62465

PHASE 2 REPORT - REVIEW COPY
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2C-A LOW RESOLUTION SEDIMENT CORING REPORT
ADDENDUM TO THE DATA EVALUATION AND INTERPRETATION REPORT
HUDSON RIVER PCBs REASSESSMENT RI/FS

JULY 1998

For

U.S. Environmental Protection Agency
Region II
and
U.S. Army Corps of Engineers
Kansas City District

Volume 2C-A
Book 2 of 2

TAMS CONSULTANTS, Inc.

Gradient Corporation

TETRA TECH, INC.

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Table of Contents

TAMS

PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
Volume 2C-A LOW RESOLUTION SEDIMENT CORING REPORT
Addendum to the Data Evaluation and Interpretation Report
HUDSON RIVER PCBs REASSESSMENT RI/FS

CONTENTS

Volume 2C-A (Book 2 of 2)

LIST OF TABLES

PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
Volume 2C-A LOW RESOLUTION SEDIMENT CORING REPORT
Addendum to the Data Evaluation and Interpretation Report
HUDSON RIVER PCBs REASSESSMENT RI/FS

CONTENTS

Volume 2C-A (Book 2 of 2)

LIST OF FIGURES

PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
Volume 2C-A LOW RESOLUTION SEDIMENT CORING REPORT
Addendum to the Data Evaluation and Interpretation Report
HUDSON RIVER PCBs REASSESSMENT RI/FS

CONTENTS

Volume 2C-A (Book 2 of 2)

300367

PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
Volume 2C-A LOW RESOLUTION SEDIMENT CORING REPORT
Addendum to the Data Evaluation and Interpretation Report
HUDSON RIVER PCBs REASSESSMENT RI/FS

CONTENTS

Volume 2C-A (Book 2 of 2)

PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
Volume 2C-A LOW RESOLUTION SEDIMENT CORING REPORT
Addendum to the Data Evaluation and Interpretation Report
HUDSON RIVER PCBs REASSESSMENT RI/FS

CONTENTS

Volume 2C-A (Book 2 of 2)

LIST OF PLATES

300369

PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
Volume 2C-A LOW RESOLUTION SEDIMENT CORING REPORT
Addendum to the Data Evaluation and Interpretation Report
HUDSON RIVER PCBs REASSESSMENT RI/FS

CONTENTS

Volume 2C-A (Book 2 of 2)

PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
Volume 2C-A LOW RESOLUTION SEDIMENT CORING REPORT
Addendum to the Data Evaluation and Interpretation Report
HUDSON RIVER PCBs REASSESSMENT RI/FS

CONTENTS

Volume 2C-A (Book 2 of 2)

Tables

TAMS

TABLES

Table 2-1
Summary of Low Resolution Sediment Core Collection Program

Location/Type	No. of Zones[1]	Cores per Zone	Total No. of Cores	PCB Samples per Core	Total Analytical Samples[2]
A. Thompson Island Pool					
Resampling 1984 NYSDEC Locations	15	3-6	60	1-3	136
Near-shore Locations	4	1-5	16	1-3	36
B. Below Thompson Island Dam[3]					
Hot Spot 25 (RM 187)	1	10	10	1-3	26
Hot Spot 28 (RM 186)	1	13	13	1-3	32
Hot Spot 31 (RM 185)	1	10	10	1-3	25
Hot Spot 34 (RM 184)	1	13	13	1-3	19
Hot Spot 35 (RM 184)	1	5	5	1-3	9
Hot Spot 37 (RM 166)	1	15	15	1-3	21
Hot Spot 39 (RM 164)	1	15	15	1-3	38
Near-shore/exploratory	4	3-4	13	1-3	29
Total	30	----	170	----	371

Hudson River Database Release 3.5 TAMS

Notes:
River Mile (RM) locations are approximate.
1. A zone is defined for this program as a cluster of samples from an area typically less than 2,100 feet at its widest point.
2. Analytical parameters include PCB congeners; TC/TN; and grain size distribution analysis, total organic carbon and radionuclides, but all analytes were not determined for every sample.
3. *Hot spot* location numbering after Tofflemire and Quinn (1979); *Hot spot* locations shown on Plate 2-1.

Table 2-3
Summary of Low Resolution Sediment Core Analytical Results
Page 1 of 2

Analyte	Count[1]	Mean	Median	Range of Values[2]	No. of Nondetect Results	Cores with Maximum PCB Concentration in layer	Cores with Unknown Maximum PCB Concentration[6]	Samples with Fraction as Primary Sediment Class
Radionuclides (pCi/kg)								
^{7}Be Top Slice (0-1 inch)	169	1,164	966	ND-3,577	50			
^{137}Cs Top Slice (0-1 inch)	169	846	715	44-8,710	0			
^{137}Cs Bottom Segment in Thompon Island Pool[3]	75	627	278	76-3931	61			
^{137}Cs Bottom Segment Below Thompon Island Dam	94	823	318	20-5650	58			
^{137}Cs Bottom Segment all cores[3]	169	768	301	ND-5,650	119			
Total PCB (ppm)								
By Location								
Thompson Island Pool (76 Cores)	172	78	15	0.0-1,127	0			
Below Thompson Island Dam (94 Cores)	199	83	15	0.0-1,352	0			
All Locations	371	81	15	0.0-1,352	0			
By Layer								
Top Segment (Surface)	170	95	23	0.4-1352	0	104[4]	22	
Second Segment	128	89	16	0.0-1045	0	30[5]	10	
Third Segment	73	33	2	0.0-589	0	0[6]	4	
Total Organic Carbon (%)	27	5	6	0.2-11	0 (1 Reject)			
Total Kjeldahl Nitrogen (ppm)	27	1,640	1,370	187-4420	0			
C/N Ratio	27	39	40	11.2-81.7	0 (1 Reject)			
Grain-Size Distribution (%) - Laser								
Shallow segment								
Clay	170	6.0	5.7	0.4-26				0
Silt	170	51.9	58.4	3.8-80				119
Fine Sand	170	28.8	27.4	0.1-67				31
Medium Sand	170	9.3	3.3	0.0-50				15
Coarse Sand	170	1.6	0.0	0.0-26				0
Gravel	170	2.5	0.0	0.0-38				5

Table 2-2

Sediment Core Segment Summary

Core Summary

Number of Segments in Core	Number of Cores Collected	Depth of Core (inches)	
		Median	Range
2	42	12	6-16
3	55	19	16-23
4	73	30	23-54

Core Segment Summary

Segment	Number of Segments Collected	Segment Thickness (inches)						Lower Depth of Segment (inches)					
		2 Segment Cores[2]		3 Segment Cores		4 Segment Cores		2 Segment Cores[2]		3 Segment Cores		4 Layer Cores	
		Median	Range	Median	Range	Median	Range	Median	Range	Median	Range	Median	Range
Top Segment (Shallow)[3]	170	9	5-13	9	7-11	10	7-17	9	5-13	9	7-11	10	7-17
Second Segment	128			7	5-10	9	6-17			16	13-20	18	14-34
Third Segment	73					9	5-17					27	20-51
Radionuclide	169	3	2-3	3	1-4	3	1-7	12	7-16	19	16-23	30	23-54

Hudson River Database Release 3.5 — TAMS

Notes:
1. All cores included at least one segment for PCB analysis and a second segment for radionuclide analysis except for core LR-02C. Radionuclide analysis was always done on the bottommost segment.
2. Core LR-02C had only one slice which was analyzed for PCB and is included in this total. No radionuclide data were obtained.
3. Top segment extends down from the sediment/water interface.

300375

Table 2-3
Summary of Low Resolution Sediment Core Analytical Results

Analyte	Count[1]	Mean	Median	Range of Values[2]	No. of Nondetect Results	Cores with Maximum PCB Concentration in layer	Cores with Unknown Maximum PCB Concentration[8]	Samples with Fraction as Primary Sediment Class
Grain-Size Distribution (%) - ASTM								
(various depths)								
Fines (silt and clay)	143	45.8	42.9	5-98				77
Fine Sand	143	32.0	27.8	0.6-87				42
Medium Sand	143	15.4	8.0	0.3-70				22
Coarse Sand	143	3.8	1.4	0.0-20				
Gravel	143	3.0	0.3	0.0-34				2
Visual Interpretation - Primary Classification								
Clay/Organics	8							
Silt	199							
Fine Sand	67							
Medium Sand	1							
Coarser Sand	90							
Fine-Medium Gravel	3							
Unclassified	3							
Bulk Density (g/cc)[7]	678	1.6	1.5	1-2.8				

Hudson River Database Release 3.5 — TAMS

Notes
1. Count represents unique samples and excludes duplicates
2. Values reported as 0.0 represent low level detections less than 0.05
3. One sample (LR-02C) was not analyzed for radionuclides
4. Excludes the 21 two segment cores (1 PCB, 1 ^{137}Cs) where ^{137}Cs was detected in the bottom segment and core LH-02C which was not analysed for radionuclides
5. Excludes the 10 three segment cores (2 PCB, 1 ^{137}Cs) where ^{137}Cs was detected in the bottom segment
6. Excludes all four segment cores (3 PCB, 1 ^{137}Cs) because ^{137}Cs was detected in the bottom segment
7. Bulk density values less than 1 and greater than 3 were excluded as unreasonable results. A total of 709 bulk density measurements were made
8. Cores with unknown maxima are defined as incomplete cores (i.e., ^{137}Cs present in bottom segment) that also have their highest PCB levels in the segment immediately above the bottommost (i.e., radionuclide) segment. Because of the history of PCB release to the Hudson, it cannot be assured that these cores have captured the peak PCB concentrations at their respective locations. See text for further discussion

Table 2-4
Comparison of Sediment Types for Complete and Incomplete Low Resolution Cores

Location Type[1] (No. of Cores)	No. of Slices	Median Depth of Lower Boundary (inches)	No. of Cores with Maximum PCB Concentration in layer[2]	Primary Geologist's Classification No. of Samples					
				Clay/ Organics	Silt	Fine Sand	Coarser Sand	Fine-Medium Gravel	Unclassified
Thompson Island Pool									
***Complete* Cores (61)**									
Top Segment (Shallow)	61	9	50	1	31	15	13		1
Second Segment	55	16	11	1	18	16	19		1
Third Segment	28	24.5	0	1	9	7	10		1
Entire Core		22							
***Incomplete* Cores (15)**									
Top Segment (Shallow)	15	8	2		8	4	3		
Second Segment	9	16	2	1	4	2	2		
Third Segment	4	25.5	0		1	1	1	1	
Entire Core		17							
Below Thompson Island Dam									
***Complete* Cores (58)**									
Top Segment (Shallow)	58	9	45	3	35	6	13	1	
Second Segment	44	18	13		29	4	10	1	
Third Segment	31	31	0		18	3	10		
Entire Core		24							
***Incomplete* Cores (36)**									
Top Segment (Shallow)	36	9	7	1	24	6	5		
Second Segment	20	17.5	4		12	3	5		
Third Segment	10	36	0		10				
Entire Core		17							

Hudson River Database Release 3.5 TAMS

Notes

1 Complete Core - no ^{137}Cs present in bottommost segment

Incomplete Core - ^{137}Cs present in bottommost segment

2 This column represents only those cores where the peak sediment concentration has been captured by the core. See text for discussion.

Table 3-1
Parameters Obtained For The Low Resolution Sediment Coring Program

Analyte Type	Parameter	Analyses or Results Per Sample	No. of Samples Analysed[1]	Units
PCB	Congener (BZ#)	126 used 145 reported	371	µg/kg
	Homologue (Sum of appropriate congeners)	10	371	µg/kg
	Total PCB (Sum of 126 Congeners)	1	371	µg/kg
	MW (Calculated from congener data)	1	371	µg/kg
	MDPR (Calculated from congener data)	1	371	µg/kg
Chemical	Total Organic Carbon (TOC)	1	26	% dry wt
	Total Kjeldahl Nitrogen (TKN)	1	27	ppm by mass dry wt
	C/N ratio (Calculated from TOC & TKN)	1	26	unitless (molar ratio)
Radionuclide	^{137}Cs - surface	1	169	pCi/kg
	- bottom	1	170	pCi/kg
	^{7}Be - surface	1	169	pCi/kg
Sediment Bulk Properties	Bulk density	1	671	g/cc
	Percent solids	1	541	%
	Solids specific weight - (Calculated from bulk density and percent solids)	1	541	g/cc
	Particle density - (Calculated from bulk density and percent solids)	1	541	g/cc
Sediment Grain-Size Distribution	Combined Sieve and Laser Particle Analysis			
	(Laser) Shallow Sediments only			
	Major Soil Classifications	6	170	% mass
	Median diameter	1	170	phi or mm
	phi distribution	26	170	% mass
	D(10) - D(90) mm	12	170	mm
	Sorting and Skewness	2	170	unitless
	Combined Sieve and Hydrometer Analysis			
	(ASTM) Various Depths			
	Major soil classifications	6	143	% mass
	Sorting Bins	9	143	% mass
	Geologist's Visual Inspection			
	Major Soil Classifications	1	541	

Hudson River Database Release 3.5 TAMS

Note: 1) Total excludes rejected analyses

300378

Table 3-2
Summary Statistics for Total PCBs, ΔMW, and MDPR

	ΔMW	MDPR	Total PCBs (mg/kg)	Estimated Mass Loss by Dechlorination[2]
All Core Segments > 0.1 mg/kg				
Min	-1.488	0.040	0.106	NA
Max	0.208	0.984	1,352	24.6%
Median	0.100	0.553	19.0	11.8%
Geometric Mean	0.101	0.551	15.3	12.0%
No. of Samples = 347				
Selected Core Segments[1]				
Min	-0.106	0.04	0.354	NA
Max	0.195	0.921	1352	23.10%
Median	0.098	0.542	30.8	11.6%
Geometric Mean	0.101	0.544	31.8	12.0%
No of Samples = 229				

Hudson River Database Release 3.5 TAMS

Notes:
1. These cores were selected so as to minimize the inclusion of cross-contaminated core segments in the data set. See text for discussion.
2. Estimated mass loss represents dechlorination mass loss only. Mass loss estimate is based on change in molecular weight (ΔMW).

Table 3-3
Regression Coefficients (r) for Correlation Among Laser Grain-Size Distribution Parameters

Parameter	Clay %	Silt %	Fine Sand %	Medium Sand %	Coarse Sand %	Gravel %	d(10)	d(15)	d(20)	d(30)	d(40)	d(50)	d(60)	d(70)	d(80)	d(85)	d(90)	d(99)	Sorting	Phi -2	Phi -1.5	Phi -1	Phi -0.5	Phi 0
Clay %	1.00	0.59	-0.69	-0.44	-0.11	-0.11	-0.53	-0.53	-0.53	-0.53	-0.51	-0.49	-0.46	-0.47	-0.58	-0.69	-0.79	-0.63	0.75	-0.11	-0.11	-0.11	-0.11	-0.39
Silt %	0.59	1.00	-0.87	-0.80	-0.21	-0.21	-0.88	-0.90	-0.91	-0.91	-0.89	-0.86	-0.80	-0.76	-0.77	-0.80	-0.82	-0.30	0.96	-0.21	-0.21	-0.21	-0.21	-0.72
Fine Sand %	-0.69	-0.87	1.00	0.44	0.08	0.08	0.58	0.61	0.63	0.64	0.62	0.58	0.53	0.52	0.65	0.74	0.80	0.31	-0.83	0.08	0.08	0.08	0.08	0.33
Medium Sand %	-0.44	-0.80	0.44	1.00	0.29	0.29	0.96	0.96	0.95	0.94	0.94	0.91	0.87	0.82	0.69	0.65	0.64	0.33	-0.85	0.29	0.29	0.29	0.29	0.97
Coarse Sand %	-0.11	-0.21	0.08	0.29	1.00	1.00	0.37	0.37	0.36	0.29	0.29	0.30	0.29	0.34	0.32	0.28	0.23	0.13	-0.24	1.00	1.00	1.00	1.00	0.44
Gravel %	-0.11	-0.21	0.08	0.29	1.00	1.00	0.37	0.37	0.36	0.29	0.29	0.30	0.29	0.34	0.32	0.28	0.23	0.13	-0.24	1.00	1.00	1.00	1.00	0.44
d(10)	-0.53	-0.88	0.58	0.96	0.37	0.37	1.00	0.99	0.97	0.94	0.92	0.88	0.82	0.78	0.72	0.71	0.71	0.35	-0.92	0.37	0.37	0.37	0.37	0.93
d(15)	-0.53	-0.90	0.61	0.96	0.37	0.37	0.99	1.00	0.99	0.97	0.95	0.91	0.85	0.81	0.73	0.72	0.72	0.34	-0.93	0.37	0.37	0.37	0.37	0.92
d(20)	-0.53	-0.91	0.63	0.95	0.36	0.36	0.97	0.99	1.00	0.99	0.97	0.93	0.87	0.82	0.74	0.72	0.73	0.35	-0.93	0.36	0.36	0.36	0.36	0.90
d(30)	-0.53	-0.91	0.64	0.94	0.29	0.29	0.94	0.97	0.99	1.00	0.99	0.95	0.89	0.83	0.75	0.73	0.74	0.35	-0.93	0.29	0.29	0.29	0.29	0.87
d(40)	-0.51	-0.89	0.62	0.94	0.29	0.29	0.92	0.95	0.97	0.99	1.00	0.98	0.92	0.86	0.77	0.74	0.75	0.36	-0.91	0.29	0.29	0.29	0.29	0.87
d(50)	-0.49	-0.86	0.58	0.91	0.30	0.30	0.88	0.91	0.93	0.95	0.98	1.00	0.98	0.93	0.81	0.76	0.75	0.36	-0.88	0.30	0.30	0.30	0.30	0.87
d(60)	-0.46	-0.80	0.53	0.87	0.29	0.29	0.82	0.85	0.87	0.89	0.92	0.98	1.00	0.97	0.83	0.77	0.74	0.34	-0.82	0.29	0.29	0.29	0.29	0.85
d(70)	-0.47	-0.76	0.52	0.82	0.34	0.34	0.78	0.81	0.82	0.83	0.86	0.93	0.97	1.00	0.90	0.83	0.77	0.37	-0.79	0.34	0.34	0.34	0.34	0.82
d(80)	-0.58	-0.77	0.65	0.69	0.32	0.32	0.72	0.73	0.74	0.75	0.77	0.81	0.83	0.90	1.00	0.97	0.90	0.47	-0.80	0.32	0.32	0.32	0.32	0.69
d(85)	-0.69	-0.80	0.74	0.65	0.28	0.28	0.71	0.72	0.72	0.73	0.74	0.76	0.77	0.83	0.97	1.00	0.97	0.52	-0.84	0.28	0.28	0.28	0.28	0.63
d(90)	-0.79	-0.82	0.80	0.64	0.23	0.23	0.71	0.72	0.73	0.74	0.75	0.75	0.74	0.77	0.90	0.97	1.00	0.59	-0.88	0.23	0.23	0.23	0.23	0.60
d(99)	-0.63	-0.30	0.31	0.33	0.13	0.13	0.35	0.34	0.35	0.35	0.36	0.36	0.34	0.37	0.47	0.52	0.59	1.00	-0.44	0.13	0.13	0.13	0.13	0.32
Sorting	0.75	0.96	-0.83	-0.85	-0.24	-0.24	-0.92	-0.93	-0.93	-0.93	-0.91	-0.88	-0.82	-0.79	-0.80	-0.84	-0.88	-0.44	1.00	-0.24	-0.24	-0.24	-0.24	-0.78
Phi -2	-0.11	-0.21	0.08	0.29	1.00	1.00	0.37	0.37	0.36	0.29	0.29	0.30	0.29	0.34	0.32	0.28	0.23	0.13	-0.24	1.00	1.00	1.00	1.00	0.44
Phi -1.5	-0.11	-0.21	0.08	0.29	1.00	1.00	0.37	0.37	0.36	0.29	0.29	0.30	0.29	0.34	0.32	0.28	0.23	0.13	-0.24	1.00	1.00	1.00	1.00	0.44
Phi -1	-0.11	-0.21	0.08	0.29	1.00	1.00	0.37	0.37	0.36	0.29	0.29	0.30	0.29	0.34	0.32	0.28	0.23	0.13	-0.24	1.00	1.00	1.00	1.00	0.44
Phi -0.5	-0.11	-0.21	0.08	0.29	1.00	1.00	0.37	0.37	0.36	0.29	0.29	0.30	0.29	0.34	0.32	0.28	0.23	0.13	-0.24	1.00	1.00	1.00	1.00	0.44
Phi 0	-0.39	-0.72	0.33	0.97	0.44	0.44	0.93	0.92	0.90	0.87	0.87	0.87	0.85	0.82	0.69	0.63	0.60	0.32	-0.78	0.44	0.44	0.44	0.44	1.00
Phi 0.5	-0.39	-0.73	0.34	0.98	0.29	0.29	0.93	0.92	0.90	0.88	0.88	0.88	0.86	0.83	0.68	0.63	0.60	0.32	-0.79	0.29	0.29	0.29	0.29	0.99
Phi 1	-0.43	-0.79	0.42	1.00	0.25	0.25	0.96	0.96	0.94	0.93	0.93	0.91	0.87	0.82	0.69	0.64	0.63	0.32	-0.84	0.25	0.25	0.25	0.25	0.97
Phi 1.5	0.57	0.11	-0.15	-0.17	-0.08	-0.08	-0.18	-0.17	-0.19	-0.20	-0.21	-0.21	-0.20	-0.22	-0.28	-0.32	-0.39	-0.92	0.27	-0.08	-0.08	-0.08	-0.08	-0.18
Phi 2	-0.57	-0.91	0.84	0.68	0.14	0.14	0.78	0.81	0.83	0.84	0.81	0.75	0.68	0.63	0.66	0.70	0.73	0.35	-0.88	0.14	0.14	0.14	0.14	0.56
Phi 2.5	-0.60	-0.84	0.95	0.42	0.07	0.07	0.57	0.59	0.61	0.62	0.59	0.55	0.49	0.47	0.58	0.65	0.71	0.33	-0.78	0.07	0.07	0.07	0.07	0.31
Phi 3	-0.43	-0.40	0.73	-0.14	-0.01	-0.01	0.03	0.04	0.05	0.07	0.06	0.07	0.07	0.12	0.31	0.42	0.46	0.05	-0.32	-0.01	-0.01	-0.01	-0.01	-0.16
Phi 3.5	-0.35	-0.20	0.56	-0.30	-0.04	-0.04	-0.15	-0.15	-0.14	-0.13	-0.13	-0.11	-0.09	-0.03	0.17	0.29	0.33	-0.07	-0.14	-0.04	-0.04	-0.04	-0.04	-0.29
Phi 4	-0.02	0.66	-0.34	-0.71	-0.19	-0.19	-0.70	-0.73	-0.73	-0.73	-0.70	-0.66	-0.59	-0.52	-0.38	-0.31	-0.28	0.04	0.56	-0.19	-0.19	-0.19	-0.19	-0.64
Phi 4.5	0.15	0.83	-0.57	-0.77	-0.20	-0.20	-0.79	-0.82	-0.84	-0.84	-0.82	-0.78	-0.72	-0.65	-0.56	-0.52	-0.49	-0.16	0.73	-0.20	-0.20	-0.20	-0.20	-0.69
Phi 5	0.31	0.93	-0.74	-0.77	-0.20	-0.20	-0.82	-0.84	-0.85	-0.86	-0.84	-0.80	-0.74	-0.70	-0.66	-0.64	-0.64	-0.19	0.83	-0.20	-0.20	-0.20	-0.20	-0.68
Phi 5.5	0.46	0.97	-0.84	-0.75	-0.20	-0.20	-0.82	-0.85	-0.86	-0.87	-0.85	-0.82	-0.77	-0.73	-0.73	-0.74	-0.75	-0.21	0.89	-0.20	-0.20	-0.20	-0.20	-0.67
phi 6	0.59	0.96	-0.88	-0.73	-0.19	-0.19	-0.82	-0.83	-0.84	-0.84	-0.82	-0.80	-0.75	-0.72	-0.74	-0.77	-0.80	-0.31	0.92	-0.19	-0.19	-0.19	-0.19	-0.65
Phi 6.5	0.60	0.89	-0.79	-0.72	-0.24	-0.24	-0.79	-0.81	-0.82	-0.83	-0.81	-0.80	-0.75	-0.75	-0.78	-0.80	-0.82	-0.42	0.89	-0.24	-0.24	-0.24	-0.24	-0.66
Phi 7	0.86	0.82	-0.87	-0.58	-0.15	-0.15	-0.68	-0.69	-0.69	-0.69	-0.68	-0.66	-0.62	-0.61	-0.71	-0.80	-0.87	-0.34	0.89	-0.15	-0.15	-0.15	-0.15	-0.51
Phi 7.5	0.92	0.75	-0.83	-0.52	-0.13	-0.13	-0.63	-0.63	-0.63	-0.63	-0.61	-0.59	-0.55	-0.55	-0.66	-0.76	-0.84	-0.37	0.85	-0.13	-0.13	-0.13	-0.13	-0.46
Phi 8	0.94	0.70	-0.80	-0.49	-0.11	-0.11	-0.60	-0.60	-0.60	-0.59	-0.57	-0.55	-0.51	-0.51	-0.62	-0.73	-0.82	-0.38	0.82	-0.11	-0.11	-0.11	-0.11	-0.43
Phi 8.5	0.97	0.67	-0.77	-0.47	-0.11	-0.11	-0.58	-0.57	-0.57	-0.57	-0.55	-0.52	-0.49	-0.49	-0.61	-0.72	-0.81	-0.47	0.80	-0.11	-0.11	-0.11	-0.11	-0.41
Phi 9	0.97	0.43	-0.56	-0.33	-0.08	-0.08	-0.41	-0.41	-0.41	-0.41	-0.39	-0.38	-0.35	-0.36	-0.47	-0.57	-0.67	-0.66	0.62	-0.08	-0.08	-0.08	-0.08	-0.30
Phi 9.5	0.75	0.17	-0.26	-0.20	-0.08	-0.08	-0.23	-0.22	-0.23	-0.24	-0.24	-0.24	-0.23	-0.24	-0.32	-0.38	-0.47	-0.88	0.37	-0.08	-0.08	-0.08	-0.08	-0.19
Phi 10	0.42	-0.02	-0.03	-0.06	-0.08	-0.08	-0.06	-0.06	-0.07	-0.08	-0.08	-0.09	-0.08	-0.11	-0.19	-0.21	-0.25	-0.86	0.12	-0.08	-0.08	-0.08	-0.08	-0.08
Phi 10.5	-0.46	-0.85	0.54	0.95	0.16	0.16	0.92	0.94	0.95	0.95	0.93	0.88	0.81	0.73	0.63	0.61	0.63	0.31	-0.87	0.16	0.16	0.16	0.16	0.84
Skewness	-0.40	-0.75	0.69	0.54	0.16	0.16	0.54	0.61	0.67	0.74	0.77	0.79	0.78	0.76	0.75	0.74	0.72	0.20	-0.69	0.16	0.16	0.16	0.16	0.48
Sorting	-0.43	-0.79	0.58	0.77	0.16	0.16	0.85	0.83	0.80	0.75	0.69	0.61	0.52	0.45	0.39	0.40	0.44	0.06	-0.78	0.16	0.16	0.16	0.16	0.69

Notes:
1. Table represents 133 shallow sediment samples from 133 low resolution coring sites

Table 3-3
Regression Coefficients (r) for Correlation Among Laser Grain-Size Distribution Parameters

Parameter	Phi 0.5	Phi 1	Phi 1.5	Phi 2	Phi 2.5	Phi 3	Phi 3.5	Phi 4	Phi 4.5	Phi 5	Phi 5.5	phi 6	Phi 6.5	Phi 7	Phi 7.5	Phi 8	Phi 8.5	Phi 9	Phi 9.5	Phi 10	Phi 10.5	Skewness	Sorting
Clay %	-0.39	-0.43	0.57	-0.57	-0.60	-0.43	-0.35	-0.02	0.15	0.31	0.46	0.59	0.60	0.86	0.92	0.94	0.97	0.97	0.75	0.42	-0.46	-0.40	-0.43
Silt %	-0.73	-0.79	0.11	-0.91	-0.84	-0.40	-0.20	0.66	0.83	0.93	0.97	0.96	0.89	0.82	0.75	0.70	0.67	0.43	0.17	-0.02	-0.85	-0.75	-0.79
Fine Sand %	0.34	0.42	-0.15	0.84	0.95	0.73	0.56	-0.34	-0.57	-0.74	-0.84	-0.88	-0.79	-0.87	-0.83	-0.80	-0.77	-0.56	-0.26	-0.03	0.54	0.69	0.58
Medium Sand %	0.98	1.00	-0.17	0.68	0.42	-0.14	-0.30	-0.71	-0.77	-0.77	-0.75	-0.73	-0.72	-0.58	-0.52	-0.49	-0.47	-0.33	-0.20	-0.06	0.95	0.54	0.77
Coarse Sand %	0.29	0.25	-0.08	0.14	0.07	-0.01	-0.04	-0.19	-0.20	-0.20	-0.20	-0.19	-0.24	-0.15	-0.13	-0.11	-0.11	-0.08	-0.08	-0.08	0.16	0.16	0.16
Gravel %	0.29	0.25	-0.08	0.14	0.07	-0.01	-0.04	-0.19	-0.20	-0.20	-0.20	-0.19	-0.24	-0.15	-0.13	-0.11	-0.11	-0.08	-0.08	-0.08	0.16	0.16	0.16
d(10)	0.93	0.96	-0.18	0.78	0.57	0.03	-0.15	-0.70	-0.79	-0.82	-0.82	-0.82	-0.79	-0.68	-0.63	-0.60	-0.58	-0.41	-0.23	-0.06	0.92	0.54	0.85
d(15)	0.92	0.96	-0.17	0.81	0.59	0.04	-0.15	-0.73	-0.82	-0.84	-0.85	-0.83	-0.81	-0.69	-0.63	-0.60	-0.57	-0.41	-0.22	-0.06	0.94	0.61	0.83
d(20)	0.90	0.94	-0.19	0.83	0.61	0.05	-0.14	-0.73	-0.84	-0.85	-0.86	-0.84	-0.82	-0.69	-0.63	-0.60	-0.57	-0.41	-0.23	-0.07	0.95	0.67	0.80
d(30)	0.88	0.93	-0.20	0.84	0.62	0.07	-0.13	-0.73	-0.84	-0.86	-0.87	-0.84	-0.83	-0.69	-0.63	-0.59	-0.57	-0.41	-0.24	-0.08	0.95	0.74	0.75
d(40)	0.88	0.93	-0.21	0.81	0.59	0.06	-0.13	-0.70	-0.82	-0.84	-0.85	-0.82	-0.81	-0.68	-0.61	-0.57	-0.55	-0.39	-0.24	-0.08	0.93	0.77	0.69
d(50)	0.88	0.91	-0.21	0.75	0.55	0.07	-0.11	-0.66	-0.78	-0.80	-0.82	-0.80	-0.80	-0.66	-0.59	-0.55	-0.52	-0.38	-0.24	-0.09	0.88	0.79	0.61
d(60)	0.86	0.87	-0.20	0.68	0.49	0.07	-0.09	-0.59	-0.72	-0.74	-0.77	-0.75	-0.75	-0.62	-0.55	-0.51	-0.49	-0.35	-0.23	-0.08	0.81	0.78	0.52
d(70)	0.83	0.82	-0.22	0.63	0.47	0.12	-0.03	-0.52	-0.65	-0.70	-0.73	-0.72	-0.75	-0.61	-0.55	-0.51	-0.49	-0.36	-0.24	-0.11	0.73	0.76	0.45
d(80)	0.68	0.69	-0.28	0.66	0.58	0.31	0.17	-0.38	-0.56	-0.66	-0.73	-0.74	-0.78	-0.71	-0.66	-0.62	-0.61	-0.47	-0.32	-0.19	0.63	0.75	0.39
d(85)	0.63	0.64	-0.32	0.70	0.65	0.42	0.29	-0.31	-0.52	-0.64	-0.74	-0.77	-0.80	-0.80	-0.76	-0.73	-0.72	-0.57	-0.38	-0.21	0.61	0.74	0.40
d(90)	0.60	0.63	-0.39	0.73	0.71	0.46	0.33	-0.28	-0.49	-0.64	-0.75	-0.80	-0.82	-0.87	-0.84	-0.82	-0.81	-0.67	-0.47	-0.25	0.63	0.72	0.44
d(99)	0.32	0.32	-0.92	0.35	0.33	0.05	-0.07	0.04	-0.16	-0.19	-0.21	-0.31	-0.42	-0.34	-0.37	-0.38	-0.47	-0.66	-0.88	-0.86	0.31	0.20	0.06
Sorting	-0.79	-0.84	0.27	-0.88	-0.78	-0.32	-0.14	0.56	0.73	0.83	0.89	0.92	0.89	0.89	0.85	0.82	0.80	0.62	0.37	0.12	-0.87	-0.69	-0.78
Phi -2	0.29	0.25	-0.08	0.14	0.07	-0.01	-0.04	-0.19	-0.20	-0.20	-0.20	-0.19	-0.24	-0.15	-0.13	-0.11	-0.11	-0.08	-0.08	-0.08	0.16	0.16	0.16
Phi -1.5	0.29	0.25	-0.08	0.14	0.07	-0.01	-0.04	-0.19	-0.20	-0.20	-0.20	-0.19	-0.24	-0.15	-0.13	-0.11	-0.11	-0.08	-0.08	-0.08	0.16	0.16	0.16
Phi -1	0.29	0.25	-0.08	0.14	0.07	-0.01	-0.04	-0.19	-0.20	-0.20	-0.20	-0.19	-0.24	-0.15	-0.13	-0.11	-0.11	-0.08	-0.08	-0.08	0.16	0.16	0.16
Phi -0.5	0.29	0.25	-0.08	0.14	0.07	-0.01	-0.04	-0.19	-0.20	-0.20	-0.20	-0.19	-0.24	-0.15	-0.13	-0.11	-0.11	-0.08	-0.08	-0.08	0.16	0.16	0.16
Phi 0	0.99	0.97	-0.18	0.56	0.31	-0.16	-0.29	-0.64	-0.69	-0.68	-0.67	-0.65	-0.66	-0.51	-0.46	-0.43	-0.41	-0.30	-0.19	-0.08	0.84	0.48	0.69
Phi 0.5	1.00	0.98	-0.17	0.57	0.32	-0.17	-0.31	-0.65	-0.70	-0.69	-0.68	-0.66	-0.66	-0.52	-0.47	-0.44	-0.42	-0.30	-0.19	-0.07	0.87	0.49	0.70
Phi 1	0.98	1.00	-0.17	0.67	0.41	-0.14	-0.30	-0.71	-0.77	-0.76	-0.74	-0.72	-0.71	-0.57	-0.52	-0.48	-0.46	-0.33	-0.20	-0.06	0.94	0.54	0.76
Phi 1.5	-0.17	-0.17	1.00	-0.17	-0.17	0.00	0.10	-0.18	0.00	0.02	0.03	0.13	0.19	0.21	0.26	0.27	0.36	0.63	0.95	0.95	-0.16	-0.07	0.07
Phi 2	0.57	0.67	-0.17	1.00	0.89	0.28	0.05	-0.69	-0.80	-0.84	-0.86	-0.86	-0.79	-0.74	-0.69	-0.65	-0.63	-0.44	-0.23	-0.06	0.79	0.65	0.73
Phi 2.5	0.32	0.41	-0.17	0.89	1.00	0.61	0.38	-0.46	-0.64	-0.75	-0.80	-0.84	-0.74	-0.76	-0.71	-0.68	-0.67	-0.47	-0.24	-0.08	0.53	0.60	0.59
Phi 3	-0.17	-0.14	0.00	0.28	0.61	1.00	0.92	0.16	-0.08	-0.30	-0.43	-0.46	-0.39	-0.56	-0.55	-0.53	-0.50	-0.35	-0.10	0.07	-0.08	0.43	0.08
Phi 3.5	-0.31	-0.30	0.10	0.05	0.38	0.92	1.00	0.40	0.18	-0.08	-0.24	-0.29	-0.20	-0.47	-0.46	-0.46	-0.42	-0.28	-0.01	0.15	-0.26	0.27	-0.07
Phi 4	-0.65	-0.71	-0.18	-0.69	-0.46	0.16	0.40	1.00	0.90	0.76	0.66	0.52	0.46	0.24	0.14	0.10	0.06	-0.13	-0.22	-0.23	-0.75	-0.41	-0.68
Phi 4.5	-0.70	-0.77	0.00	-0.80	-0.64	-0.08	0.18	0.90	1.00	0.93	0.85	0.75	0.67	0.41	0.30	0.25	0.22	0.02	-0.06	-0.06	-0.82	-0.62	-0.70
Phi 5	-0.69	-0.76	0.02	-0.84	-0.75	-0.30	-0.08	0.76	0.93	1.00	0.96	0.88	0.78	0.59	0.49	0.43	0.39	0.15	0.00	-0.08	-0.81	-0.69	-0.75
Phi 5.5	-0.68	-0.74	0.03	-0.86	-0.80	-0.43	-0.24	0.66	0.85	0.96	1.00	0.94	0.82	0.75	0.65	0.60	0.55	0.28	0.05	-0.08	-0.80	-0.76	-0.74
phi 6	-0.66	-0.72	0.13	-0.86	-0.84	-0.46	-0.29	0.52	0.75	0.88	0.94	1.00	0.88	0.82	0.74	0.70	0.67	0.43	0.19	0.03	-0.77	-0.71	-0.75
Phi 6.5	-0.66	-0.71	0.19	-0.79	-0.74	-0.39	-0.20	0.46	0.67	0.78	0.82	0.88	1.00	0.73	0.70	0.67	0.64	0.50	0.28	0.09	-0.75	-0.73	-0.64
Phi 7	-0.52	-0.57	0.21	-0.74	-0.76	-0.56	-0.47	0.24	0.41	0.59	0.75	0.82	0.73	1.00	0.98	0.96	0.93	0.73	0.37	0.05	-0.61	-0.62	-0.61
Phi 7.5	-0.47	-0.52	0.26	-0.69	-0.71	-0.55	-0.46	0.14	0.30	0.49	0.65	0.74	0.70	0.98	1.00	0.99	0.98	0.83	0.45	0.09	-0.55	-0.55	-0.57
Phi 8	-0.44	-0.48	0.27	-0.65	-0.68	-0.53	-0.46	0.10	0.25	0.43	0.60	0.70	0.67	0.96	0.99	1.00	0.99	0.86	0.48	0.11	-0.52	-0.49	-0.55
Phi 8.5	-0.42	-0.46	0.36	-0.63	-0.67	-0.50	-0.42	0.06	0.22	0.39	0.55	0.67	0.64	0.93	0.98	0.99	1.00	0.90	0.56	0.20	-0.50	-0.45	-0.52
Phi 9	-0.30	-0.33	0.63	-0.44	-0.47	-0.35	-0.28	-0.13	0.02	0.15	0.28	0.43	0.50	0.73	0.83	0.86	0.90	1.00	0.82	0.49	-0.35	-0.27	-0.32
Phi 9.5	-0.19	-0.20	0.95	-0.23	-0.24	-0.10	-0.01	-0.22	-0.06	0.00	0.05	0.19	0.28	0.37	0.45	0.48	0.56	0.82	1.00	0.88	-0.19	-0.10	-0.03
Phi 10	-0.07	-0.06	0.95	-0.06	-0.08	0.07	0.15	-0.23	-0.06	-0.08	-0.08	0.03	0.09	0.05	0.09	0.11	0.20	0.49	0.88	1.00	-0.04	0.03	0.15
Phi 10.5	0.87	0.94	-0.16	0.79	0.53	-0.08	-0.26	-0.75	-0.82	-0.81	-0.80	-0.77	-0.75	-0.61	-0.55	-0.52	-0.50	-0.35	-0.19	-0.04	1.00	0.58	0.81
Skewness	0.49	0.54	-0.07	0.65	0.60	0.43	0.27	-0.41	-0.62	-0.69	-0.76	-0.71	-0.73	-0.62	-0.55	-0.49	-0.45	-0.27	-0.10	0.03	0.58	1.00	0.26
Sorting	0.70	0.76	0.07	0.73	0.59	0.08	-0.07	-0.68	-0.70	-0.75	-0.74	-0.75	-0.64	-0.61	-0.57	-0.55	-0.52	-0.32	-0.03	0.15	0.81	0.26	1.00

Notes:

1. Table represents 133 shallow sediment samples from 133 low resolution coring sites

Table 3-4
Regression Coefficients (r) for Correlations Among Total PCBs, ΔMW, MDPR, and Laser Grain-Size Distribution Parameters

Parameter	Log (Total PCB) mg/kg	MDPR	ΔMW	No. of Samples
Clay %	0.19	0.23	0.17	149
Silt %	0.35	0.35	0.26	149
Fine Sand %	-0.23	-0.19	-0.14	149
Medium Sand %	-0.30	-0.34	-0.25	149
Coarse Sand	-0.24	-0.24	-0.18	149
Gravel %	-0.21	-0.17	-0.14	149
Mean Phi	0.35	0.37	0.29	155
Skewness	-0.40	-0.38	-0.30	155
Sorting	-0.32	-0.33	-0.26	155
Phi -0.5	-0.27	-0.24	-0.20	136
Phi -1	-0.27	-0.23	-0.19	136
Phi -1.5	-0.27	-0.24	-0.20	136
Phi -2	-0.27	-0.24	-0.20	136
Phi 0	-0.35	-0.37	-0.31	136
Phi 0.5	-0.30	-0.35	-0.29	136
Phi 1	-0.34	-0.37	-0.30	136
Phi 1.5	-0.39	-0.37	-0.30	136
Phi 10	0.10	0.00	-0.02	136
Phi 10.5	0.01	-0.08	-0.10	136
Phi 2	-0.31	-0.27	-0.21	136
Phi 2.5	-0.19	-0.16	-0.12	136
Phi 3	0.09	0.10	0.08	136
Phi 3.5	0.14	0.16	0.12	136
Phi 4	0.34	0.36	0.28	136
Phi 4.5	0.41	0.38	0.30	136
Phi 5	0.47	0.43	0.35	136
Phi 5.5	0.44	0.40	0.33	136
Phi 6	0.43	0.36	0.30	136
Phi 6.5	0.42	0.38	0.31	136
Phi 7	0.31	0.31	0.26	136
Phi 7.5	0.30	0.31	0.26	136
Phi 8	0.26	0.27	0.23	136
Phi 8.5	0.25	0.24	0.20	136
Phi 9	0.18	0.17	0.14	136
Phi 9.5	0.10	0.03	0.01	136
d(10)	-0.19	-0.26	-0.20	147
d(15)	-0.27	-0.34	-0.26	147
d(20)	-0.30	-0.35	-0.28	147
d(30)	-0.33	-0.36	-0.29	147
d(40)	-0.34	-0.36	-0.29	147
d(50)	-0.31	-0.34	-0.27	147
d(60)	-0.28	-0.31	-0.24	147
d(70)	-0.23	-0.27	-0.22	147
d(80)	-0.17	-0.20	-0.16	147
d(85)	-0.16	-0.18	-0.14	147
d(90)	-0.18	-0.19	-0.15	147
d(99)	-0.10	-0.10	-0.08	147

Table 3-5
Regression Coefficients (r) for Correlations Among Total PCBs, ΔMW, MDPR, and ASTM Grain-Size Distribution Parameters

Parameter	Log (Total PCB) mg/kg	MDPR	ΔMW	No. of Samples
Fines %	0.21	0.19	0.17	130
Fine Sand %	-0.07	-0.03	-0.02	130
Coarse Sand	-0.23	-0.23	-0.23	130
Medium Sand %	-0.14	-0.20	-0.18	130
Gravel %	-0.18	-0.08	-0.09	130
<0.075 mm	0.22	0.16	0.13	122
>0.075 mm	0.07	0.04	0.01	122
>0.15 mm	-0.21	-0.12	-0.09	122
>0.425 mm	-0.04	-0.10	-0.08	122
>1.0 mm	-0.11	-0.15	-0.13	122
>1.4 mm	-0.11	-0.14	-0.11	122
>2.0 mm	-0.16	-0.15	-0.13	122
>4.0 mm	-0.20	-0.11	-0.09	122
>4.75 mm	-0.14	0.00	0.02	122

Table 3-6
Regression Coefficients (r) for Correlations Among Total PCBs, ΔMW, MDPR, Chemical, and Radionuclide Parameters

Individual Samples:

Parameter	Log(Total PCB) mg/kg	MDPR (Shallow Segment)	ΔMW (Shallow Segment)	No. of Samples
Total Kjeldahl Nitrogen	0.376	-0.1691	-0.1898	24
Total Organic Carbon	0.3964	0.0541	0.0394	24
C/N	0.2929	0.3604	0.355	24

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Shallow Sediments Only:

Parameter	Log(Total PCB) mg/kg	MDPR (Shallow Segment)	ΔMW (Shallow Segment)	No. of Samples
^{7}Be Surficial Sediment	0.0825	0.0825	0.0965	169
^{137}Cs Surficial Sediment	0.4508	0.3408	0.3117	162
^{137}Cs Bottom Slice	-0.1183	-0.2005	-0.17	158

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Complete Core Averages:

Parameter	Log(Mass/Area) g/m^2	MDPR (Core Length-Weighted Average)	ΔMW (Core Length-Weighted Average)	No. of Samples
^{7}Be Surficial Sediment	0.1483	0.1401	0.1491	169
^{137}Cs Surficial Sediment	0.2827	0.2905	0.2586	162
^{137}Cs Bottom Slice	0.1159	0.0164	0.0386	169

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Table 3-7
Regression Coefficients (r) for Correlations Among Total PCBs,
ΔMW, MDPR, and Bulk Sediment Properties for all Sediments and Shallow Sediments

Parameter	Log (Total PCB) mg/kg	MDPR	ΔMW	No. of Samples
All Sediment Segments				
Bulk Density	-0.4957	-0.2879	-0.2652	344
Percent Solids	-0.5835	-0.341	-0.2923	350
Solid Specific Weight	-0.5447	-0.3407	-0.2997	353
Particle Density	-0.1889	-0.001	-0.0155	335
Shallow Sediment Segments				
Bulk Density	-0.5557	-0.3997	-0.3467	158
Percent Solids	-0.6547	-0.5443	-0.4749	163
Solid Specific Weight	-0.5992	-0.4877	-0.4244	158
Particle Density	-0.2645	-0.0232	-0.045	153

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Table 3-8
Regression Coefficients (r) for Correlations Among Length-Weighted Average Total PCB, Total PCB Mass/Unit Area and Several Important Ancillary Parameters

Variable	Log of Core Length-Weighted Average PCB (mg/kg)	No. of Samples	Log of MPA (g/m^2)	No. of Samples
^{137}Cs Shallow Segment	0.41	166	0.31	166
Silt % (Laser)	0.54	165	0.48	165
Bulk Density	-0.61	157	-0.48	156
Percent Solids	-0.72	164	-0.60	165

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Table 4-1

Assessment of Core Profiles in the TI Pool[1]

Inventory Decrease	Inventory Increase	No Change	Undiscerned	No 1984 Data for Comparison
01A	01D	01C	08D[5]	16A
01B	04D	03B	10A	16B
02A	05A[2]	04C		16C
02B	05C[2]	08B		16E
02C	05D[2]	09A		17C
03A[4]	05E[2,3]	12A		17D
03C	07C	12B		17E
04A[4]	08A	12E		18B
04B	08C[2]	13A[3]		18C
05B	08E	14C		18D
06A	09C	14D		18E
06B	10C	15B		19A
06C	11A	17A		
07A	12D			
07B	13C[2,3]			
07D	16D[2]			
09B	15A[2]			
09D[4]	15C[2]			
09E	15D[2]			
09F				
10B[4]				
10D[4]				
11B[4]				
11C[4]				
12C[4]				
13B[1]				
14A				
14B				
17B				
18A				

Notes:
1. Core profiles are provided in Appendix C.
2. Gains very large (2x or higher).
3. 1984 PCB profile based on screening analysis only.
4. Evidence for sediment scour present.
5. Appears consistent with inventory decrease.

Table 4-2

Summary Data for *Hot Spots* Surveyed by the Low Resolution Coring Program[1]

Hot Spot	Area (ft^2)	Mean Core PCB Concentration (mg/kg)	PCB Quantity (lbs)
25	300,000	100	2,440
28	1,026,800	109	9,090
31	194,300	516	8,150
34	955,800	159	12,350
35	245,400	105	2,090
37	1,239,700	116	11,680
39	284,000	161	3,720

Note:

1. Estimates by Malcolm Pirnie (1979) as reported in Tofflemire and Quinn (1979).

Table 4-3

Assignment Classifications for 1976 - 1978 Samples for Solid Specific Weight Based on the Low Resolution Coring Results

PCB Concentration Range[1] 1976-1978 Length-Weighted Average (mg/kg)	Assigned Solid Specific Weight (g/cc)
320 ≤ Total PCB	0.51
100 ≤ Total PCB < 320	0.70
32 ≤ Total PCB < 100	0.79
10 ≤ Total PCB < 32	1.03
3.2 ≤ Total PCB < 10	1.15
0.32 ≤ Total PCB < 3.2	1.20
Total PCB < 0.32	1.37

Note:
1. PCB concentrations are binned on a logarithmic scale.

Table 4-4

Assignment of Grain-Size Distribution Bins for Determination of Principal Fraction for 1977 NYSDEC Samples

Phi or Sediment Class[1]	Principal Fraction
Clay	Clay
Silt	Silt
4	Fine Sand
3	Fine Sand
2	Fine Sand
1	Medium Sand
0	Medium Sand
-1	Coarse Sand

Note:
1. From Normandeau, 1977.

Table 4-5

Assignment of Principal Sediment Fraction Based on 1977 NYSDEC Visual Sediment Classifications

Visual Classification Code (1st Digit)[1]	NYSDEC Texture[2]	Principal Fraction
0	Clay	Clay
1	Silt	Silt
2	Muck	Muck
3	Muck and W. C.[3]	Muck
4	Fine Sand	Fine Sand
5	Fine Sand and W. C.	Fine Sand
6	Sand	Medium Sand
7	Sand and W. C.	Medium Sand
8	Coarse Sand	Coarse Sand
9	Coarse Sand and W. C.	Coarse Sand

Notes:
1. As reported in electronic file (Bopp, 1990)
2. Based on Tofflemire & Quinn (1979).
3. W. C. is assumed to be wood chips.

Table 4-6

Shapiro-Wilk Statistics for 1976-1978 and 1994 Hudson River Sediment Samples Below the TI Dam

Data Set[1]		Shapiro Wilk W Statistic	Probability of a Log Normal Distribution[2]
Length Weighted Averages (LWA) (0-12")	NYSDEC 1976-1978 Survey	0.980	0.490
	Low Resolution Core Study		
	Hot Spots Only	0.985	0.860
	All Points Below the TI Dam	0.978	0.440
Mass/Area (MPA)	NYSDEC 1976-1978 Survey	0.971	0.150
	Low Resolution Core Study		
	Hot Spots Only	0.976	0.470
	All Points Below the TI Dam	0.971	0.180

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Notes:

1. All data are log-transformed.
2. Likelihood of normality is rejected when probability ≤ 0.05.

Table 4-7

Estimates of Mean Values for PCB Mass per Unit Area and Length-Weighted Average for Sediments Below the TI Dam

Mean Value Statistics for PCB Mass per Unit Area

Hot Spot	1976-1978[1] (0 to 12 in.)				1994[1] (Entire Core)			
	Geometric Mean $\overline{C_G}$ (g/m²)	Simple Arithmetic Mean $\overline{C_A}$ (g/m²)	Unbiased Arithmetic Mean[2] $\overline{C'_A}$ (g/m²)	Standard Error on Unbiased Mean σ'_A (g/m²)	Geometric Mean $\overline{C_G}$ (g/m²)	Simple Arithmetic Mean $\overline{C_A}$ (g/m²)	Unbiased Arithmetic Mean[2] $\overline{C'_A}$ (g/m²)	Standard Error on Unbiased Mean σ'_A (g/m²)
25	17	26	24	9	11	24	24	11
28	12	17	18	4	91	142	193	86
31	42	54	55	23	7	11	12	6
34	11	18	19	5	3	10	9	5
35	13	16	16	4	15	18	18	6
37	11	15	16	5	3	5	6	2
39	10	13	12	2	11	22	39	20
182[3]	4	6	7	4	8	8	8	---[4]

Hudson River Database Release 3.5 TAMS

Mean Value Statistics for PCB Length-Weighted Average Concentration (0 to 12 inches)

Hot Spot	1976-1978[1]				1994[1]			
	Geometric Mean $\overline{C_G}$ (mg/kg)	Simple Arithmetic Mean $\overline{C_A}$ (mg/kg)	Unbiased Arithmetic Mean[2] $\overline{C'_A}$ (mg/kg)	Standard Error on Unbiased Mean σ'_A (mg/kg)	Geometric Mean $\overline{C_G}$ (mg/kg)	Simple Arithmetic Mean $\overline{C_A}$ (mg/kg)	Unbiased Arithmetic Mean[2] $\overline{C'_A}$ (mg/kg)	Standard Error on Unbiased Mean σ'_A (mg/kg)
25	73	147	132	61	32	87	93	52
28	46	73	79	19	224	395	470	208
31	224	319	337	168	22	41	44	25
34	43	81	89	25	11	31	31	17
35	52	68	71	19	64	98	94	45
37	42	66	75	25	13	24	27	12
39	40	55	52	11	14	30	36	16
182[3]	12	18	24	13	24	24	24	---[4]

Hudson River Database Release 3.5 TAMS

Notes:
1. See text for discussion on the creation of the individual sample values for MPA and length-weighted average (LWA).
2. This value was calculated using a minium variance, unbiased estimator for the arithmetic mean as given in Gilbert (1987).
3. Number refers to dredge location 182. (MPI, 1992). No *hot spot* number was assigned to this area.
4. Values were ommitted as a result of not having enough sample points.

