill Creek	1
1987	20,020	Lower Mill Creek	1
1987	8,640	Segment 4	1
1988	17,300	Lower Mill Creek	1
1989	14,310	Lower Mill Creek	1
1989	30,000	Segment 4	1
1990	12,920	Lower Mill Creek	1
1991	12,800	Lower Mill Creek	1
1992	14,000	Lower Mill Creek	1
1993	14,500	Lower Mill Creek	1
1994	15,850	Lower Mill Creek	1
1995	14,500	Lower Mill Creek	2
1996	14,500	Lower Mill Creek	1
1997	16,000	Lower Mill Creek	1
1998	15,084	Lower Mill Creek	1
1999	15,580	Lower Mill Creek	1
2000	15,397	Lower Mill Creek	1
2001	15,000	Lower Mill Creek	1
2002	15,752	Lower Mill Creek	1
2003	16,002	Lower Mill Creek	1
2004	16,000	Lower Mill Creek	1
2005	10,200	Lower Mill Creek	1
2006	11,094	Lower Mill Creek	1
2007	10,100	Lower Mill Creek	1

Table 19.—Number of brown trout stocked each year in the Black River watershed by the Michigan Department of Natural Resources. These fish were stocked in Segment 4 of the river to encourage their use of suitable habitat in the St. Clair River and southern Lake Huron.

Year stocked	Number stocked	Number of sites
1980	2,500	1
1981	25,000	1
1982	22,500	1
1983	20,000	2
1984	38,000	2
1985	35,600	2
1986	49,800	2
1987	35,100	2
1988	20,044	2
1989	40,180	2
1990	19,998	3
1991	25,000	1
1992	19,400	1
1993	35,402	2
1994	20,180	2
1995	18,550	1
1996	18,742	1
1997	19,995	1
1998	19,500	1
1999	19,990	1
2000	23,980	2
2001	16,000	2
2002	22,600	2
2003	24,000	2
2004	20,000	1
2005	20,000	1
2006	25,000	3
2007	6,433	1

Table 20.–Partner agencies, current activities, and products implemented by St. Clair County to increase public awareness of watershed issues and management plans (Jurs 2005).

Partner agencies

Blue Water Land Conservancy
Binational Public Advisory Council (BPAC)
East Michigan Environmental Action Council
Friends of the St. Clair River
Michigan Farmland and Community Alliance
Michigan Farm Bureau
Southeast Michigan Land Conservancy
United States Department of Agriculture
USFWS Partners for Fish and Wildlife Program
Michigan Department of Environmental Quality

Activities and products

Blue *Watershed* Newsletter
Watershed Management Brochure
Southeast Michigan Partners for Clean Water Mass Media Efforts
Tributary /Watershed Road Signs
River Day
Earth Fair
“Water Quality” Table-Top Exhibit
Municipal Newsletter Articles
Storm Water Website
“*Adopt-A-Stream*” Program
MDEQ Pollution Prevention Programs
Storm Drain/Curb Marking Program
“*Pollution Solutions*” Presentation
24-Hour Water Quality Hotline
OSDS Maintenance Brochure
IDEP Brochure
Water Quality Magnet
“*Improving Water Quality*” Presentations
Children’s Activity Booklet
Household Hazardous Waste Collection Program
Riparian Management Brochure
Beach Brochure
Home *A*Syst Workshops
Chamber of Commerce materials
WAG Meetings

