HYDRAULICS DIVISION

Technical Note

DATE: April 1981 **REPORT NO:** 81-15

TITLE: Particle Size Data Report 81-07

AUTHOR: G. A. Duncan

REASON FOR REPORT: This report responds to a request for particle size data from W. Booth, Applied Ecology Division.

CORRESPONDENCE FILE NO:

5690 (Study 2302)

1.0 INTRODUCTION

This report provides the results of particle size analysis on sediments from a Lake Ontario core.

W. Booth, AED, submitted three samples, requesting sand, silt, and clay percentages. The samples were analysed and checked by G. Duncan.

2.0 PROCEDURE

The Sieve and Sedigraph Method which provides sand, silt, and clay percentages was used to analyse the samples.

Briefly, the procedure consists of:

1. Splitting the sample to 2g.
2. Removing particles large enough to block Sedigraph Suction Tube (0.088 mm).
3. Dispersing samples in a Calgon suspension.
4. Automatic analysis with the Sedigraph.
5. Processing the results with SIZDIST: a FORTRAN IV computer program.

3.0 RESULTS

For the Sieve and Sedigraph Method, the output consists of:

1. A histogram of the frequency distribution.
2. The percentage and cumulative percentages of the material occurring within each 1/2 PHI unit.
3. Moment measures (Krumbein and Pettijohn, 1938) and graphic (Folk and Ward, 1957) statistics.
4. Percentiles.
5. Percent gravel, sand, silt, and clay.
6. Ratios used to plot Folk's Ternary Classification.
7. Shepard (1954) and Folk (1974) Ternary Classifications.

4.0 REFERENCES

Duncan, G. A. and LaHaie, G. G., 1979. "Size Analysis Procedures Used in the Sedimentology Laboratory, NWRI". Hydraulics Division Manual, September 1979.

Folk, R. L., 1968. "Petrology of Sedimentary Rocks". Hemphill Publishing Co., Austin, Texas, 182 p.

Folk, R. L. and Ward, W. C., 1957. "Brazos River Bar: A Study in the Significance of Grain-Size Parameters". Jour. Sed. Petrology, V. 27, pp. 3-26.

Krumbien, W. C. and Pettijohn, F. J., 1938. "Manual of Sedimentary Petrography". Appleton-Century-Crofts, New York, 549 p.

Shepard, F. P., 1954. "Nomenclature Based on Sand-Silt Ratios". Jour. Sed. Petrology, V. 24, pp. 151-158.

APPENDIX 1
SIZDIST OUTPUT

CO 2 STN.10 0-2 CM100481 SEDIGRAPH ANALYSIS

PHI	PCT.	CUMPCT.	04/13/81
3.50			
	0.00		
4.00		0.00	
	0.00		
4.50		0.00	
	0.00		
5.00		0.00	
	0.00		
5.50		0.00	
	2.00		**
6.00		2.00	
	2.50		**
6.50		4.50	
	3.50		***
7.00		8.00	
	7.00		*******
7.50		15.00	
	7.00		*******
8.00		22.00	
	8.00		********
8.50		30.00	
	10.50		**********
9.00		40.50	
	10.00		**********
9.50		50.50	
	10.00		**********
10.00		60.50	
	11.00		**********
10.50		71.50	
	6.75		*******
11.00		78.25	
	6.75		*******
11.50		85.00	
	4.00		****
12.00		89.00	
*****	11.00	100.00	**********

MEAN	ST.DEV.	SKEWNESS	KURTOSIS	
9.12	1.51	-.11	-.72	KRUMBEIN + PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 12.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED. OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES MEDIAN 9.48 5TH 6.57 16TH 7.57 25TH 8.19
75TH 10.76 84TH 11.43 95TH******

PCT. GRAVEL .00 SAND 0.00 SILT (PIPETTE) 0.00 CLAY (PIPETTE) 0.00
(SEDIGRAPH) 22.00 (SEDIGRAPH) 78.00

GRAVEL+SAND .00 SILT/(SILT+CLAY) 22.00 PCT.GRAV+SAND/SILT+CLAY .00

LABELS SHEPARD -CLAY FOLK(GMS)-MUD (SCS)-CLAY

CO 2 STN.10 2-4 CM100481 SEDIGRAPH ANALYSIS

PHI	PCT.	CUMPCT.	04/13/81
3.50	0.00	0.00	
4.00	0.00	0.00	
4.50	0.00	0.00	
5.00	0.00	0.00	
5.50	.25	.25	
6.00	3.75	4.00	****
6.50	4.00	8.00	****
7.00	6.50	14.50	******
7.50	6.50	21.00	******
8.00	7.50	28.50	*******
8.50	9.00	37.50	*********
9.00	9.50	47.00	*********
9.50	10.00	57.00	**********
10.00	10.00	67.00	**********
10.50	7.50	74.50	*******
11.00	7.00	81.50	*******
11.50	5.50	87.00	*****
12.00	13.00	100.00	************
*****			

MEAN	ST.DEV.	SKEWNESS	KURTOSIS	
9.22	1.53	-.09	-.89	KRUMBEIN & PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 12.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES	MEDIAN	9.65	5TH	6.63	16TH	7.62	25TH 8.27
			75TH	11.04	84TH	11.73	95TH******
PCT. GRAVEL	.00	SAND	0.00	SILT (PIPETTE)	0.00	CLAY (PIPETTE)	0.00
				(SEDIGRAPH)	21.00	(SEDIGRAPH)	79.00
GRAVEL+SAND	.00	SILT/(SILT+CLAY)	21.00	PCT.GRAV+SAND/SILT+CLAY		.00	
LABELS SHEPARD -CLAY		FOLK(GMS)-MUD		(SCS)-CLAY			

23696

CO 2 STN.10 4-6 CM100481 SEDIGRAPH ANALYSIS

PHI	PCT.	CUMPCT.	04/13/81
3.50	0.00	0.00	
4.00	0.00	0.00	
4.50	0.00	0.00	
5.00	0.00	0.00	
5.50	.25	.25	
6.00	2.25	2.50	**
6.50	4.00	6.50	****
7.00	6.30	12.80	******
7.50	7.20	20.00	*******
8.00	8.00	28.00	********
8.50	10.00	38.00	**********
9.00	10.00	48.00	**********
9.50	9.00	57.00	*********
10.00	9.50	66.50	*********
10.50	8.00	74.50	********
11.00	7.00	81.50	*******
11.50	4.00	85.50	****
12.00	14.50	100.00	**************
*****			

MEAN	ST.DEV.	SKEWNESS	KURTOSIS	
9.20	1.46	-.07	-.87	KRUMBEIN & PETTIJOHN (1938) MOMENT MEASURES FOR SIZE RANGE 4.0 TO 12.0 PHI

> 5 PERCENT OF THE FINES ARE NOT RESOLVED, OBTAIN FOLK STATS. GRAPHICALLY

PERCENTILES MEDIAN 9.61 5TH 6.81 16TH 7.72 25TH 8.31
75TH 11.04 84TH 11.81 95TH******

PCT. GRAVEL .00 SAND 0.00 SILT (PIPETTE) 0.00 CLAY (PIPETTE) 0.00
(SEDIGRAPH) 20.00 (SEDIGRAPH) 80.00

GRAVEL+SAND .00 SILT/(SILT+CLAY) 20.00 PCT.GRAV+SAND/SILT+CLAY .00

LABELS SHEPARD -CLAY FOLK(GMS)-MUD (SCS)-CLAY