Table 4-8
Comparison of MPI (1992) and Low Resolution Inventory Estimates for Dredge Locations

Hot Spot	Dredge Location	Area (m^2)	No. of Sample Locations 1976-1978	No. of Sample Locations 1994	Sediment Inventories 1976-1978 MPA[1,3] (g/m^2)	Sediment Inventories 1976-1978 Inventory (kg)	Sediment Inventories 1994 MPA[2,3] (g/m^2)	Sediment Inventories 1994 Inventory (kg)	Inventory Change[4]	Original MPI (1992) Inventory Estimates[7] 1976-1978 MPA (g/m^2)	Original MPI (1992) Inventory Estimates[7] 1976-1978 Inventory (kg)
25	153	23,131	7	9	24.1	557	24.5	566	None	44.7	1,033
28	160	105,522	27	10	17.5	1850	193.2	20,386	Gain	21.6	2,275
31	167	15,038	4	5	55.4	834	12.1	182	Loss	97.3	1,463
34	172	11,606	3	1	19.4	225	9.3	108		4.9	56
	173	8,713	3	1	19.4	169	9.3	81		16.7	145
	174	21,205	6	2	19.4	411	9.3	197		16.6	351
	175	36,062	6	2	19.4	699	9.3	336		33.1	1,193
	176	24,374	10	3	19.4	472	9.3	227		32.7	797
	Total	101,959	28	9		1,976		950	Loss		2,542
35	177	22,892	11	4	16.2	371	17.8	408	None	20.7	473
37	202	136,008	15	11	16.4	2230	5.5	749	Loss[5]	20.8	2,825
39	207	11,168	2	4	12.4	138	39.0	435		13.7	153
	210	94,526	13	10	12.4	1172	39.0	3,686		17.3	1,633
	Total	105,694	15	14		1,311		4,121	None[5]		1,786
---	182[6]	15,281	6	2	7.2	110	7.6	116.6	None	5.4	83
Total of Surveyed Areas		525,525	113	64		9,239		27,478			12,480

Hudson River Database Release 3.5 | TAMS

Notes

1 1978 MPA -(Average concentration reported in MPI, 1992 mg/kg)*(solid specific weight determined from Figure 4 2-1) *(12 inches)*(2.54cm/in)*(1kg/1000g)*(1g/1000mg)*($10^4 cm^2/m^2$)

2 The 1994 MPA is for the full core using the measured density for each sample

3 MPA represents the minimum variance unbiased estimator of the mean for the associated samples (Gilbert, 1987)

4 Change is denoted when the MPA geometric means are statistically different at a 95% confidence level

5 See text for discussion of this *hot spot*

6 Dredge location 182 as designated by MPI (1992)

7 As originally reported in MPI (1992)

300394

Table 4-9
Characterization of the 1976-1978 and 1994 Sediment Sample Types

Hotspot	1976-1978			1994				
	No. of Sample Locations	No. of Cores	No. of Grabs	No. of Sample Locations	No. of Complete Cores	No. of Cores Nearly Complete by PCB Profile	No. of Incomplete Cores with Falling ^{137}Cs	No. of Incomplete Cores with Rising ^{137}Cs
25	7	3	4	9	9			
28	27	8	19	10	8	2	1	1
31	4	1	3	5	5			
34	28	4	24	9	3	1	6	
35	11	6	5	4	2	2	2	
37	13	7	6	11	5	1	5	1
39[1]	15	9	6	14	6	3	3	5
DL 182	6	4	2	2	1		1	

Hudson River Database Release 3.5 — TAMS

Note:
1. The large number of incomplete cores with rising ^{137}Cs at this *hotspot* indicate that a potentially substantial PCB inventory may exist at depth

300395

Table 4-10
Assessment of the Studied *Hot Spot* Areas Below the TI Dam

Hot Spot	MPI Dredge Location	Change in Inventory (MPA)[1]	Change in Shallow Sediment Concentration (LWA)[1]	1994 Inventory Depth (inches)[2]	Estimated Inventory Loss(-) or Gain (+) (kg)	Interpretation
25	153	None	None	12.2	0	Inventory relatively constant. Little burial or scour
28	160	+ 11x	+ 6x	21.2	18,536	Inventory appears to have increased substantially with some peak concentrations at depth, suggesting burial with less contaminated (but not clean) sediments. However, this gain may result from an inaccurate The increase in shallow concentrations suggests mass loss to water column, possibly via scour.
31	167	- 5x	- 8x	10.4	-652	Decrease in inventory and shallow sediment concentration plus shallow inventory depth indicates loss to water column, posssibly via scour
34	172, 173, 174, 175, 176	- 2x	- 3x	11.2	-1,026	Decrease in inventory and shallow sediment concentration plus shallow inventory depth indicates loss to water column, posssibly via scour
35	177	None	None	13.0	0	Inventory relatively constant. Little burial or scour.
37	202	- 3x	- 3x	11.5	-1,481	Decrease in inventory and shallow sediment concentration plus shallow inventory depth indicates loss to water column, posssibly via scour.
39	207, 210	None	- 1.4x	21.9[3]	2,810[4]	Potential increase in inventory plus decline in shallow sediment concentration indicates burial by less contaminated (but not clean) sediment.
---	182	None	None	23.8	0	Dredge location inventory relatively constant. Little burial or scour. However, near-shore locations outside dredge boundary indicate burial with less contaminated sediment.
Net Change					18,187	Evidence for PCB loss from the sediment is found in three of eight study areas. A fourth exhibits evidence for inventory gain and sediment scour. A fifth exhibits a likely inventory increase while the remaining three appear unchanged (neither loss nor burial).

Hudson River Database Release 3.5 TAMS

Notes

1 Change in inventory or concentration is calculated as the ratio of the larger value over the smaller value. Negative values indicate decline from 1976-1978 to 1994. Positive values indicate increase from 1976-1978 to 1994. Changes are only denoted for statistically significant differences between 1976-1978 and 1994 based on an analysis of the log-transformed data. The magnitude of the change is based on the minimum variance, unbiased estimate of the arithmetic mean.

2 Inventory depth represents the average of all cores within the hot spot. It is calculated from the depth at which underlying sediment PCB concentrations are less than 25 percent of the peak concentration in a core.

3 This hot spot was characterized with a large number of incomplete cores with rising ^{137}Cs and PCB levels with increasing depth. As a result, the inventory depth estimate must be considered only a lower bound estimate. It is likely that the actual depth of the 1994 PCB inventory is substantially deeper.

4 Although the difference between 1994 and 1976-1978 was not statistically significant, the gain in inventory is still considered to be real based on the large number of incomplete cores. It is likely that the value given represents a lower bound on the actual sediment inventory gain.

300396

Table 4-11
Comparison of Historical and 1994 PCB Inventories for *Hot Spots* Below the TI Dam

Estimates by Malcom Pirnie, 1979[1] — **Low Resolution Core Estimate**

Hot Spot	Area (m^2)	Mean Core PCB Concentration (mg/kg)	PCB Quantity (kg)	SSW[6] (g/cc)	Revised PCB Quantity (kg)	MPA (g/m^2)	PCB Quantity (kg)	Delta$_i$[9]
25	27,900	100	1,107	0.70	775	24.5	682	-12%
28	95,400	109	4,123	0.70	2,886	193.2	18,431	539%
31	18,100	516	3,697	0.51	1,885	12.1	219	-88%
34	88,800	159	5,602	0.70	3,921	9.3	827	-79%
35	22,800	105	948	0.70	664	17.8	407	-39%
37	115,200	116	5,298	0.70	3,709	5.5	634	-83%
39	26,400	161	1,687	0.70	1,181	39.0	1,029	-13%

Estimates by Tofflemire and Quinn, 1979[5] — **Low Resolution Core Estimate**

Hot Spot	Area (m^2)	Mean Core PCB Concentration (mg/kg)	PCB Quantity (kg)	SSW[6] (g/cc)	Revised PCB Quantity (kg)	MPA (g/m^2)	PCB Quantity (kg)	Delta$_i$[9]
25	18,900	103	928	0.70	649	24.5	462	-29%
28	94,900	163	7,360	0.70	5,152	193.2	18,334	256%
31[2]	12,800	163	995	0.70	696	12.1	155	-78%
34	109,400	163	8,492	0.70	5,944	9.3	1,019	-83%
35[3]	29,900	70	886	0.79	700	17.8	533	-24%
37	139,400	108	5,358	0.70	3,751	5.5	768	-80%
39[4]								

300397

Table 4-11
Comparison of Historical and 1994 PCB Inventories for *Hot Spots* Below the TI Dam

Estimates by Malcom Pirnie, 1992[7] — **Low Resolution Core Estimate**

Hot Spot	Area (m^2)	Mean Core PCB Concentration (mg/kg)	PCB Quantity (kg)	SSW[6] (g/cc)	Revised PCB Quantity (kg)	MPA (g/m^2)	PCB Quantity (kg)	Delta$_i$[9]
25	23,100	132	1,033	0.70	725	24.5	565	-22%
28	105,500	79	2,275	0.79	1,788	193.2	20,382	1040%
31	15,000	337	1,463	0.51	746	12.1	181	-76%
34	102,000	89	2,542	0.79	1,998	9.3	950	-52%
35	22,900	71	473	0.79	372	17.8	408	10%
37	136,000	75	2,825	0.79	2,220	5.5	749	-66%
39	105,700	52	1,786	0.79	1,404	39.0	4,122	194%

Phase 2-Derived Estimates from MPI (1992) Data[8] — **Low Resolution Core Estimate**

Hot Spot	Area (m^2)	Mean PCB Mass per Unit Area (MPA) (mg/kg)	PCB Quantity (kg)			MPA (g/m^2)	PCB Quantity (kg)	Delta$_i$[9]
25	23,100	24	557			24.5	565	1%
28	105,500	18	1,850			193.2	20,382	1002%
31	15,000	55	834			12.1	181	-78%
34	102,000	19	1,976			9.3	950	-52%
35	22,900	16	371			17.8	408	10%
37	136,000	16	2,230			5.5	749	-66%
39	105,700	12	1,311			39.0	4,122	214%

Notes:
1. Estimates by Malcolm Pirnie, 1979 as reported in Tofflemire and Quinn (1979).
2. *Hot Spot* 31 assigned to NAI treansect 6-55-57 as reported in Tofflemire and Quinn (1979).
3. *Hot Spot* 35 assigned to NAI treansect 5-90 as reported in Tofflemire and Quinn (1979).
4. *Hot Spot* 39 was not identified in Tofflemire and Quinn (1979).
5. Table 14 from Tofflemire and Quinn (1979).
6. Assigned based on average PCB concentration from Table 4.2-2.
7. Estimate of PCB quantity from Malcolm Pirnie, 1979. SSW assignment based on the minimum variance unbiased estimator of the mean PCB concentration.
8. Derivation shown on Table 4.2-7.
9. Delta$_i$ = 100%x(Original Inventory -1994 Inventory)/Original Inventory

Table 4-12

Summary of 1994 *Hot Spot* Inventories Below the TI Dam

Low Resolution Coring Results

Hot Spot [1]	Area[2] (m^2)	PCB Quantity (metric tons)
25	23,100	0.57
28	105,500	20.4
31	15,000	0.18
34	102,000	0.95
35	22,900	0.41
37	136,000	0.75
39	105,700	4.12
DL 182[3]	15,300	0.12
Total metric tons =		27.5

Hudson River Database Release 3.5 TAMS

Notes:

1. *Hot Spot* number designations as defined in Tofflemire and Quinn (1979).
2. *Hot Spot* areas are based on associated dredge location areas as defined in MPI (1992).
3. Dredge location 182 as defined in MPI (1992).

Table 4-13
Estimates of PCB Concentration in Shallow, Near-Shore Sediments

Concentrations in mg/kg.

	Low Resolution Near-Shore Clusters[1]	Low Resolution Fine Sediment Cores[1,2]	1984 Fine Sediment Samples[1,2,6]	Original 1984 Shallow Sediment Estimate
Number of Samples	11	19	100	
Minimum	10	0.4	0	
Maximum	281	281	778	
Geometric Mean	46	19	13	
Arithmetic Mean	68	45	52	
MVUE[3]	68	68	75	
95% UCL[4] on Arithmetic Mean	151	264	135	66[5]

Notes:

1. Sampling locations within 50 ft of shoreline. Shoreline based on Normandeau, 1976.
2. Sediment classification as fine sediment assigned based on side-scan sonar results.
3. Minimum Variance Unbiased Estimator of the arithmetic mean is given by:

$$\chi = e^{(y + s_y^2/2)}$$

Where:

χ = MVUE of the arithmetic mean

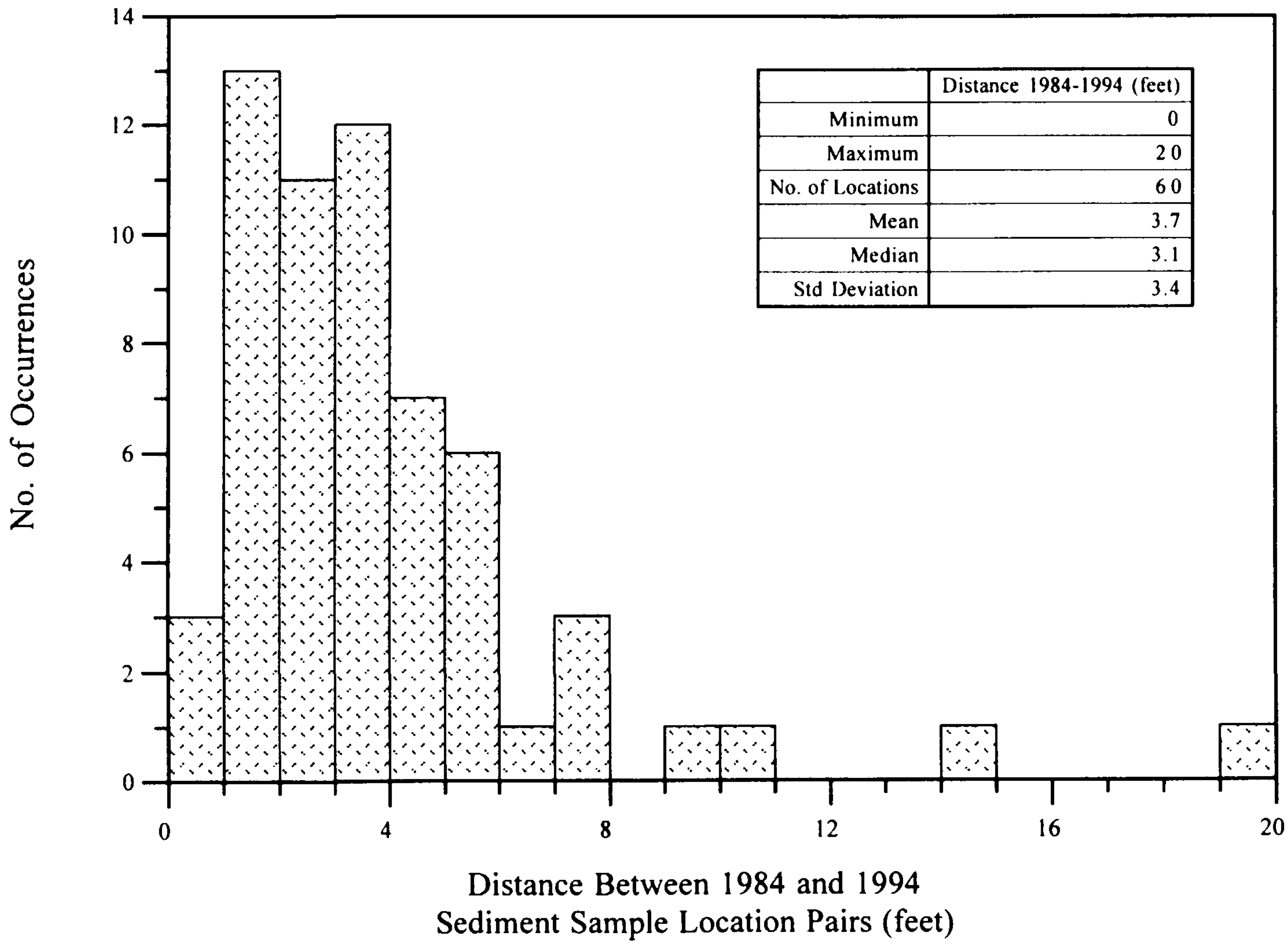
y = Mean natural logarithm of the data

S_y^2 = Variance of the natural logarithms of the data

4. Upper Confidence Limit
5. Cited from Phase I Report, Interim Characerization And Evaluation (TAMS/Gradient 1991)
6. Zero values were set to 0.5 mg/kg for calculation of log-based statistics.

Figures

TAMS



Source: TAMS/Gradient Database, Release 3.5

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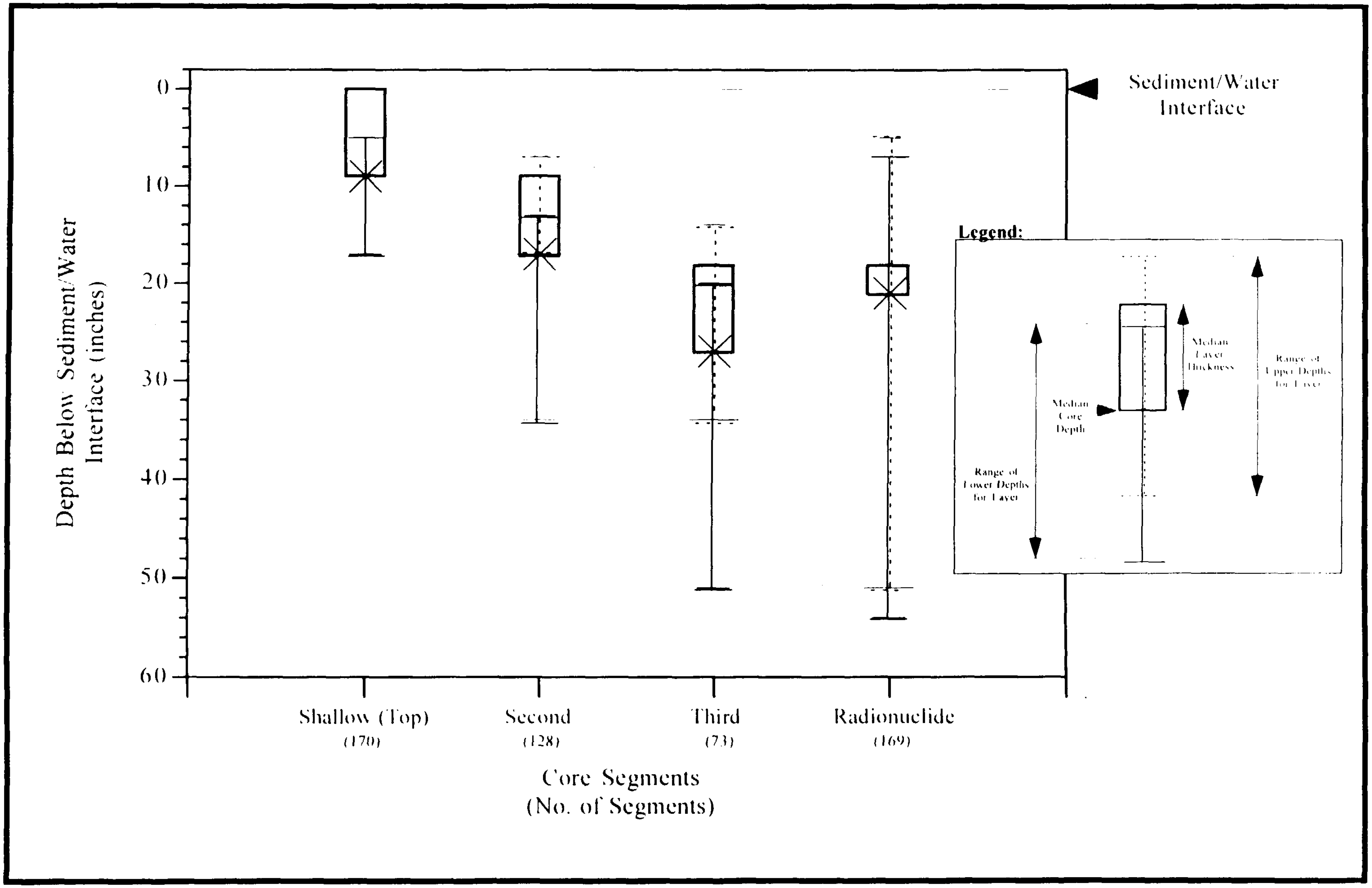
Figure 2-1
Distance Between 1984 and 1994 Sediment Sample Locations

300402

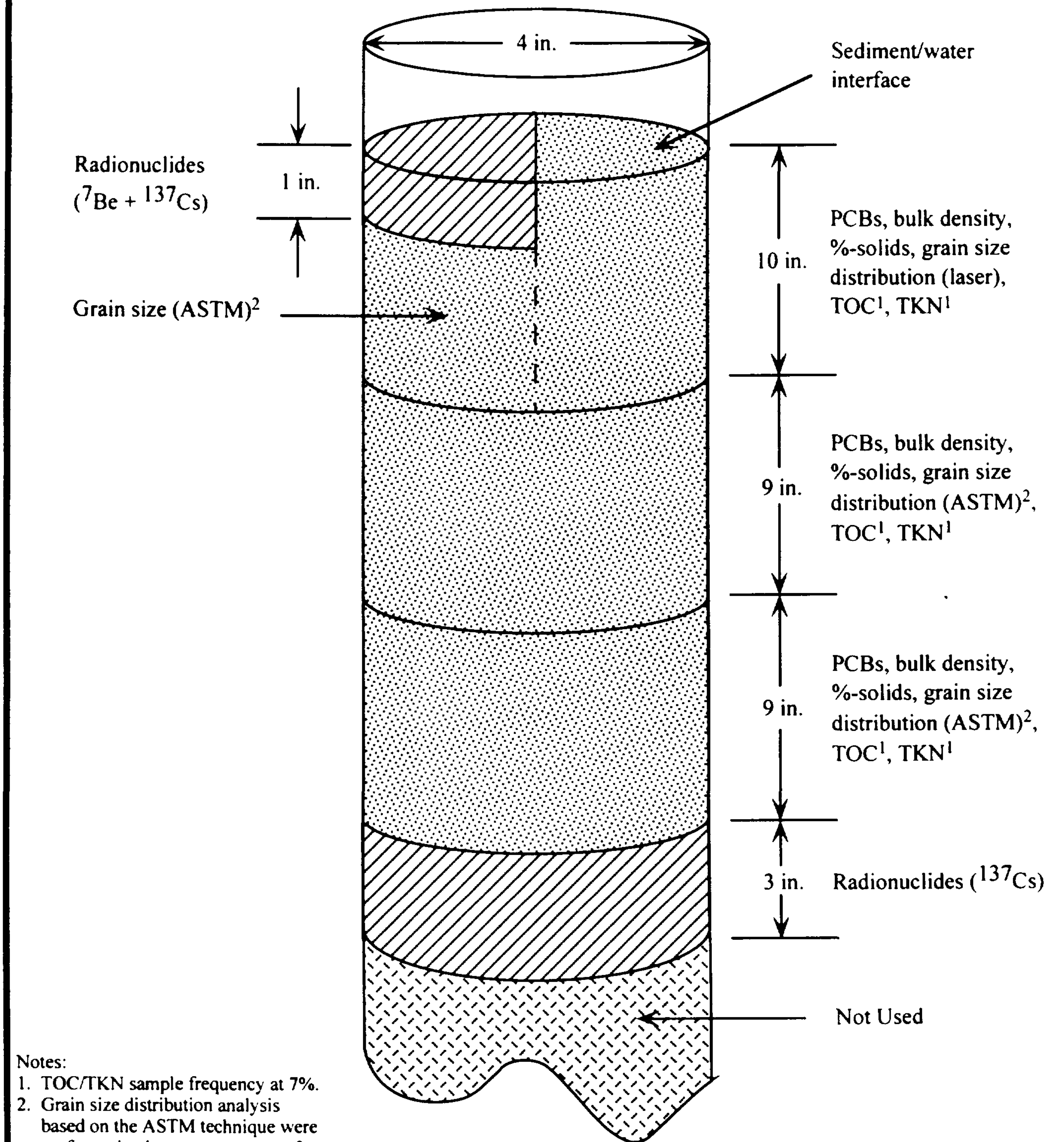


Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 2-2
Distribution of Core Segments Depths

300403



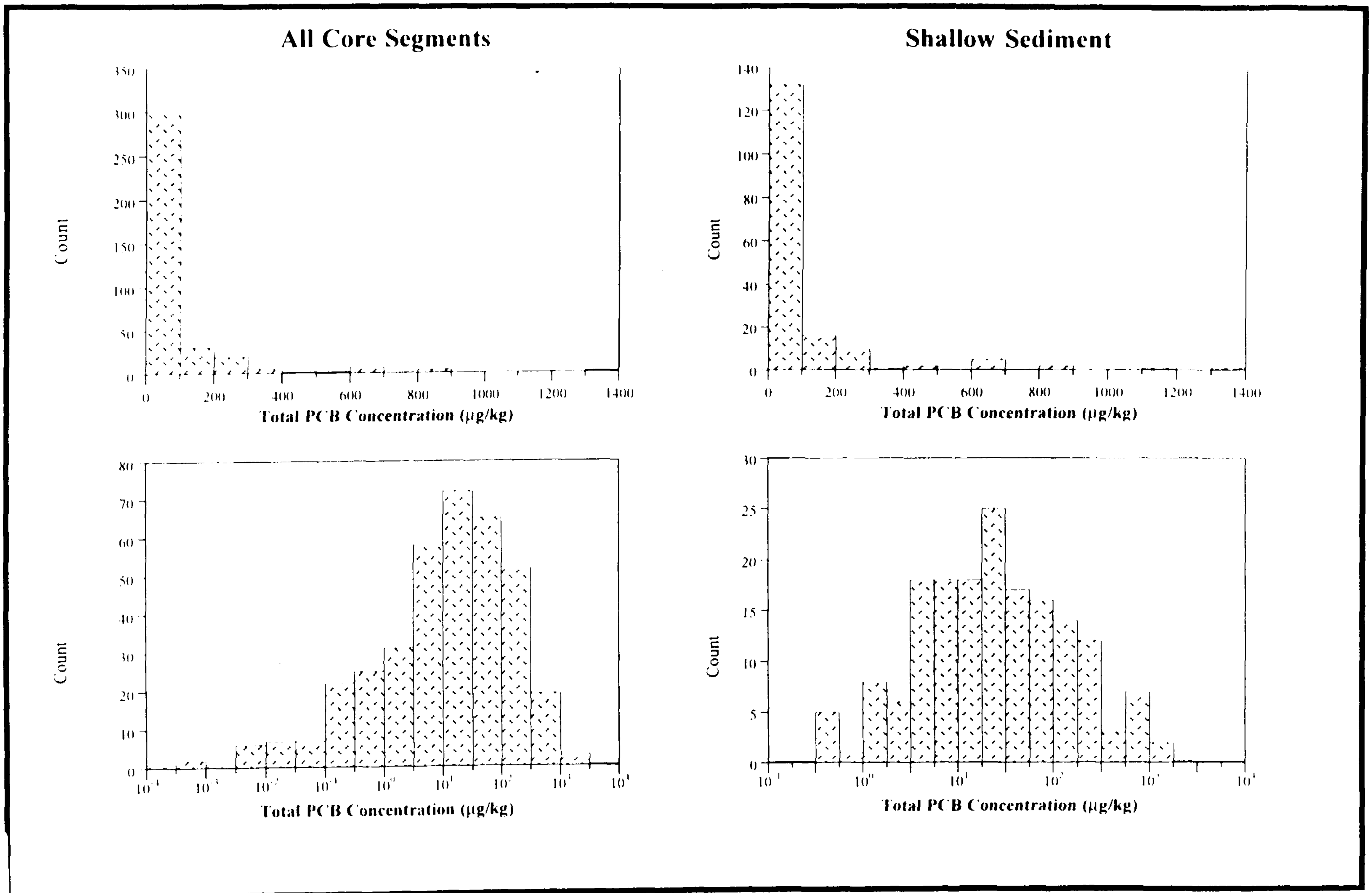
Notes:
1. TOC/TKN sample frequency at 7%.
2. Grain size distribution analysis based on the ASTM technique were performed at least once per core for approximately 68% of the cores collected.
3. The segment thicknesses shown are median values for four segment cores.

Legend:
TOC - Total Organic Carbon Analysis
TKN - Total Kjeldahl Nitrogen Analysis

Source: TAMS/Gradient Database, Release 3 5

TAMS

Figure 2-3
Low Resolution Sediment Core Preparation

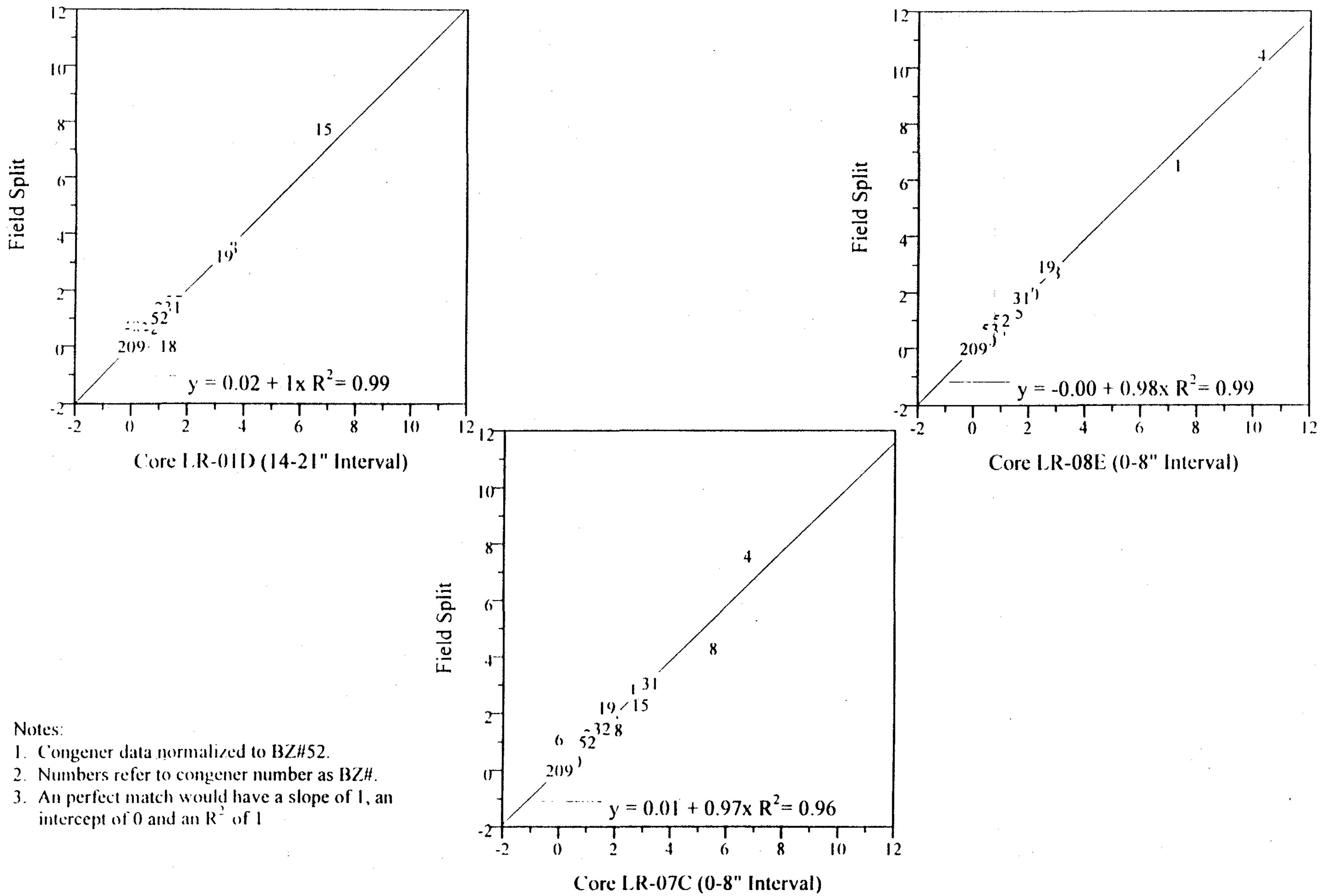


Source: TAMS/Gradient Database, Release 3.5

TAMS

300405

Figure 2-4
Distribution of Total PCB Concentrations in Low Resolution Sediment Core Samples

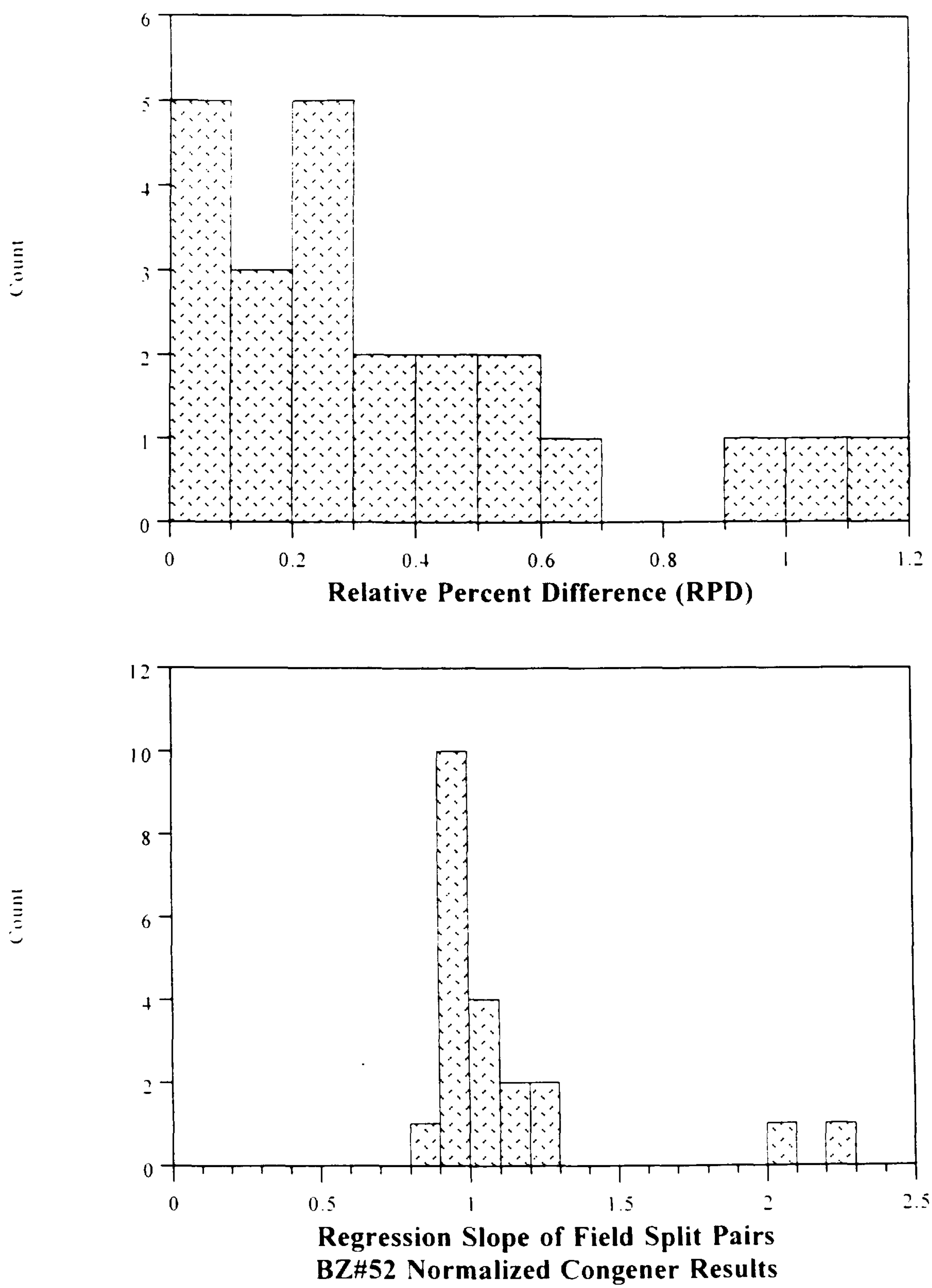


Notes:
1. Congener data normalized to BZ#52.
2. Numbers refer to congener number as BZ#.
3. An perfect match would have a slope of 1, an intercept of 0 and an R^2 of 1

Source: TAMS/Gradient Database, Release 3.5

TAMS

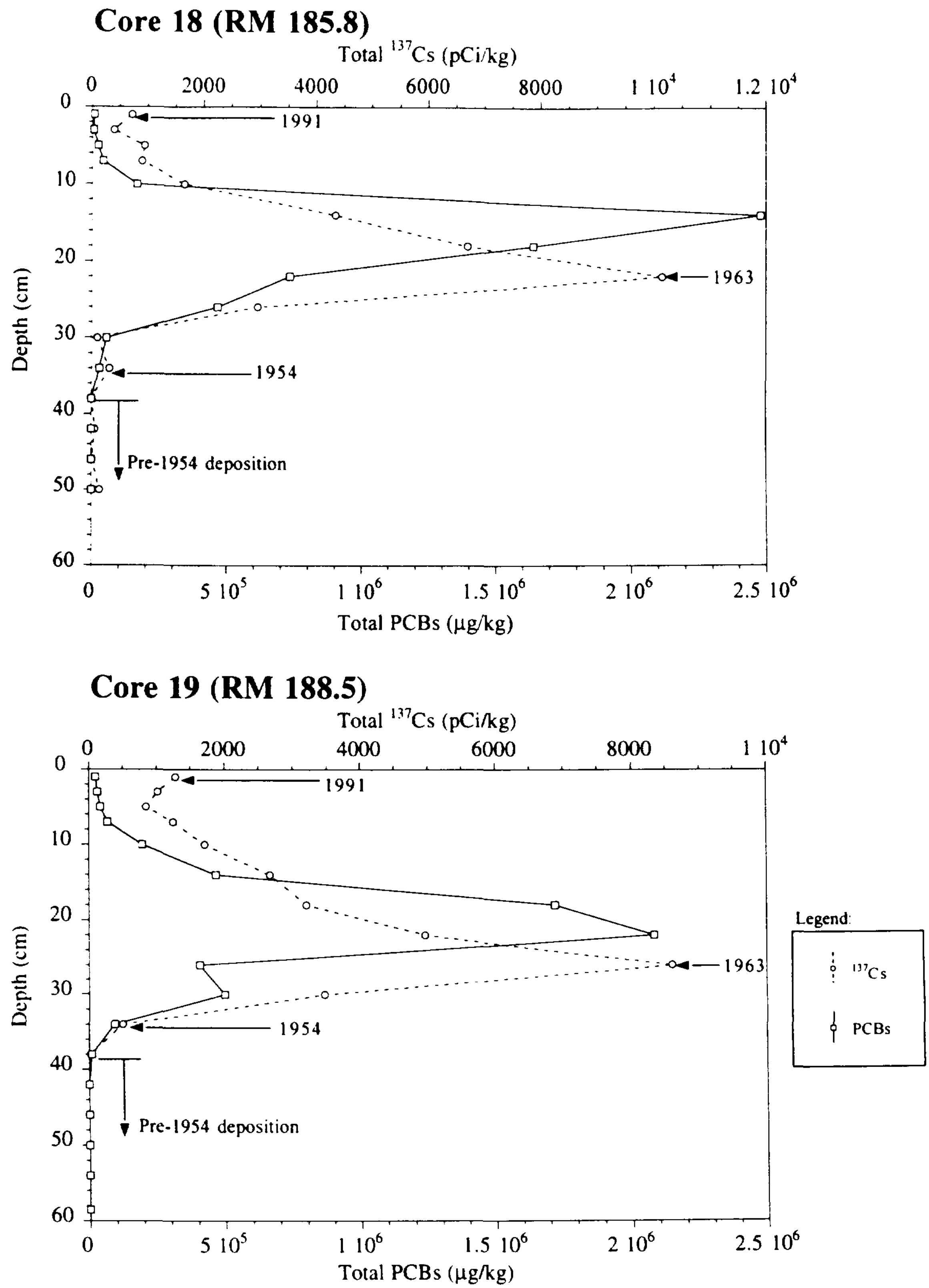
Figure 2-5
Example Regressions for Low Resolution Sediment Core Field Split Pairs



Source: LAMS Gradient Database, Release 3.5

TAMS

Figure 2-6
Precision in Total PCB Concentration for Low Resolution Core Field Splits

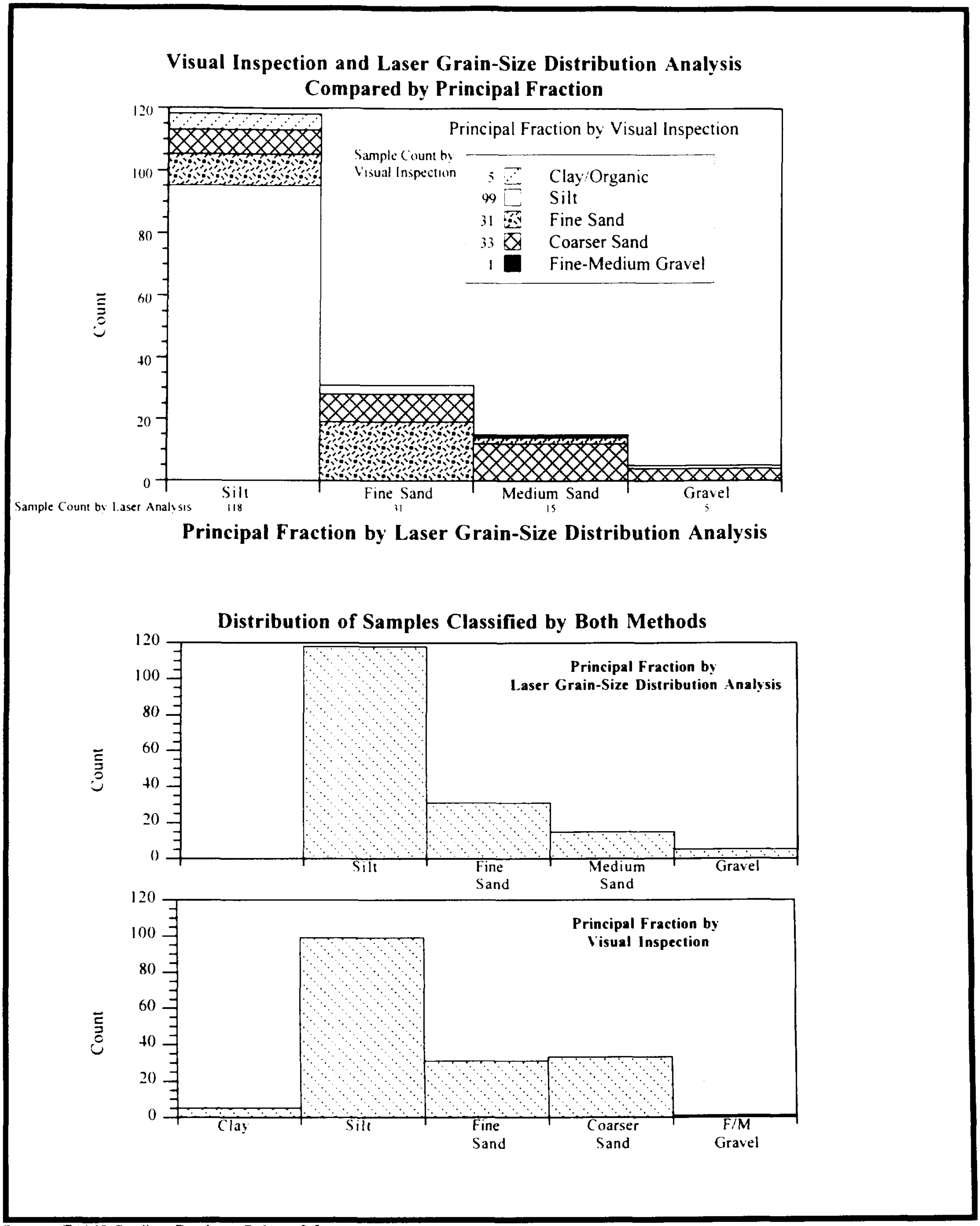


Source: TAMS/Gradient Database, Release 3.5

TAMS

300408

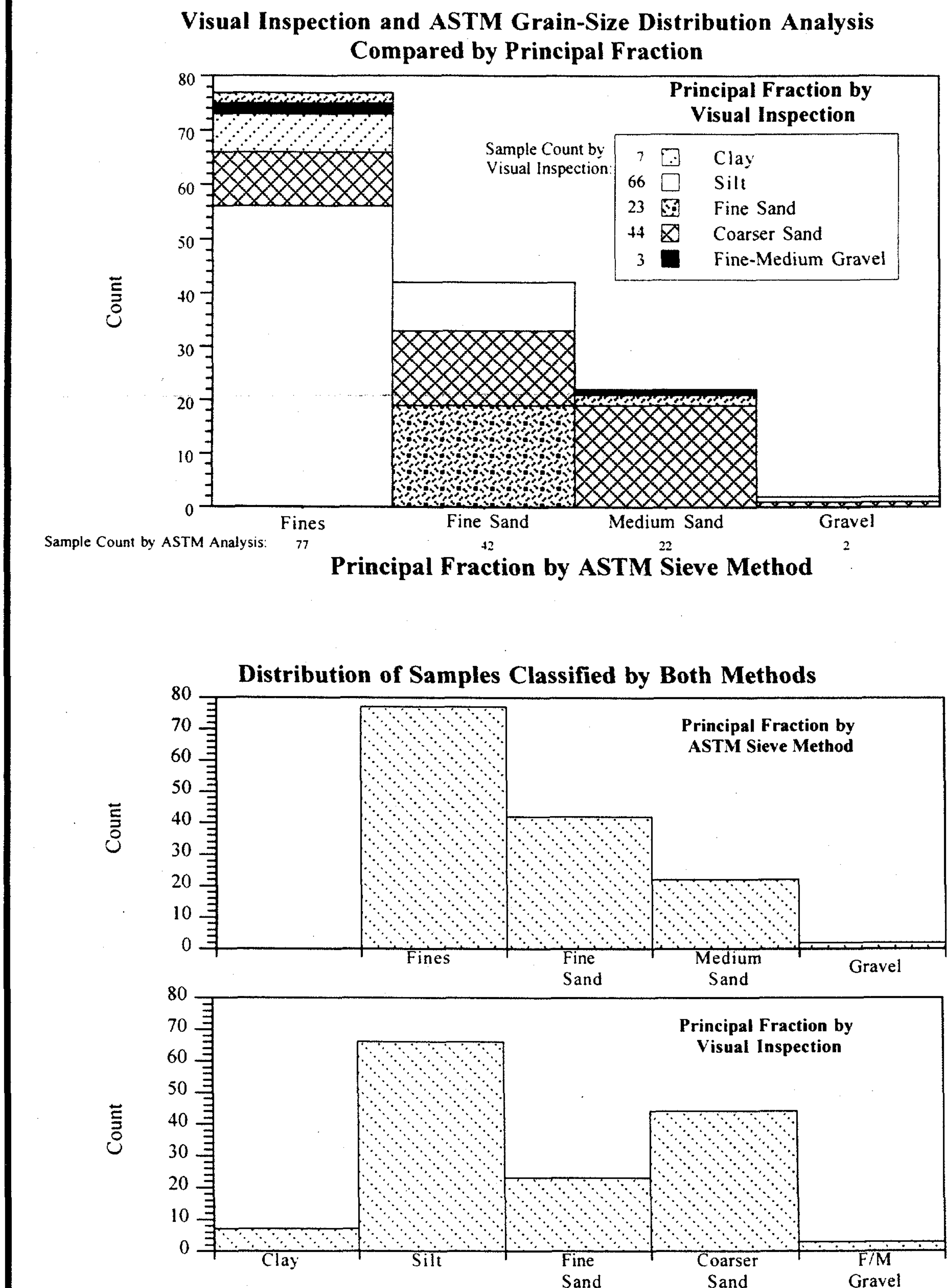
Figure 2-7
High Resolution Sediment Core Profiles in the Upper Hudson: Examples of the Coincidence of ^{137}Cs and PCBs Over Time



Source: TAMS/Gradient Database, Release 3.5

TAMS

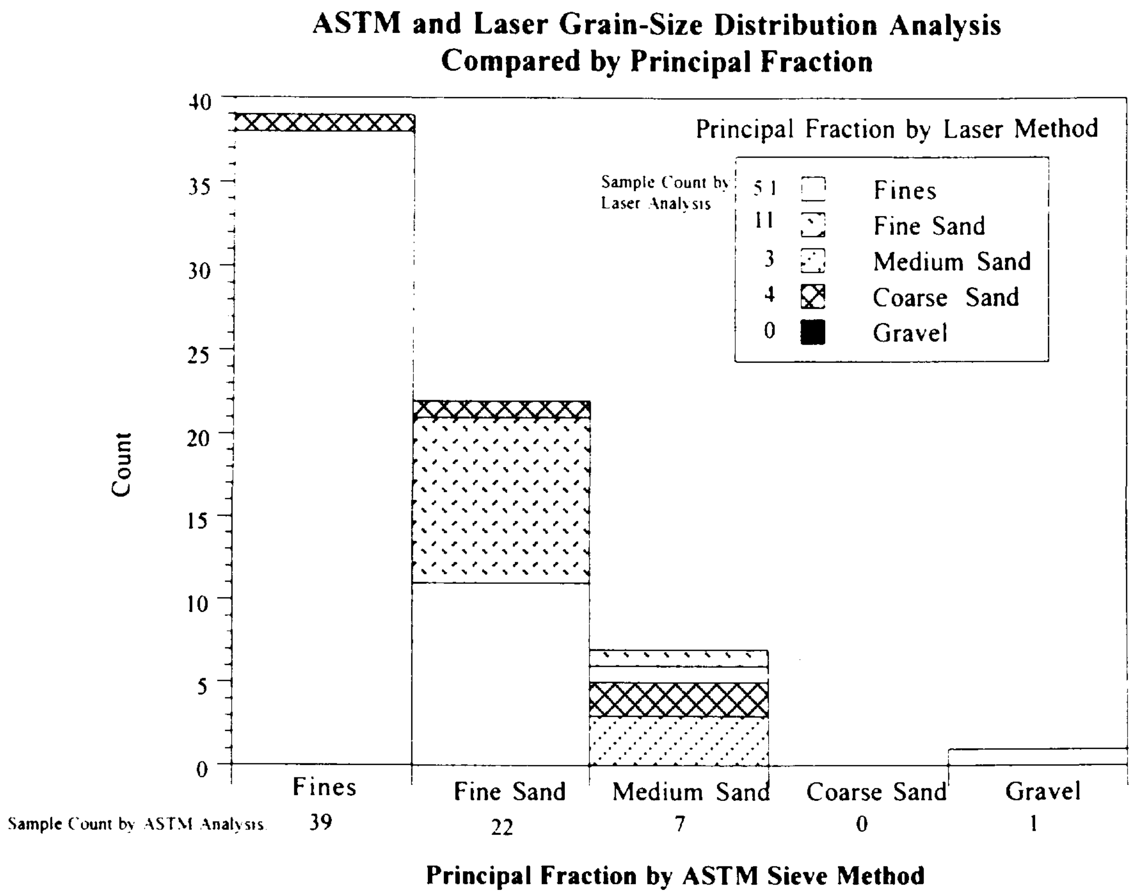
Figure 2-8
Classification of Shallow Sediment Samples
Comparison of Visual Inspection and Laser Grain-Size Analytical Technique

