

SOURCE AREA EROSION RATES IN AREAS TRIBUTARY TO MIAMI WHITEWATER LAKE:
INTERIM REPORT TO HAMILTON COUNTY PARK DISTRICT

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This report describes the progress on the project, "Source area erosion rates in areas tributary to Miami Whitewater Lake:" as of July 31, 1988. The goals of this study are to:

- Measure source-area erosion rates associated with each of the following land cover types: Old-growth woodland, immature woodland, pasture/turf/meadow, and developed residential/commercial land.
- Provide a calibration of the Universal Soil Loss Equation for conditions prevailing in the watershed of Miami Whitewater Lake.
- Provide a method for rapid determination of the relative contribution of channel erosion as compared to sheet and rill erosion in this area
- Identify those land management techniques that appear to be the most cost-effective in controlling sediment.

Results to date:

The first step in this project was to identify ponds in which sedimentation due to source-area erosion could be measured. Our initial plan was to measure sedimentation in about 20 ponds; this has been increased to 33 ponds. In order to maximize the number of ponds for measurement, we have included in our study are the entire upland surface between the present Miami River valley to the southeast and the ancestral valley now occupied by Dry Fork of Whitewater River to the northwest. This area is a reasonably homogeneous physiographic unit, and is dominated by the same land uses found in areas tributary to Miami Whitewater Lake.

Within this study area, about 80 ponds were examined. Some of the ponds were excluded because they were too new or had basins too small to accumulate a measurable amount of sediment. Many of the remaining ponds were excluded because they had been filled in, destroyed, or dredged or reworked to the point of making measurement impossible. A total of 33 were found suitable for study. Of these 33, 6 are in areas tributary to Miami Whitewater Lake; the remaining 27 are outside the immediate drainage basin of the lake but in areas of similar soil, topography, and land use.

The ponds selected for study are listed in Table 1. Because data about these ponds are still being gathered, the information in Table 1 is incomplete and preliminary. For each pond, the approximate date of construction, current owner and address/location, and general land use type are listed.

Sediment surveys have been conducted in all 33 of the ponds. Table 2 summarizes the preliminary results of these surveys. Asterisks indicate values not yet determined. Pond capacities are corrected for volumes above water level on the day of the survey, but below the level of the pond spillways. Measured sediment thicknesses range from 0.48 to 5.57 feet.

Preliminary calculations of erosion rates based on these results indicate that source-area erosion is highly variable within the study area, and that source-area rates are generally of the same magnitude as the basin-wide average indicated by sedimentation in Miami Whitewater Lake.

Table 1: Ponds selected for study

- Pond # 3 Built between 1968 & 1975
Walter and Cheryl Rolfes 9255 Luther Road
Land use: Residential
- Pond # 4: Built 1967
9115 Luther Lane Cleves 45002 (recent purchase from J.R. Sherzinger)
Land use: Woodland
- Pond # 7 Built 1971
Edward J. Niemeier (horse farm) 8817 Harrison Road
Land use: Woodland/pasture
- Pond # 10 Built between 1962 and 1968
Carl Meyer (Landscaping) 8828 Harrison Road
Land use: Residential, pasture.
- Pond # 13 Built between 1975 and 1977
Lawrence C. Vonderhaar Strimple Road
Land use: Woodland, grassland.
- Pond # 14 Built between 1938 and 1950
Timothy Roever 9024 West Road
Land use: Pasture
- Pond # 15 Dredged 1948
Beryl Roever 9060 West Road Cleves 45002
Land use: Pasture
- Pond # 18 Built between 1951 and 1958
John J. and Karen S. Stoeckel 9103 Kopp Lane
Land use: Pasture
- Pond # 19 Built between 1962 and 1968
Robert J. and Donna S. Quinlan 8713 Strimple Road Cleves 45002
Land use: Woodland
- Pond # 24 Built between 1956 and 1962
Roger and Lana Lane 9180 Kopp Lane
Land use: Woodland/brush
- Pond # 25 Built about 1964
Ervin Lail 9400 West Road
Land use: Residential
- Pond # 26 Built late 1960's
Lois J. Pfister 9438 West Road
Land use: Pasture