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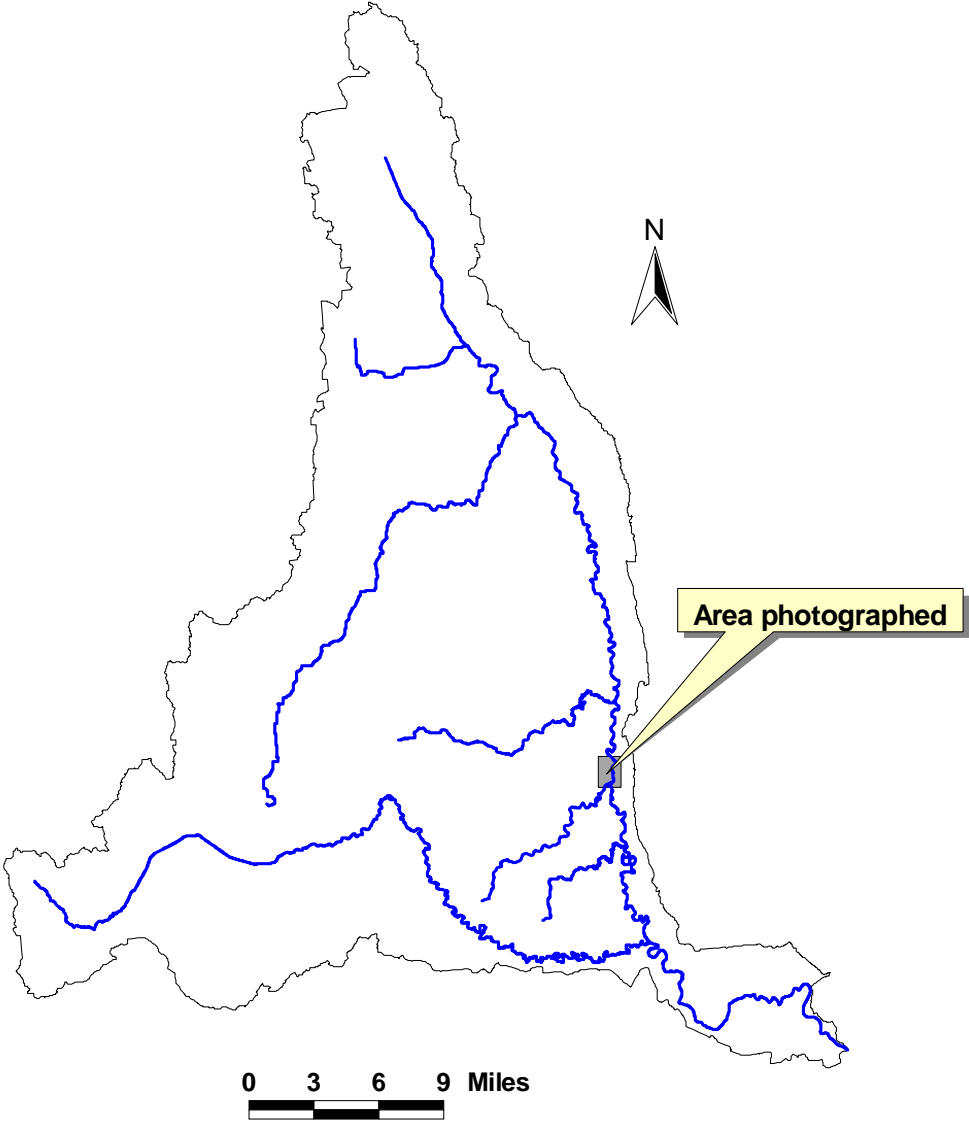
APPENDICES

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Appendix A

Aerial photographs of a 1,216 acre area along the mainstem of the Black River

This appendix contains eight historical and recent aerial photographs of the same 1,216 acre area bordering a 2.1 mile stretch of the Black River. These photographs document very significant changes to the landscape and river channel caused by development and operation of a large sand and gravel surface mine that is currently expanding mining operations to the south along the river.





First of eight aerial photos of the Black River at Fisher Rd. in September of 1941.



Second of eight aerial photos of the Black River at Fisher Rd. in October of 1949.



Third of eight aerial photos of the Black River at Fisher Rd. in September of 1963.



Fourth of eight aerial photos of the Black River at Fisher Rd. A mining operation is apparent with heavy silt loading into the river in May, 1971.



Fifth of eight aerial photos of the Black River at Fisher Rd. The mining operation has expanded with modifications apparent in the river channel in September, 1980.



Sixth of eight aerial photos of the Black River at Fisher Rd. The mining operation has continued to expand by May, 1982.



Seventh of eight aerial photos of the Black River at Fisher Rd. The mining operation has continued to expand with large ponds visibly connected to the river in 1998.



Eighth of eight aerial photos of the Black River at Fisher Rd. The mining operation has made apparent improvements to the river channel and disconnected ponds from the river in 2005.