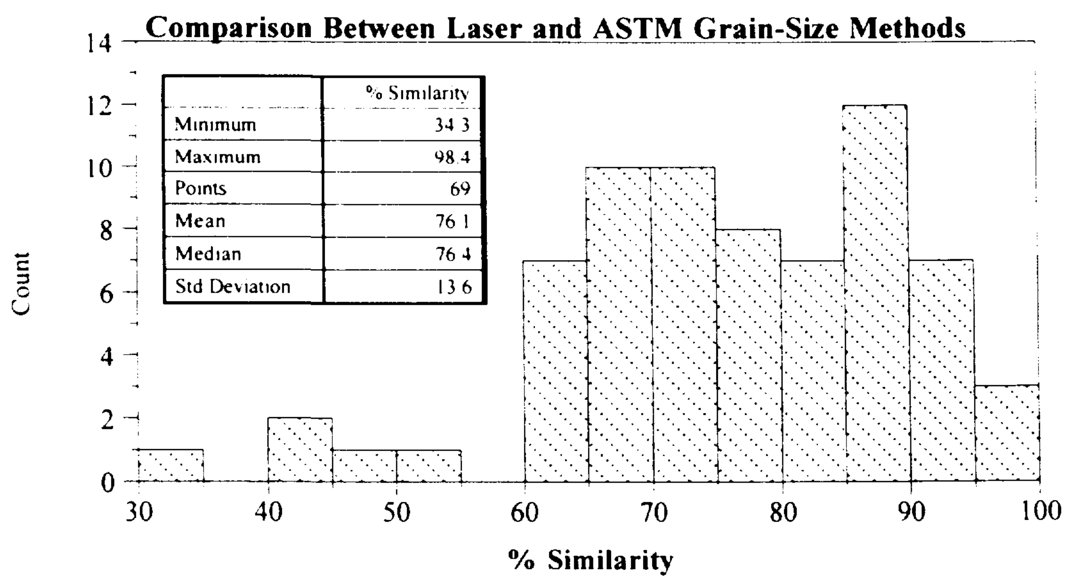


Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 2-9
Classification of Sediment Samples
Comparison of Visual Inspection and ASTM Grain-Size Analytical Techniques

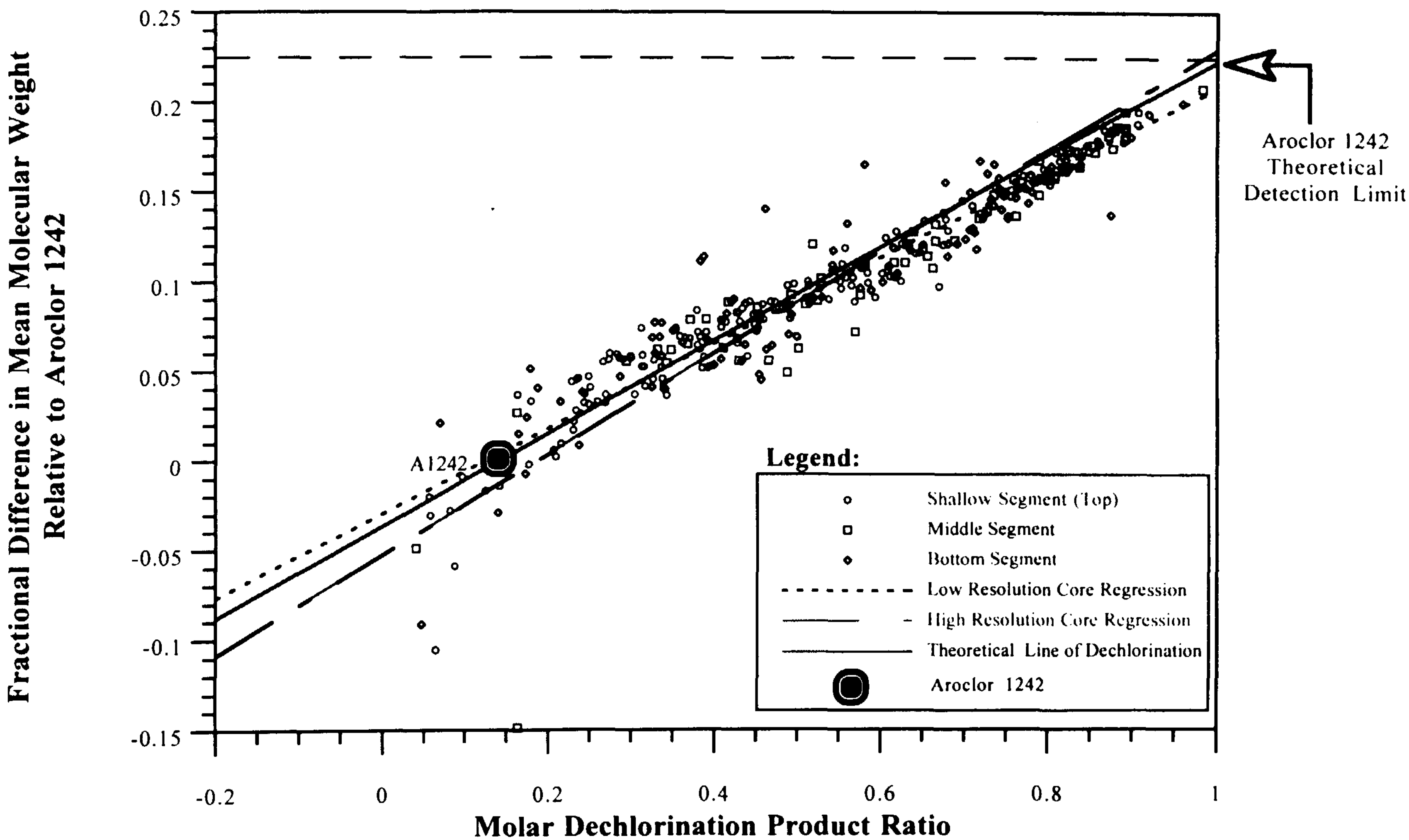




Source: TAMS/Gradient Database. Release 3.5

TAMS

Figure 2-10
Classification of Sediment Samples
Comparison of Grain-Size Analytical Techniques (ASTM and Laser Methods)

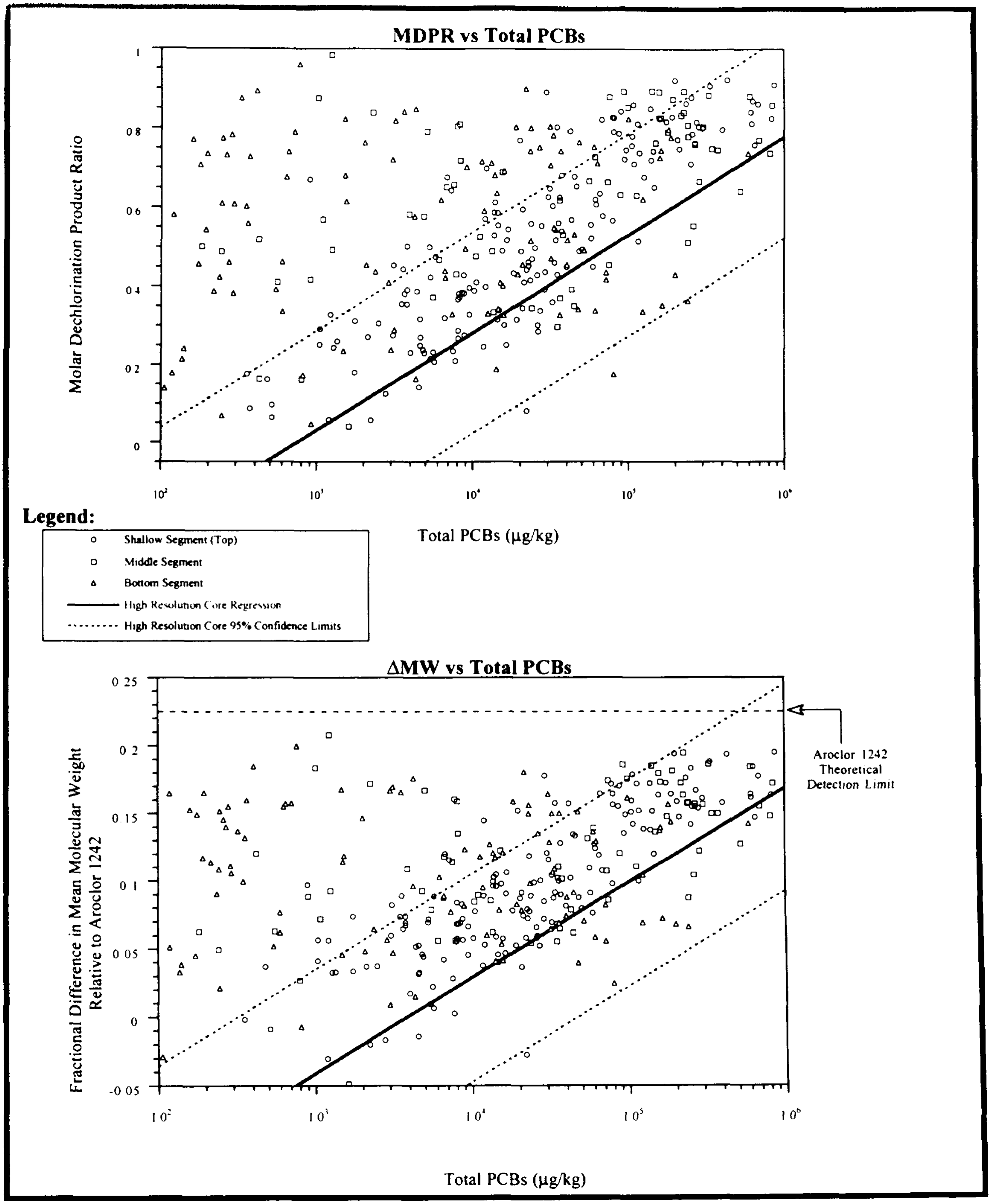


Notes:
1. Plot excludes sediment samples less than 100 µg/kg (ppb).
2. The High Resolution regression line is ΔMW = -0.0523+ 0.282*MDPR R^2= 0.94. The Low Resolution regression line is ΔMW = -0.0295+ 0.238*MDPR R^2= 0.90.

Source: TAMS/Gradient Database, Release 3.5

TAMS

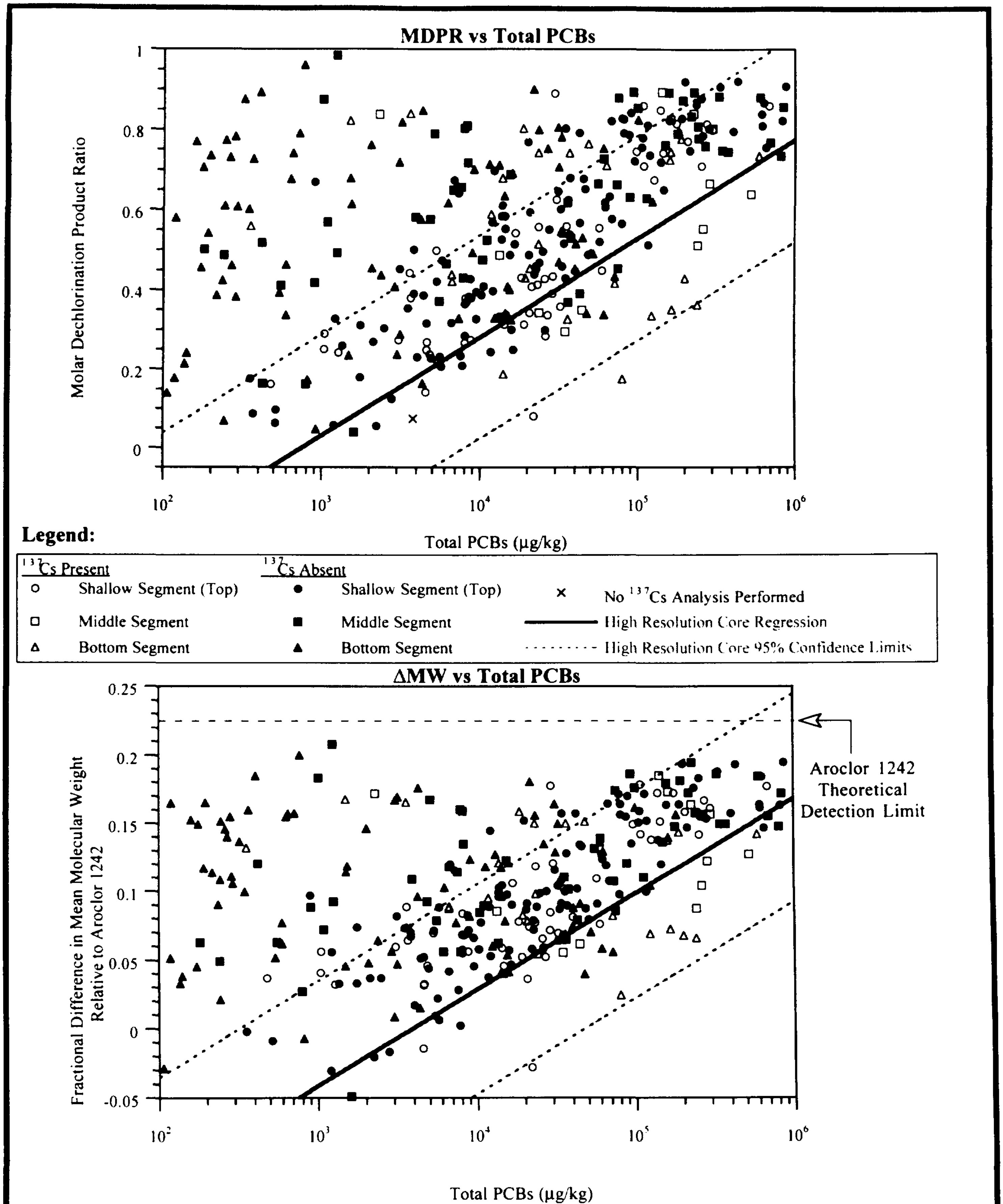
Figure 3-1
Molar Dechlorination Product Ratio vs Fractional Difference in Mean Molecular Weight Relative to Aroclor 1242 for All Low Resolution Sediment Core Results



Source: TAMS/Gradient Database, Release 3.5

TAMS

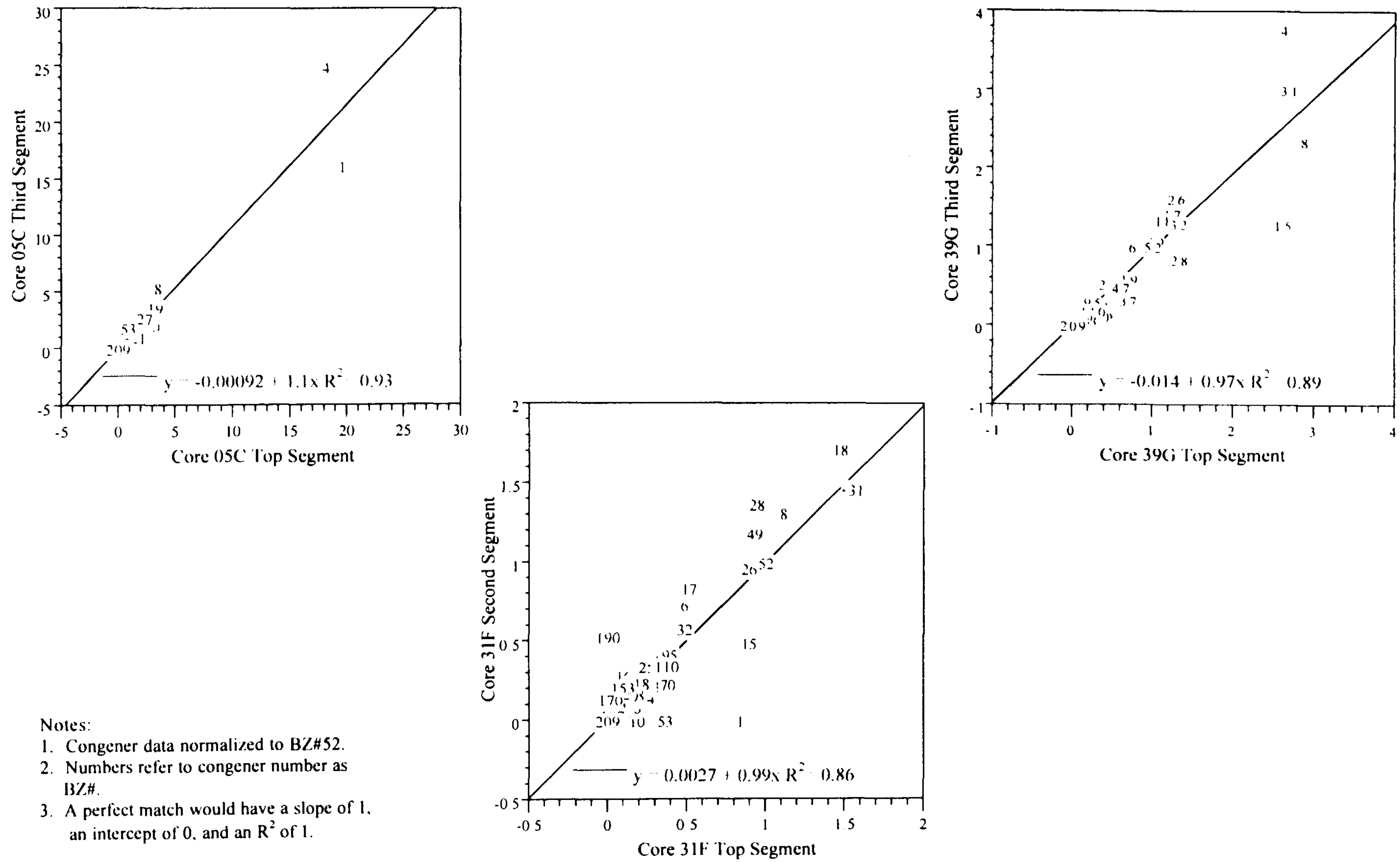
Figure 3-2
Total PCB Concentration vs Molar Dechlorination Product Ratio and Fractional Difference om Mean Molecular Weight Relative to Aroclor 1242



Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-3
Total PCB Concentration vs MDPR and Δ MW
Showing Cores with and without ^{137}Cs Present



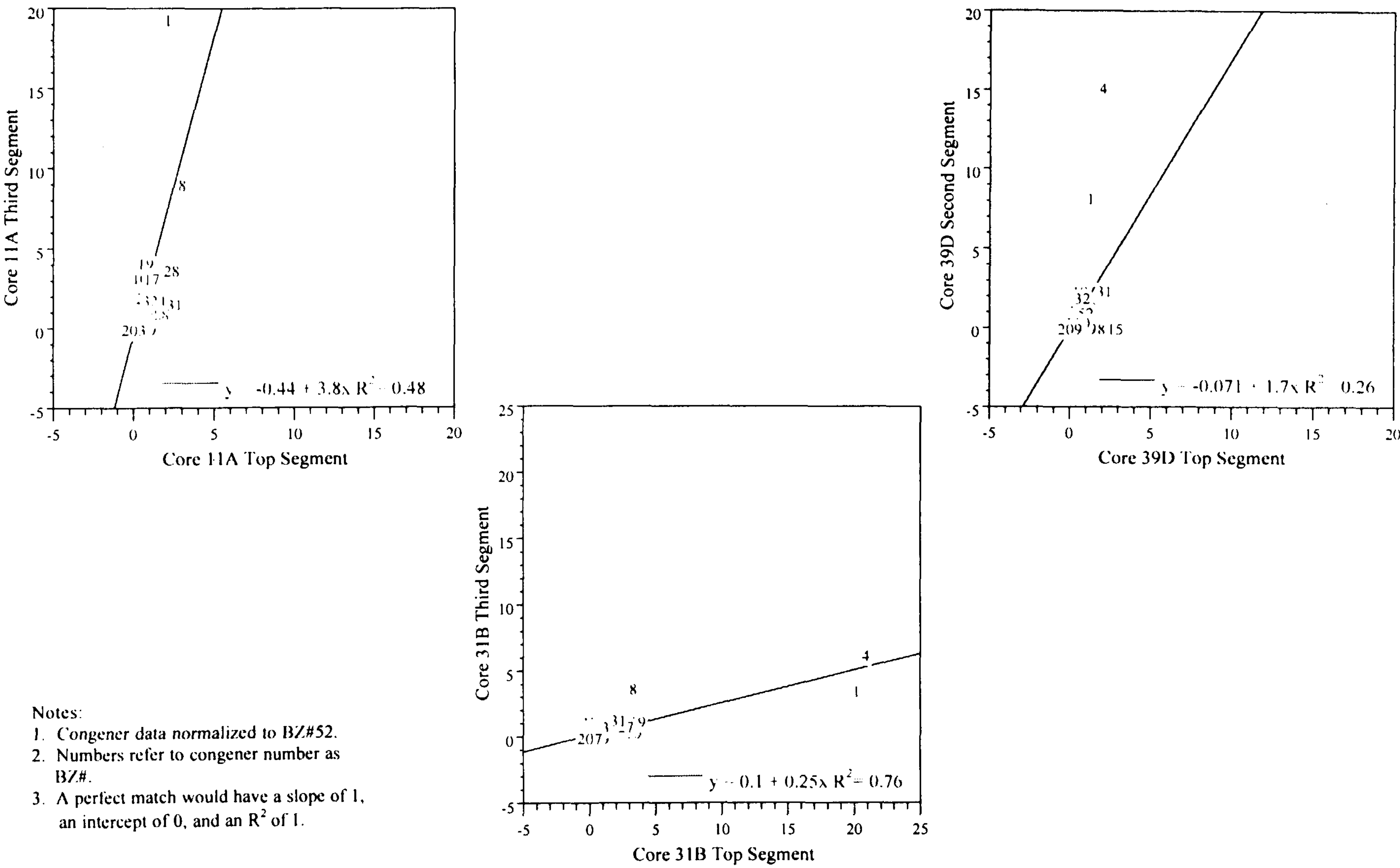
Notes:

1. Congener data normalized to BZ#52.
2. Numbers refer to congener number as BZ#.
3. A perfect match would have a slope of 1, an intercept of 0, and an R^2 of 1.

Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-4
Congener Pattern Comparison Between Upper and Lower Segments on Potentially Cross-Contaminated Cores



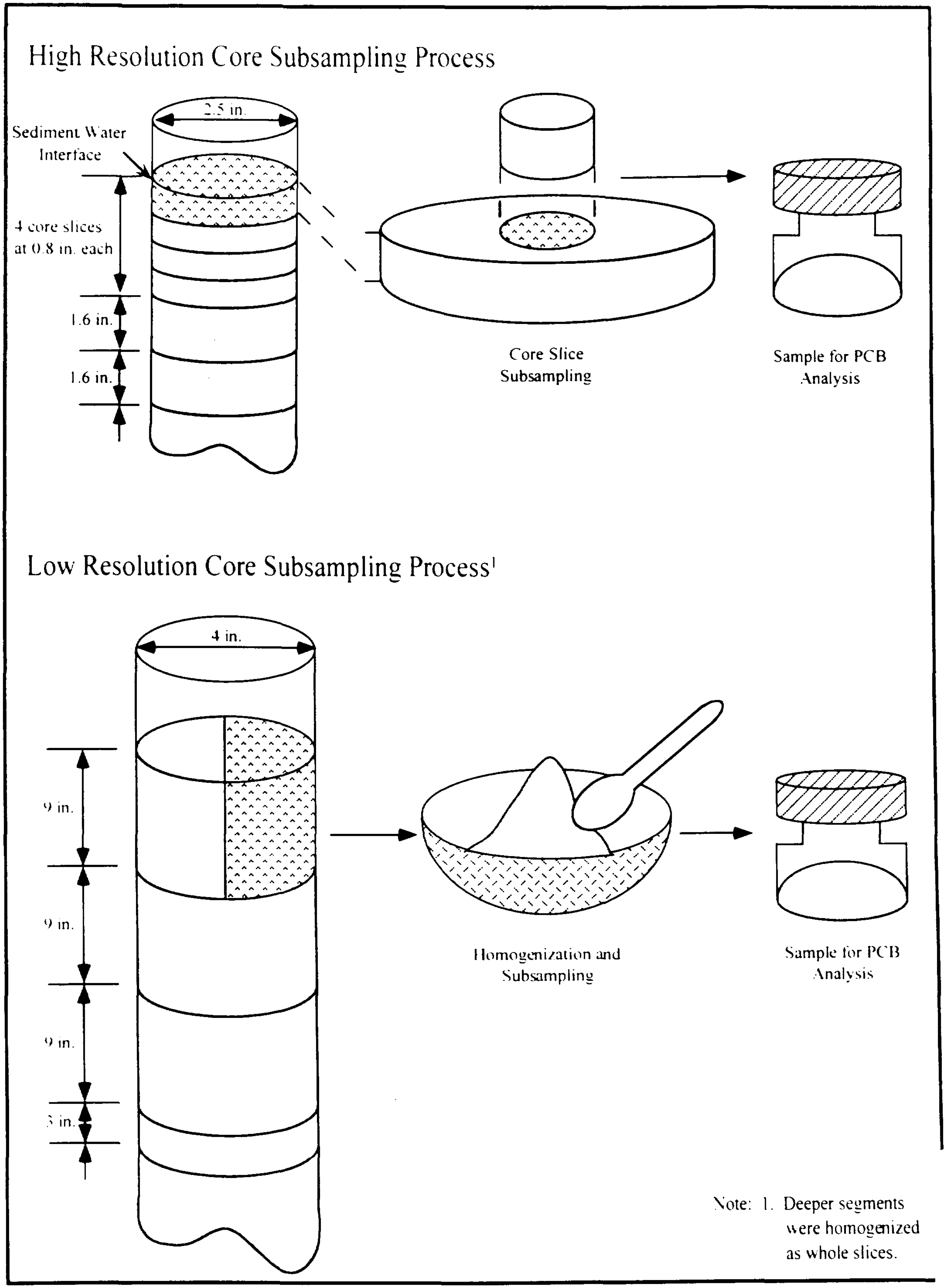
Notes:
1. Congener data normalized to BZ#52.
2. Numbers refer to congener number as BZ#.
3. A perfect match would have a slope of 1, an intercept of 0, and an R^2 of 1.

Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-5
Congener Pattern Comparison Between Upper and Lower Segments on Cores without Cross-Contamination

300416

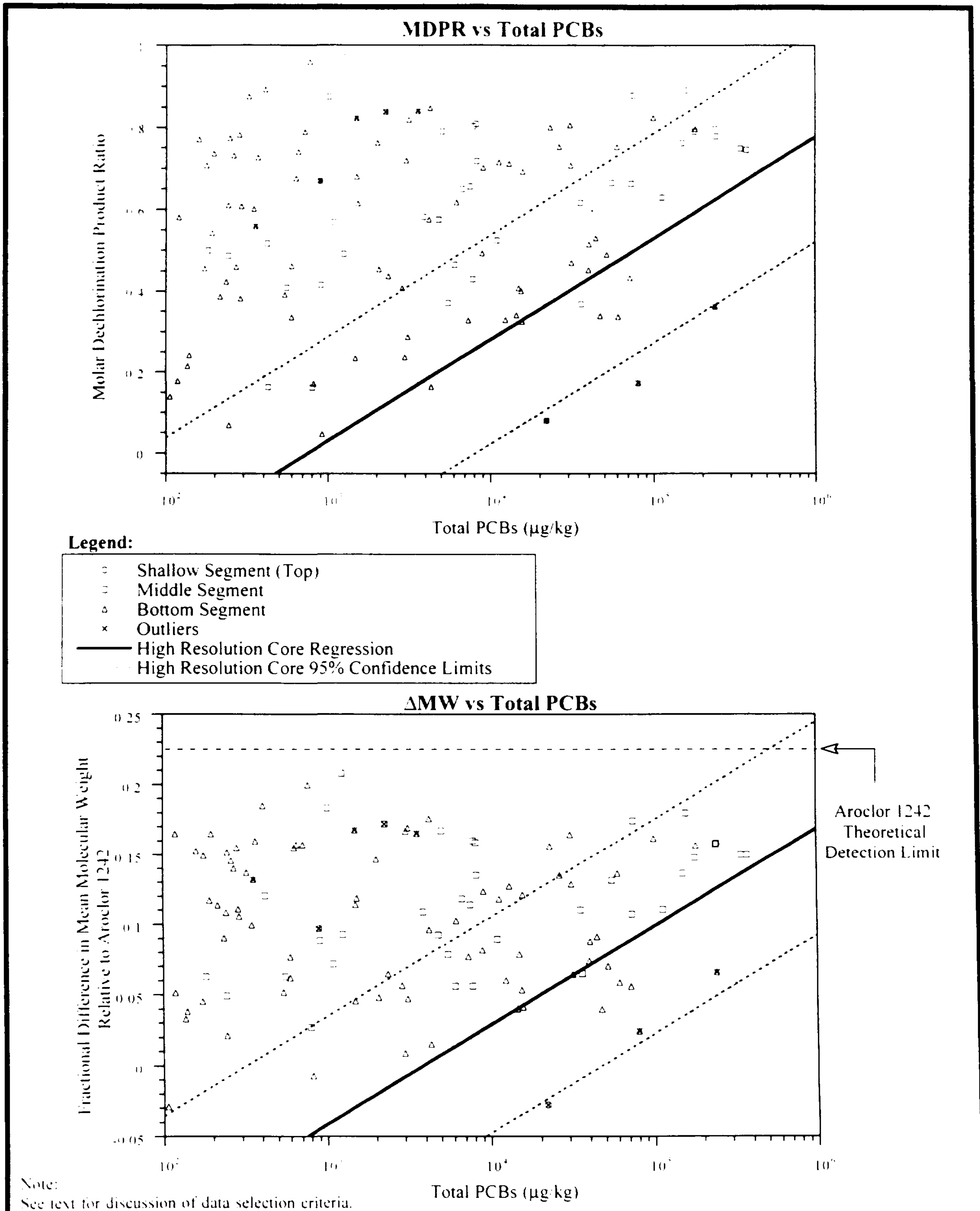


Source: TAMS Gradient Database, Release 3.5

TAMS

Figure 3-6
Comparison of the Low Resolution Core and High Resolution Core Subsampling Processes

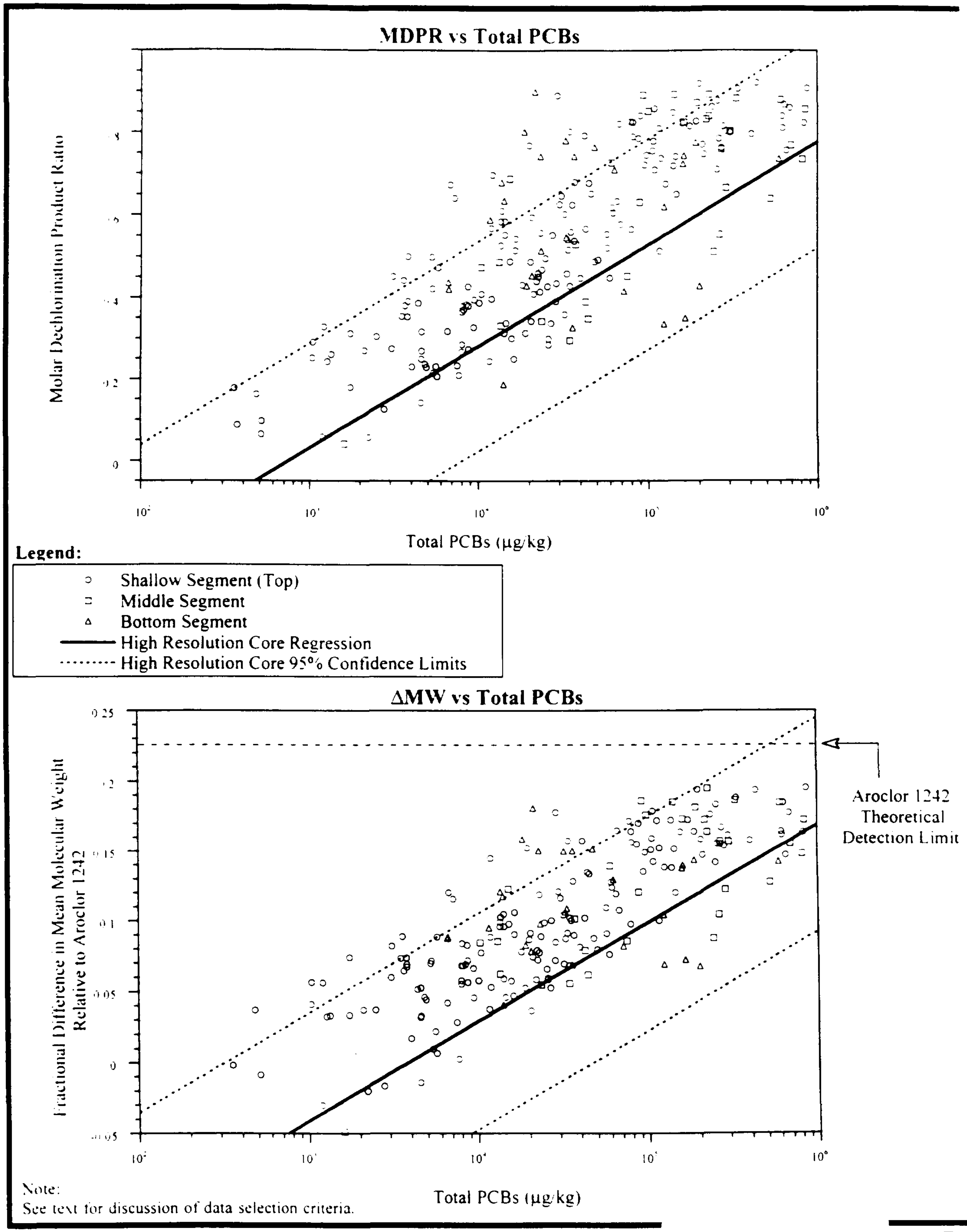
300417



Source: TAMS Gradient Database, Release 3.5

TAMS

Figure 3-7
Sample Points Excluded as a Result of the Selection Criteria

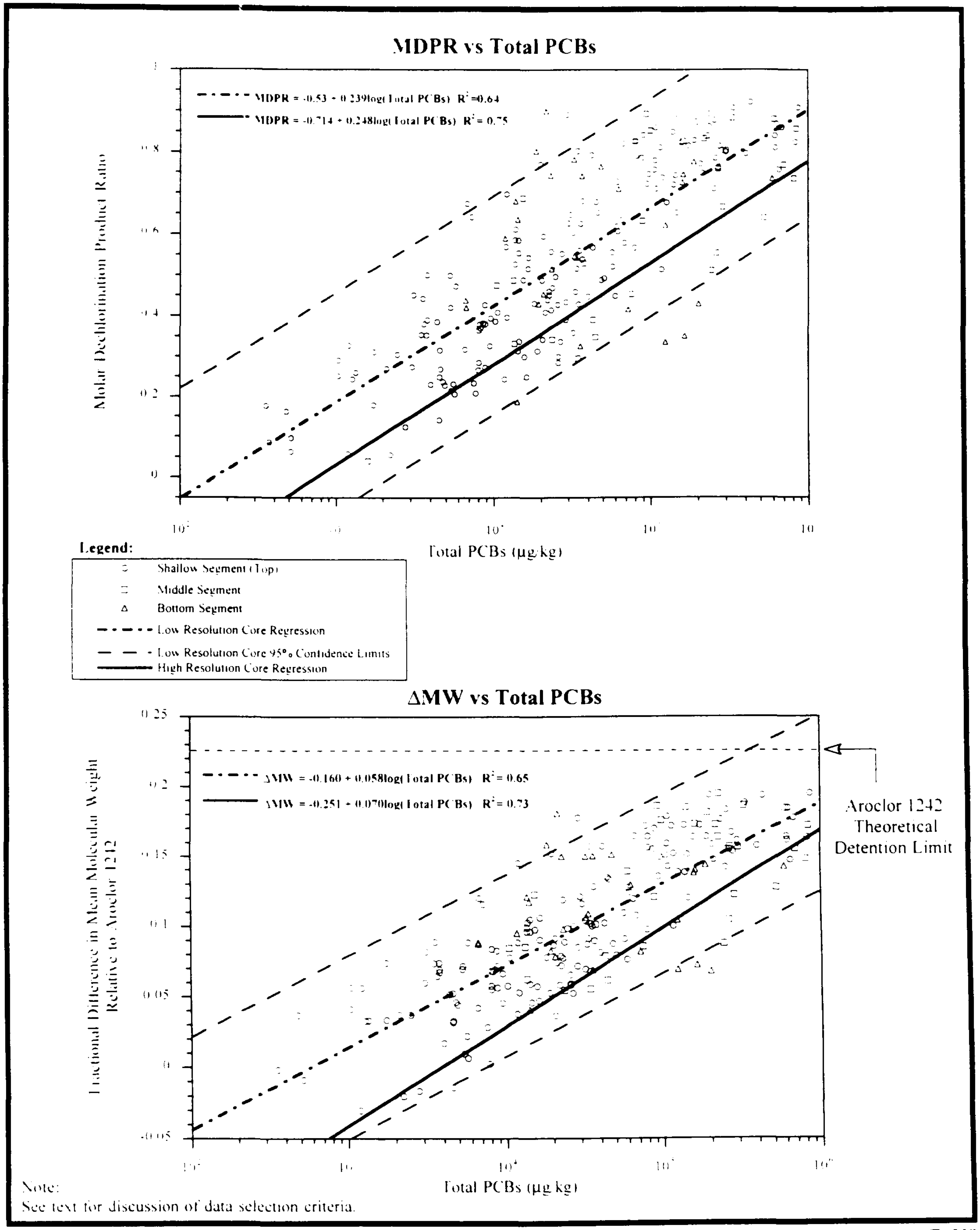


Source: TAMS/Gradient Database, Release 3.5

TA

300419

Figure 3-8
Examination of the Relationship of MDPR and ΔMW to Total PCBs for Selected Low Resolution Sediment Core Results

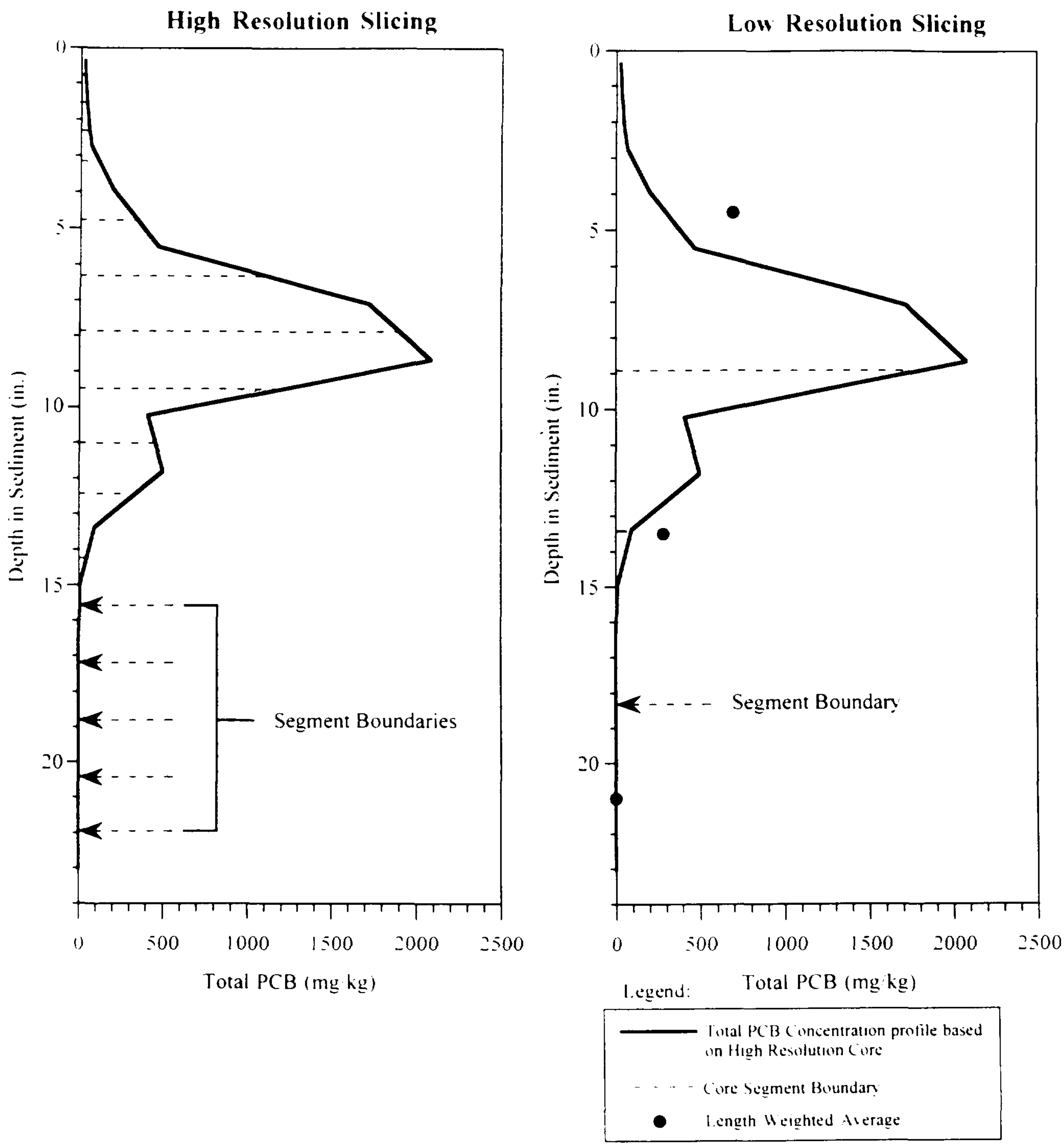


Source: TAMS Gradient Database, Release 3.5

TAMS

Figure 3-9

Comparison of Low Resolution Core and High Resolution Core Regressions for MDPR and ΔMW vs Total PCBs



High Resolution Core Samples[1]	MDPR	ΔMW	Total PCBs (ppm)
Minimum	0.0000	-0.0916	0.01
Maximum	0.9156	0.2074	2082.93

Length Weighted Averages	MDPR	ΔMW	Total PCBs (ppm)
0-9"	0.8799	0.1860	693
9-18"	0.9002	0.1922	282
>18"	0.0000	-0.0568	0.02
Full Core	0.8828	0.1871	512

Note:
1. ^{7}Cs Bearing slices only

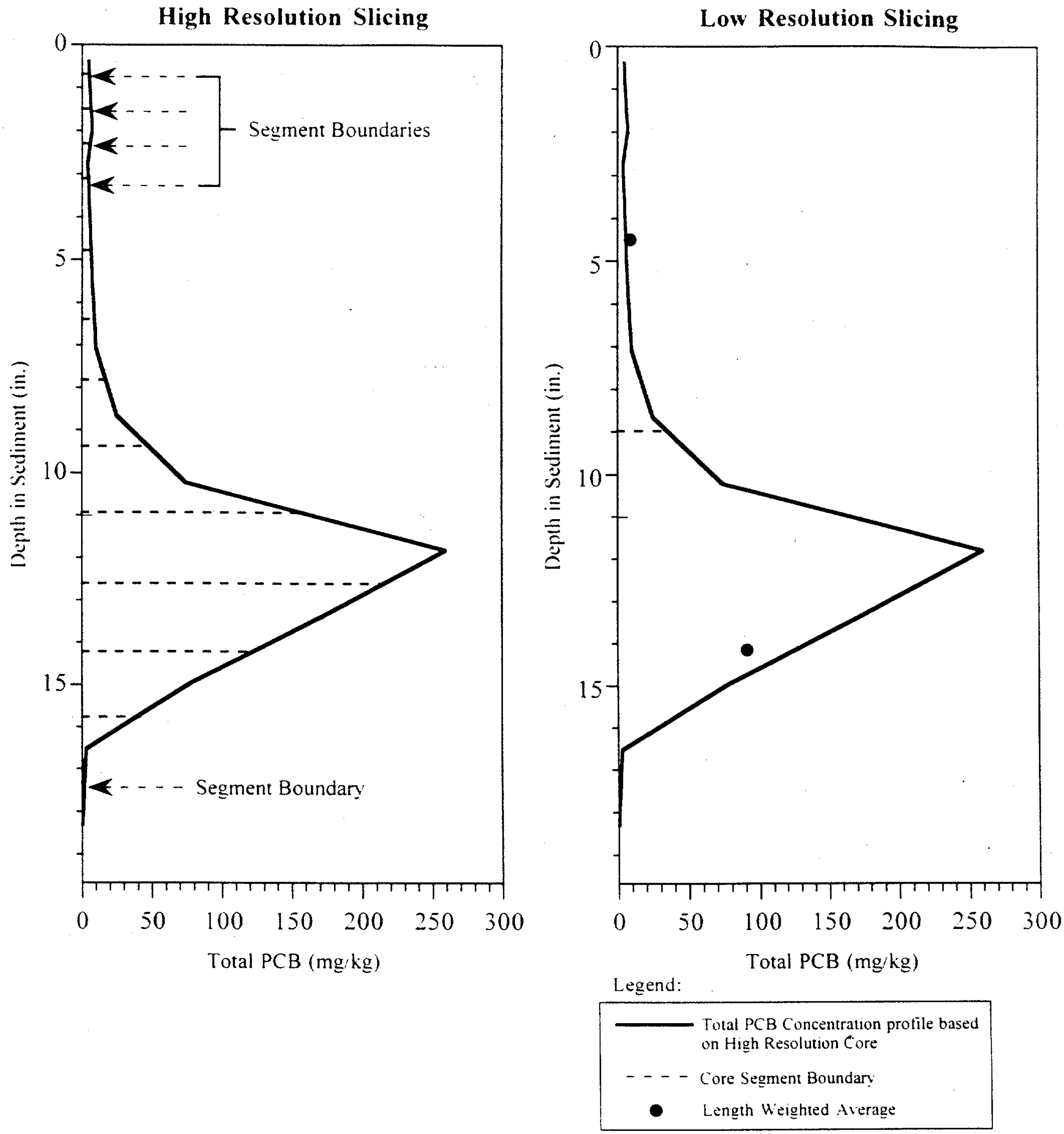
Source: TAMS Gradient Database, Release 3.5

TAMS

Figure 3-10

300421

Comparison of the Low Resolution Core and High Resolution Core Slicing Techniques on Measured Sample Values for High Resolution Core 19



High Resolution Core Samples[1]	MDPR	ΔMW	Total PCBs (ppm)
Minimum	0.0000	-0.3551	0.27
Maximum	0.8682	0.1945	259.70

Length Weighted Averages	MDPR	ΔMW	Total PCBs (ppm)
0-9"	0.8799	0.0219	9.2
>9"	0.9002	0.1723	91
Full Core	0.7325	0.1639	66

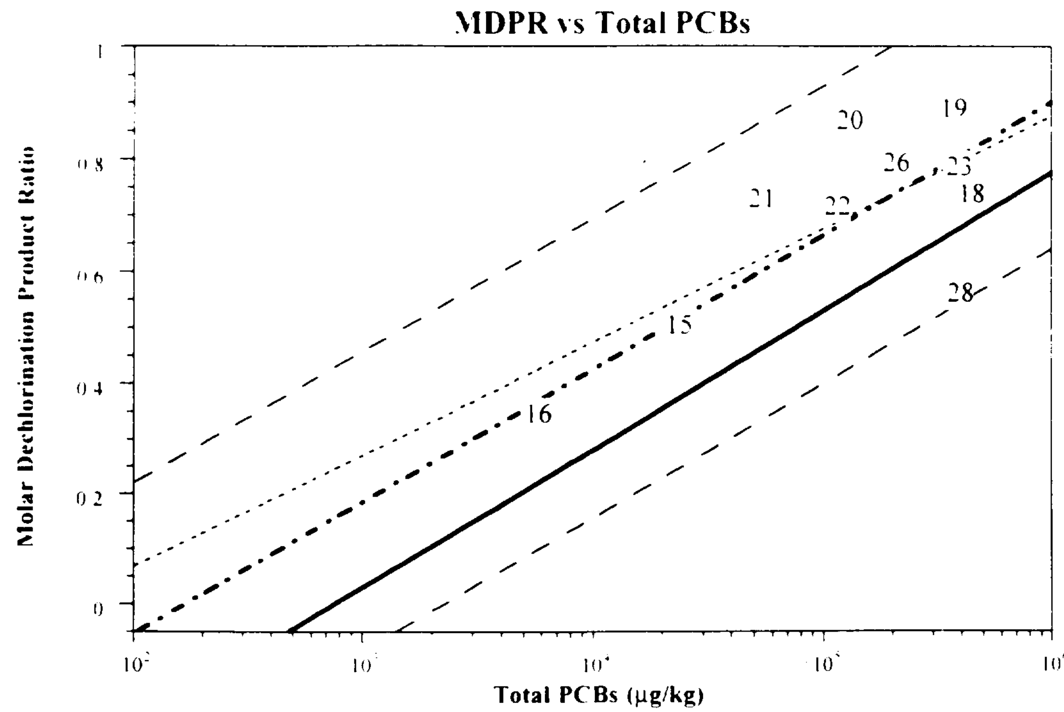
Note:
1. ^{137}Cs Bearing slices only

Source: TAMS/Gradient Database, Release 3.5

TAMS

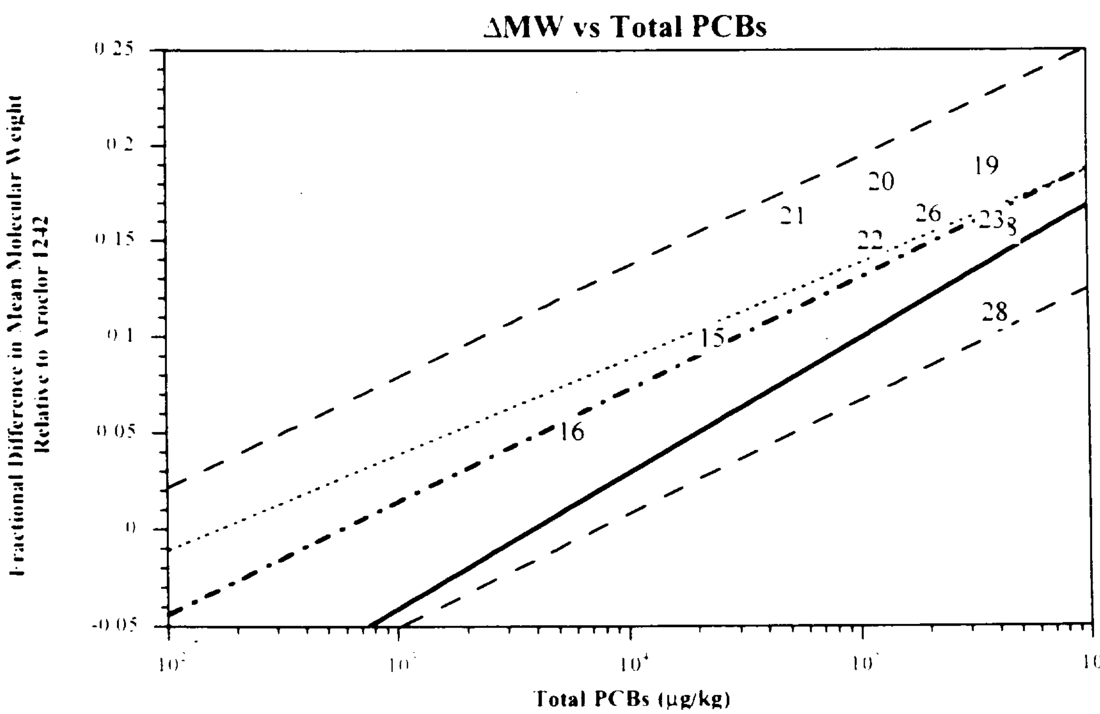
300422

Figure 3-11
Comparison of the Low Resolution Core and High Resolution Core Slicing Techniques on Measured Sample Values for High Resolution Core 21



Legend:

- ··· 18 ··· Regression on High Resolution Length Weighted Average Core Values (Number refers to Core No.)
- ——— Original High Resolution Core Regression
- – · – · – Low Resolution Core Regression
- — — — Low Resolution Core 95% Confidence Limits