- Pond # 27 Built between 1938 and 1951
Jack and Elvera Schultz 9500 Dry Fork Road, Harrison
Land use: Pasture, woodland, residential
- Pond # 28 Built between 1938 and 1951
Hamilton County Park District (Upper Timberlakes)
Land use: Woodland/residential
- Pond # 29 Built between 1938 and 1951
Hamilton County Park District (Lower Timberlakes)
Land use: Woodland
- Pond # 37 Built between 1938 and 1950
James Lake 8309 State Route 128 Miamitown
Land use: Shrubland/woodland
- Pond # 49 Built late 1970s
Doug Combs 8670 Mt. Hope Road Harrison 45030
Land use: Grassland
- Pond # 53 Built between 1950 and 1956
Miami View Golf Club, Inc.
Land use: Golf course
- Pond # 55 Dredged in 1962
Miami View Golf Club
Land use: Golf course/woodland
- Pond # 57 Built between 1967 and 1971
Miamitown Apartments
Land use: Shrubland
- Pond # 58 Built 1975
Charles W. and Florence Hine 6840 Morgan Road
Land use: Grassland
- Pond # 49 Built 1970
Jerome Heimbrock 7429 Morgan Road
Land use: pasture
- Pond # 64 Built between 1962 and 1967
Imperial Oaks/Miamitown Apartments
Land use: Woodland
- Pond # 65 Built between 1956 and 1962
Ida M. Berry 8050 Ferry Miamitown 45041
Land use: Residential/woodland.
- Pond # 66 Built between 1950 and 1956
Ida Berry
Land use: Residential/woodland; farmland prior to 1979.

- Pond # 67 Built about 1970
Malinda and John McDonald 8653 Harrison Road
Land use: pasture
- Pond # 71 Built between 1938 and 1951
Walter K. and Sharlene Brisbin 9964 Crosby Road Crosby Twp.
Land use uncertain
- Pond # 78 Built 1979
Robert Bybee 7765 Morgan Road
Land use: Woodland/residential
- Pond # 83 Built between 1968 and 1973
Carl H. Parrot 8505 Strimple Road Cleves 45002
Land use: Pasture/grassland
- Pond # 84 Built 1983
Robert Witz 10110 Crosby Road Harrison 45030
Land use: residential
- Pond # 85 Built 1983
Steve Jacob 5754 Morgan Road Cleves 45002
Land use: Woodland/grassland/residential
- Pond # 86 Built 1962(?)
Hamilton County Park District (north of golf course)
Land use: Woodland
- Pond # 88 Built 1983
Hubert Wills 9157 Luther Lane Cleves 45002
Land use: Woodland/residential

Table 2: Preliminary results of sediment surveys.

Pond #	Pond area, acres	Basin area, acres	Contr area Acres	Thick- ness of sed Ft3	Orig. Cap. Ft3	Curr. Cap. Ft3
3	0.32	5.61	5.61	1.18	97441	80912
4	1.01	9.14	9.14	0.73	502871	470580
7	0.99	22.59	11.86	1.13	292740	243804
10	0.30	1.51	1.51	1.54	59812	39772
13	0.52	67.93	63.04	1.91	152274	109064
14	0.33	4.89	4.89	1.96	73833	45556
15	0.62	8.20	4.08	2.24	275894	215561
18	0.08	6.61	6.61	1.63	17350	11561
19	0.13	15.96	15.96	2.12	32951	20575
24	0.46	15.15	15.15	1.63	81435	48703
25	0.28	2.48	2.48	1.15	104368	90157
26	0.20	3.74	3.74	1.85	49580	33182
27	0.38	24.83	24.83	0.79	233967	220931
28	0.71	197.61	167.94	5.57	296835	125096
29	2.73	249.22	49.87	2.83	085204	749196
37	0.06	0.68	0.68	1.29	11273	7867
49	0.43	2.50	2.50	0.48	104023	95008
53	1.25	29.28	20.13	1.19	420406	355400
54	1.84	46.08	16.80	0.58	999209	952739
55	3.82	45.16	45.16	1.29	823713	3609286
57	**	**	**	1.45	**	**
58	0.13	2.45	2.45	0.83	40625	35955
59	0.10	1.41	1.41	1.56	21991	15070
64	0.27	97.22	52.07	3.97	77504	30027
65	0.16	16.71	3.73	2.28	41395	25362
67	0.13	22.15	20.30	1.28	26823	19820
71	0.21	1.86	1.86	2.45	60679	38606
78	0.52	6.32	6.32	0.81	197838	179499
83	0.04	1.36	1.36	1.23	11927	9915
84	**	**	**	0.57	**	**
85	**	**	**	1.32	**	**
86	0.14	14.00	14.00	3.20	43250	23940
88	**	**	**	1.79	**	**

** Not available



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July 22, 1987

Mr. Robert Mason
Hamilton County Park District
10245 Winton Road
Cincinnati, Ohio
45231

Dear Bob,

Enclosed is our interim report on the Miami Whitewater Lake Project. As you will see, the project is going well, and I think we are getting some interesting results.

It would probably be wise for us to meet to discuss our results to date, and to hear your comments and suggestions for the remaining parts of the study. I will be on vacation from July 24 to August 16. Would it be reasonable to meet in the third week of August? I'll call when I return, and perhaps we can set something up.

Sincerely,

A handwritten signature in cursive script, appearing to read "W. Renwick".

William H. Renwick