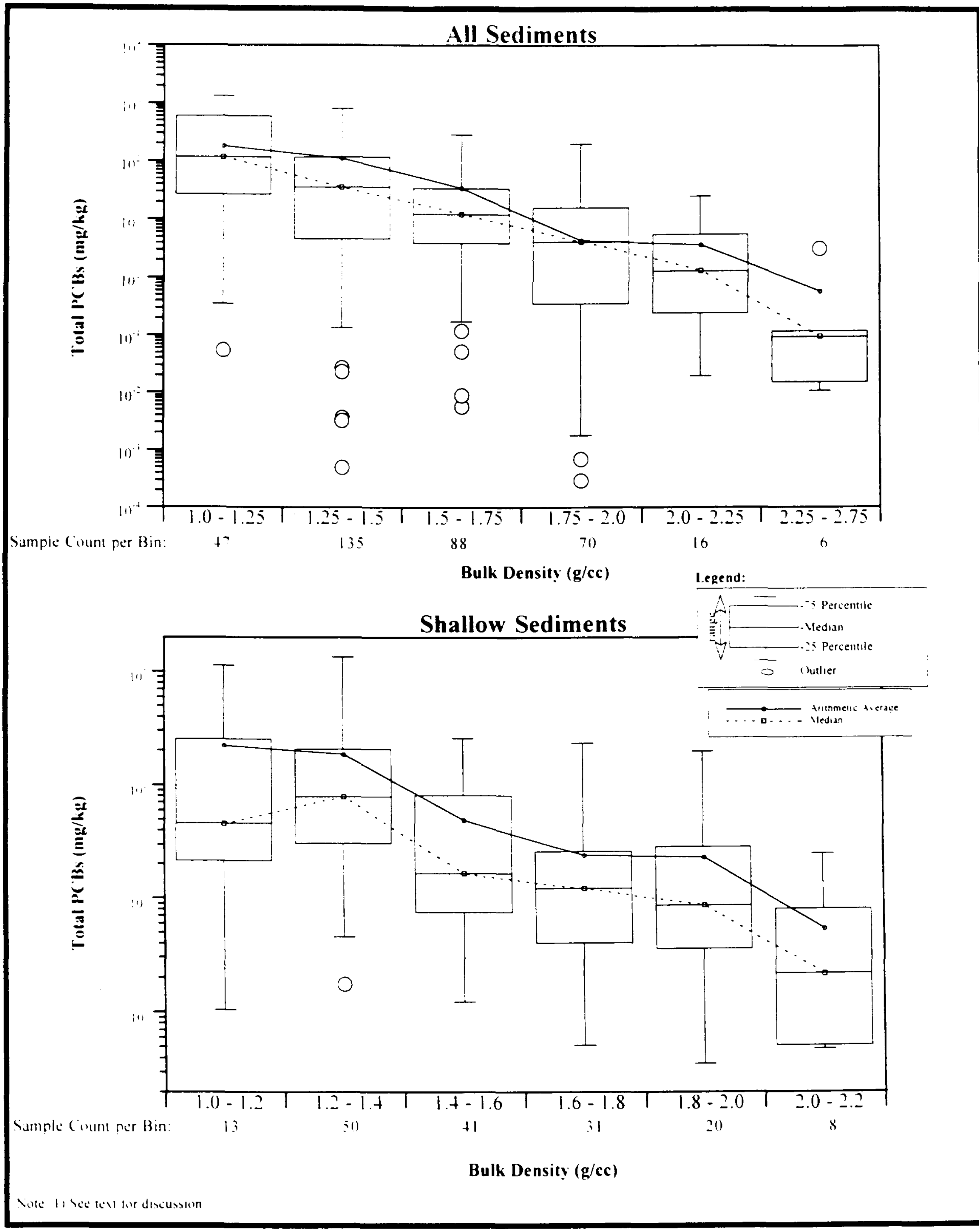
Source: TAMS Gradient Database, Release 3.5

300423

TAMS

Figure 3-12

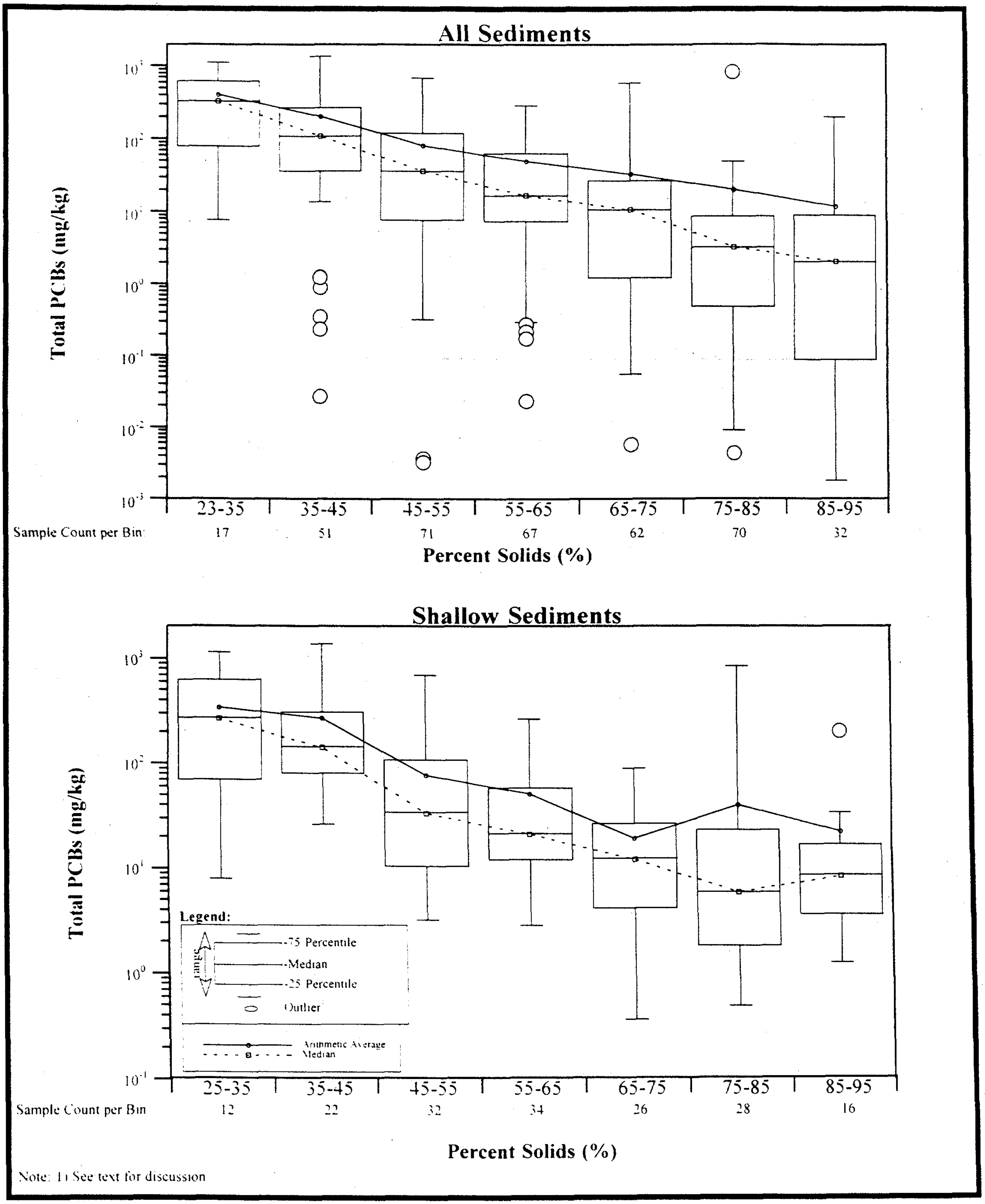
Comparison of Calculated Results for High Resolution Cores with the Low Resolution Core Regression Lines for ΔMW and MDPR vs Total PCBs



Source: TAMS Gradient Database, Release 3.5

TAMS

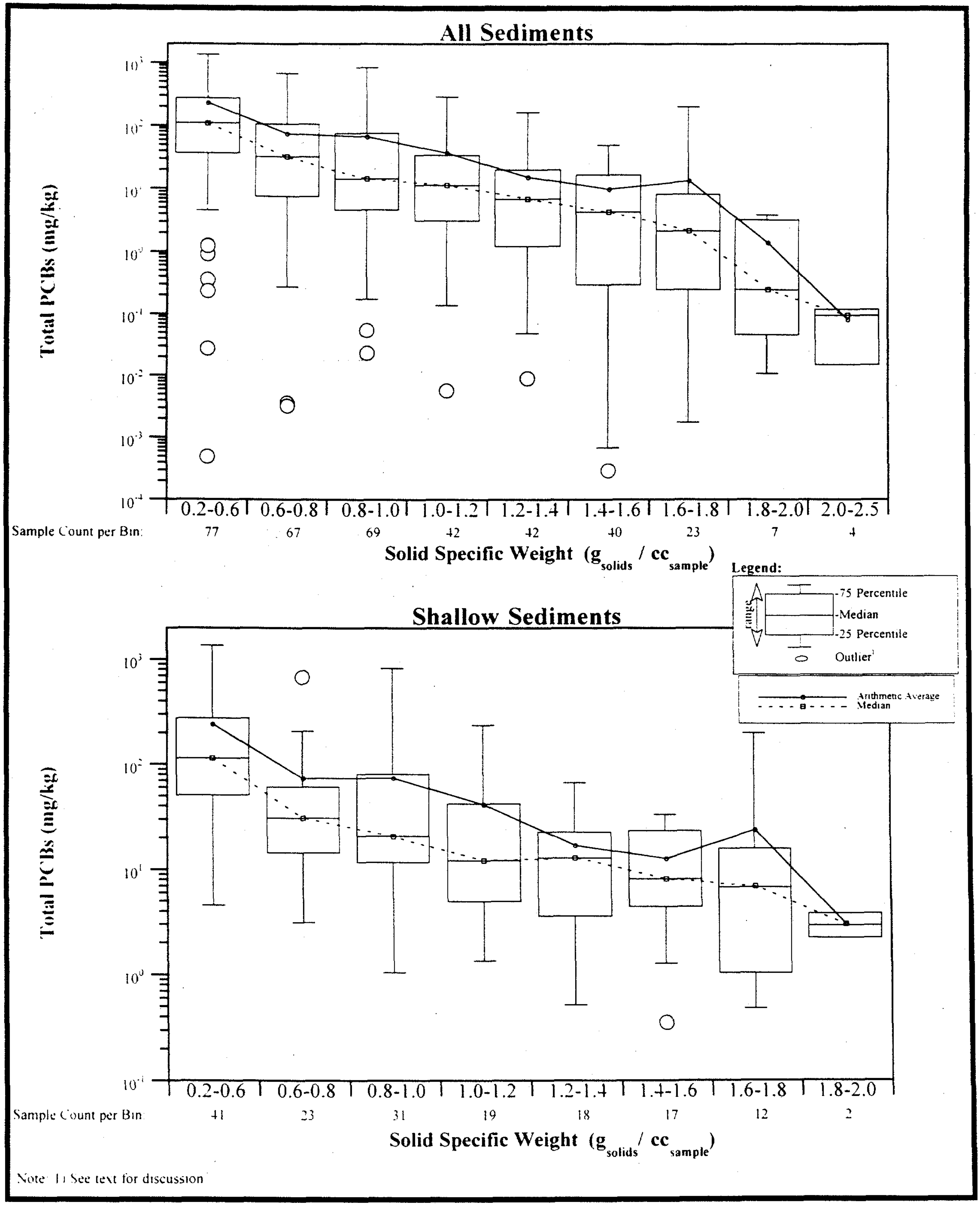
Figure 3-13
Total PCBs Grouped by Bulk Density



Source: TAMS/Gradient Database, Release 3.5

TAMS

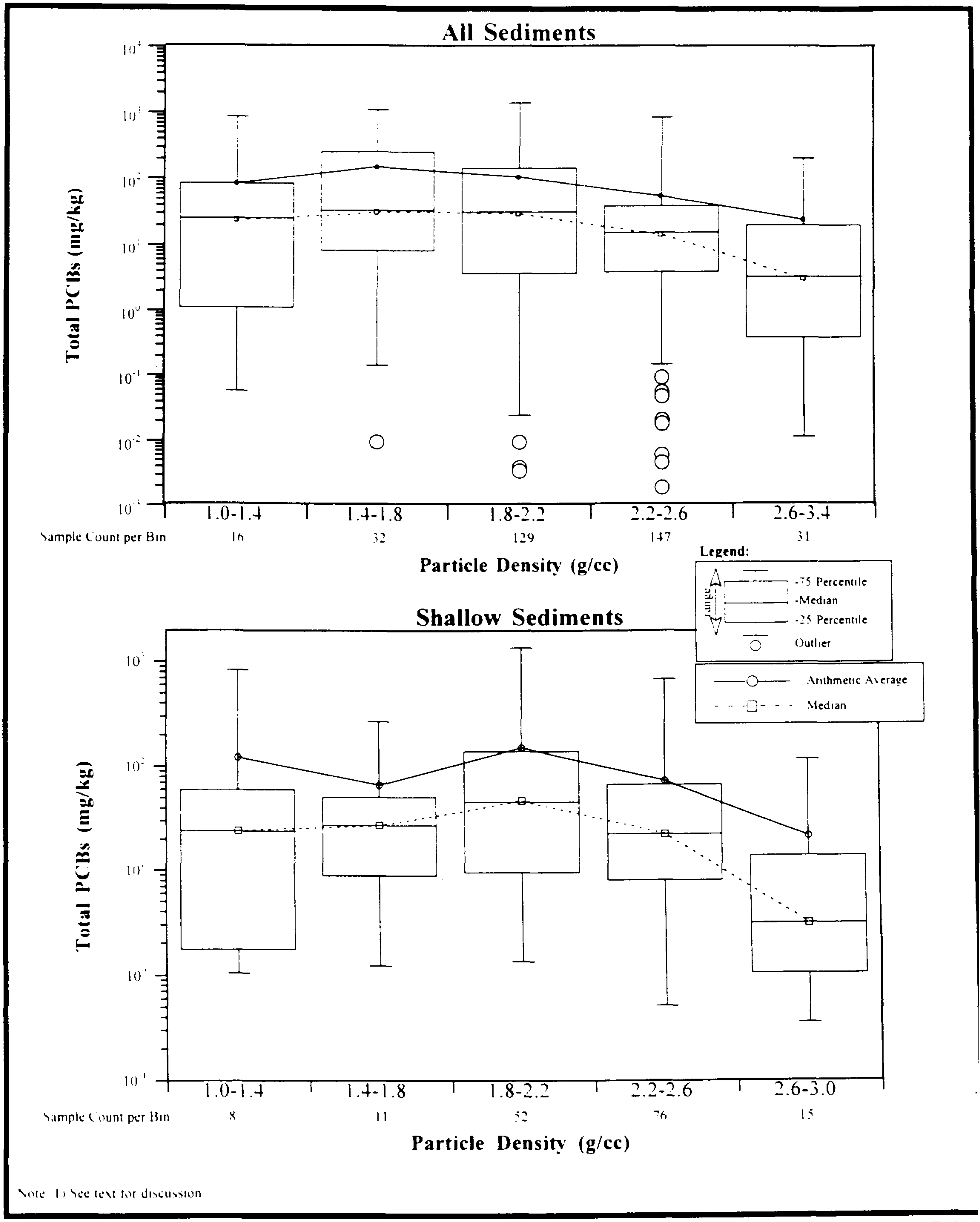
Figure 3-14
Total PCBs Grouped by Percent Solids



Source: TAMS/Gradient Database, Release 3.5

TAMS

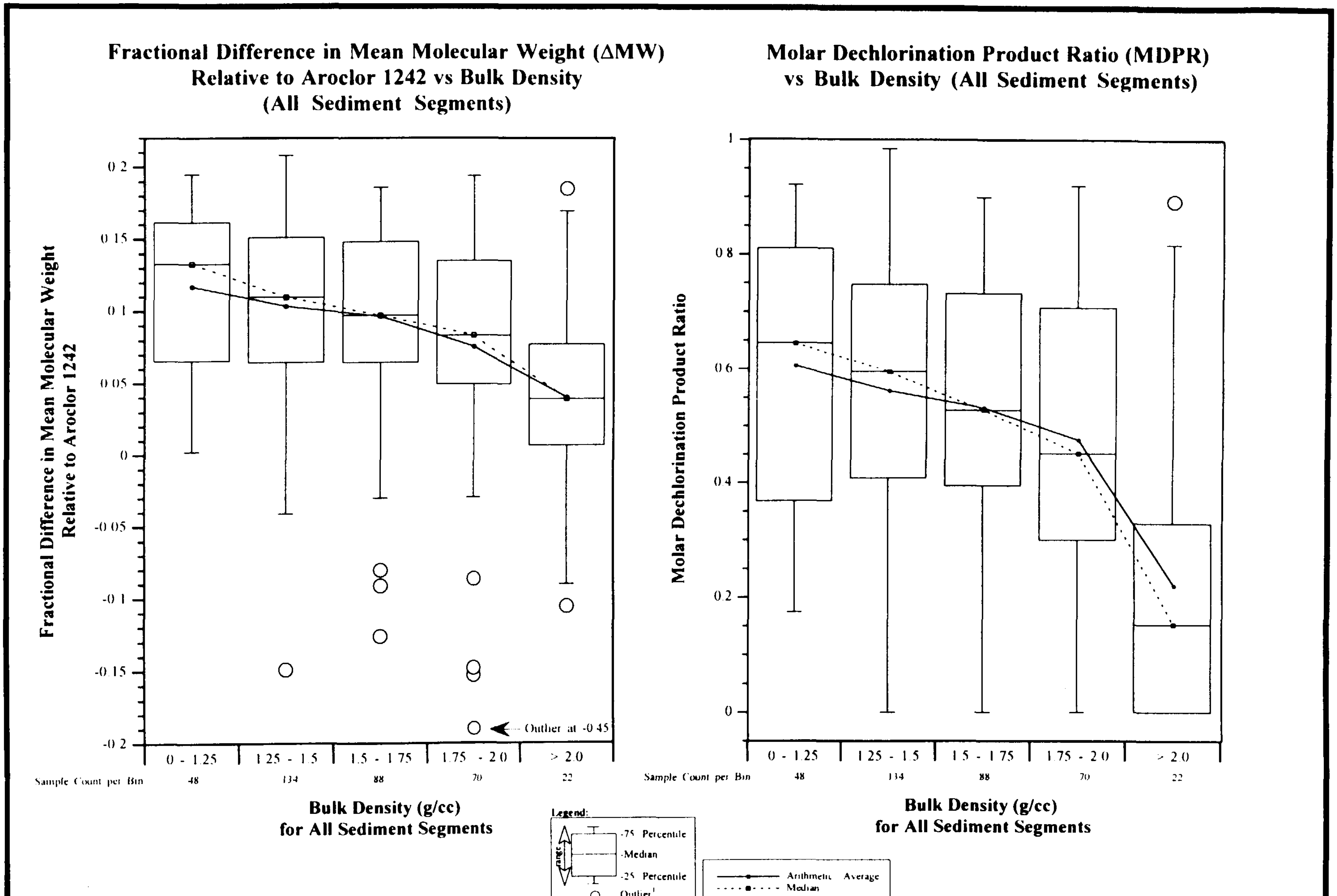
Figure 3-15
Total PCBs Grouped by Solid Specific Weight



Source: TAMS Gradient Database, Release 3.5

TAMS

Figure 3-16
Total PCBs Grouped by Particle Density



Note: 1) See text for discussion

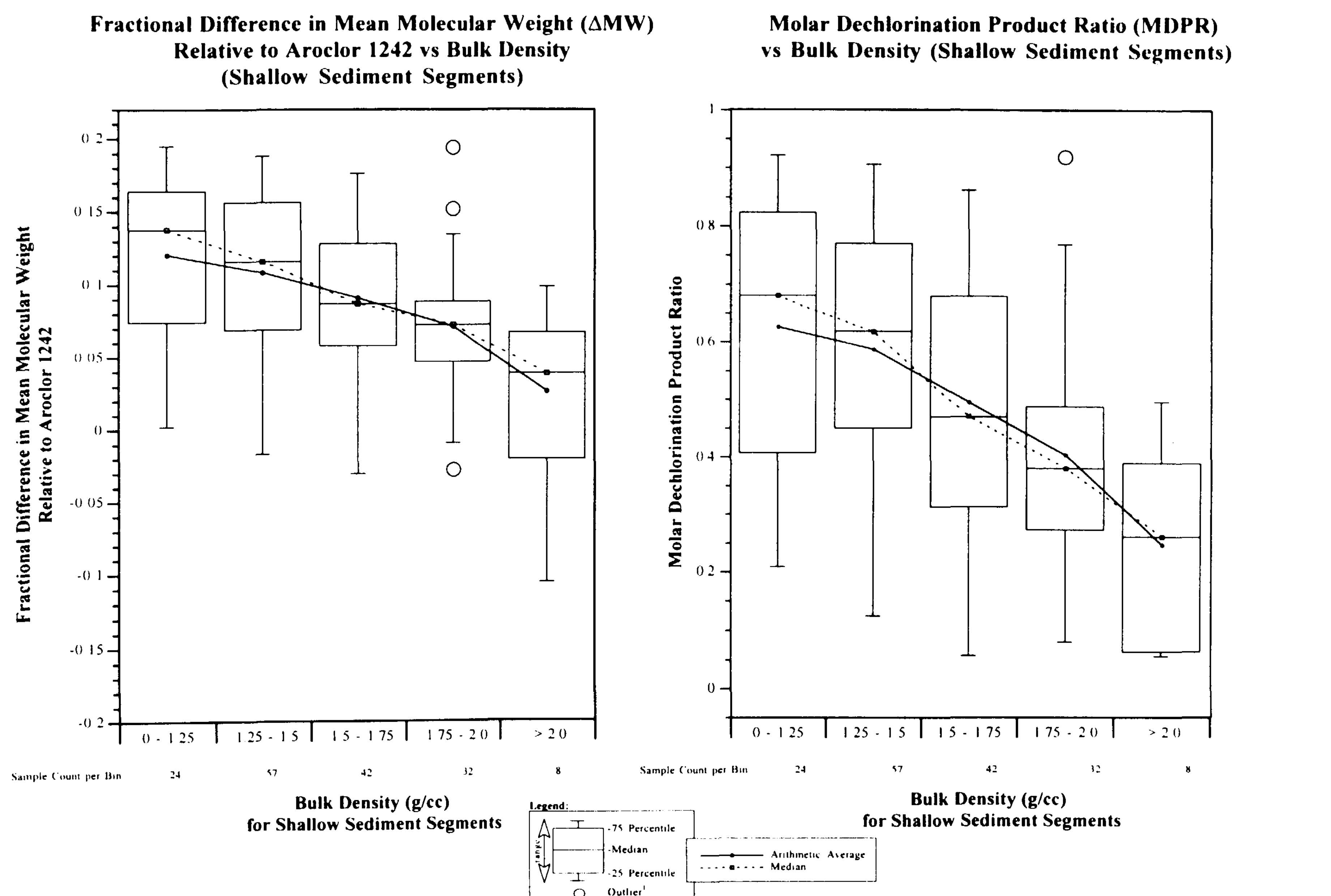
Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-17a

ΔMW and MDPR Grouped by Bulk Density for All Sediment Segments

300428



Note: 1) See text for discussion

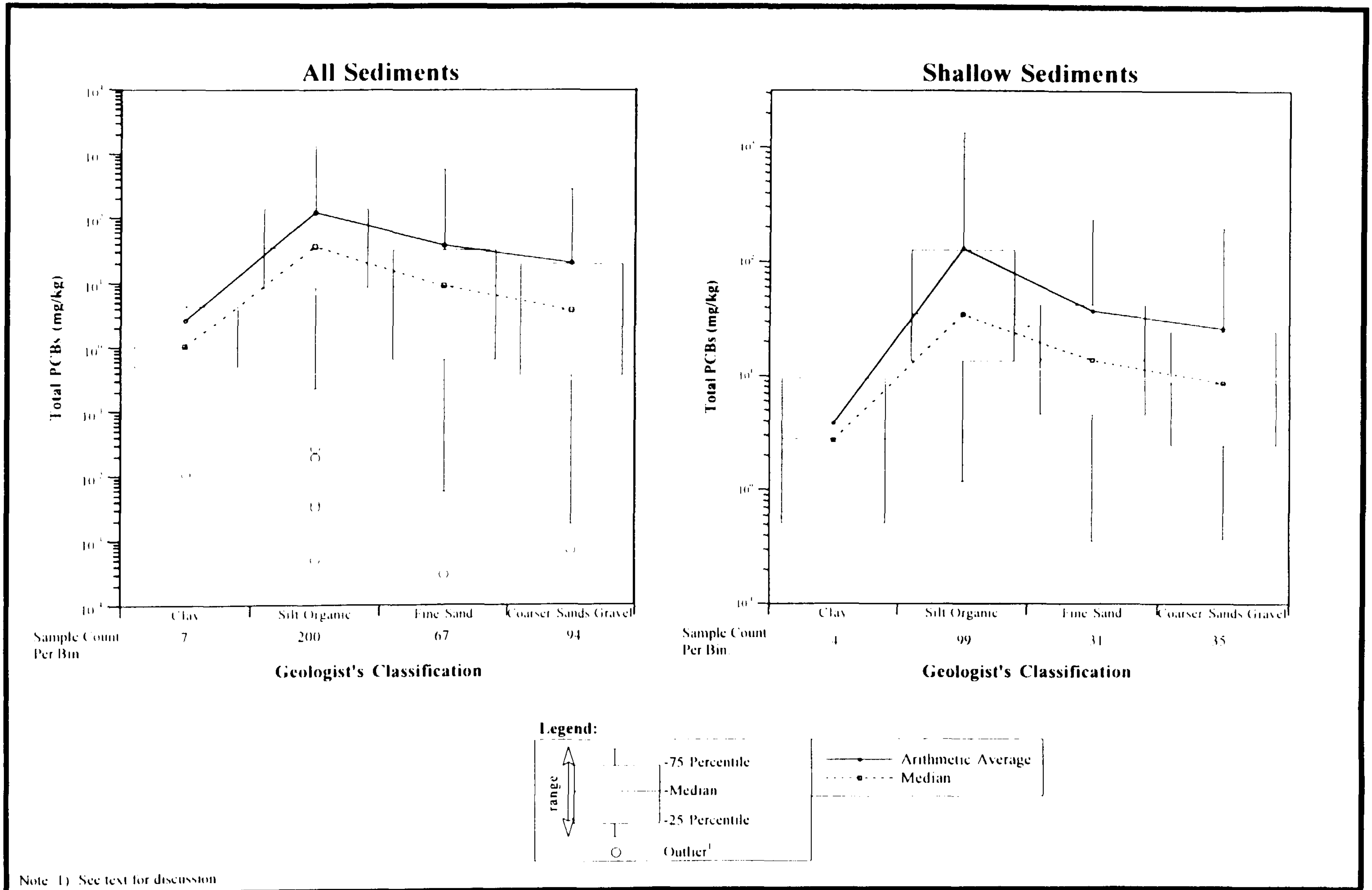
Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-17b

ΔMW and MDPR Grouped by Bulk Density for Shallow Sediment Segments

300429

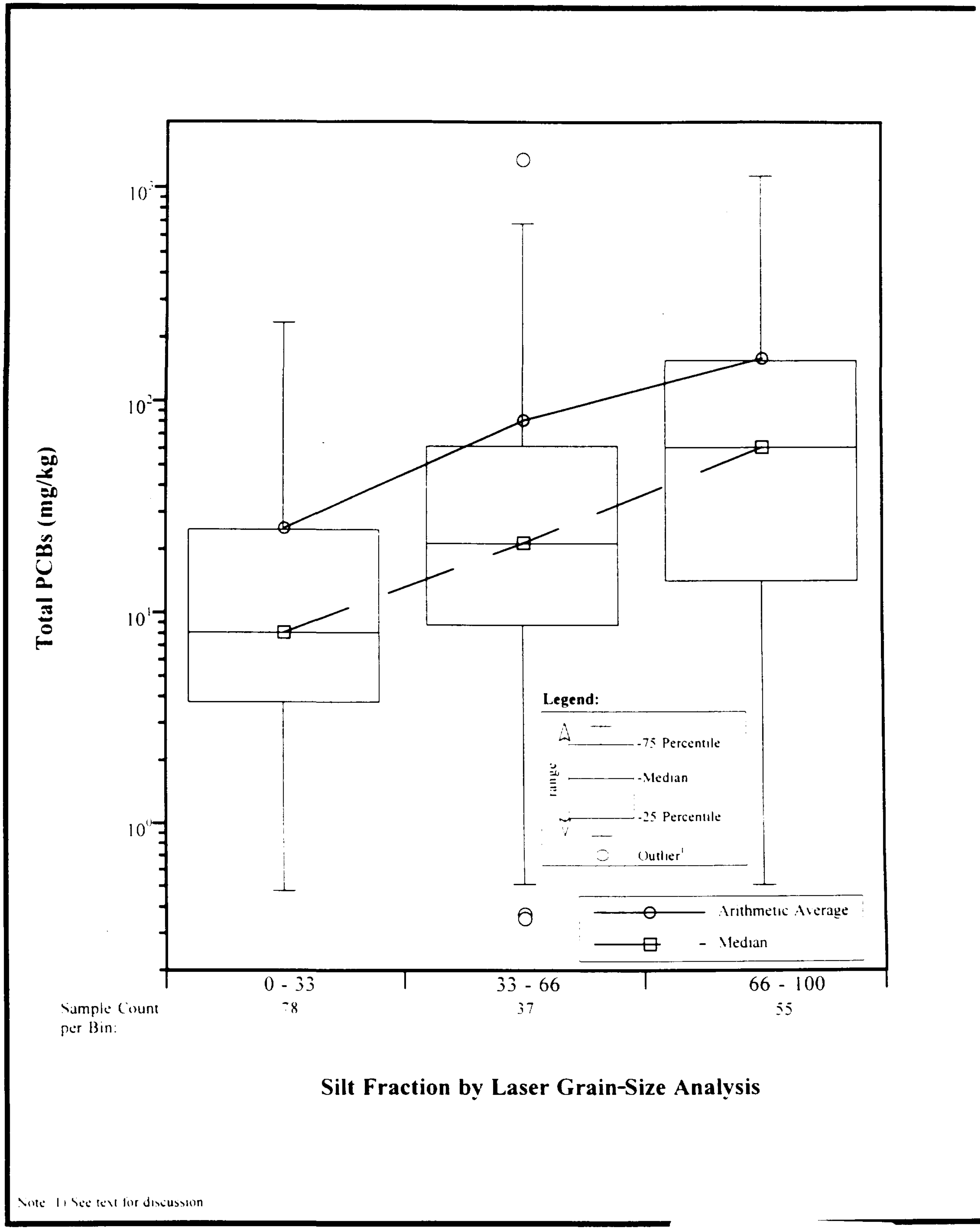


Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-18
Total PCBs Grouped by Geologist's Classification

300430

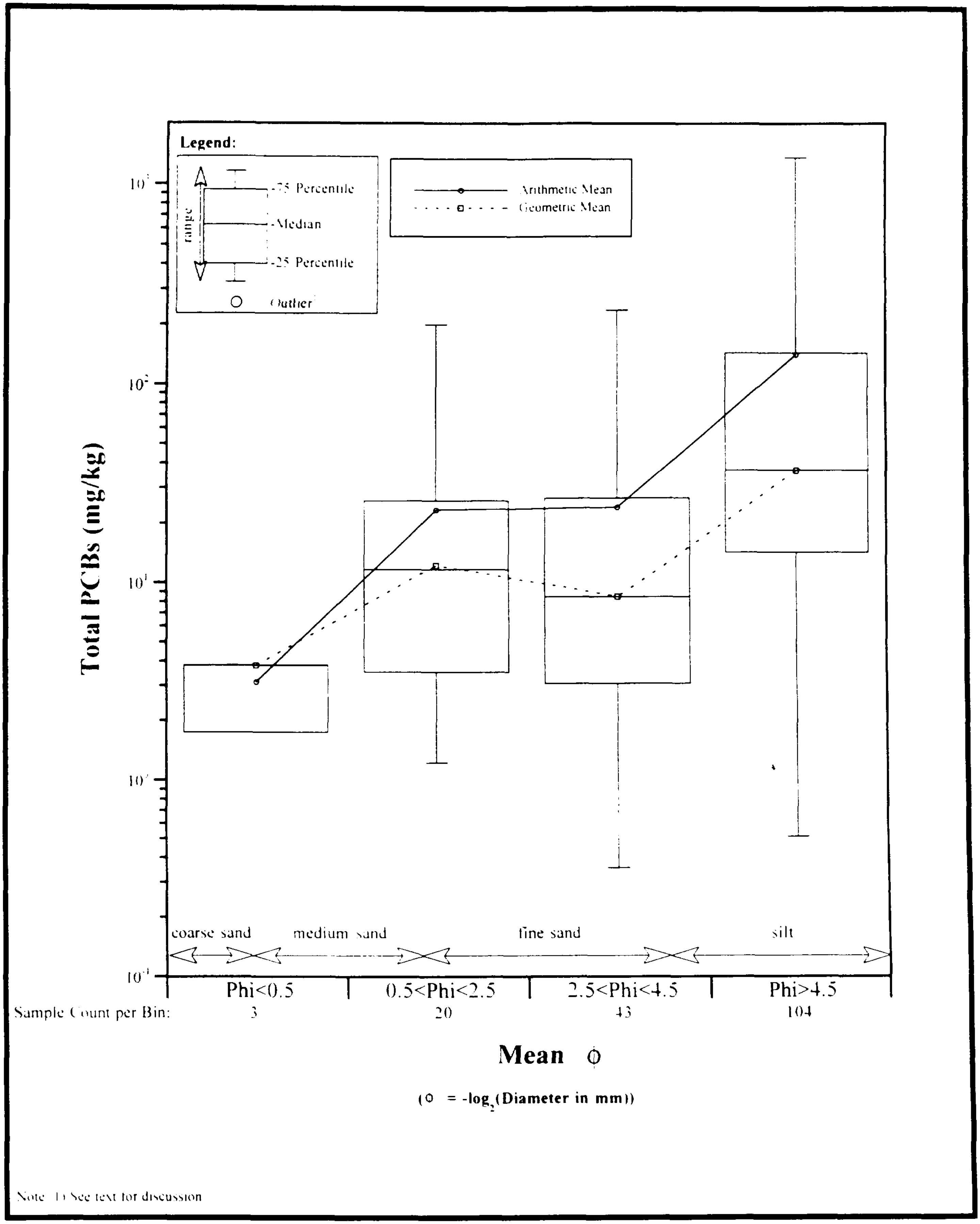


Source: TAMS Gradient Database, Release 3.5

TAMS

300431

Figure 3-19
Total PCBs Grouped by Silt Fraction in Shallow Sediments

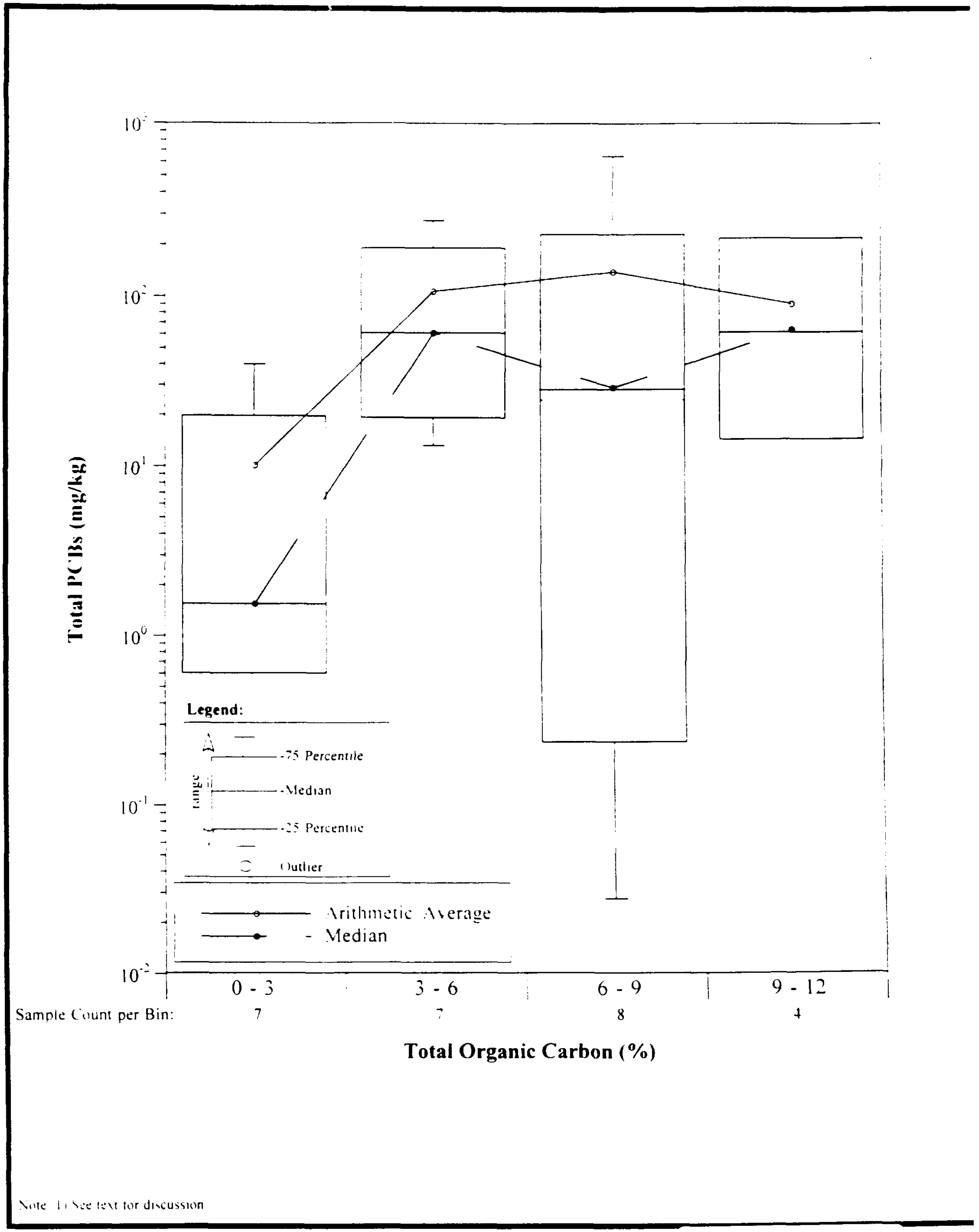


Source: TAMS Gradient Database, Release 3.5

TAMS

Figure 3-20 300432

Total PCBs Grouped by Mean ϕ (Phi) in Shallow Sediments

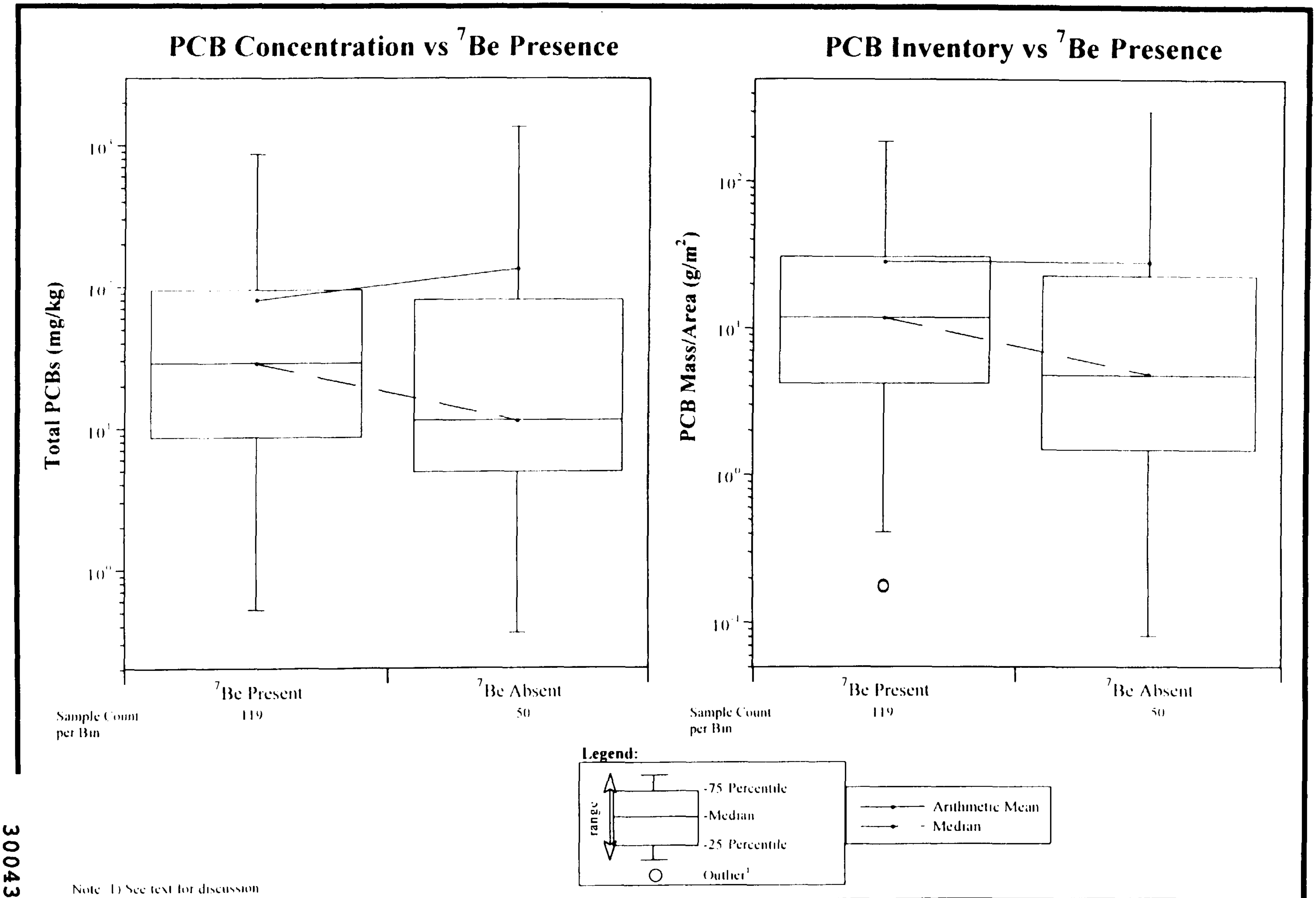


Note: 1) See text for discussion

Source: EAMS Gradient Database. Release 3.5

300433

Figure 3-21
Total PCBs Grouped by Total Organic Carbon

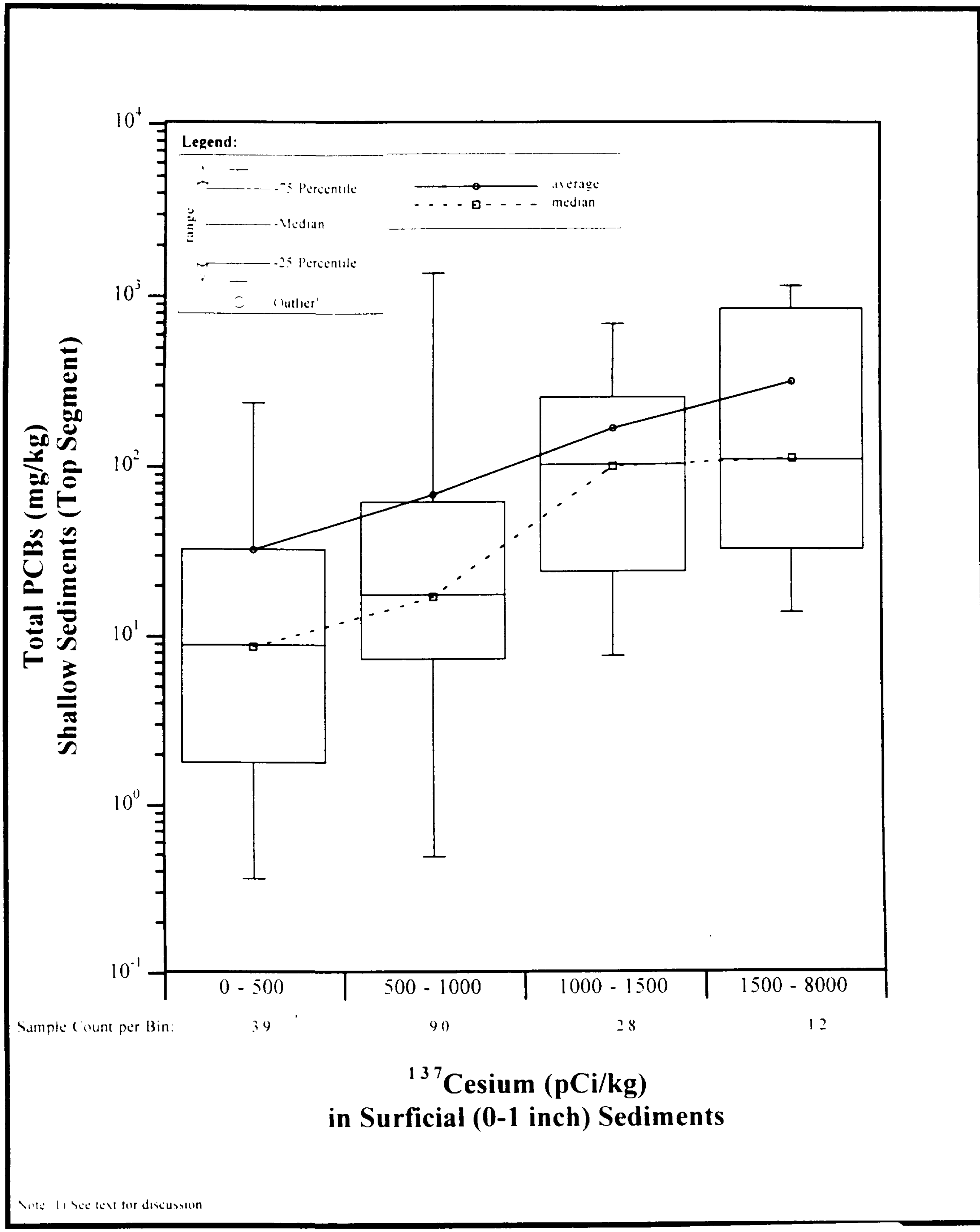


Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-22
Total PCB Concentration and Mass per Unit Area Grouped by ^{7}Be

300434

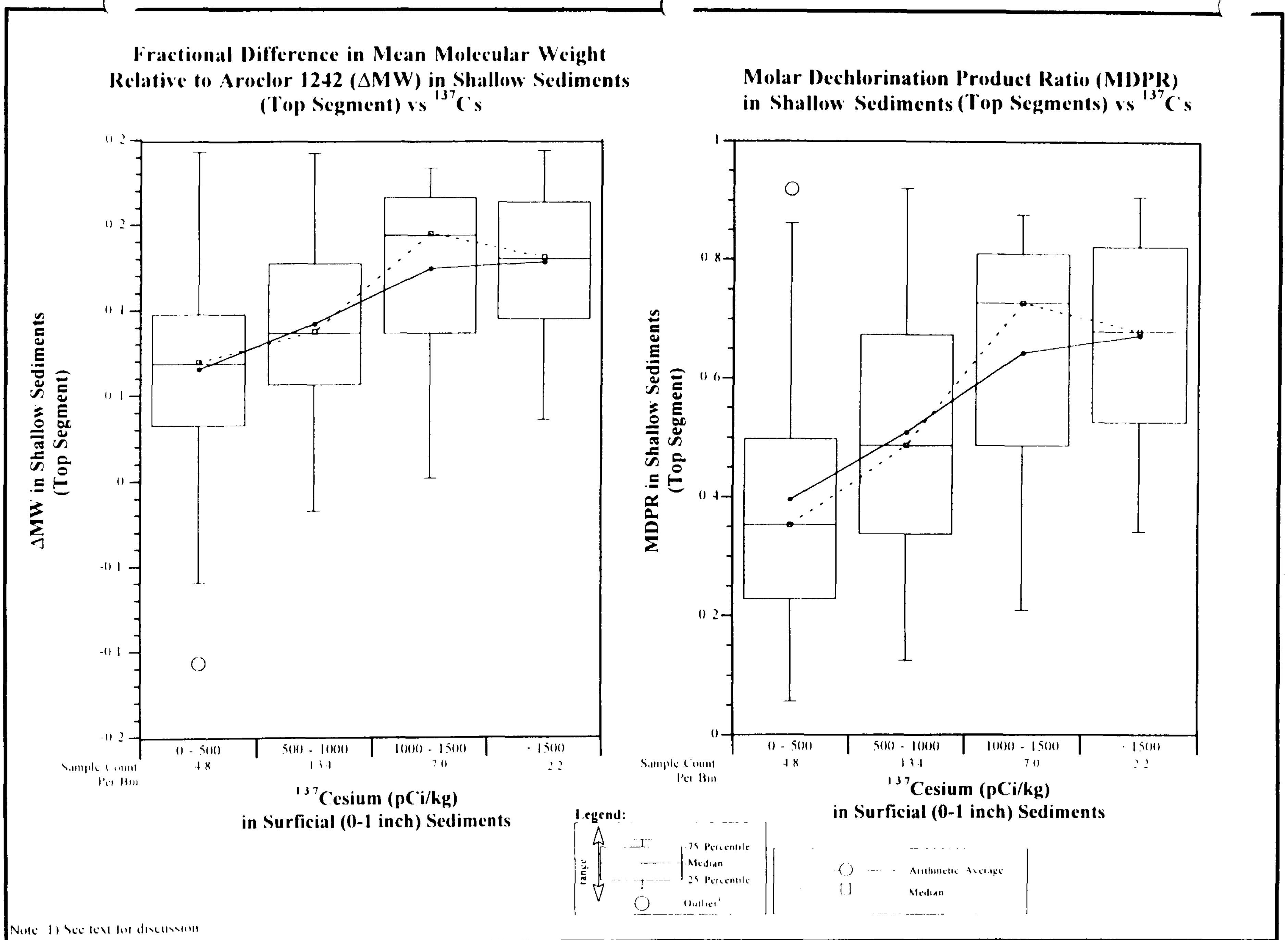


Source: TAMS Gradient Database, Release 3.5

TAMS

Figure 3-23 300435

Total PCBs Grouped by ^{137}Cesium for Shallow Sediments



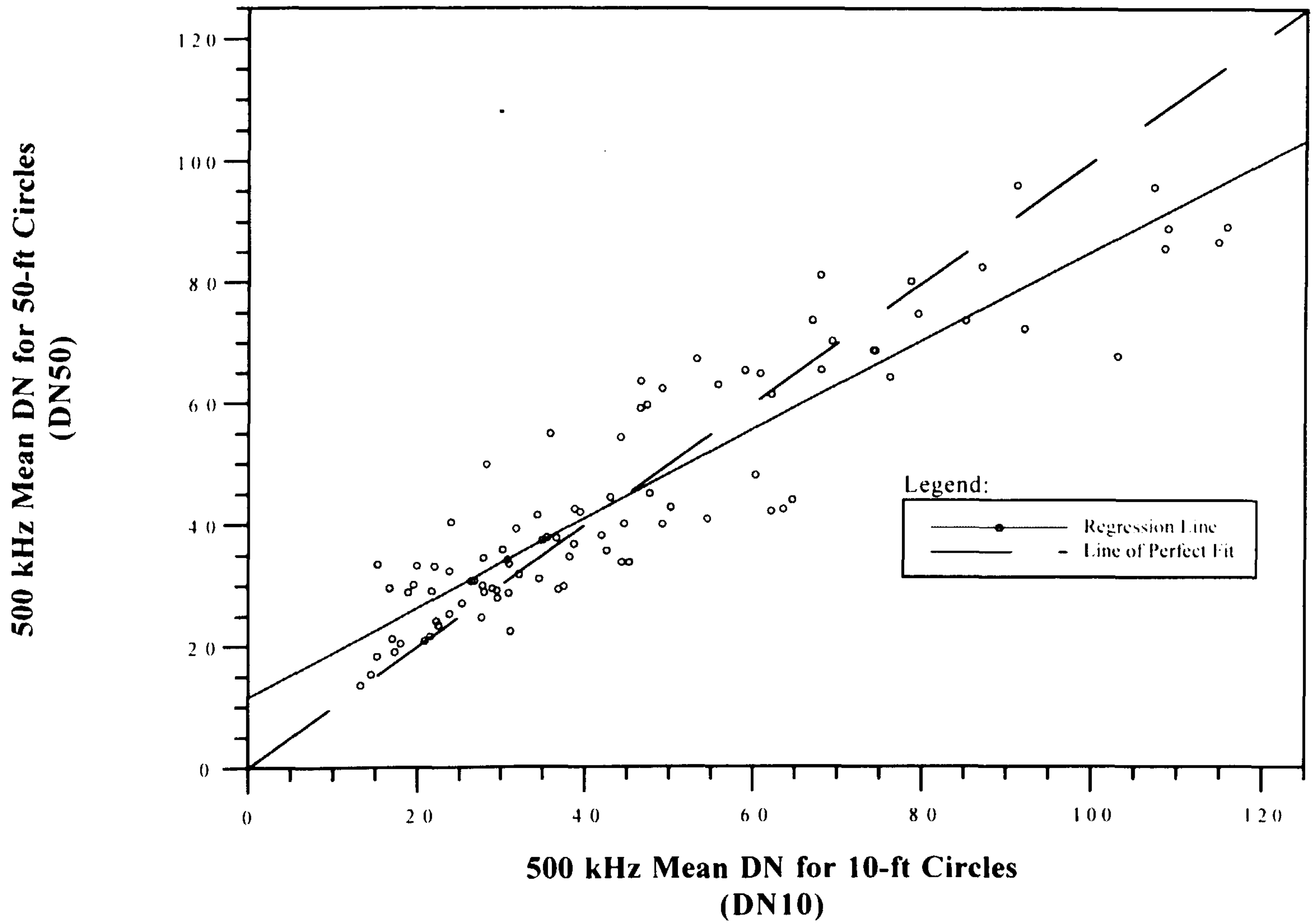
Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-24

ΔMW and MDPR Grouped by ^{137}Cs in Shallow Sediments

300436

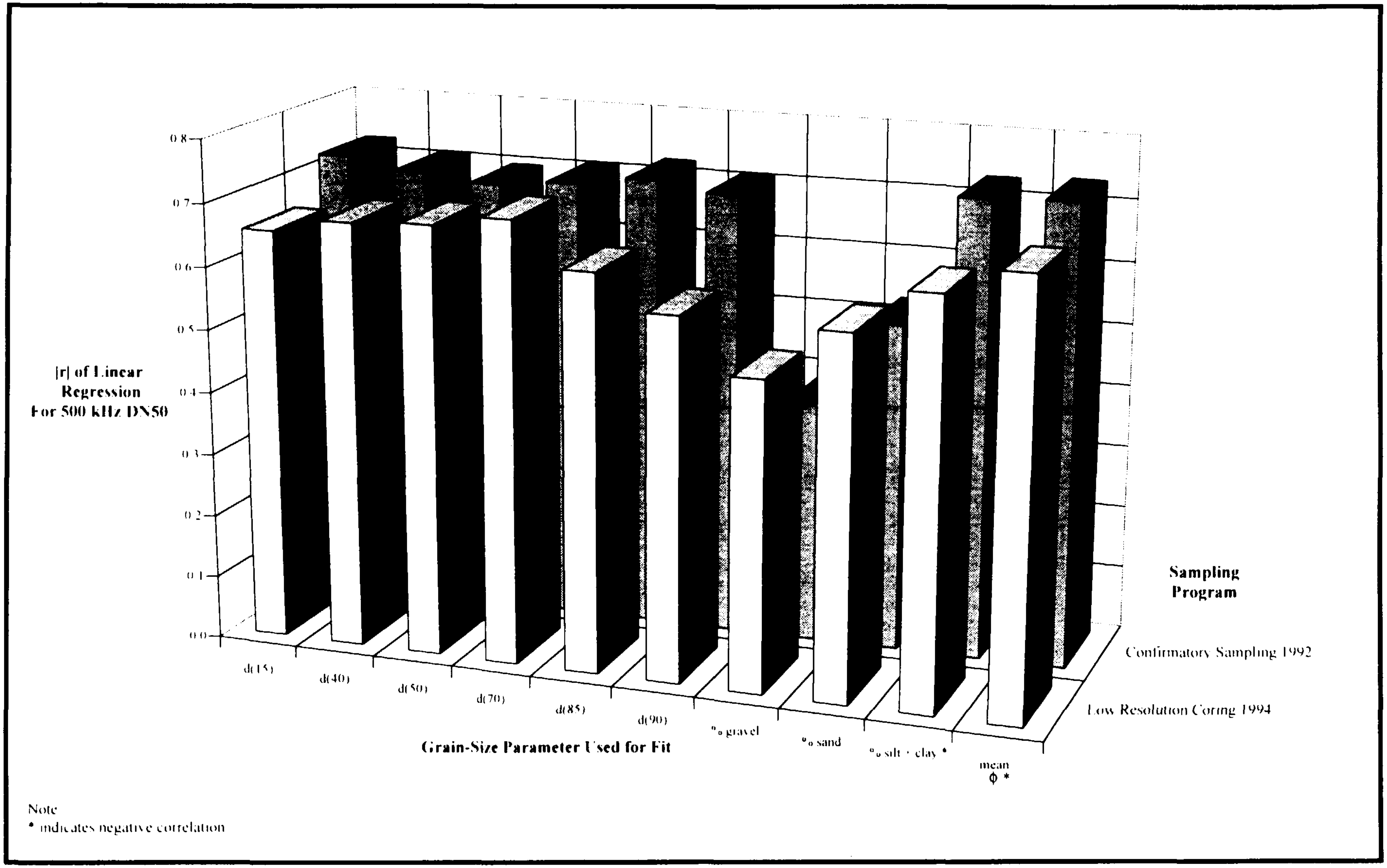


Note: 1) The equation for the regression line is DN 50' Circles = 12 + 0.74*(DN 10' Circles) $R^2 = 0.83$

Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-25
Comparison of the Mean DN Value for 10-ft and 50-ft Circles

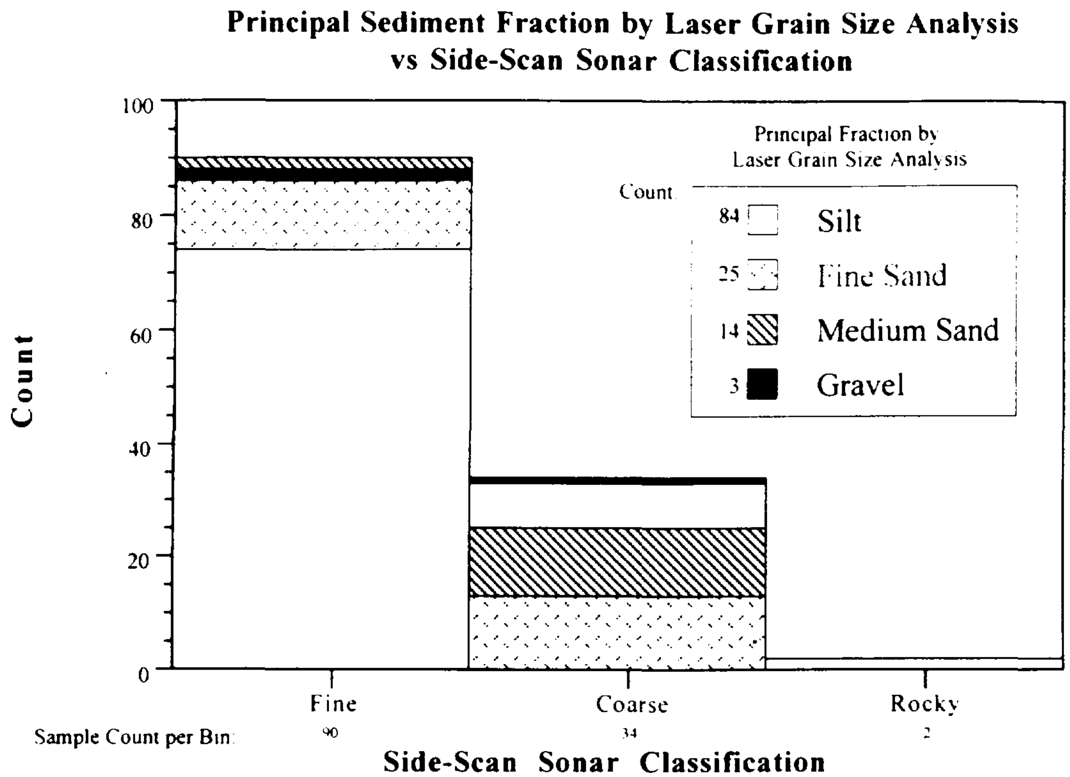


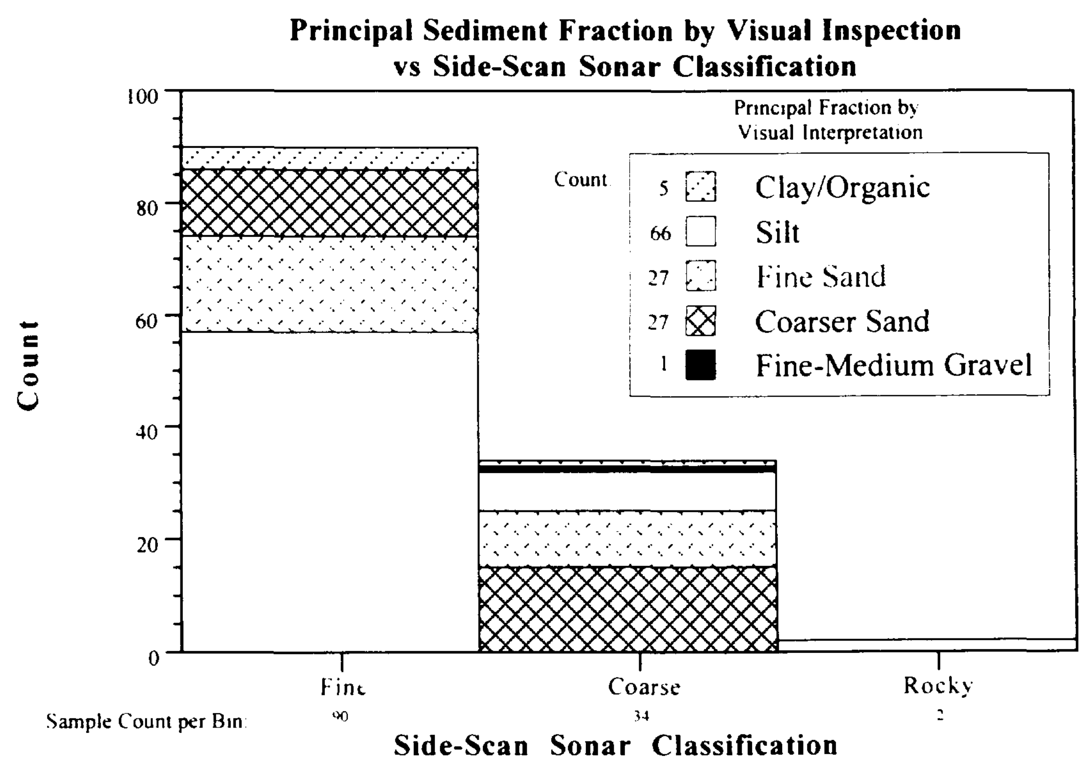
Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-26
Three Dimensional Correlation Plot of Digital Number vs Grain-Size Distribution Parameters: Comparison Between Confirmatory and Low Resolution Core Samples

300438

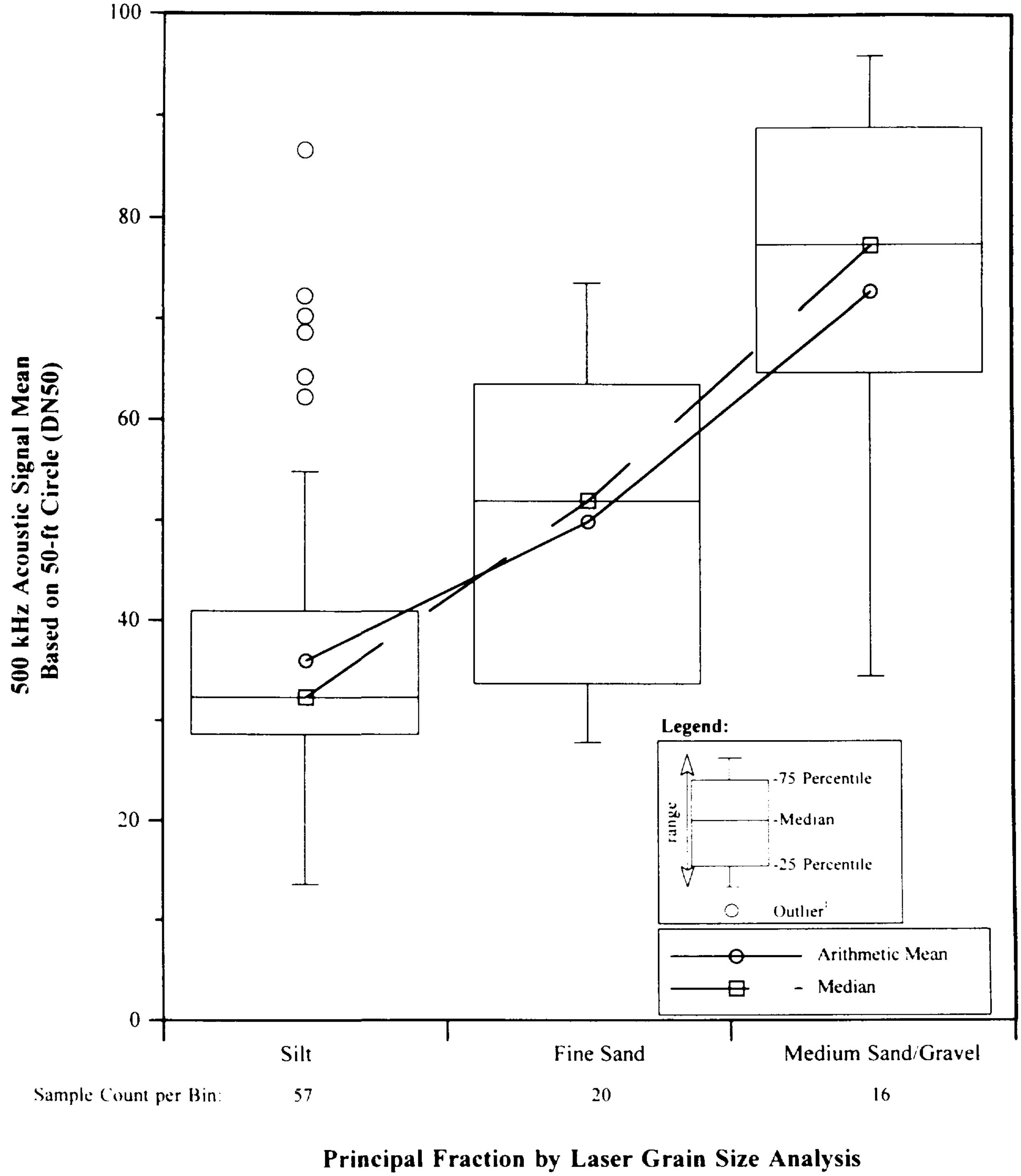




Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-27
Classification of Sediment Samples
Comparison of Visual and Analytical Techniques to the Interpretation of the Side-Scan Sonar Images

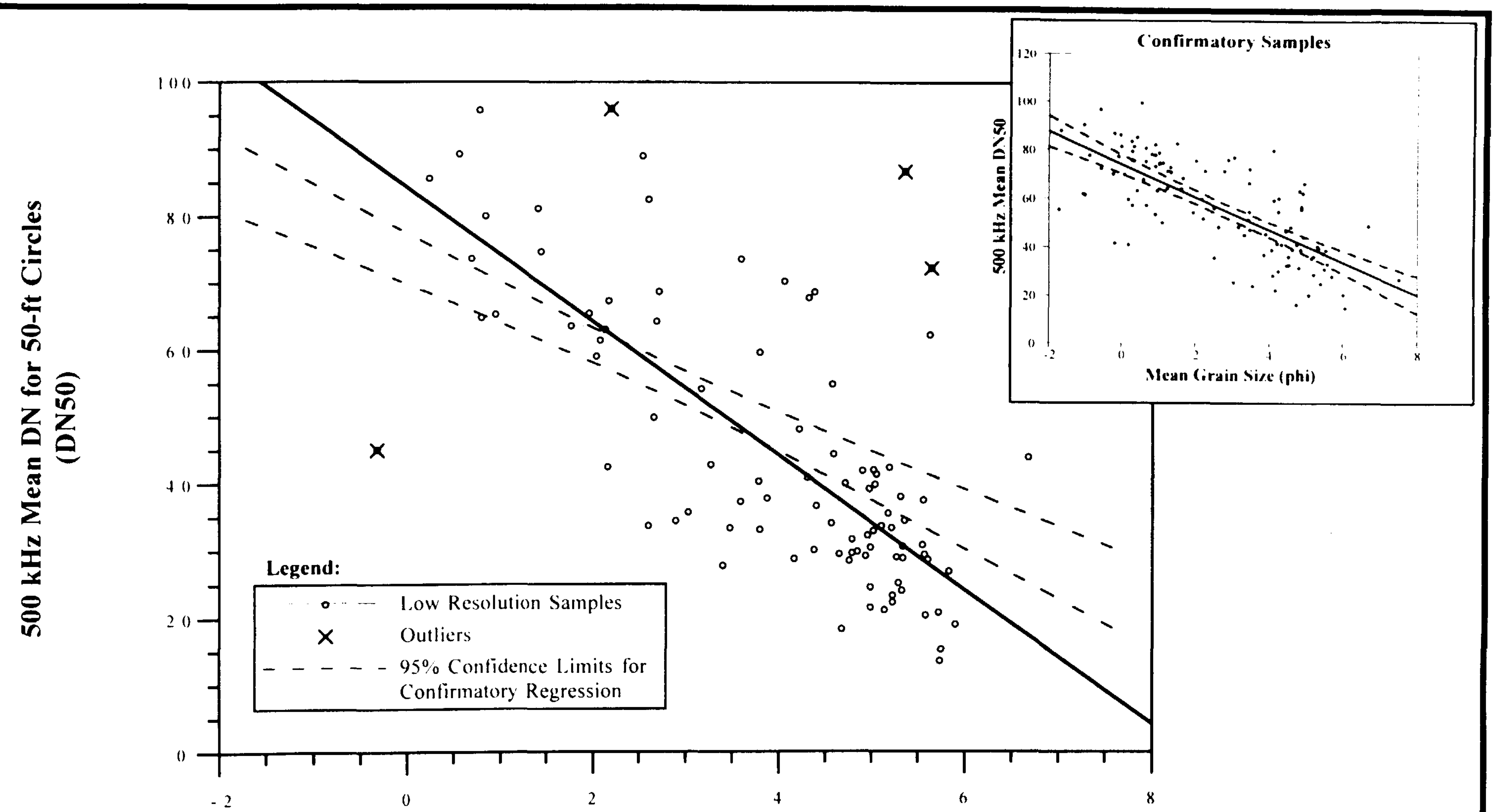


Note: 1) See text for discussion

Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 3-28
Acoustic Signal Mean (DN50) Based on 50-ft Circles Grouped by Laser Analysis Principal Fraction

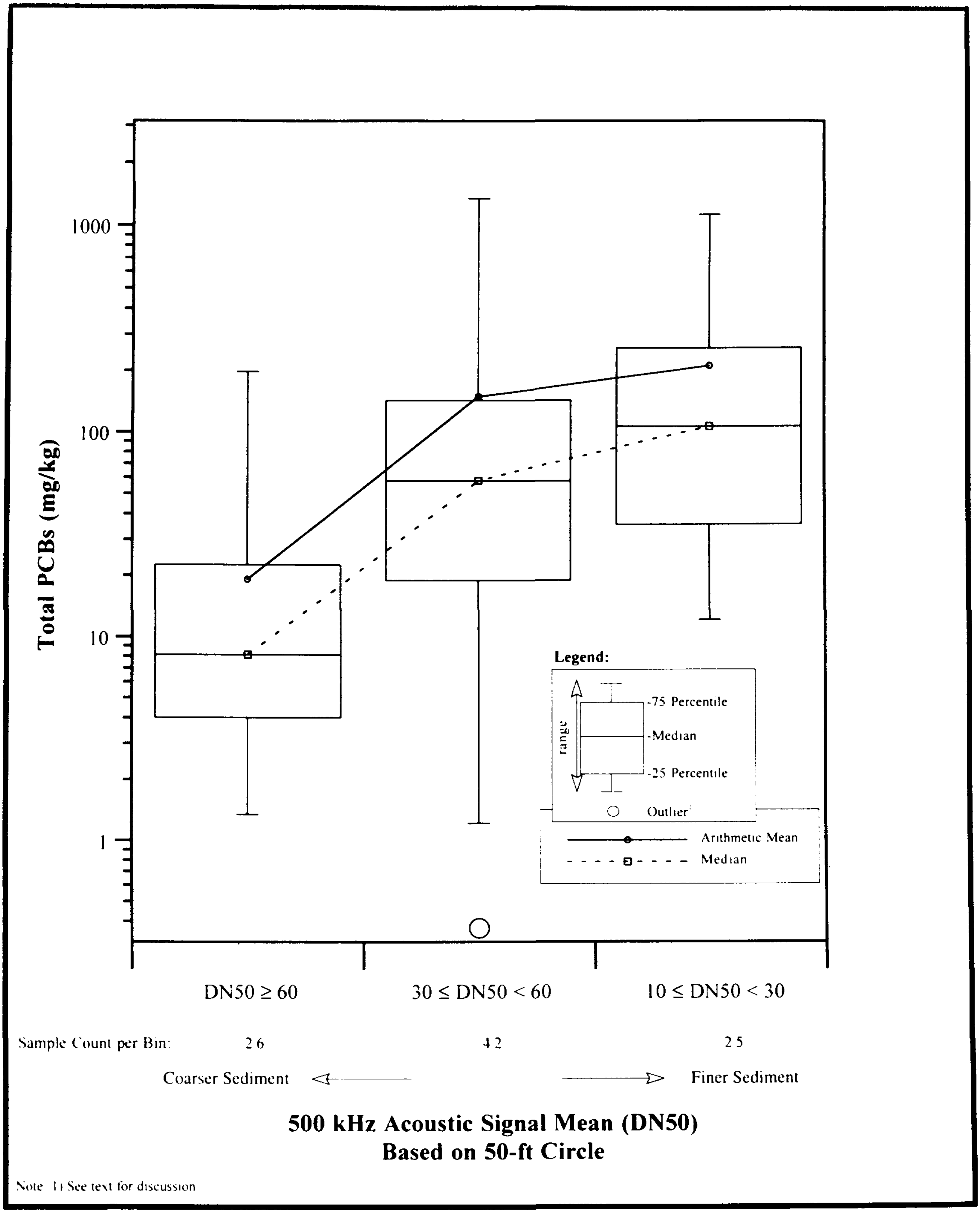


Notes:
a. phi = Log[grain size (mm)] / Log[2]
b. The regression line for the confirmatory samples is Mean DN50 = 76 - 6.9*Mean Phi $R^2 = 0.54$.
For the low resolution core samples the regression line is Mean DN50 = 84 - 10*Mean Phi $R^2 = 0.61$.

Source: TAMS/Gradient Database, Release 3.5

TAMS

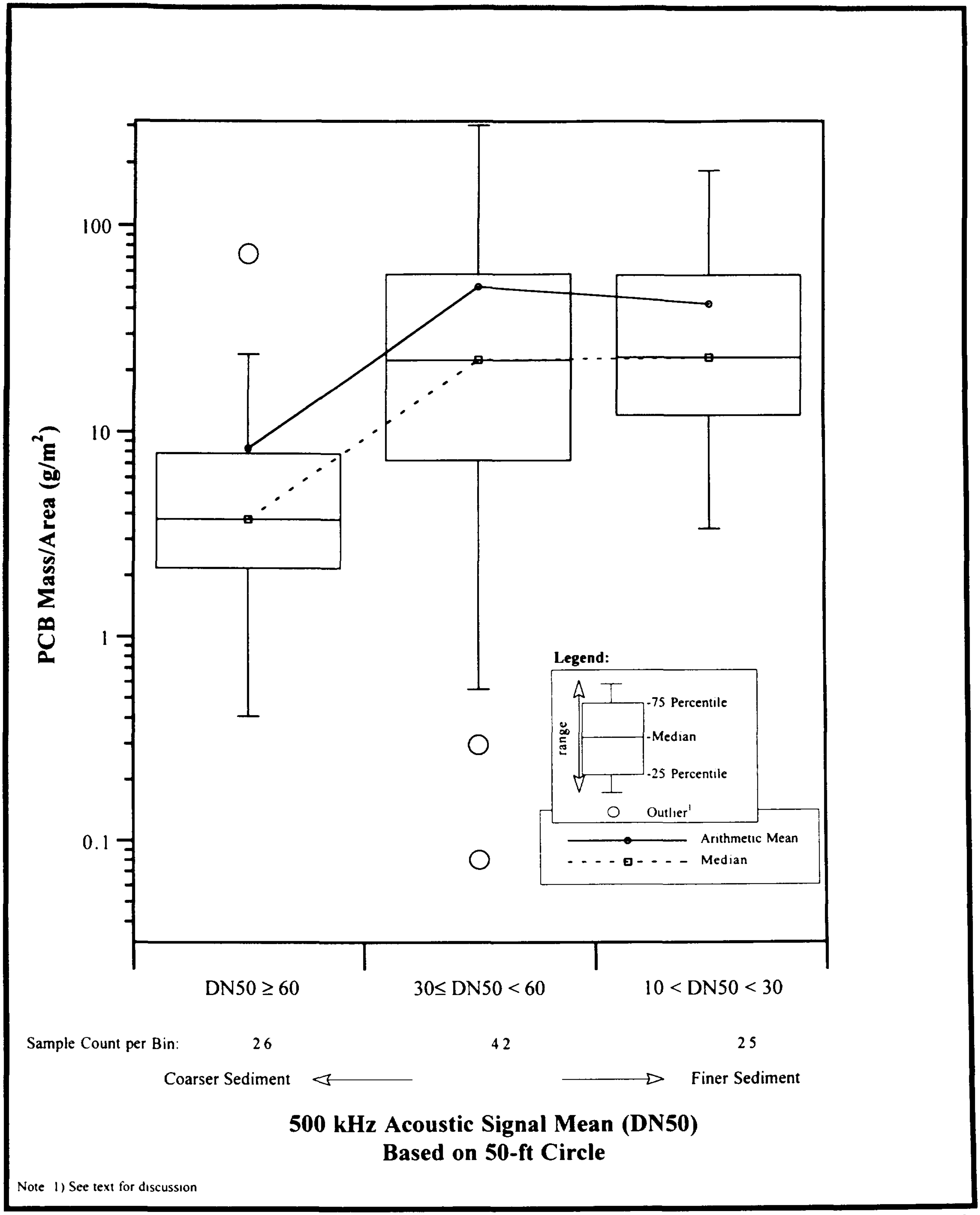
Figure 3-29
Comparison of the Regression Lines for the Confirmatory and Low Resolution Core Results against the DN50 for the 500 kHz Side-Scan Sonar Images



Source: TAMS/Gradient Database, Release 3.5

TAMS

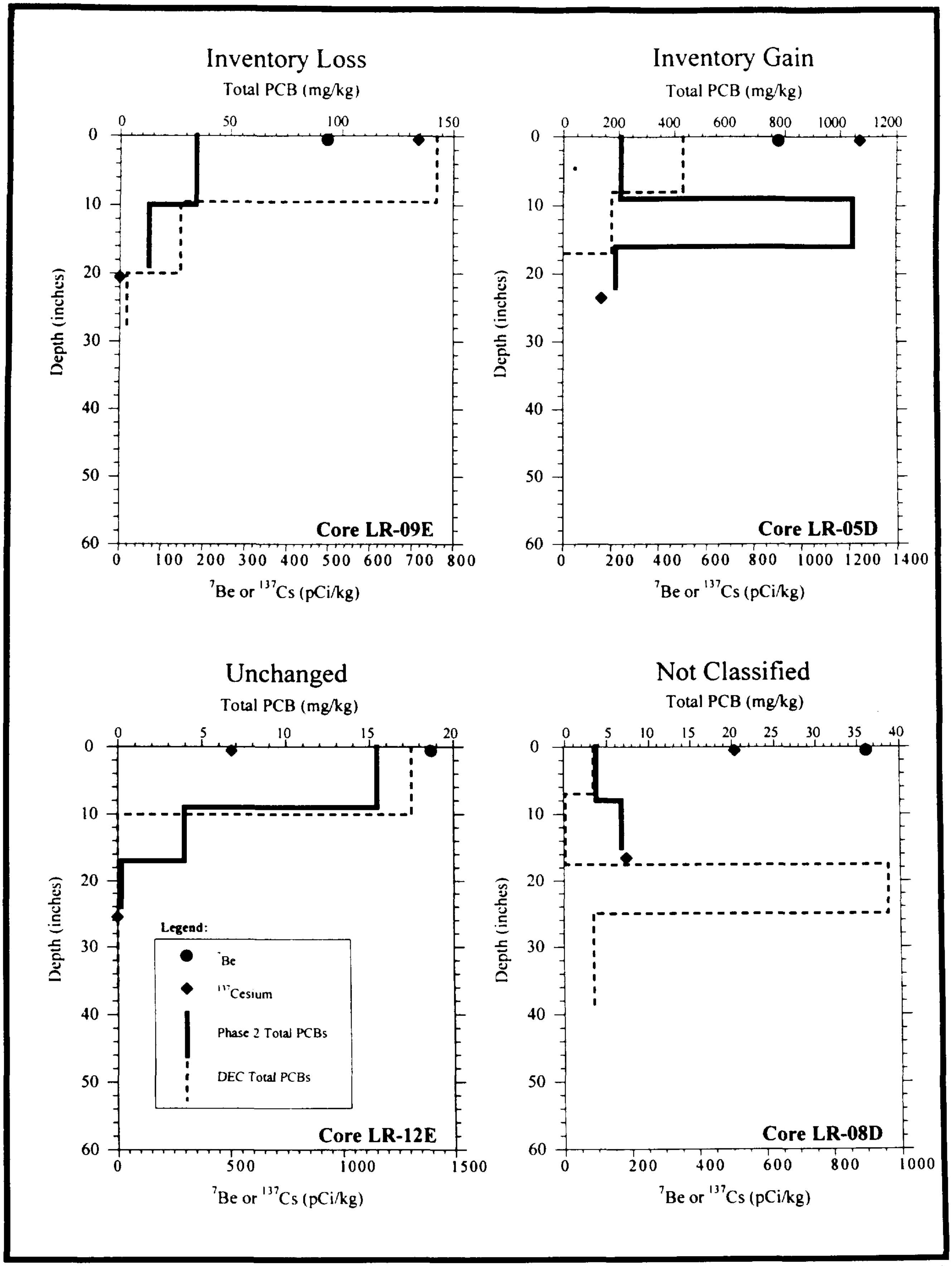
Figure 3-30
Comparison of 500 kHz Acoustic Signal (DN50) and Low Resolution Core PCB Levels in Shallow Sediments



Source: TAMS/Gradient Database, Release 3.5

TAMS

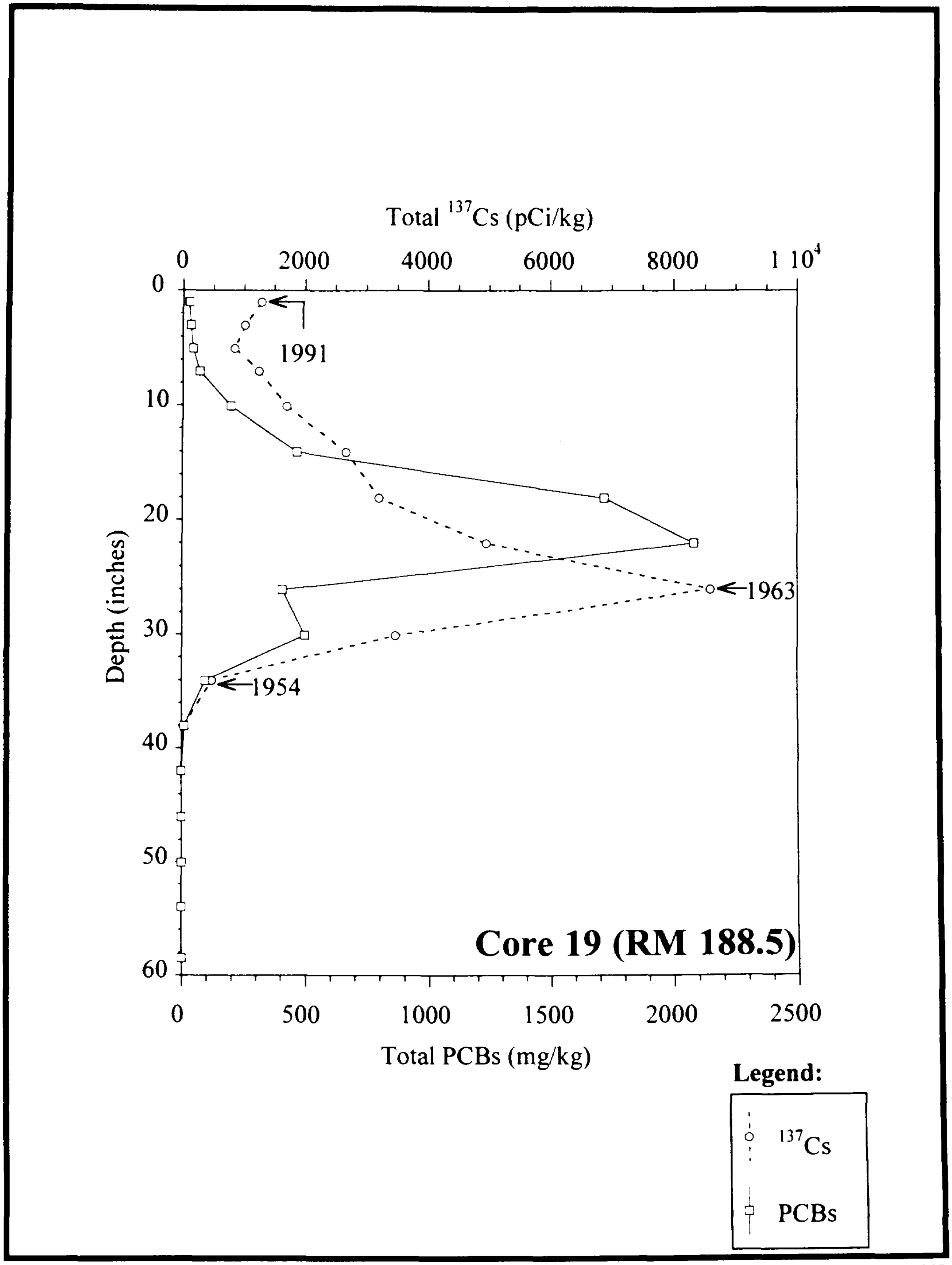
Figure 3-31
Comparison of 500 kHz Acoustic Signal (DN50) and Low Resolution Core PCB Mass/Area



Source: TAMS/Gradient Database, Release 3.5

TAMS

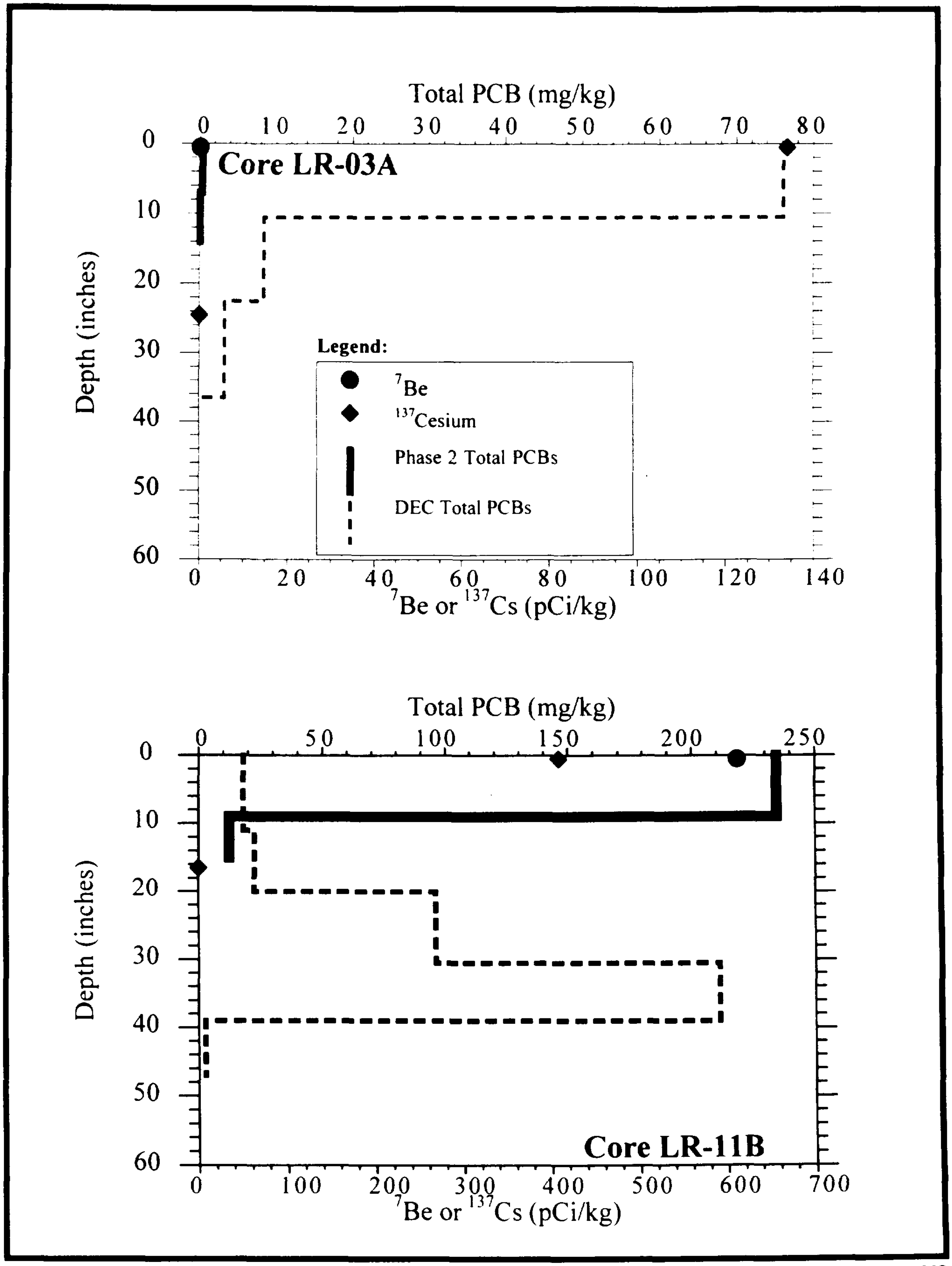
Figure 4-1
Typical Low Resolution Core Profiles for the TI Pool and Their Classification



Source: TAMS/Gradient Database. Release 3.5

TAMS

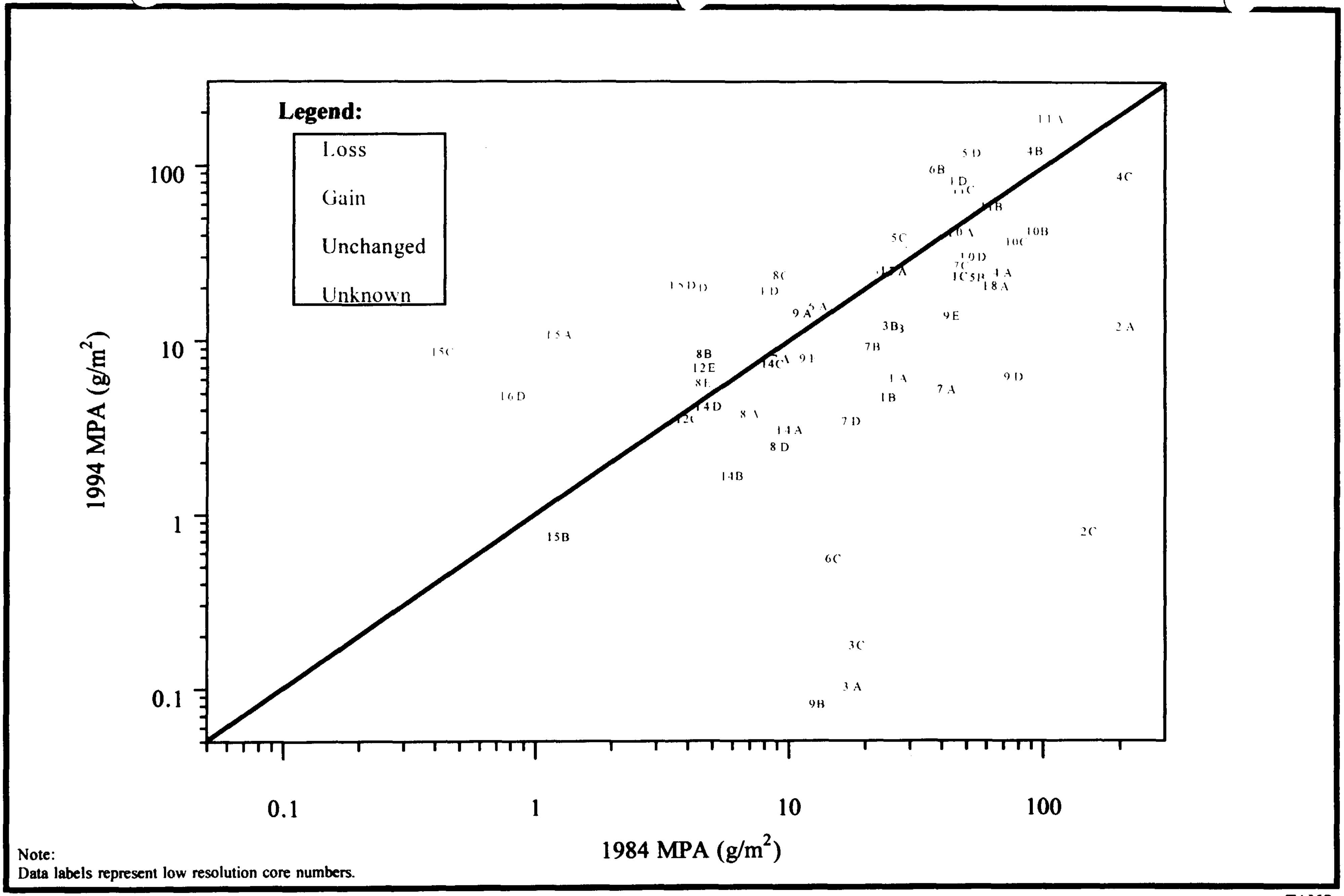
Figure 4-2
High Resolution Core 19 from the TI Pool



Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-3
Core Locations Exhibiting Sediment Scour

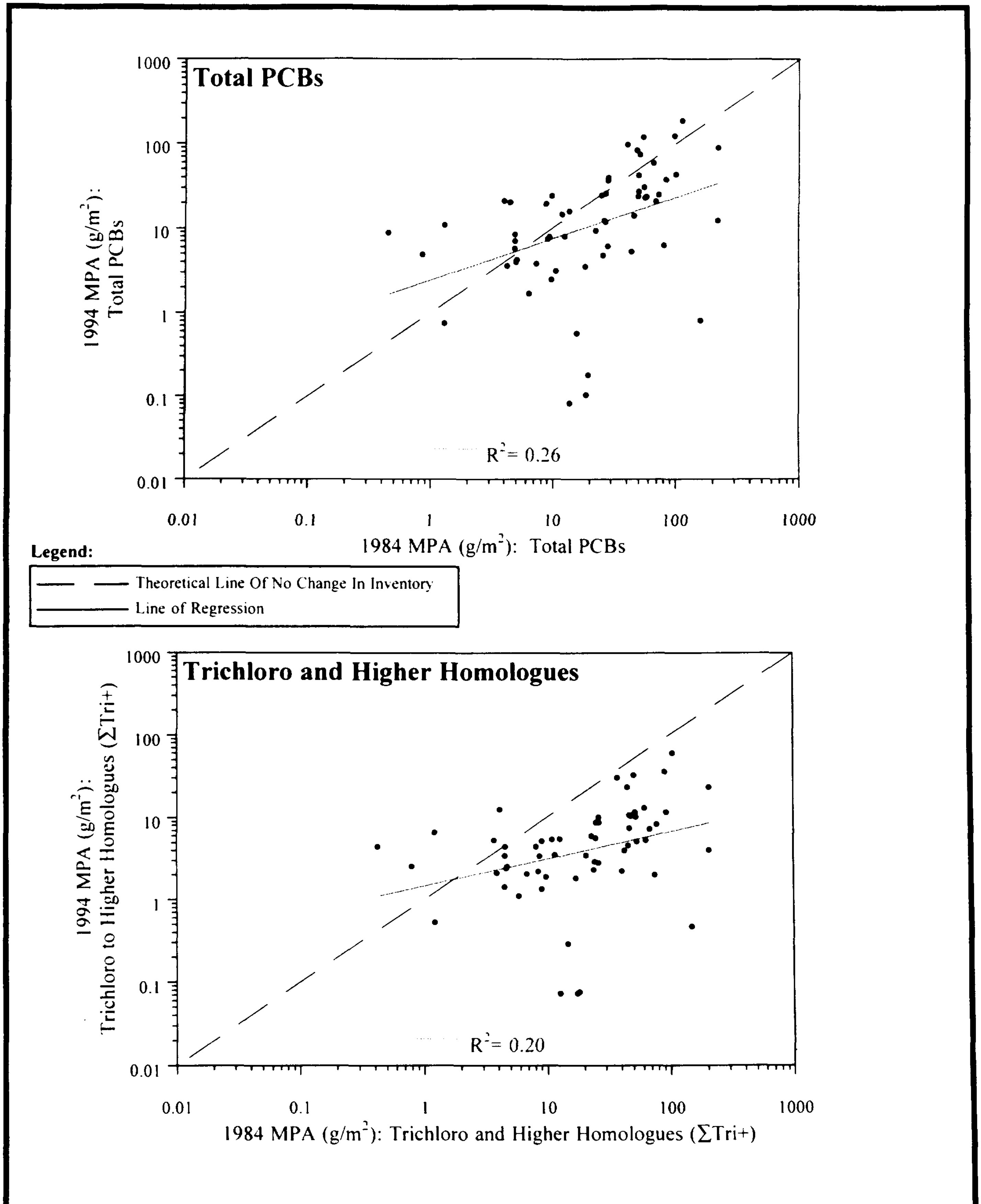


Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-4
Comparison Between 1984 and 1994 MPA for Total PCBs Showing Core Classications

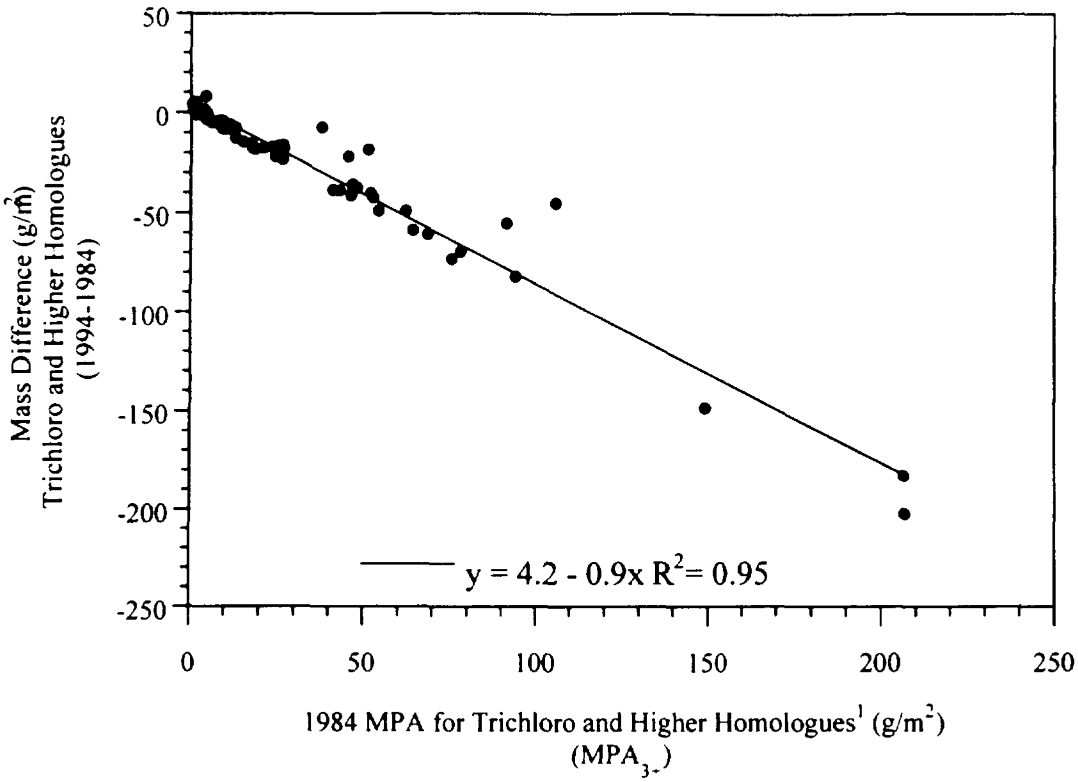
300447

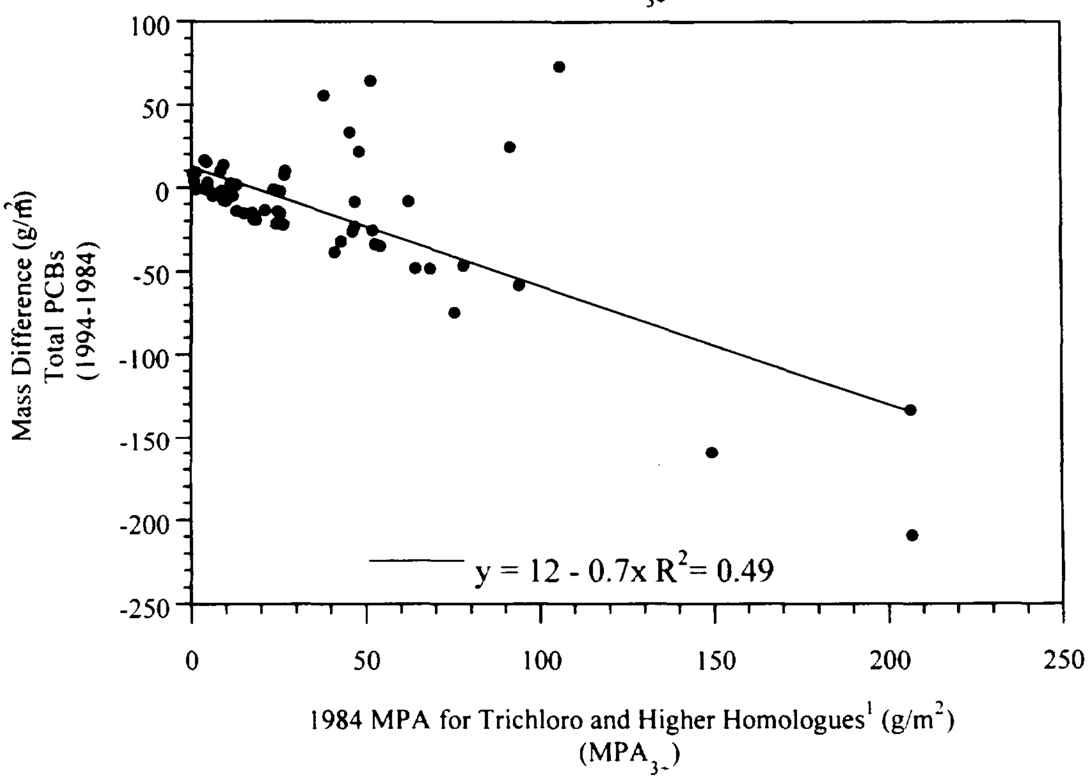


Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-5
Relationship Between 1984 and 1994 Sediment Inventories (MPA) for Total PCBs and Trichloro and Higher Homologues



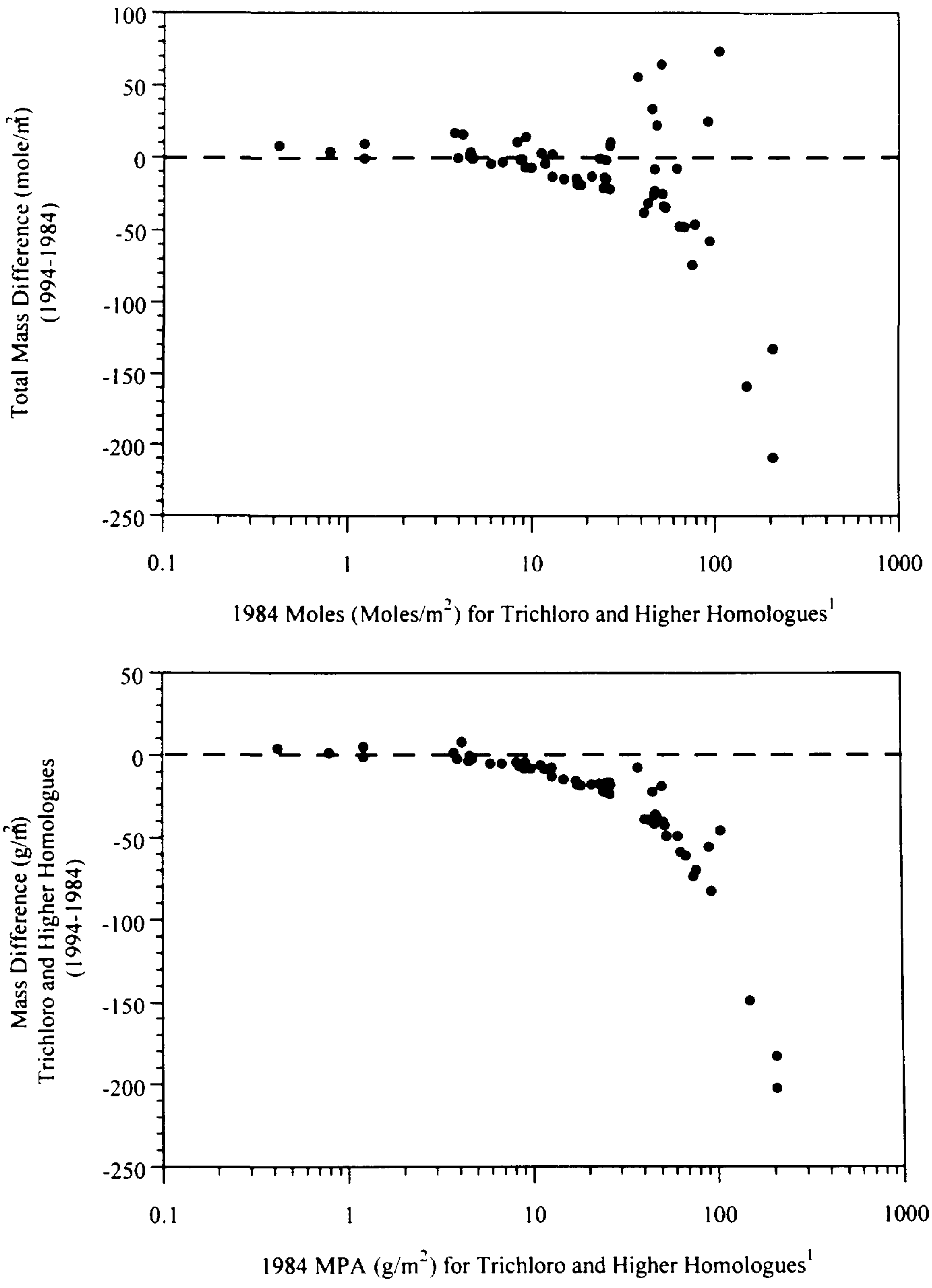


Note:
1. See text for definition.

Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-6
Relationship Between the 1984 $\sum$Tri+ Mass Per Unit Area (MPA_{3+}) and the Change in Sediment PCB Inventory for the TI Pool

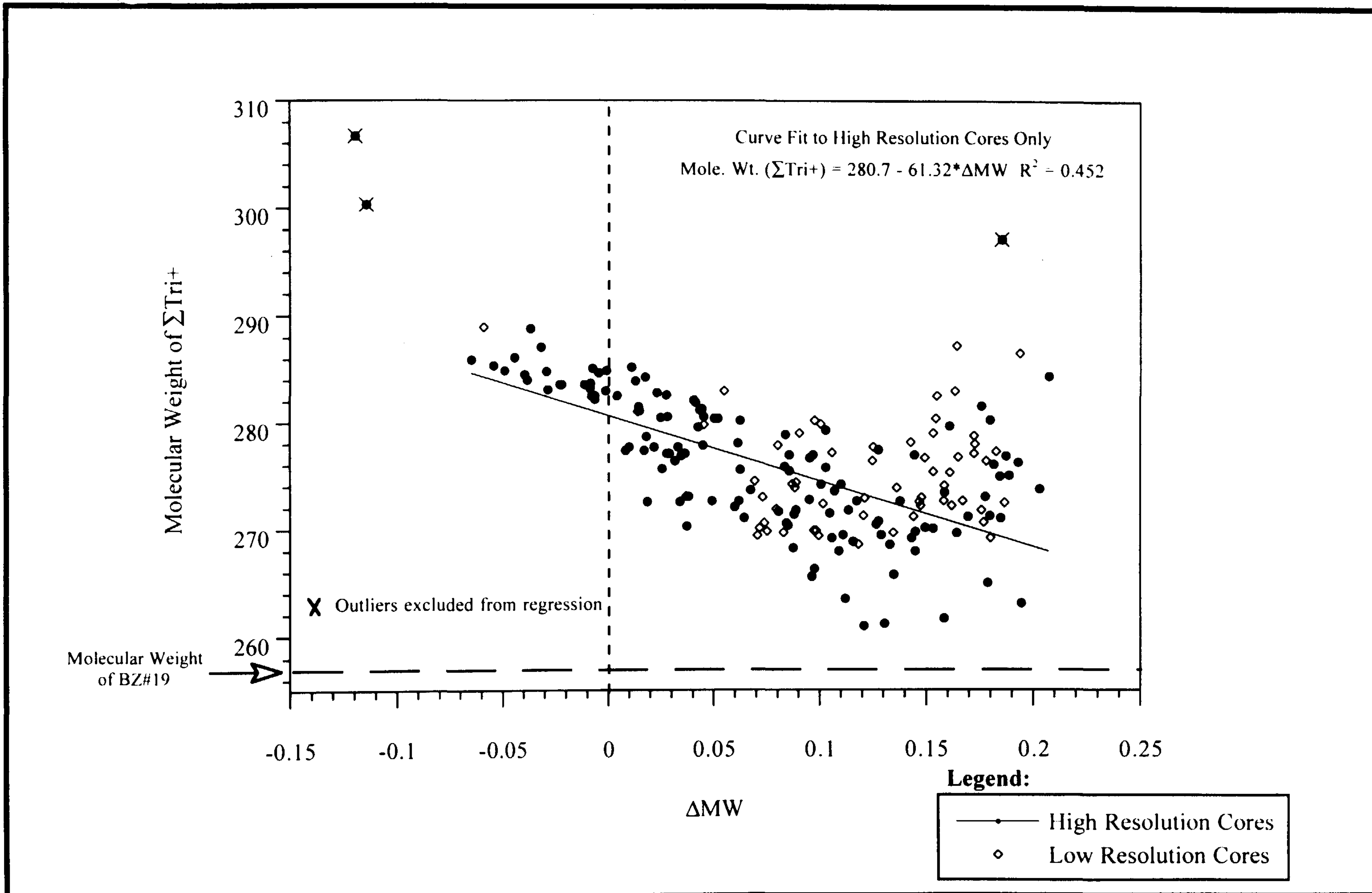


Note:
1. See text for definition.

Source: TAMS/Gradient Database. Release 3.5

TAMS

Figure 4-7
1984 Trichloro and Higher Homologues as MPA vs Mass Difference and Mole Difference Relative to 1994 - Log Scale



Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-8
Determination of the Molecular Weight of the Trichloro and Higher Homologues (ΣTri+) at the Time of Deposition

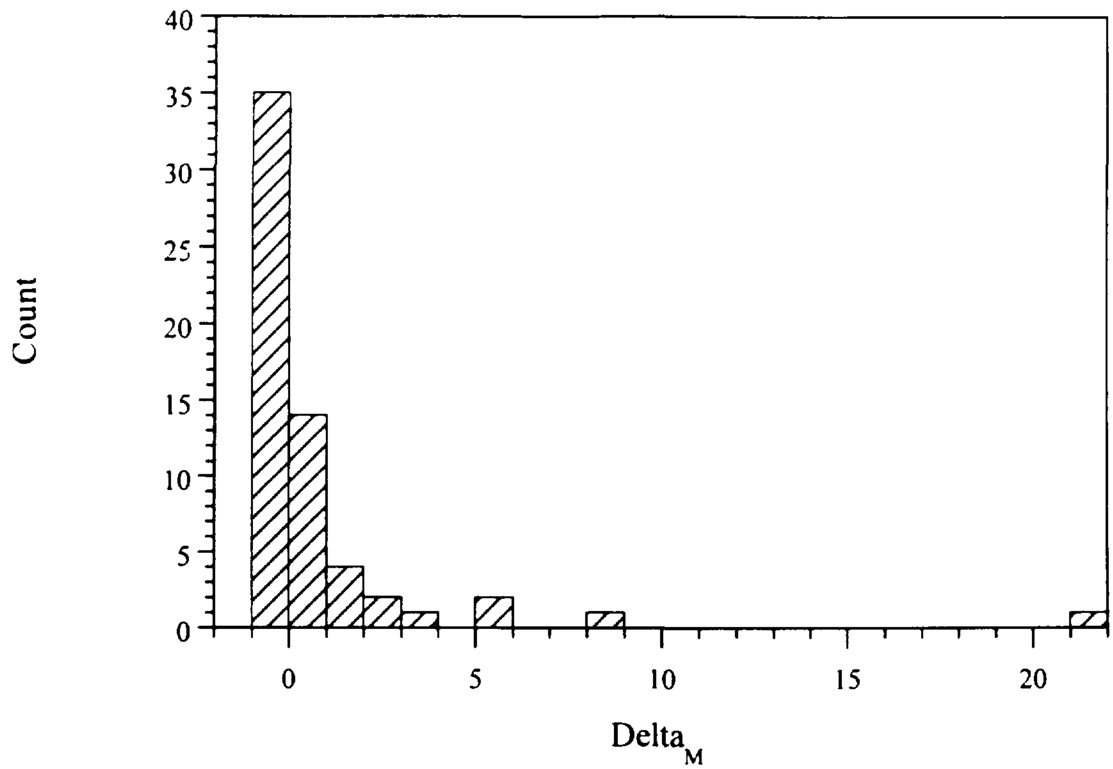
Note:
1. Mole Difference =1984 Moles $_{Tn+}$ - (1994 Moles $_{Tn+}$ + BZ 1,4,8,10,19)

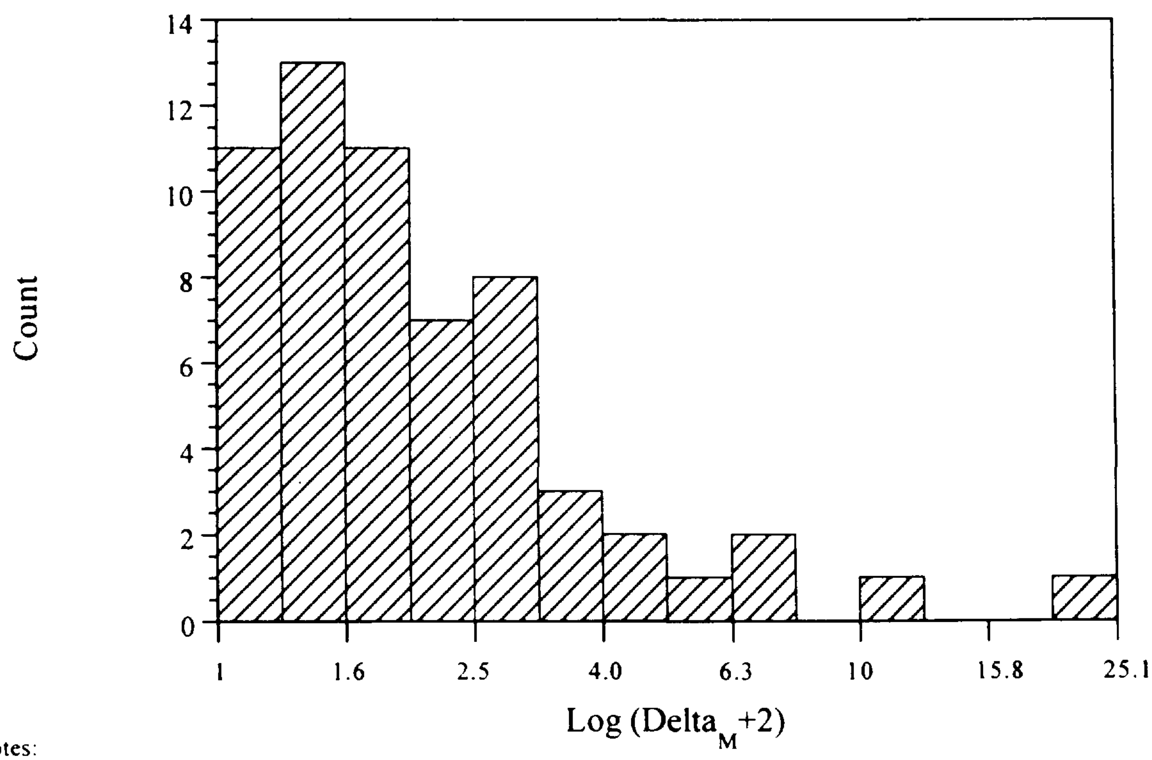
Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-9

Distribution of Mass Difference (g/m^2) and Mole Difference ($mole/m^2$) between 1984 and 1994



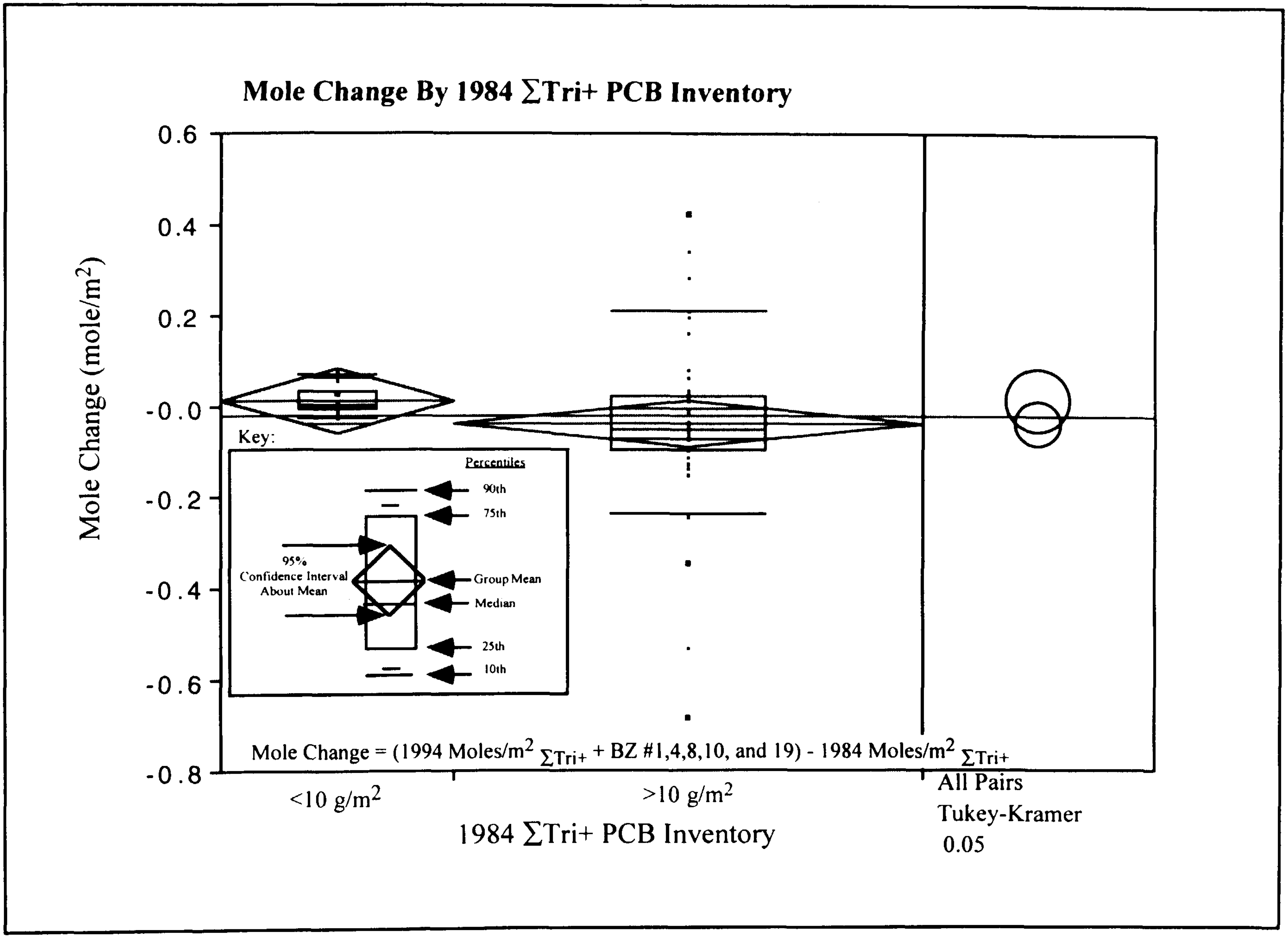


Notes:
1. See text for definition of Delta$_M$
2. The value of 2 is added to Delta$_M$ prior to taking the logarithm of the value in order to translate the distribution away from zero and negative numbers which do not have defined logarithm values.

Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-10
Distribution of the Percent Change in PCB Molar Inventory (Delta$_M$)



300454

Figure 4-11

Change in (Moles/m^2) by 1984 ΣTri+ PCB Inventory

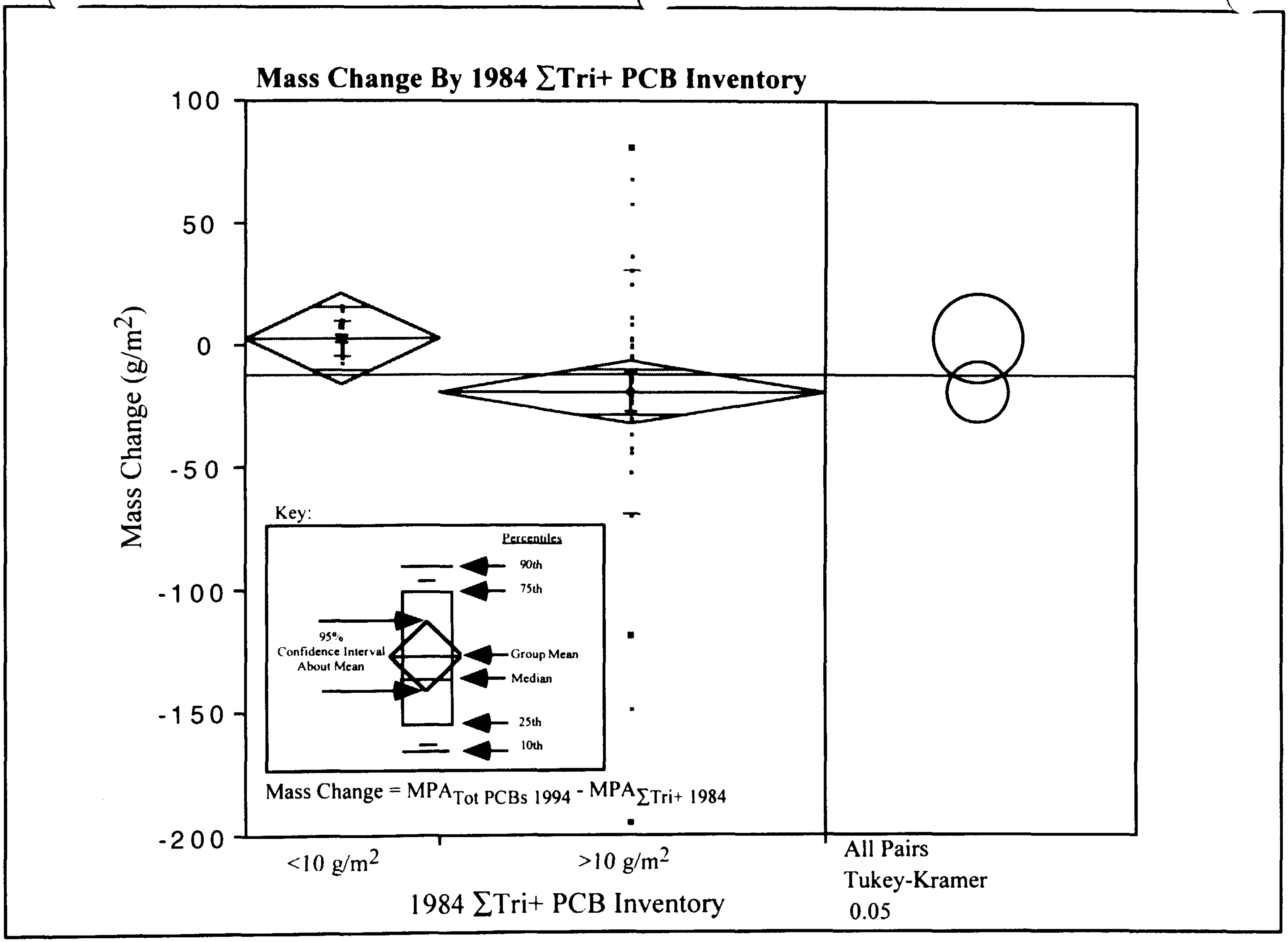
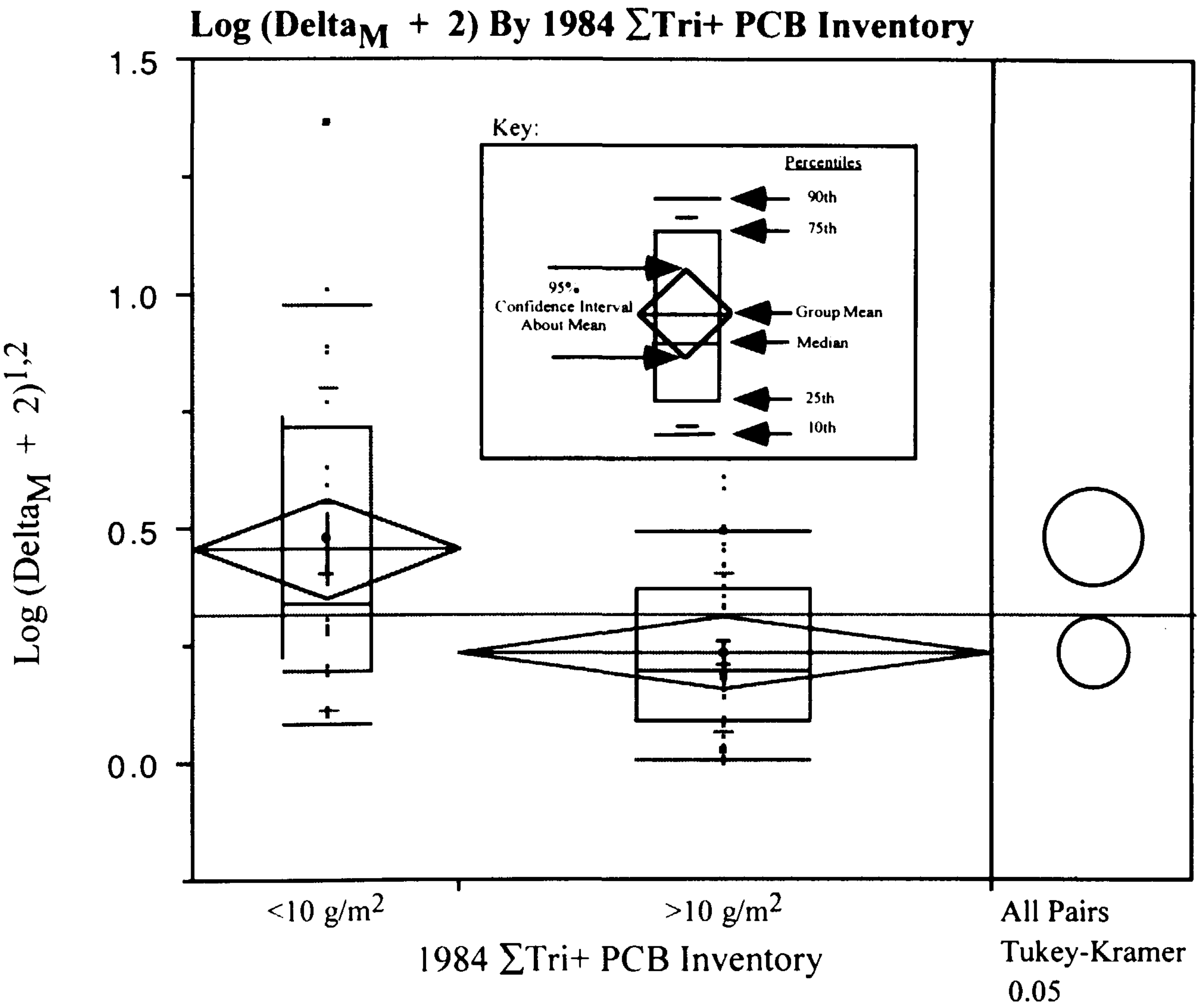


Figure 4-12
Change in Mass per Unit Area (MPA) by 1984 ΣTri+ PCB Inventory

300455



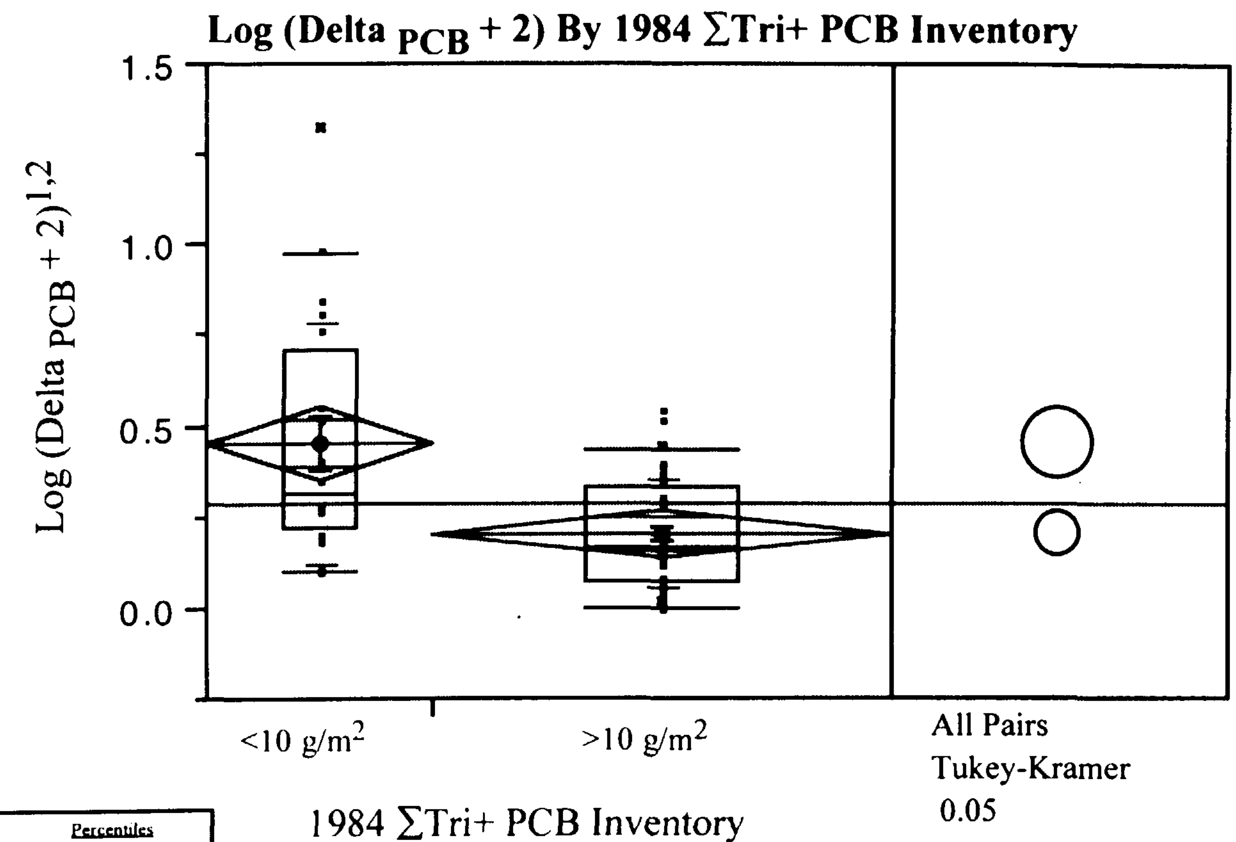
Notes:

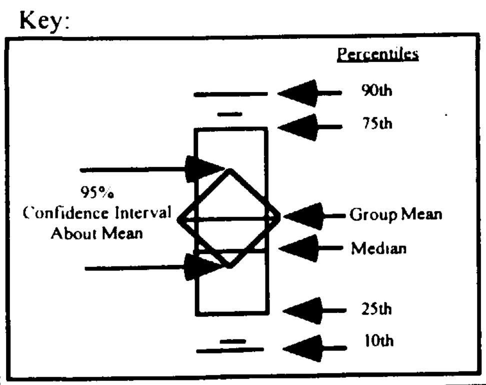
1. See text for definition of $Delta_M$.
2. The value 2 is added to $Delta_M$ prior to taking the logarithm of the value in order to translate the distribution away from zero and negative numbers which do not have defined logarithmic values.

Figure 4-13

Percent Change in PCB Molar Inventory ($Delta_M$) by 1984 ΣTri + PCB Inventory

300456





Notes:

1. See text for definition of $Delta_{PCB}$.
2. The value 2 is added to $Delta_{PCB}$ prior to taking the logarithm of the value in order to translate the distribution away from zero and negative numbers which do not have defined logarithmic values.

300457

Figure 4-14
Percent Mass Change ($Delta_{PCB}$) by 1984 ∑Tri+ PCB Inventory

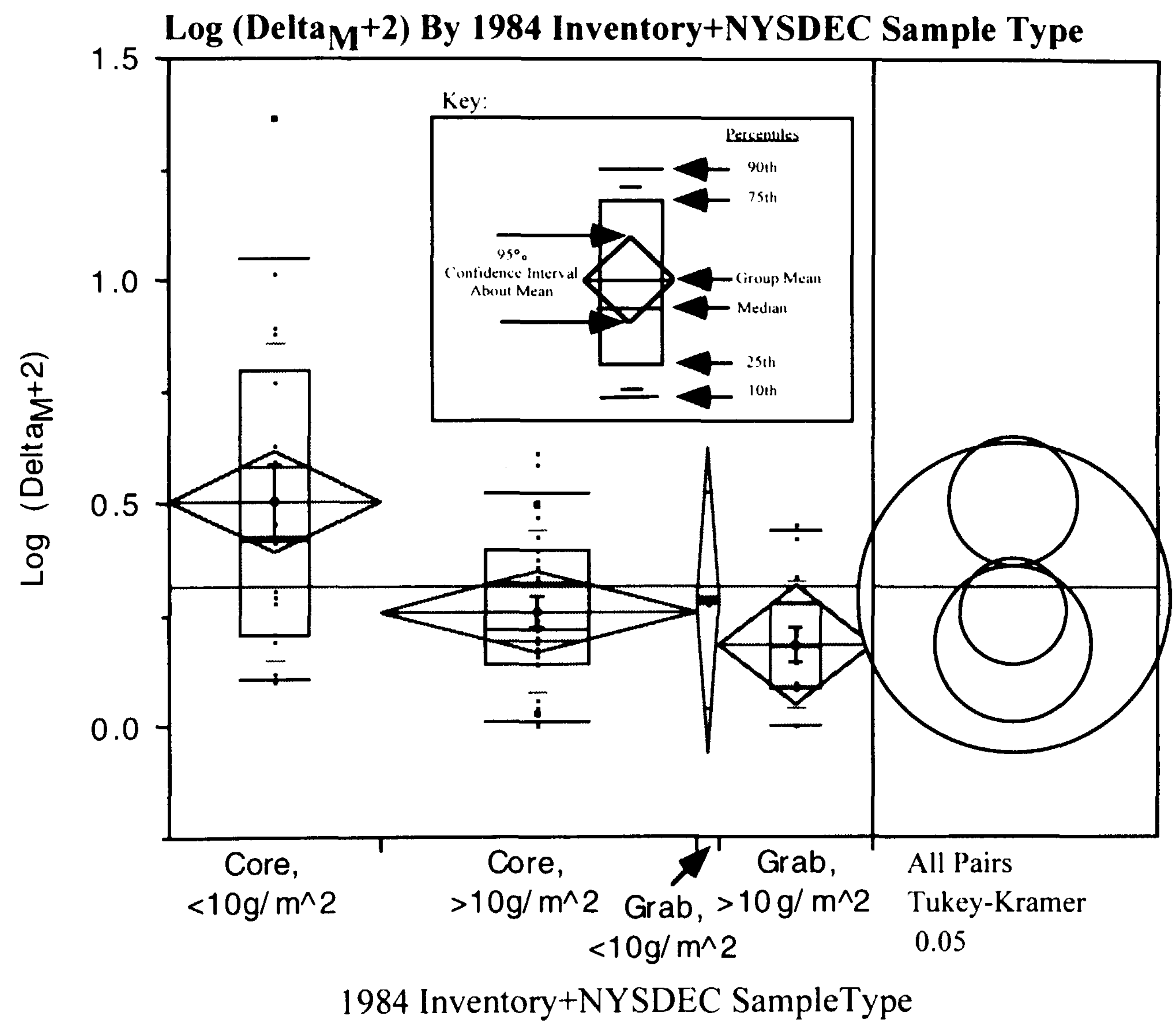
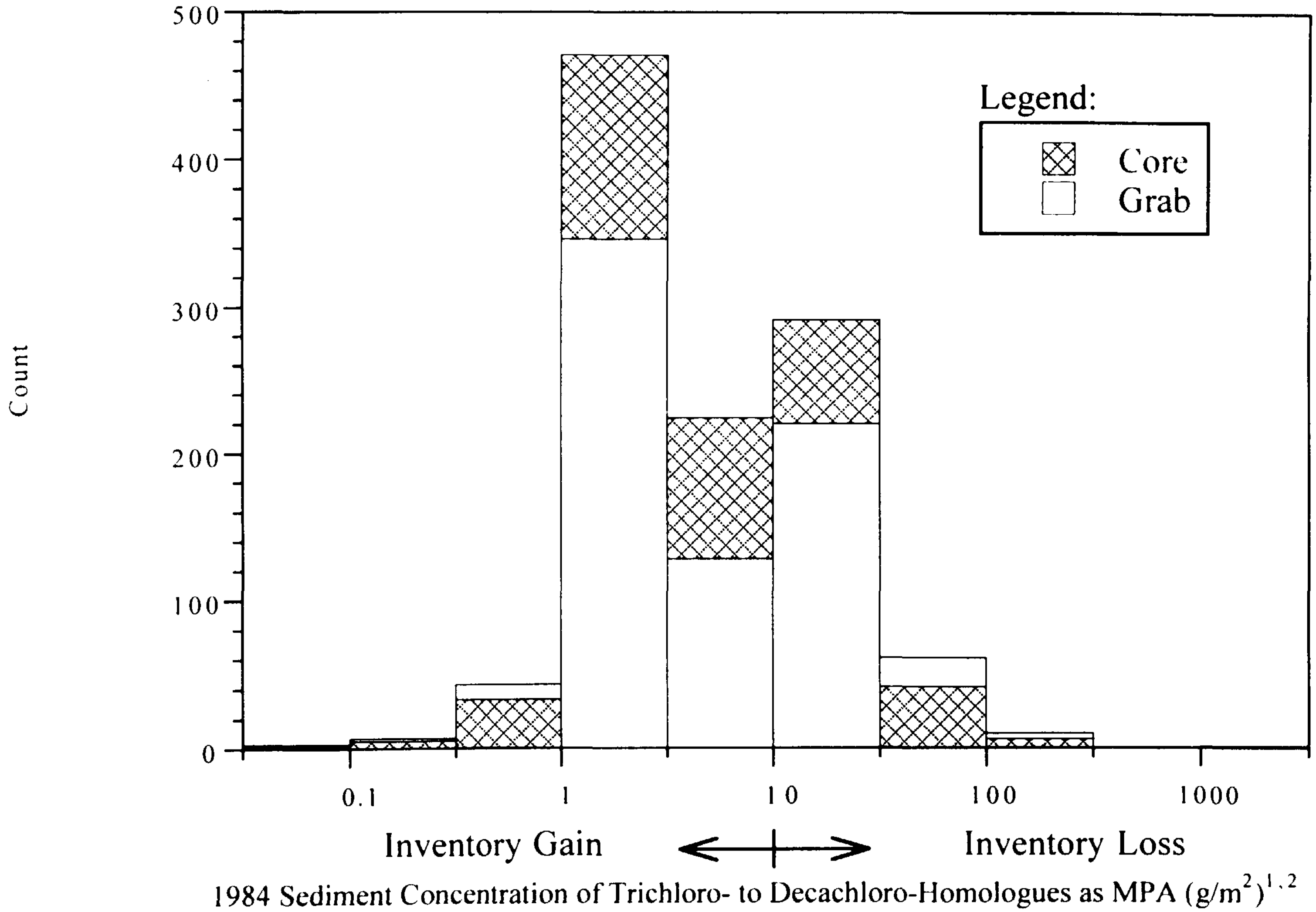


Figure 4-15

Statistical Analysis of Delta$_M$ as a Function of 1984 Sediment ΣTri+ Inventory and NYSDEC Sample Type

300458

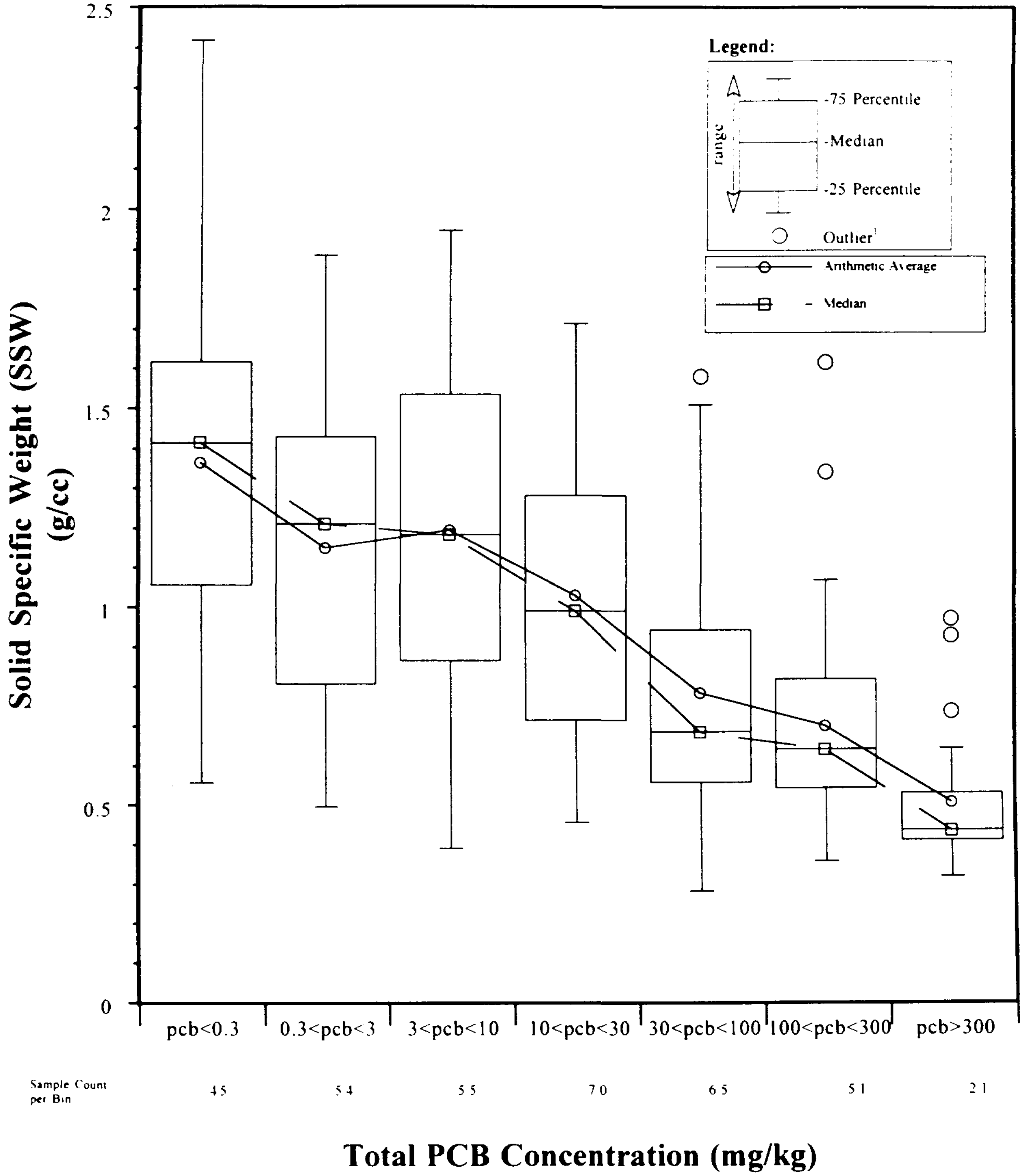


Notes:
1. Based on Brown, et al 1988.
2. Original 1984 PCB concentrations were converted to the sum of trichloro- to decachloro homologues by multiplying by a factor of 0.934. See text for discussion.

Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-16
Implications of the Inventory Change Analysis for the 1984 TI Pool Inventory



Note 1) See text for discussion

Source: TAMS/Gradient Database, Release 3.5

TAMS

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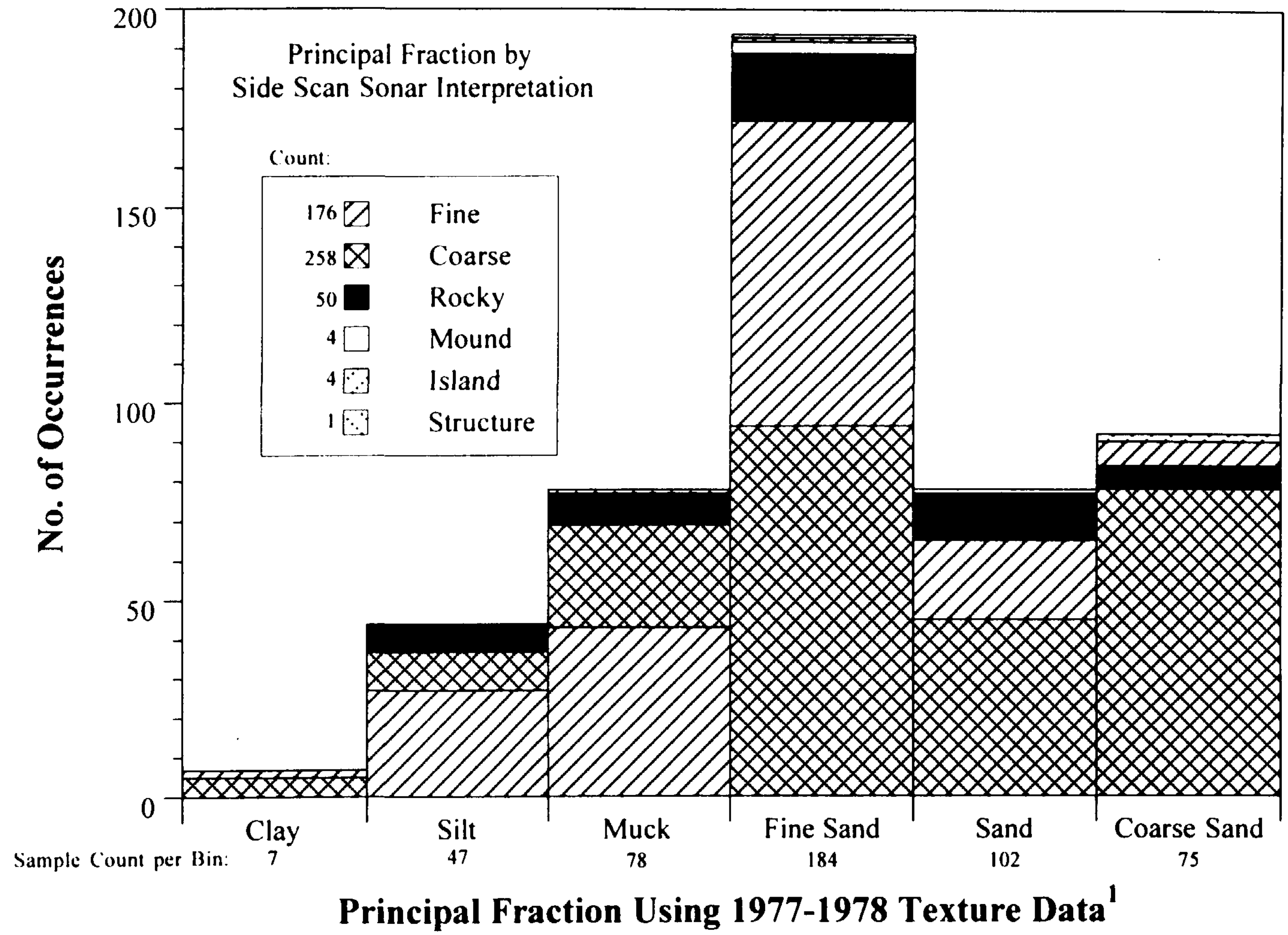
Figure 4-17
Relationship Between Total PCB Concentration and Solid Specific Weight for Low Resolution Core Samples



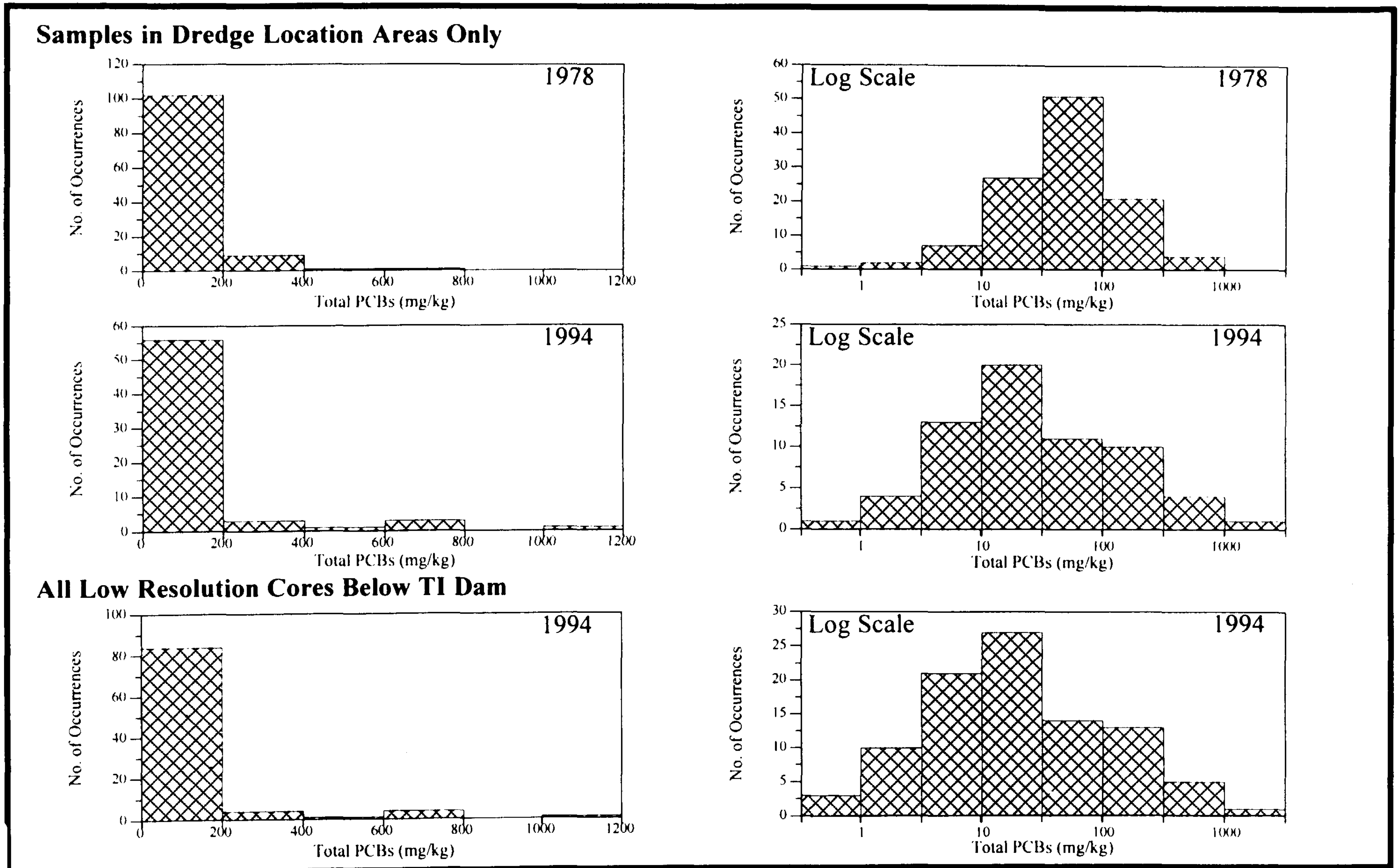
Notes: 1) 1977-1978 data represents all NYSDEC sampling points between the TI Dam and Lock 5. Sediment texture data were obtained from NYSDEC (NYSDEC, 1990) and Normandeau (1977).

Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-18

Comparison of 1977-1978 Sediment Classifications and Interpretation of the Side-Scan Sonar Images

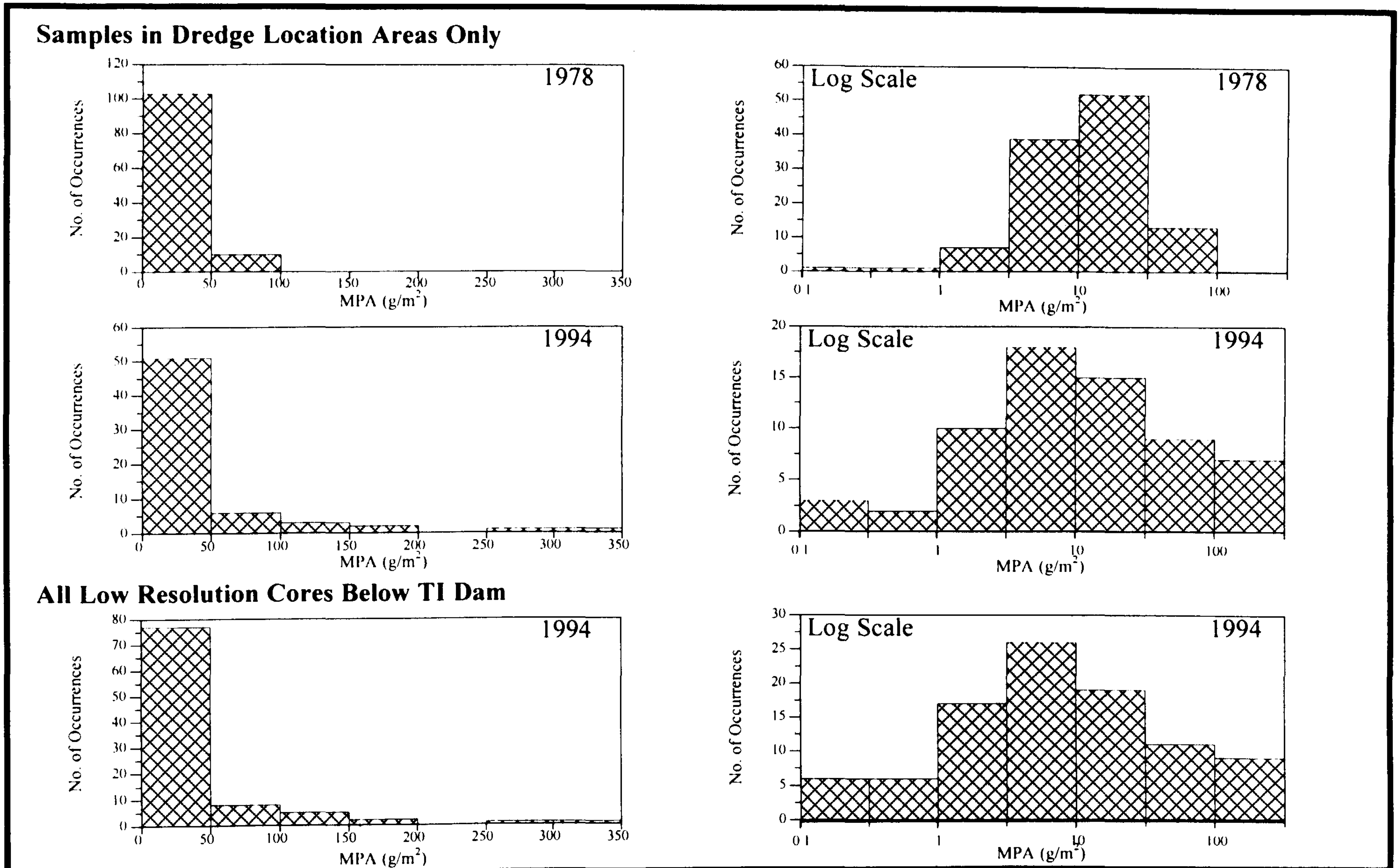


Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-19
Distribution of Length-Weighted Core Averages in 1976-1978 NYSDEC Survey and Low Resolution Sediment Core Samples

300462

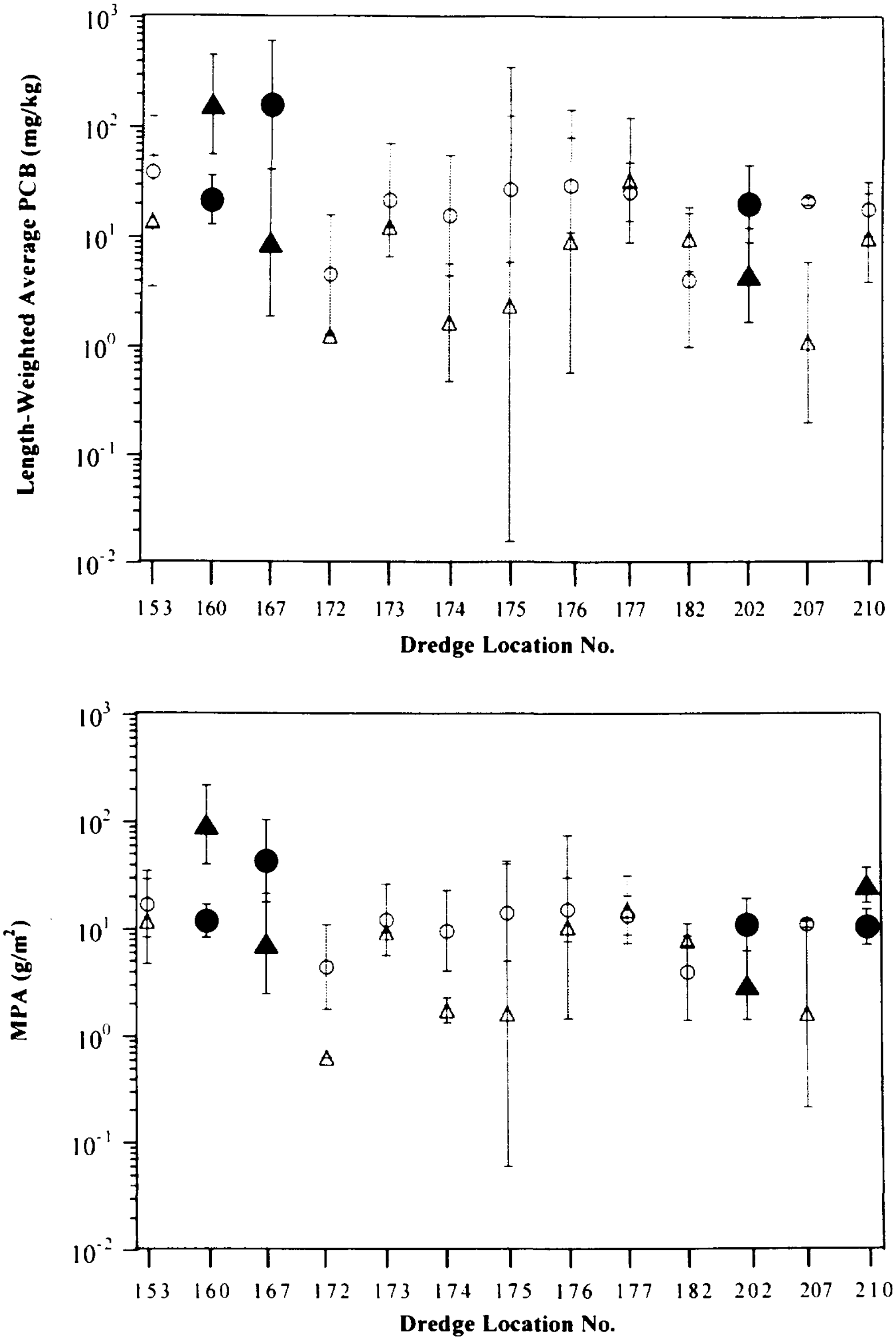


Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-20
Distribution of MPA in 1976-1978 NYSDEC Survey and Low Resolution Sediment Core Samples

300463



Legend:

○ 1976-1978 NYSDEC Survey

△ Low Resolution Cores

Notes
1. Filled symbols indicate statistically significant differences in sediment inventory
2. Error bars represent two standard errors about the mean value
3. Plotted values represent geometric mean values for dredge locations
4. Dredge location areas are based on MPI. 1992

Source: TAMS/Gradient Database, Release 3.5

TAMS

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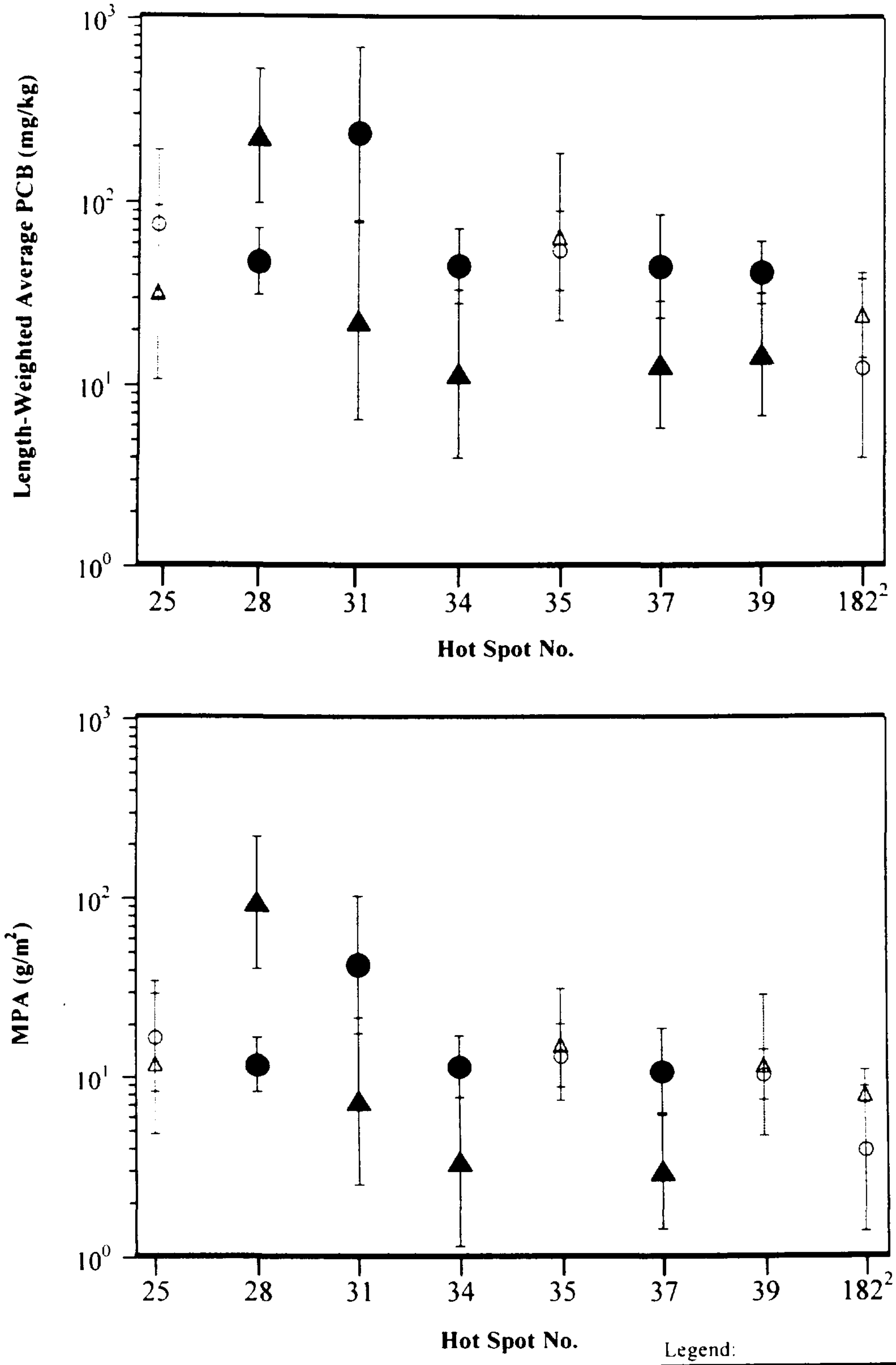
Figure 4-21
Comparison of Geometric Mean PCB MPA and Length-Weighted Core Averages from the 1976-1978 NYSDEC and Low Resolution Core Surveys in Dredge Locations

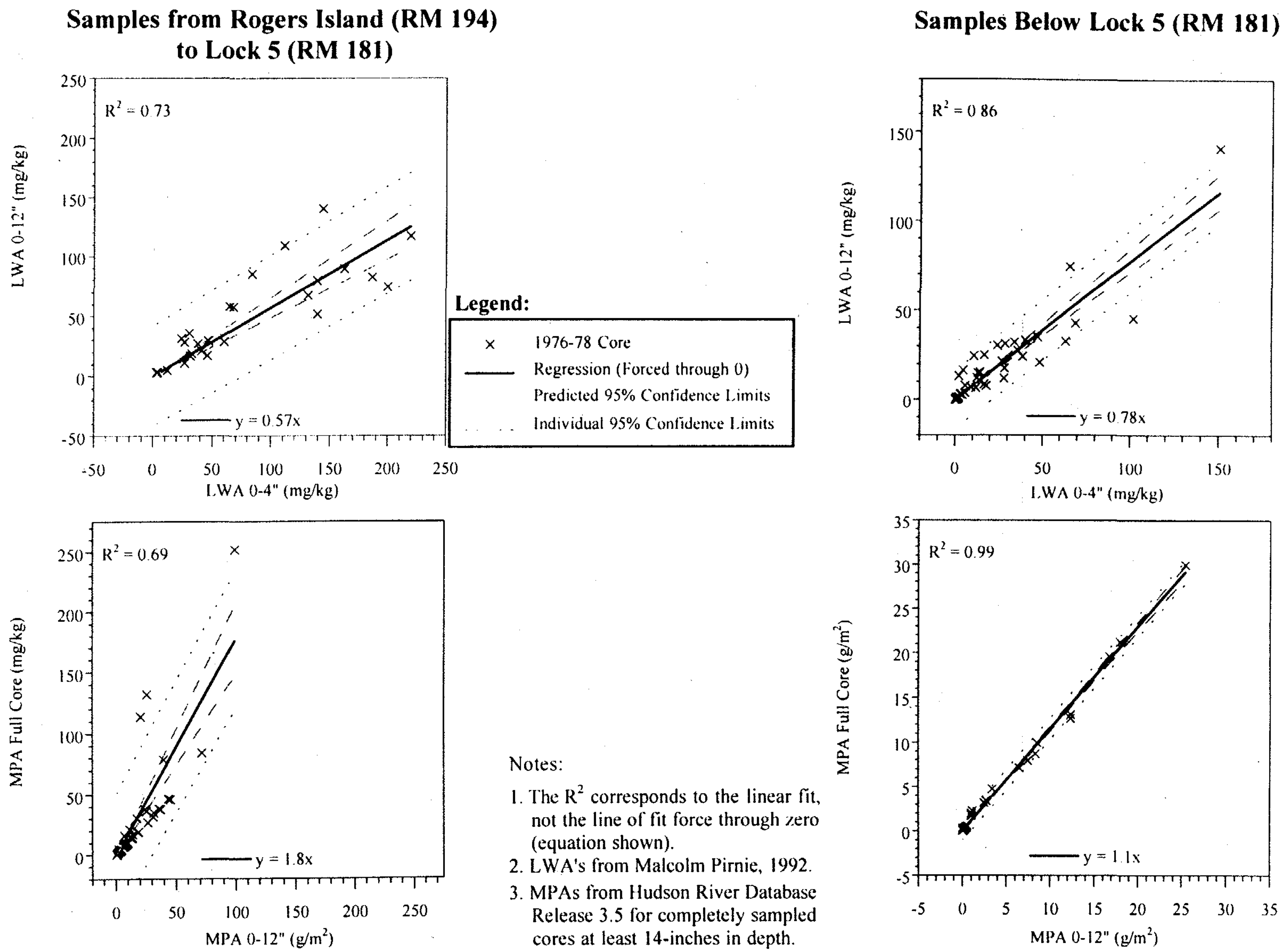


Notes
1 Filled symbols indicate statistically significant differences in sediment inventory
2 No hot spot number was designated for this area. The number given is the dredge location number designated by, MPI, 1992
3 Error bars represent two standard errors about the mean value
4 Plotted values represent geometric mean mass per unit area for hot spots
5 Hot spot areas are based on MPI, 1992

Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-22
Comparison of Geometric Mean PCB MPA and Length-Weighted Core Averages from the 1976-1978 NYSDEC and Low Resolution Core Surveys in Hot Spots



Notes:

1. The R^2 corresponds to the linear fit, not the line of fit force through zero (equation shown).
2. LWA's from Malcolm Pirnie, 1992.
3. MPAs from Hudson River Database Release 3.5 for completely sampled cores at least 14-inches in depth.

Source: TAMS/Gradient Database, Release 3.5

TAMS

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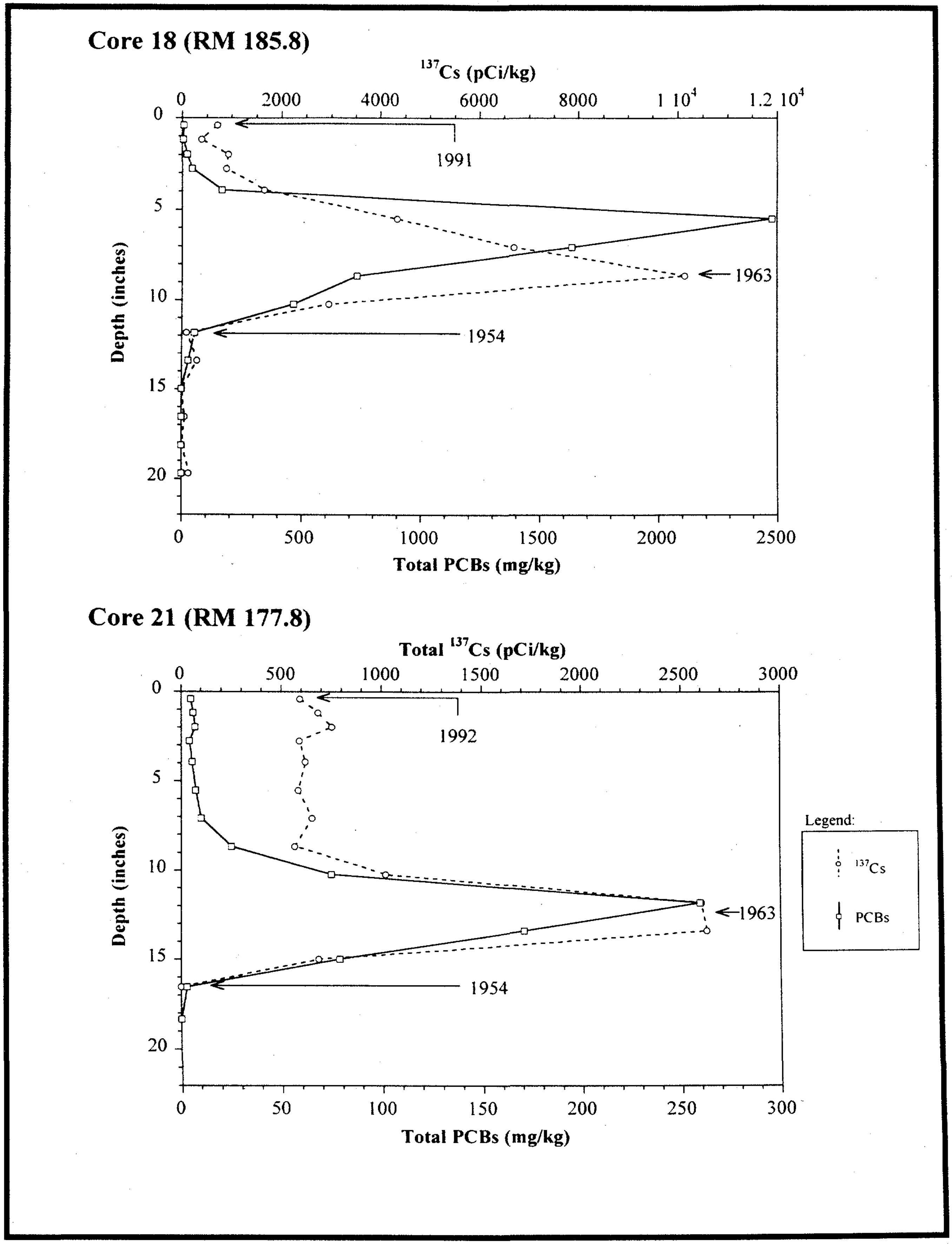
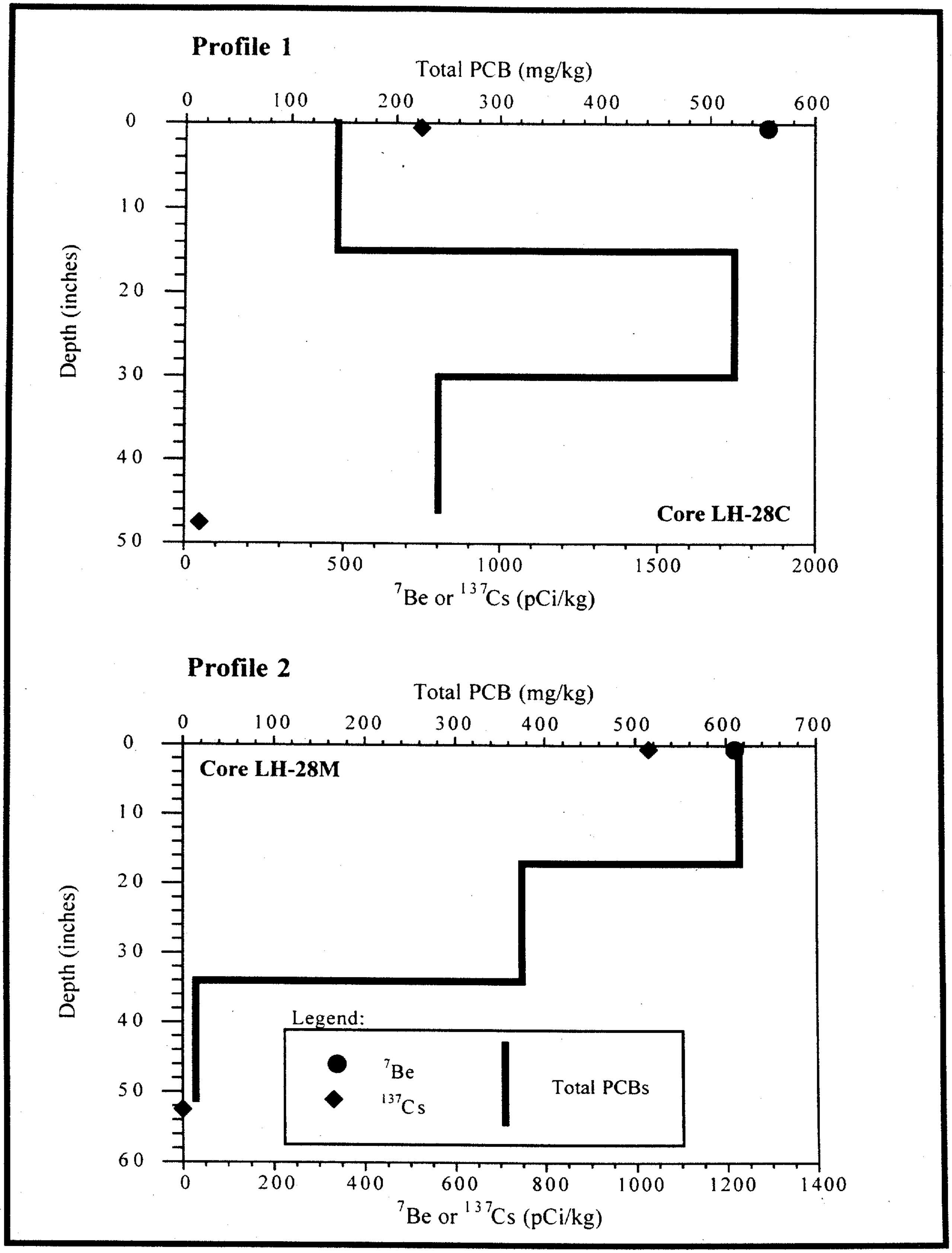
Figure 4-23
Relationships Between 0-4", 0-12" and Entire Core PCB Concentrations



Source: TAMS/Gradient Database, Release 3.5

TAMS

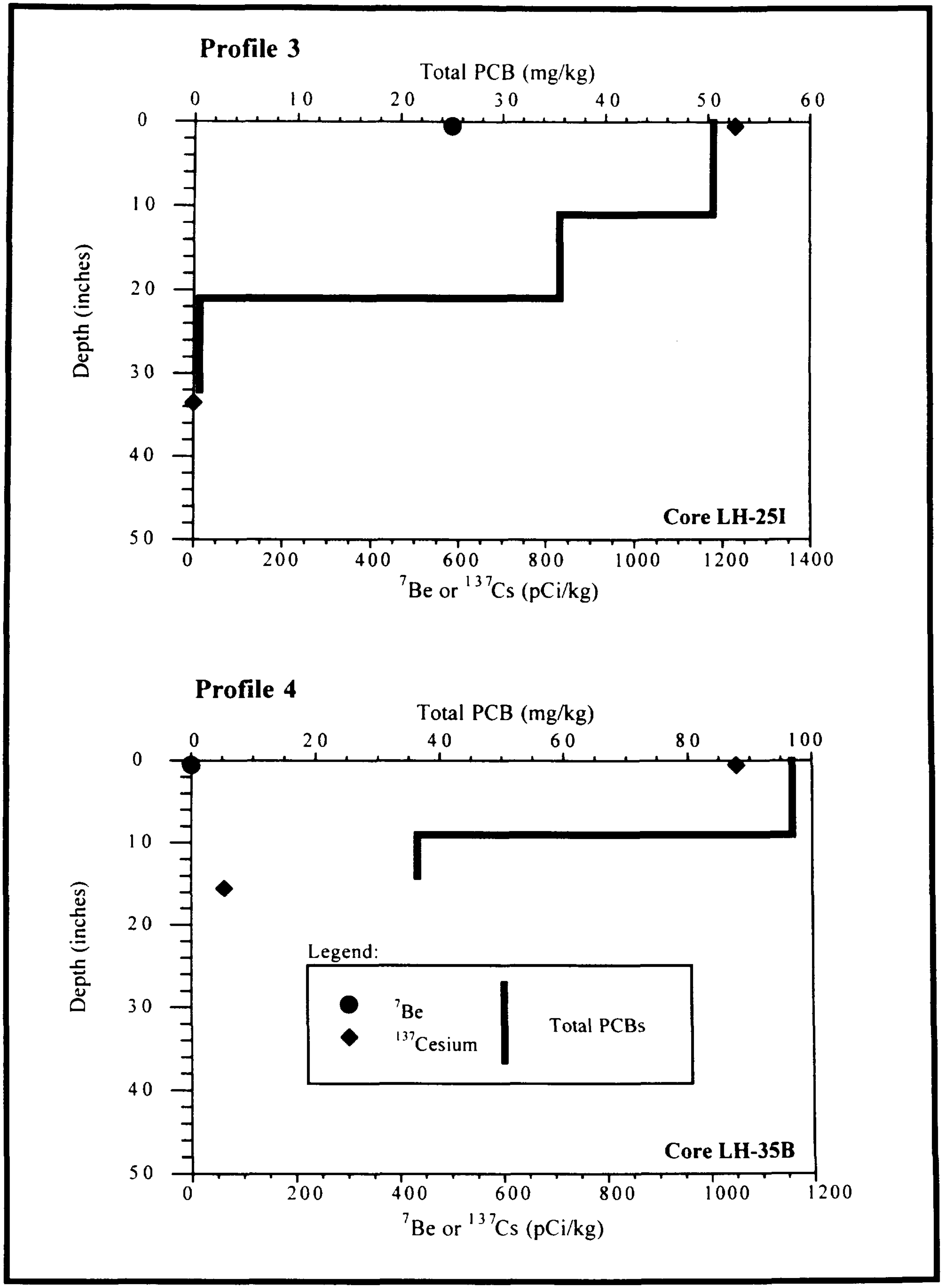
Figure 4-24
Core Profiles in Areas of Continuous Deposition



Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-25
Typical 1994 Sediment Core Profiles from Hot Spot 28



Source: TAMS/Gradient Database, Release 3.5

TAMS

Figure 4-26
Typical 1994 Sediment Core Profiles from Hot Spots 25 and 35

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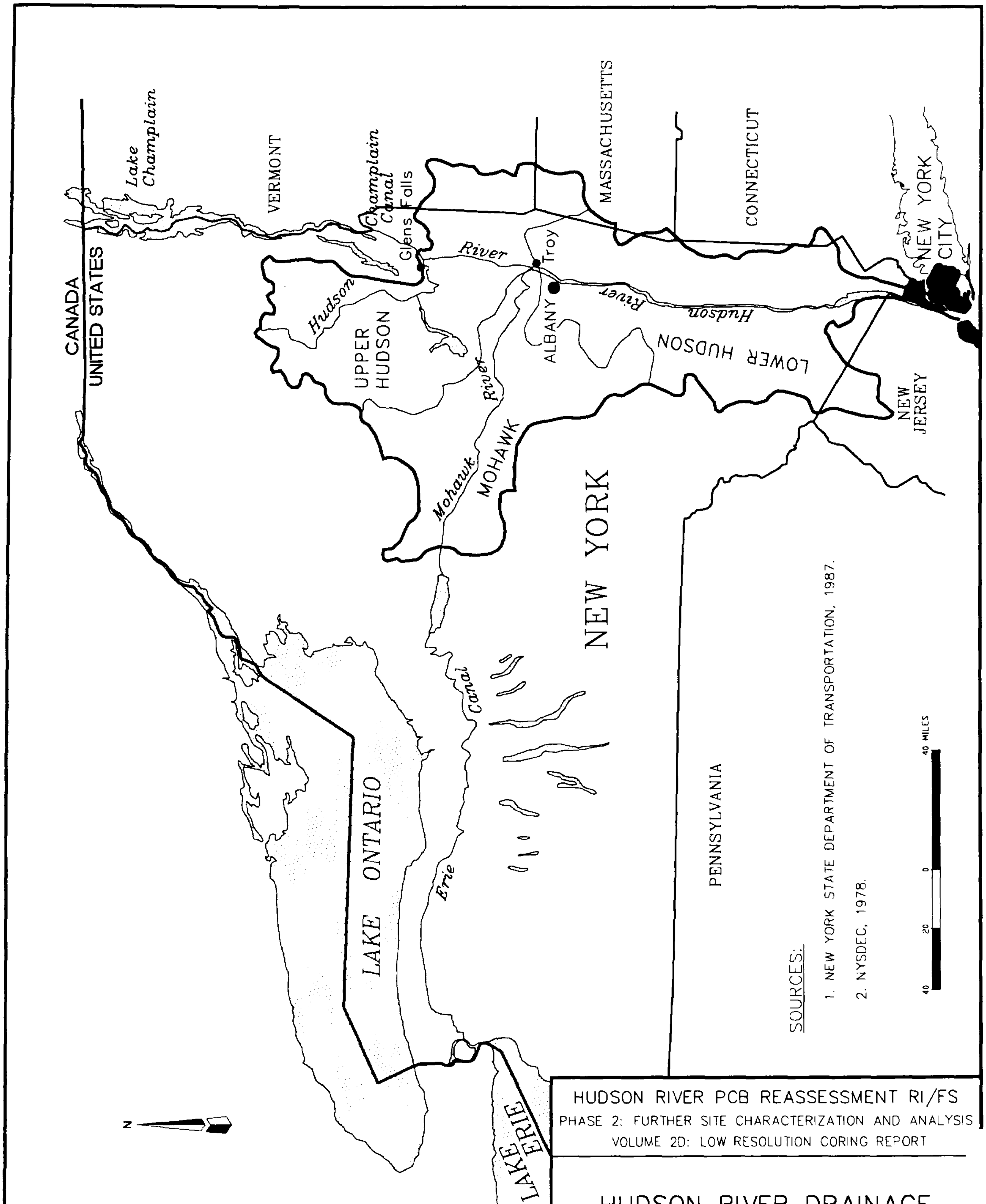
Plates

PLATES



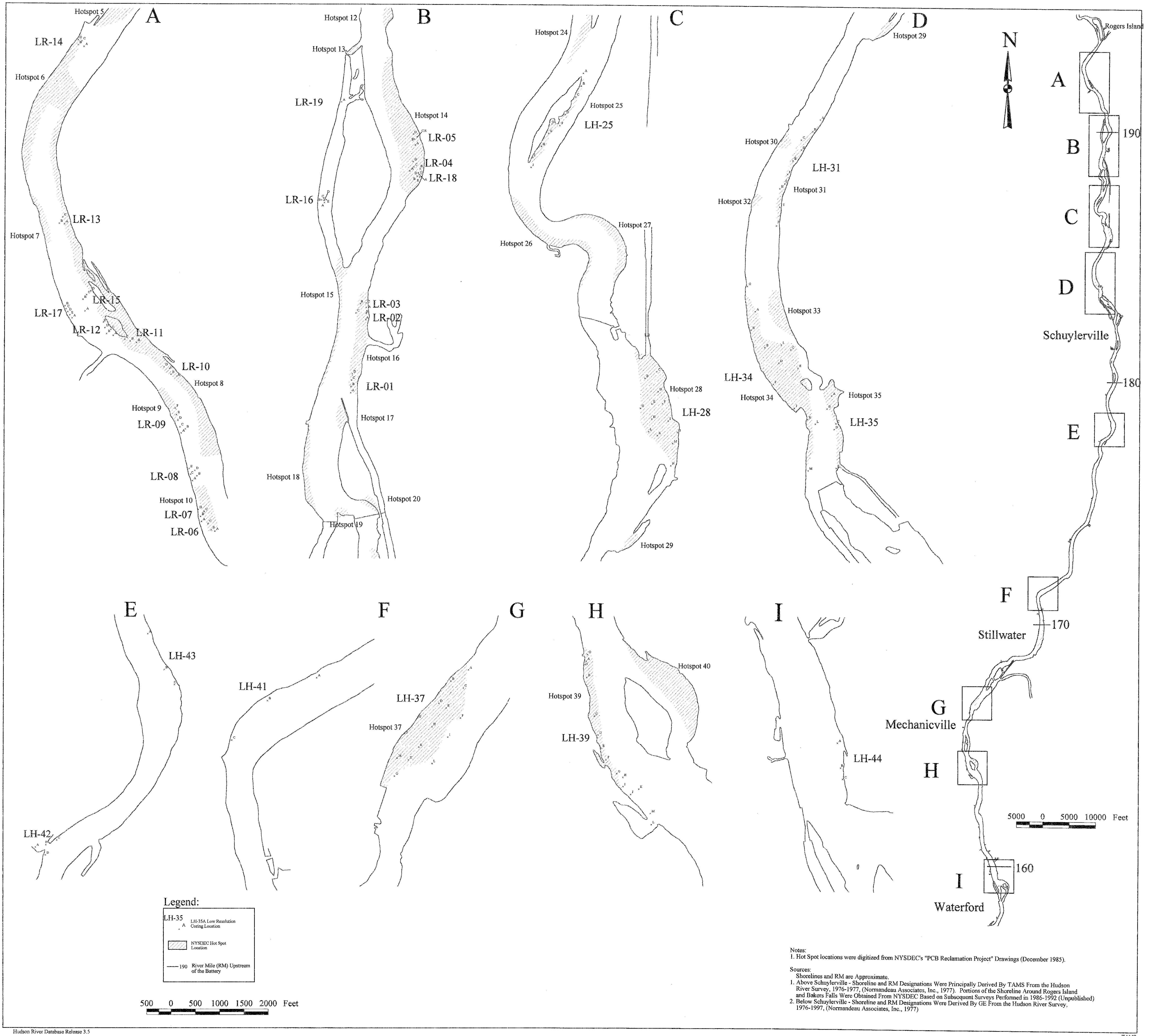
HUDSON RIVER PCB REASSESSMENT RI/FS
PHASE 2: FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2D: LOW RESOLUTION CORING REPORT

HUDSON RIVER DRAINAGE BASIN AND SITE LOCATION MAP

TAMS CONSULTANTS, Inc.

PLATE 1-1

300471



Hudson River Database Release 3.5

TAMS

Plate 2-1
Low Resolution Coring Locations in Upper Hudson

Hudson River PCB Reassessment RI/FS
Phase2: Further Site Characterization and Analysis
Volume 2C-A: Low Resolution Sediment Coring Report

EPA REGION II
SCANNING TRACKING SHEET

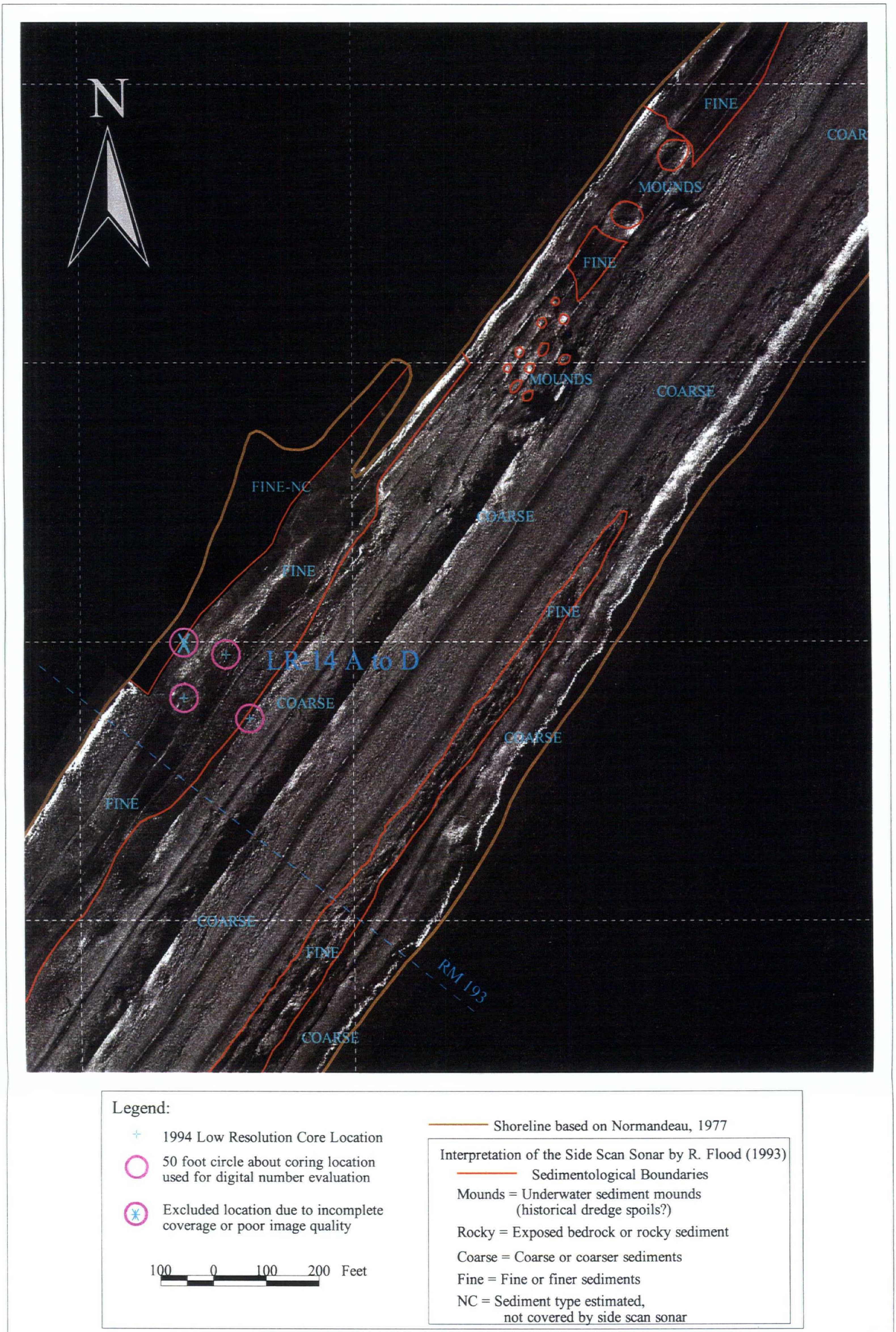
DOC ID # 62465

DOC TITLE/SUBJECT:

PLATE 3-1
HUDSON RIVER PCB UPDATES #2
KEY TO LOCATIONS OF PLATES 3-2
THROUGH 3-20

THIS DOCUMENT IS OVERSIZED AND CAN BE LOCATED IN THE ADMINISTRATIVE RECORD FILE AT THE

SUPERFUND RECORDS CENTER
290 BROADWAY, 18TH FLOOR
NEW YORK, NY 10007

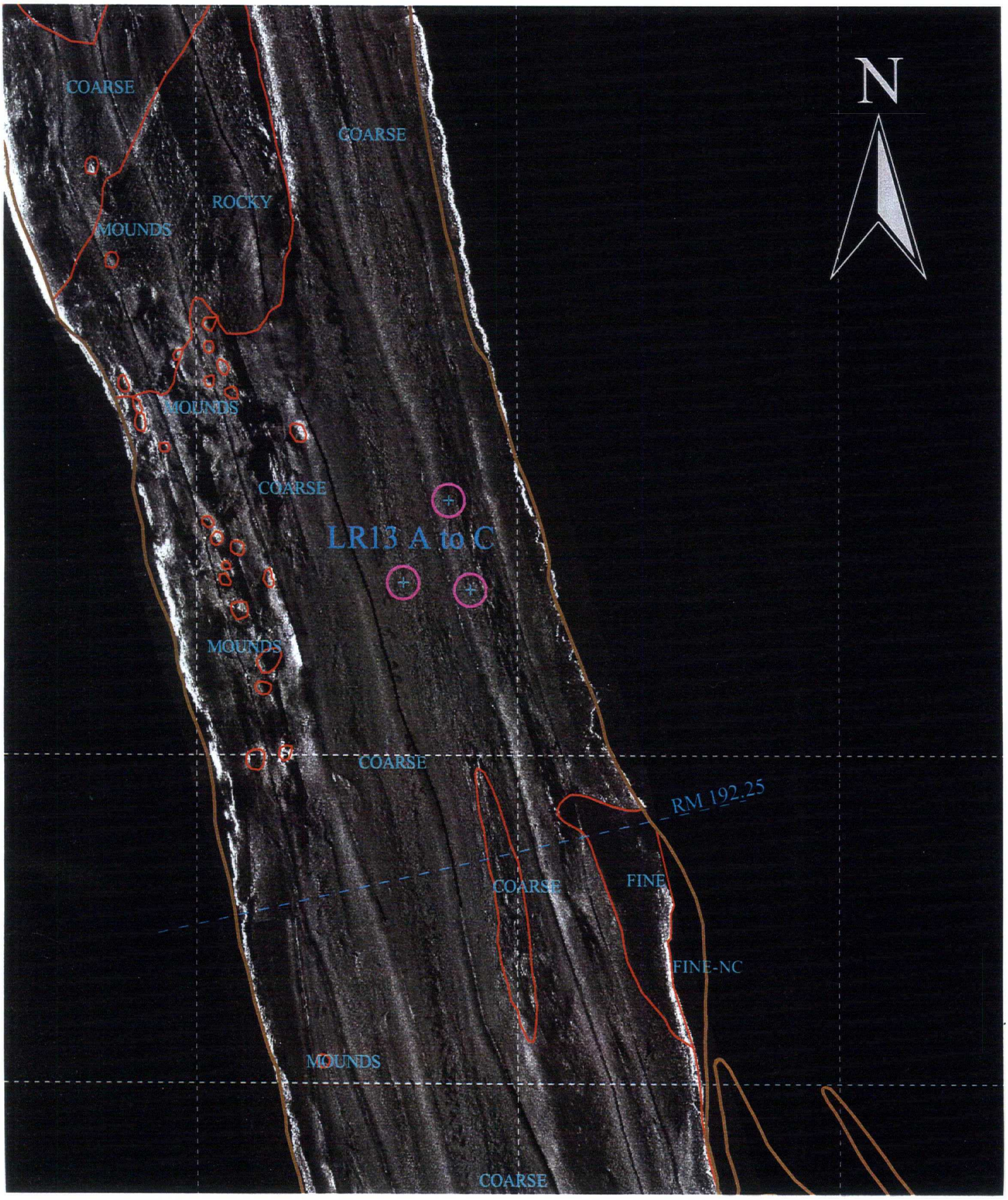


Hudson River Database Release 3.5

TAMS

Plate 3-2
Determination of the DN50 Values for the Low Resolution Coring Locations in Cluster 14

AW 12/97
image28.apr



Legend:

- 1994 Low Resolution Core Location
- 50 foot circle about coring location used for digital number evaluation
- Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

Sedimentological Boundaries

Mounds = Underwater sediment mounds (historical dredge spoils?)

Rocky = Exposed bedrock or rocky sediment

Coarse = Coarse or coarser sediments

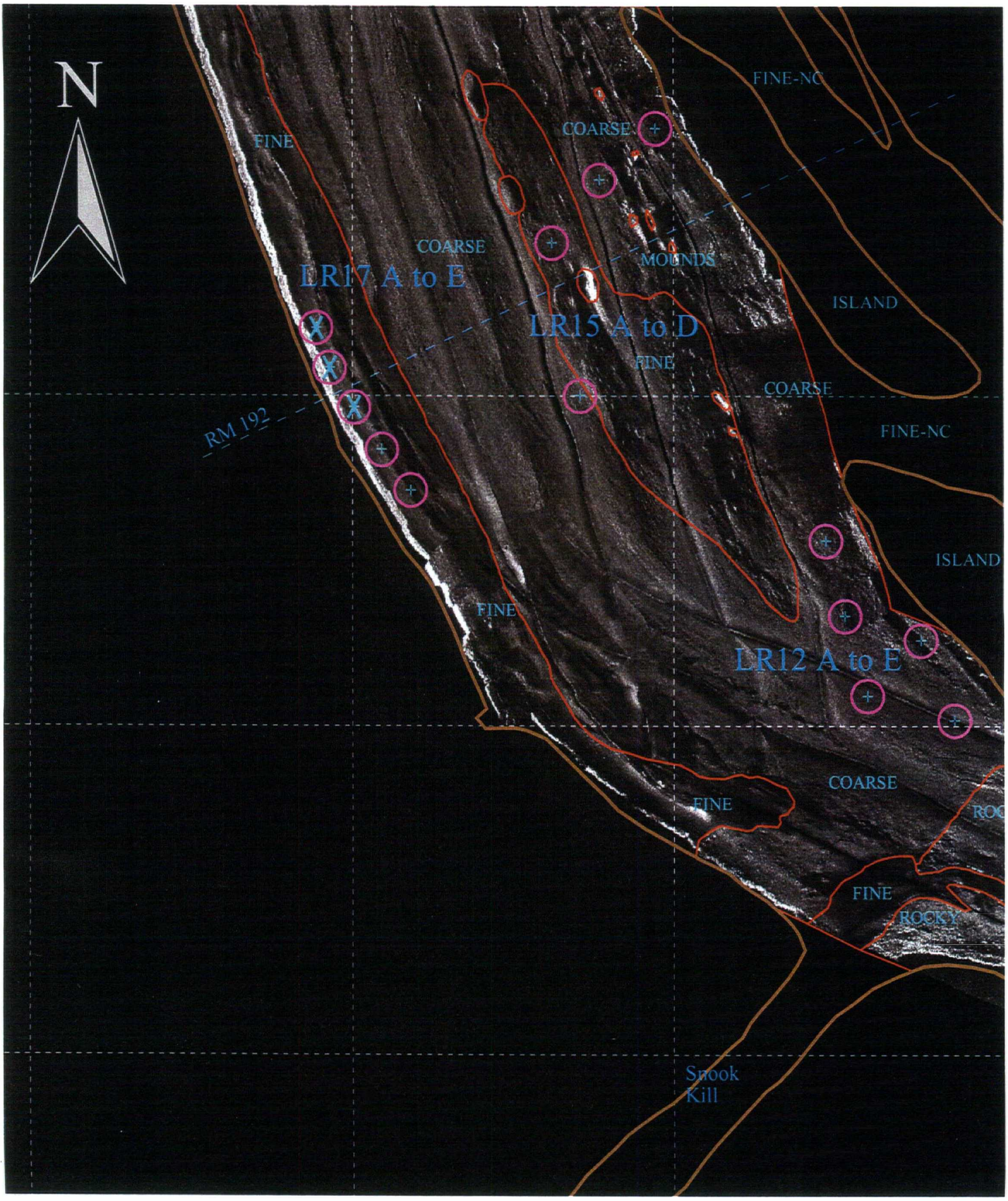
Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-3

Determination of the DN50 Values for the Low Resolution Coring Locations in Cluster 13

AW 12/97
image26.apr



Legend:

- 1994 Low Resolution Core Location
- 50 foot circle about coring location used for digital number evaluation
- Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

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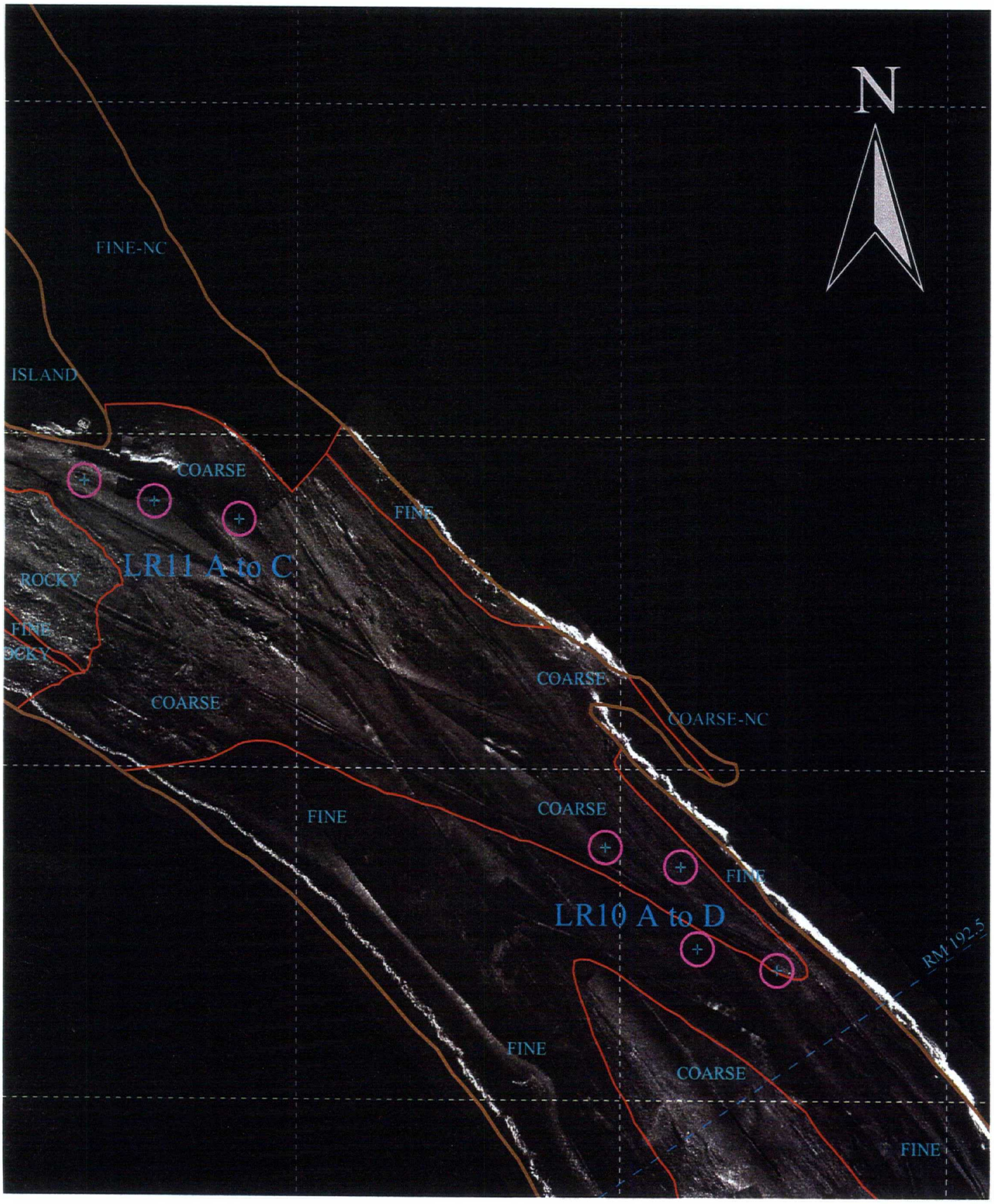
Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-4
Determination of the DN50 Values for the Low Resolution Coring Locations in Clusters 12, 15, and 17

AW 12/97
image25.apr



Legend:

- 1994 Low Resolution Core Location
- 50 foot circle about coring location used for digital number evaluation
- Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

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Coarse = Coarse or coarser sediments

Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-5
Determination of the DN50 Values for the Low Resolution Coring Locations in Clusters 10 and 11

AW 12/97
image24.apr

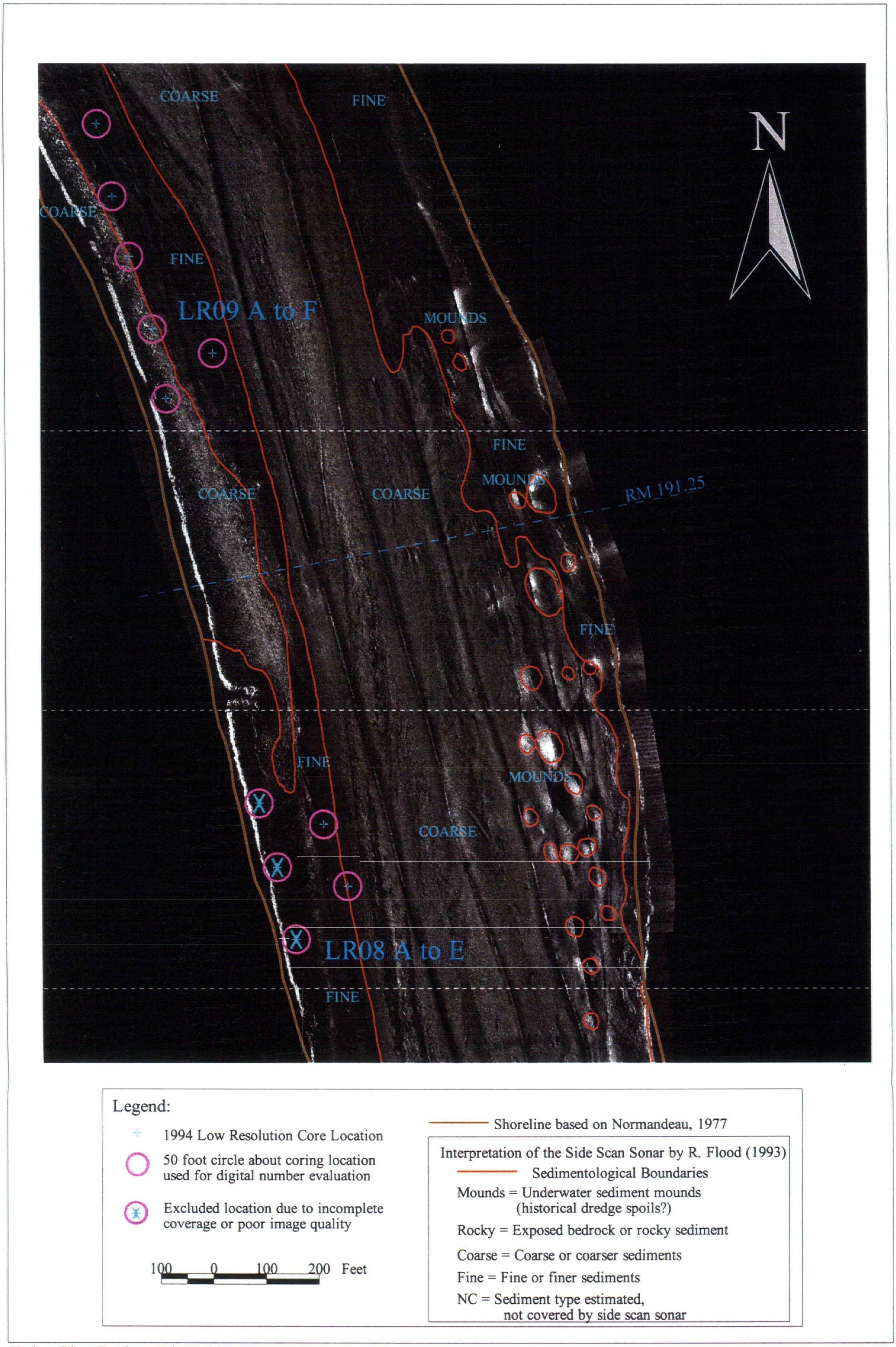
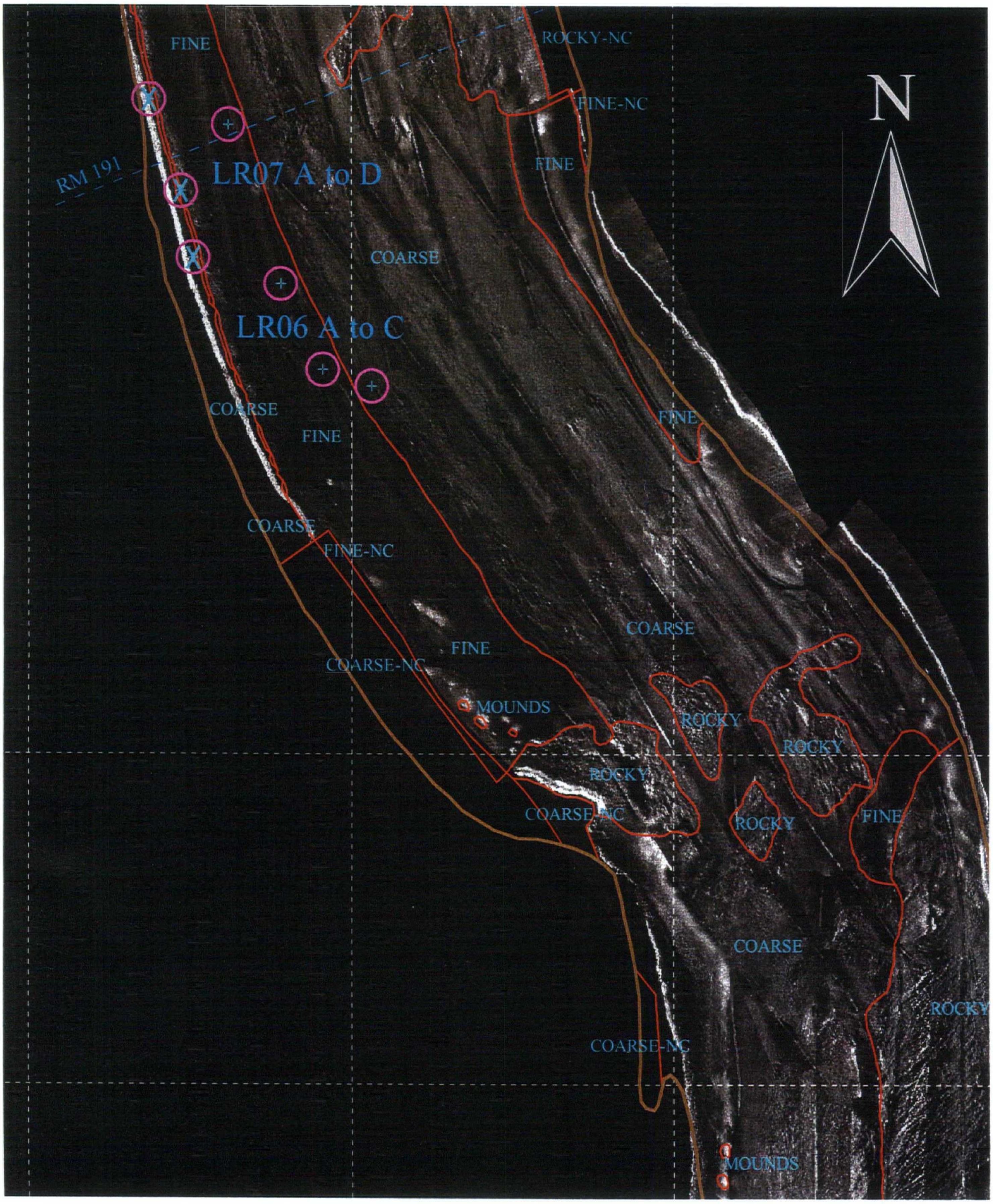


Plate 3-6
Determination of the DN50 Values for the Low Resolution Coring Locations in Clusters 8 and 9

AW 12/97
image23.apr



Legend:

- 1994 Low Resolution Core Location
- 50 foot circle about coring location used for digital number evaluation
- Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

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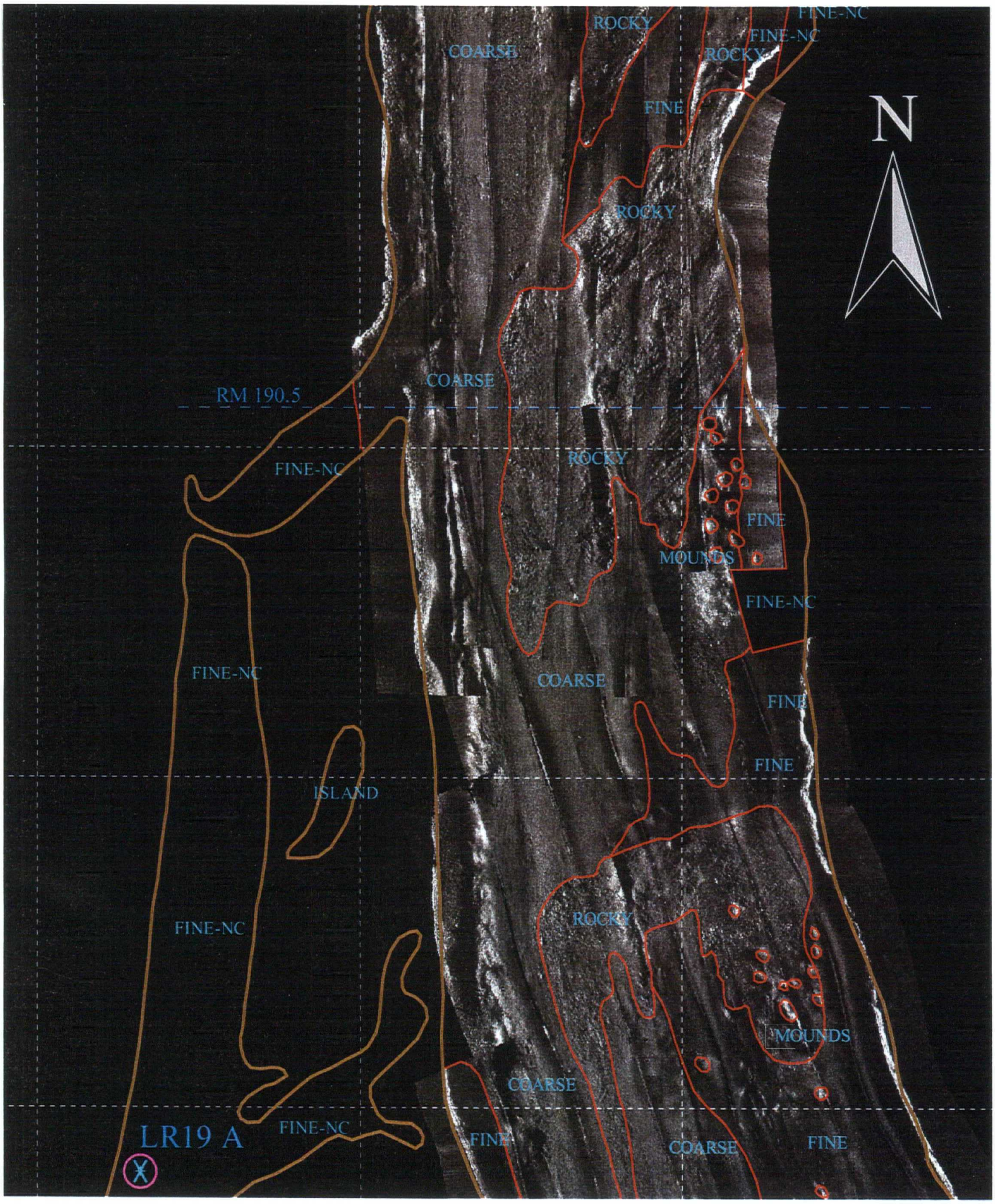
Coarse = Coarse or coarser sediments

Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-7
Determination of the DN50 Values for the Low Resolution Coring Locations in Clusters 6 and 7

AW 12/97
image22.apr



Legend:

1994 Low Resolution Core Location

50 foot circle about coring location used for digital number evaluation

Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

Sedimentological Boundaries

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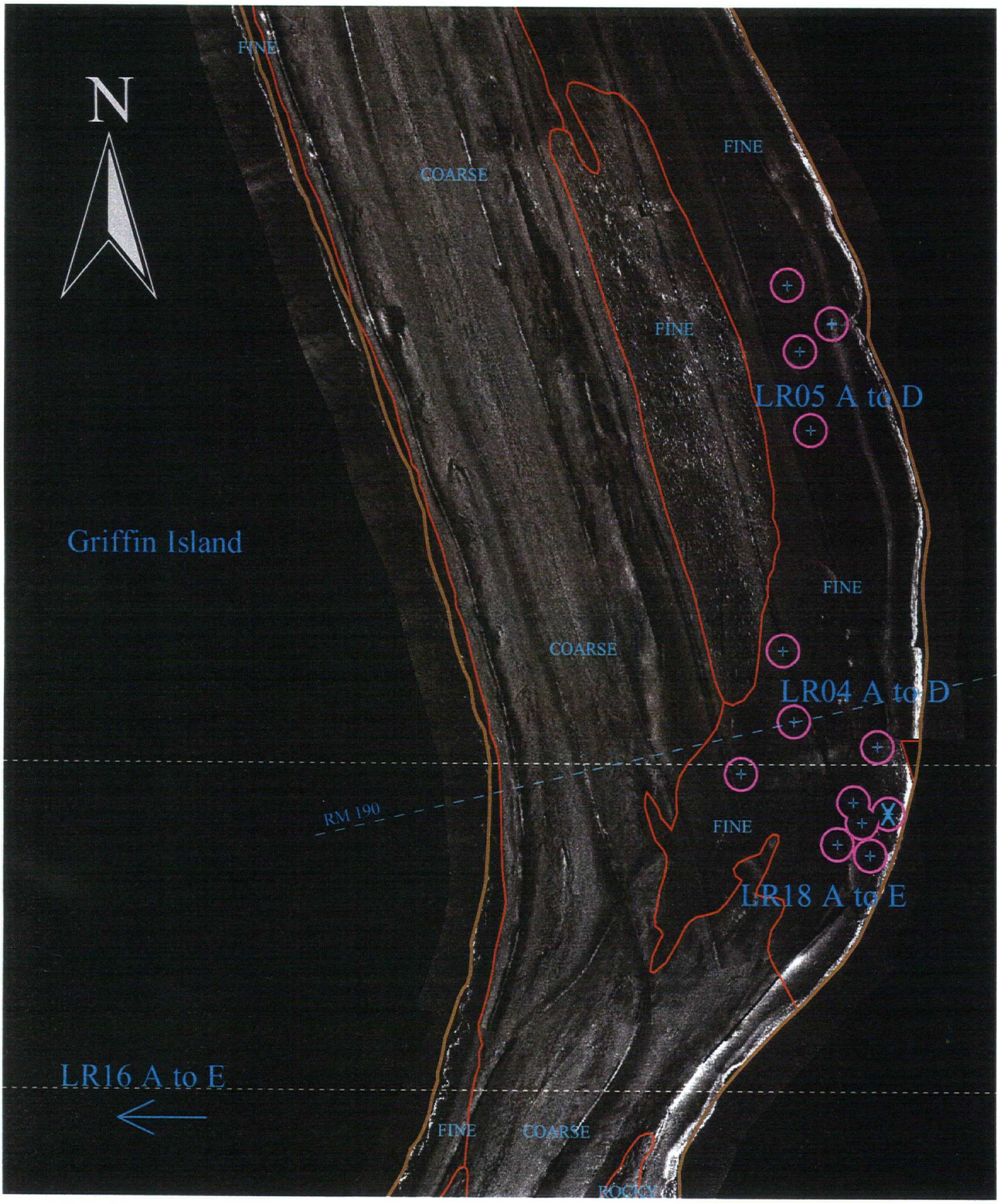
Coarse = Coarse or coarser sediments

Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-8
Determination of the DN50 Values for the Low Resolution Coring Locations in Cluster 19

AW 12/97
good image21.apr



Legend:

- 1994 Low Resolution Core Location
- 50 foot circle about coring location used for digital number evaluation
- Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

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Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-9
Determination of the DN50 Values for the Low Resolution Coring Locations in Clusters 4, 5 and 18

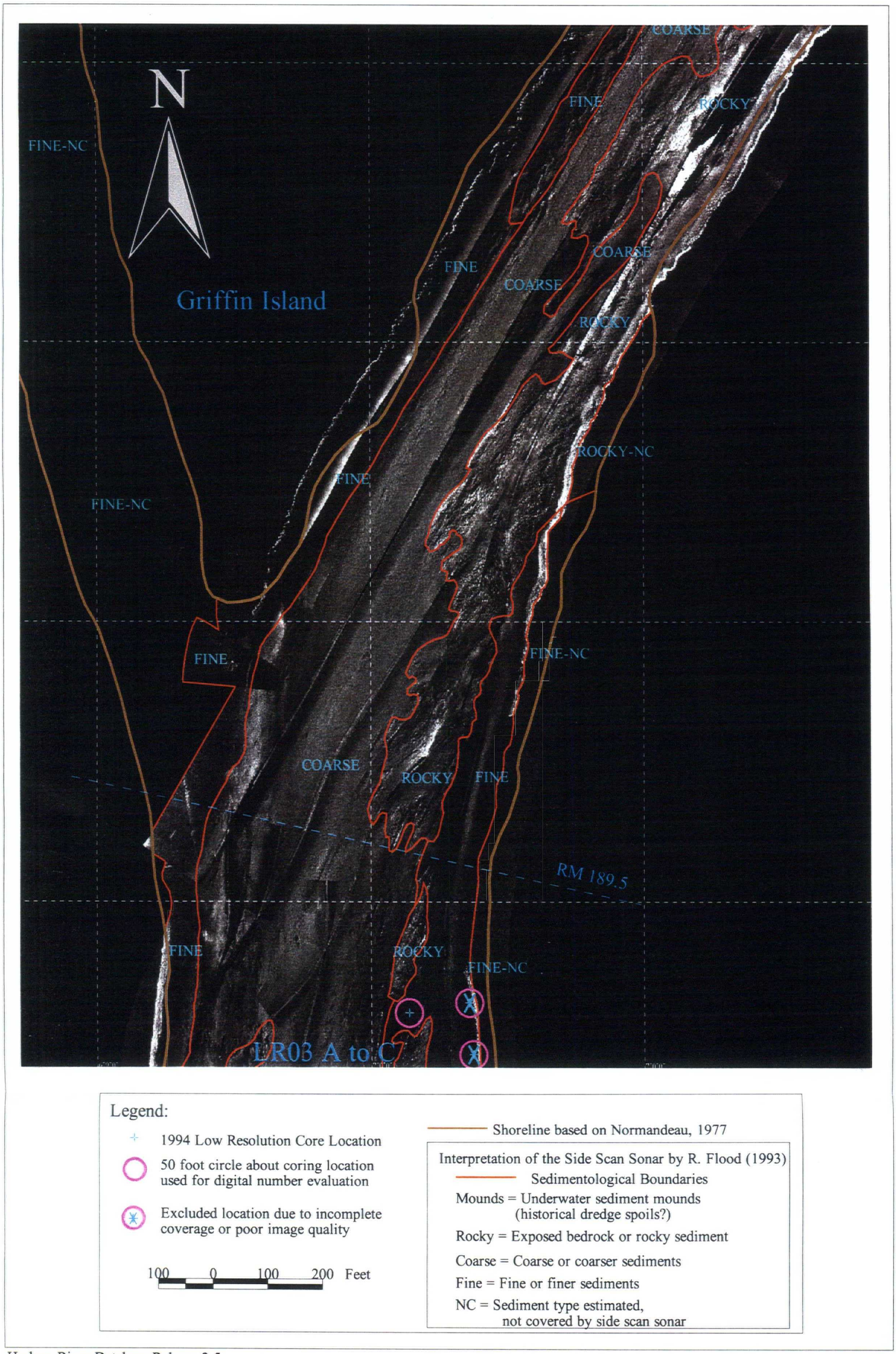
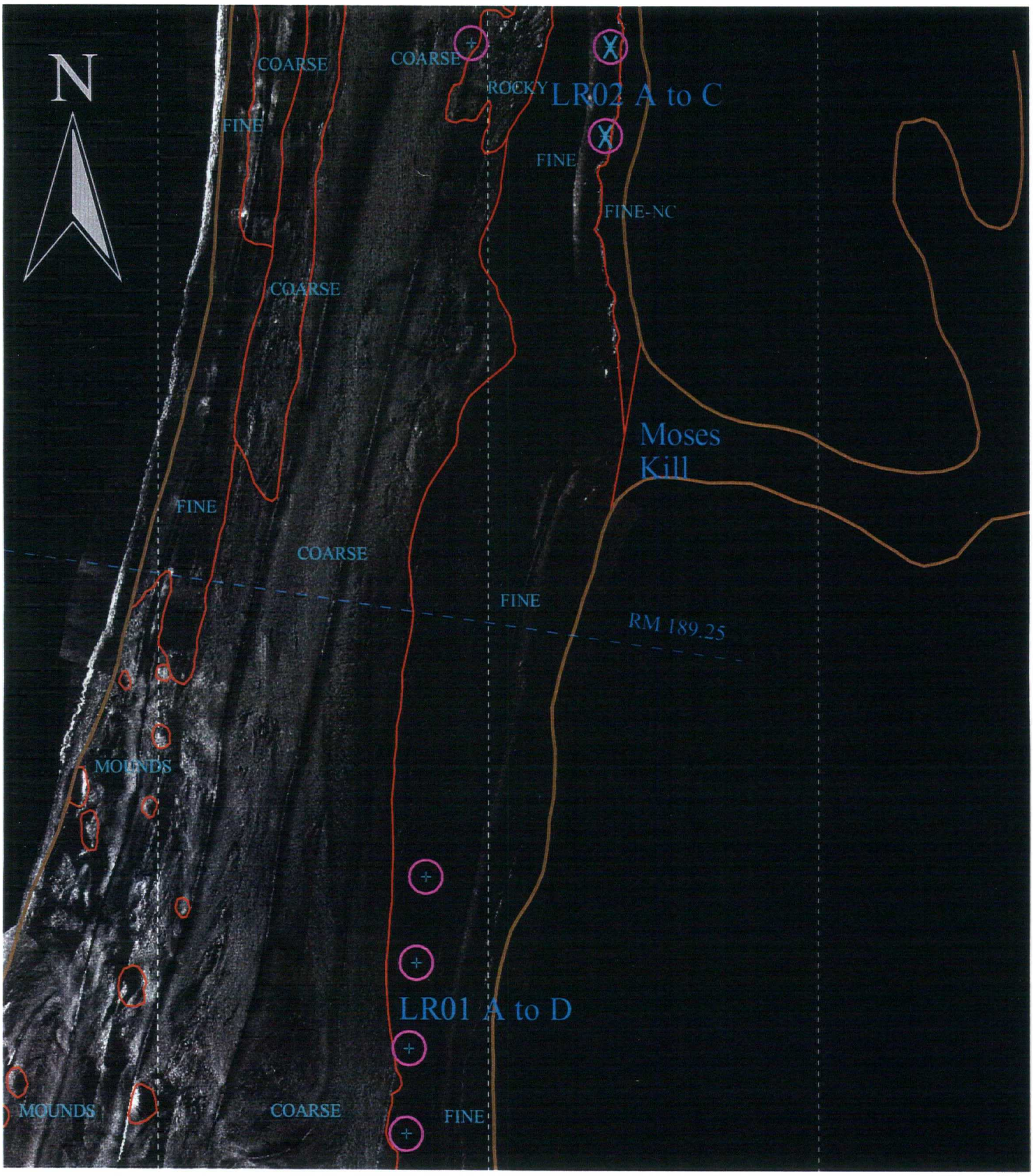


Plate 3-10
Determination of the DN50 Values for the Low Resolution Coring Locations in Cluster 3

AW 12/97
image19.apr



Legend:

- 1994 Low Resolution Core Location
- 50 foot circle about coring location used for digital number evaluation
- Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

Sedimentological Boundaries

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Rocky = Exposed bedrock or rocky sediment

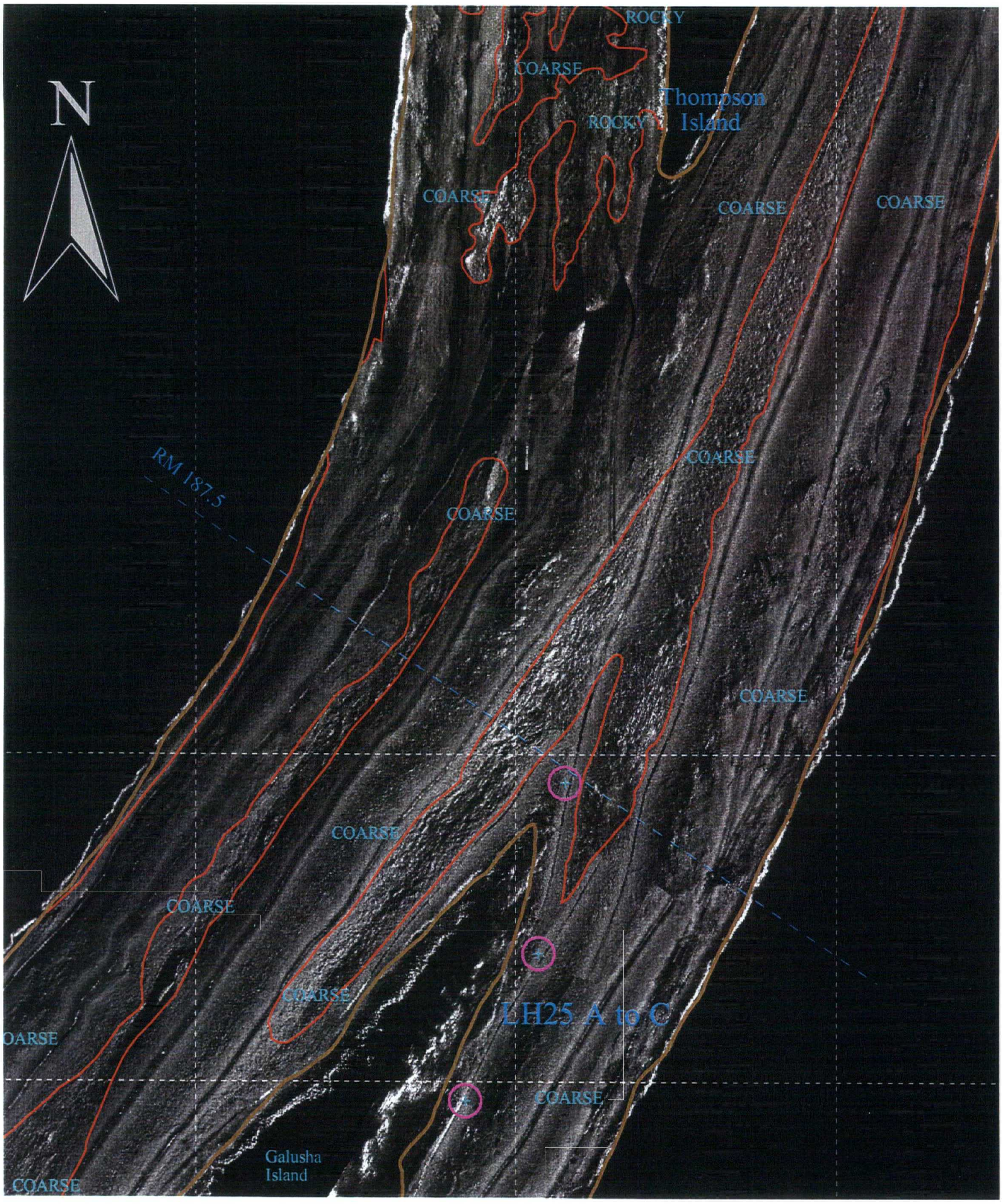
Coarse = Coarse or coarser sediments

Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-11
Determination of the DN50 Values for the Low Resolution Coring Locations in Clusters 1 and 2

AW 12/97
image18.apr



Legend:

- 1994 Low Resolution Core Location
- 50 foot circle about coring location used for digital number evaluation
- Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

Sedimentological Boundaries

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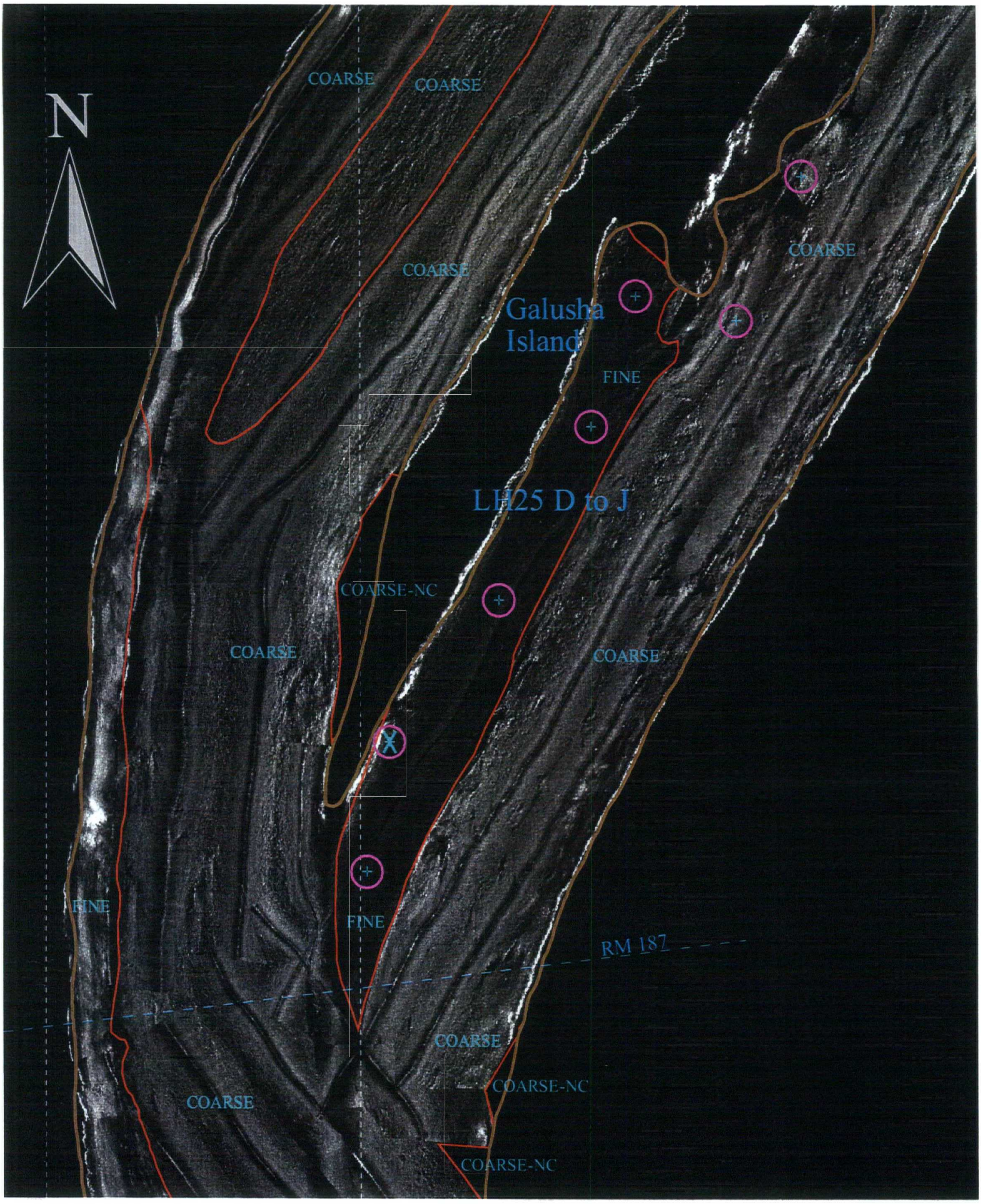
Coarse = Coarse or coarser sediments

Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-12
Determination of the DN50 Values for the Low Resolution Coring Locations in Hot Spot 25



Legend:

- 1994 Low Resolution Core Location
- 50 foot circle about coring location used for digital number evaluation
- Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

Sedimentological Boundaries

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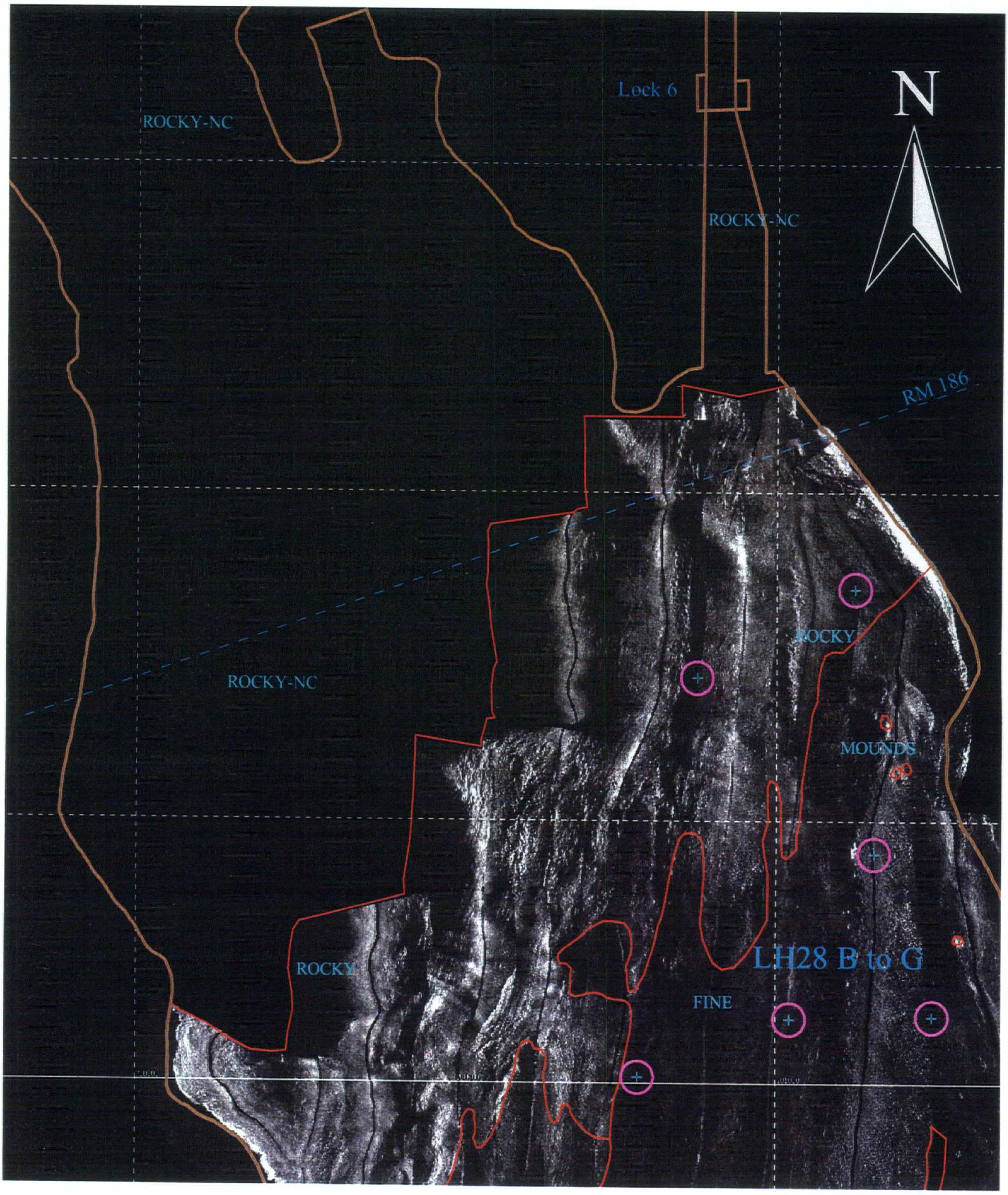
Coarse = Coarse or coarser sediments

Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-13
Determination of the DN50 Values for the Low Resolution Coring Locations in Hot Spot 25



Legend:

1994 Low Resolution Core Location

50 foot circle about coring location used for digital number evaluation

Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

Sedimentological Boundaries

Mounds = Underwater sediment mounds (historical dredge spoils?)

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Coarse = Coarse or coarser sediments

Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-14
Determination of the DN50 Values for the Low Resolution Coring Locations in Hot Spot 28

AW 12/97
image10.apr

Legend:

- 1994 Low Resolution Core Location
- 50 foot circle about coring location used for digital number evaluation
- Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

Sedimentological Boundaries

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Coarse = Coarse or coarser sediments

Fine = Fine or finer sediments

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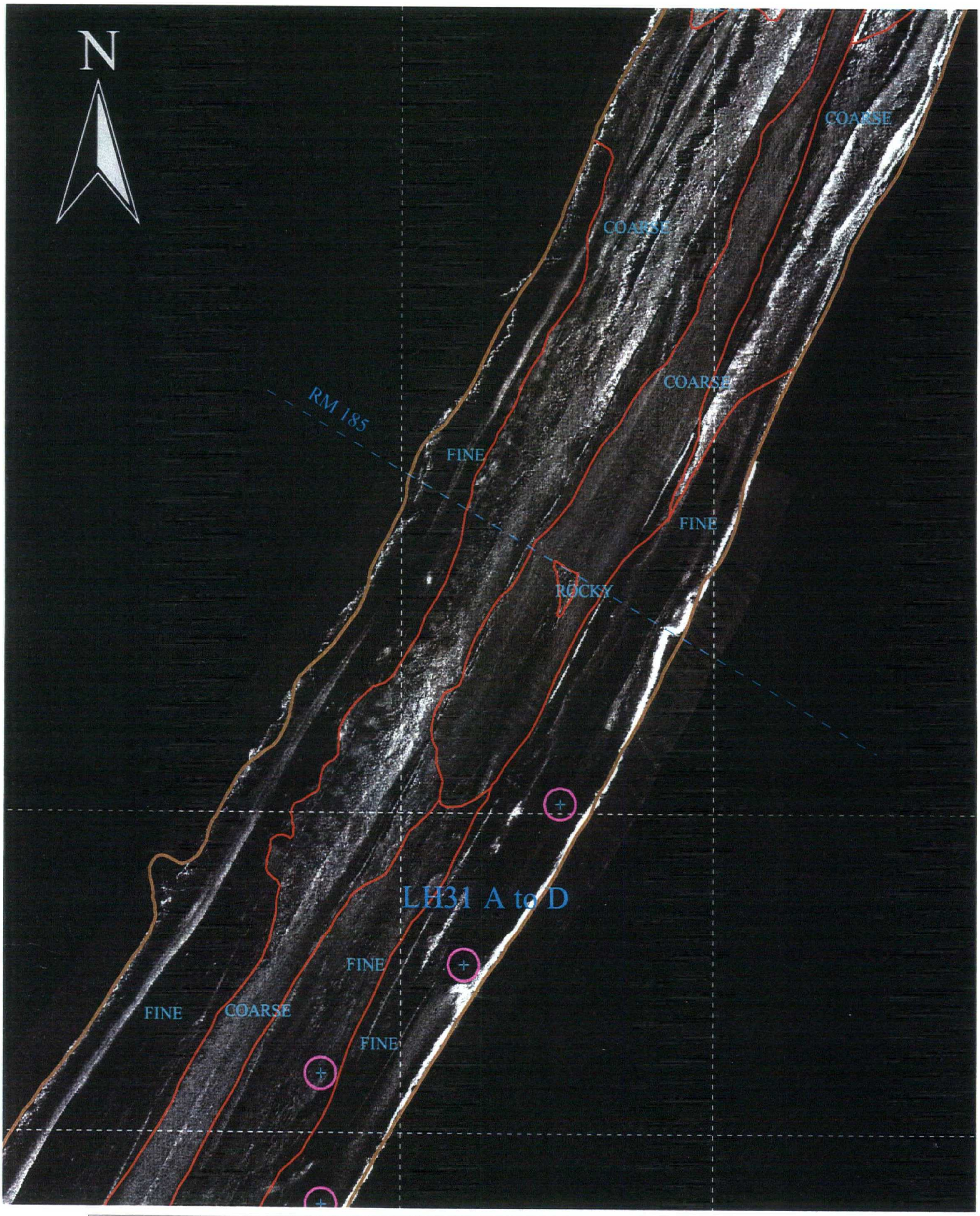
Plate 3-15
Determination of the DN50 Values for the Low Resolution Coring Locations in Hot Spot 28

AW 12/97
image9.apr



Legend:

1994 Low Resolution Core Location

50 foot circle about coring location used for digital number evaluation

Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

Sedimentological Boundaries

Mounds = Underwater sediment mounds (historical dredge spoils?)

Rocky = Exposed bedrock or rocky sediment

Coarse = Coarse or coarser sediments

Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-16
Determination of the DN50 Values for the Low Resolution Coring Locations in Hot Spot 31

AW 12/97
image7.apr

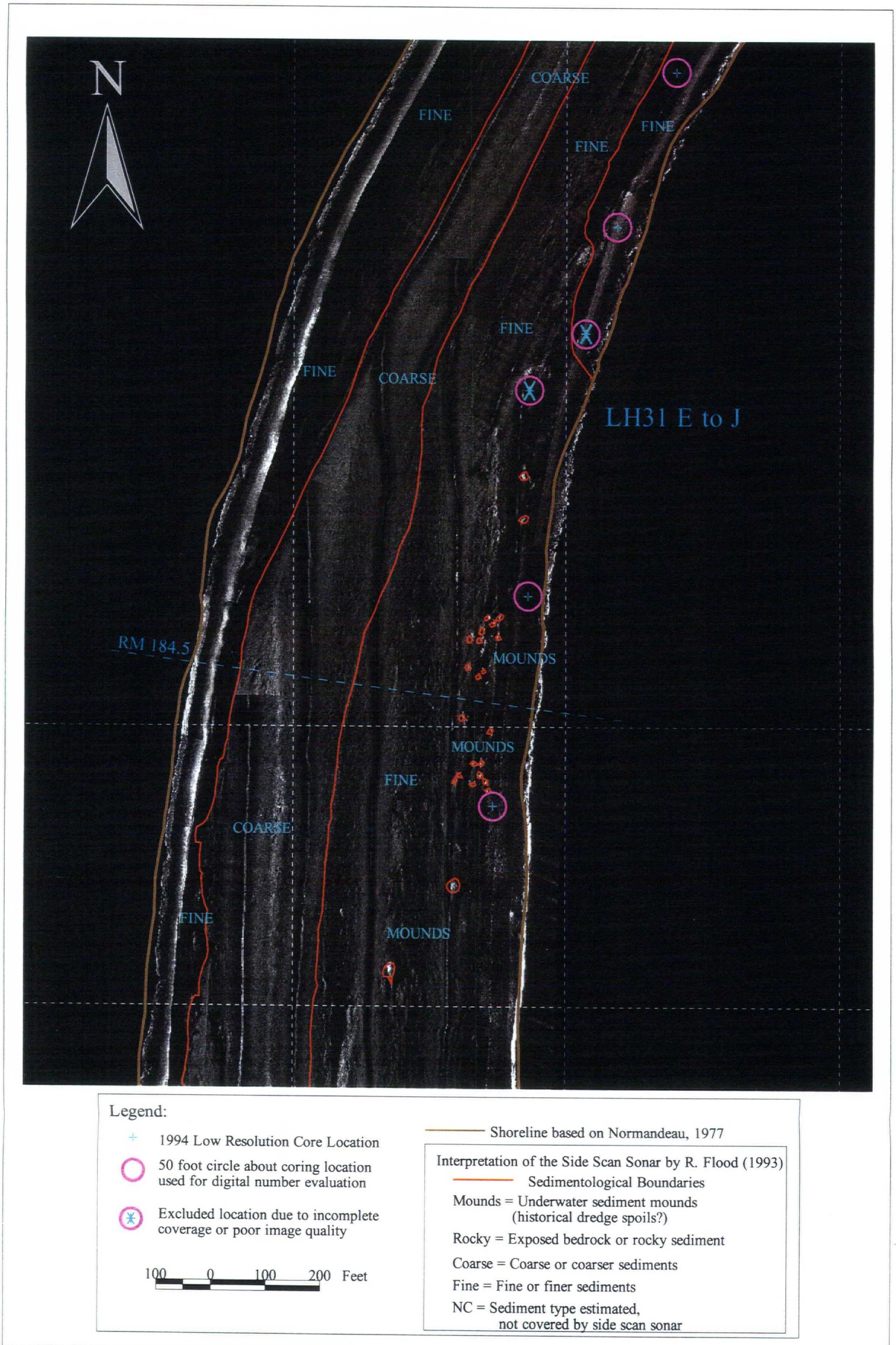
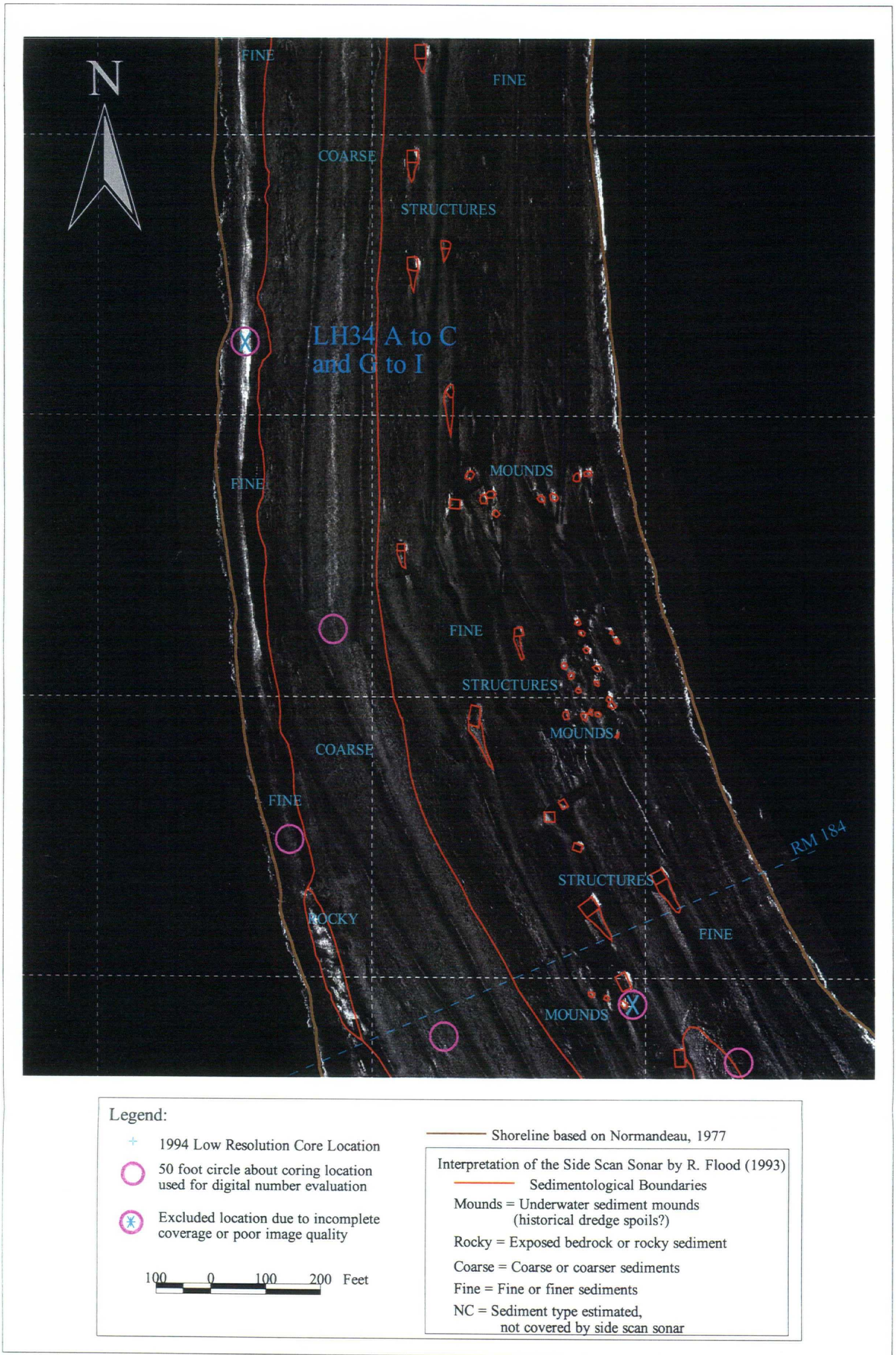


Plate 3-17
Determination of the DN50 Values for the Low Resolution Coring Locations in Hot Spot 31

AW 12/97
image6.apr



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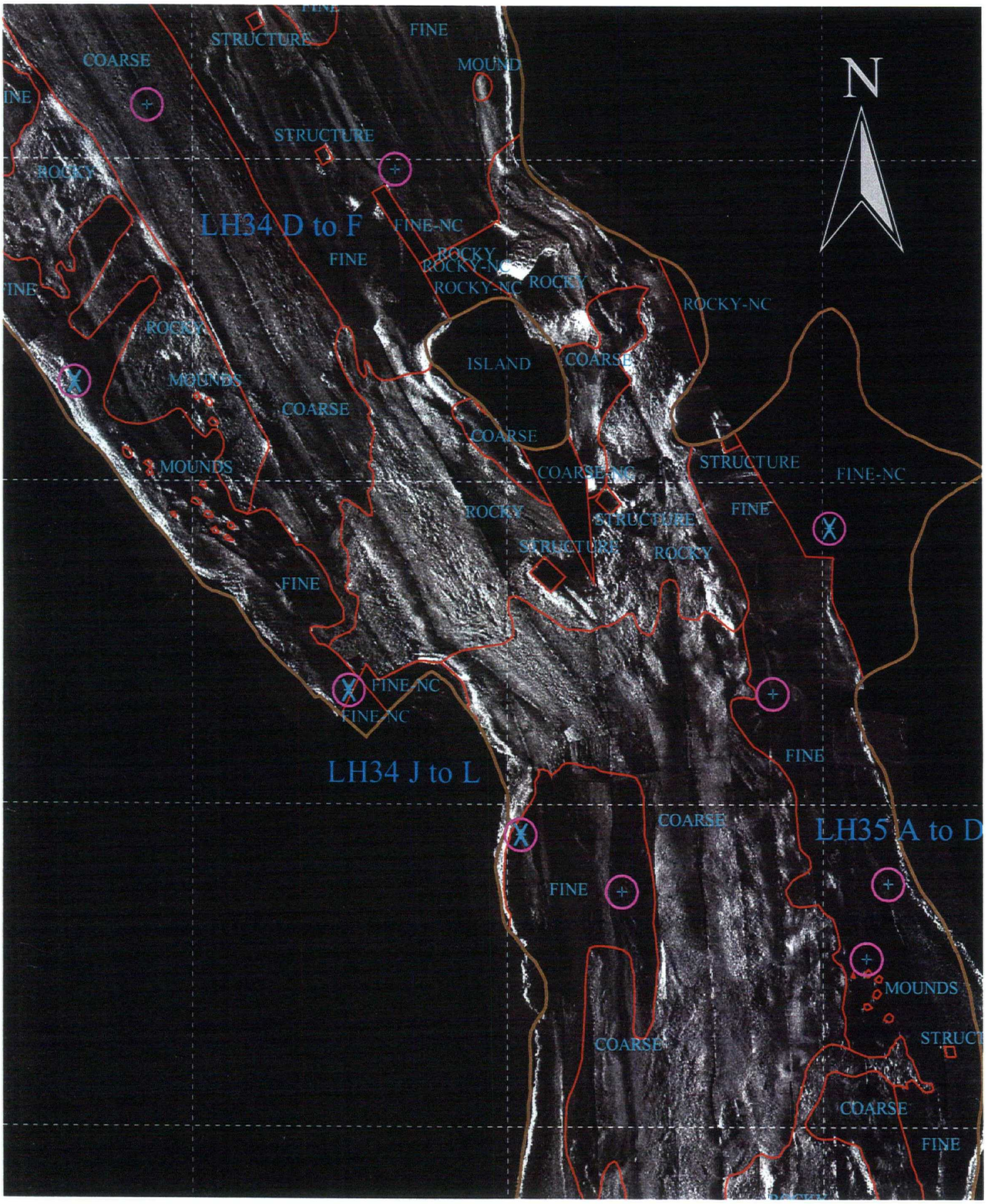
TAMS

Plate 3-18
Determination of the DN50 Values for the Low Resolution Coring Locations in Hot Spot 34

AW 12/97
image5.apr



Legend:

- 1994 Low Resolution Core Location
- 50 foot circle about coring location used for digital number evaluation
- Excluded location due to incomplete coverage or poor image quality

100 0 100 200 Feet

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

Sedimentological Boundaries

Mounds = Underwater sediment mounds (historical dredge spoils?)

Rocky = Exposed bedrock or rocky sediment

Coarse = Coarse or coarser sediments

Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

Plate 3-19

Determination of the DN50 Values for the Low Resolution Coring Locations in Hot Spots 34 and 35

AW 12/97
image4.apr

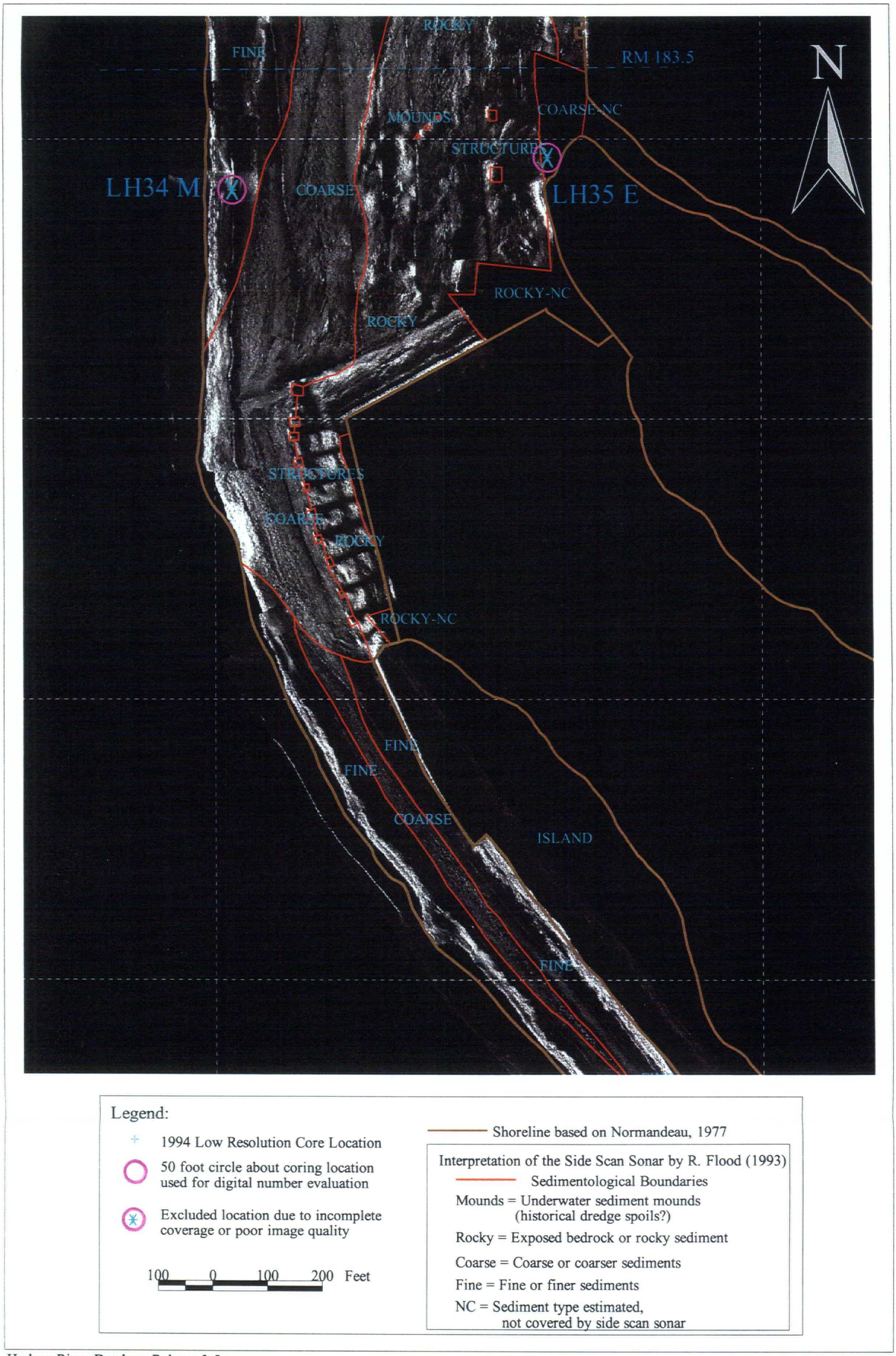
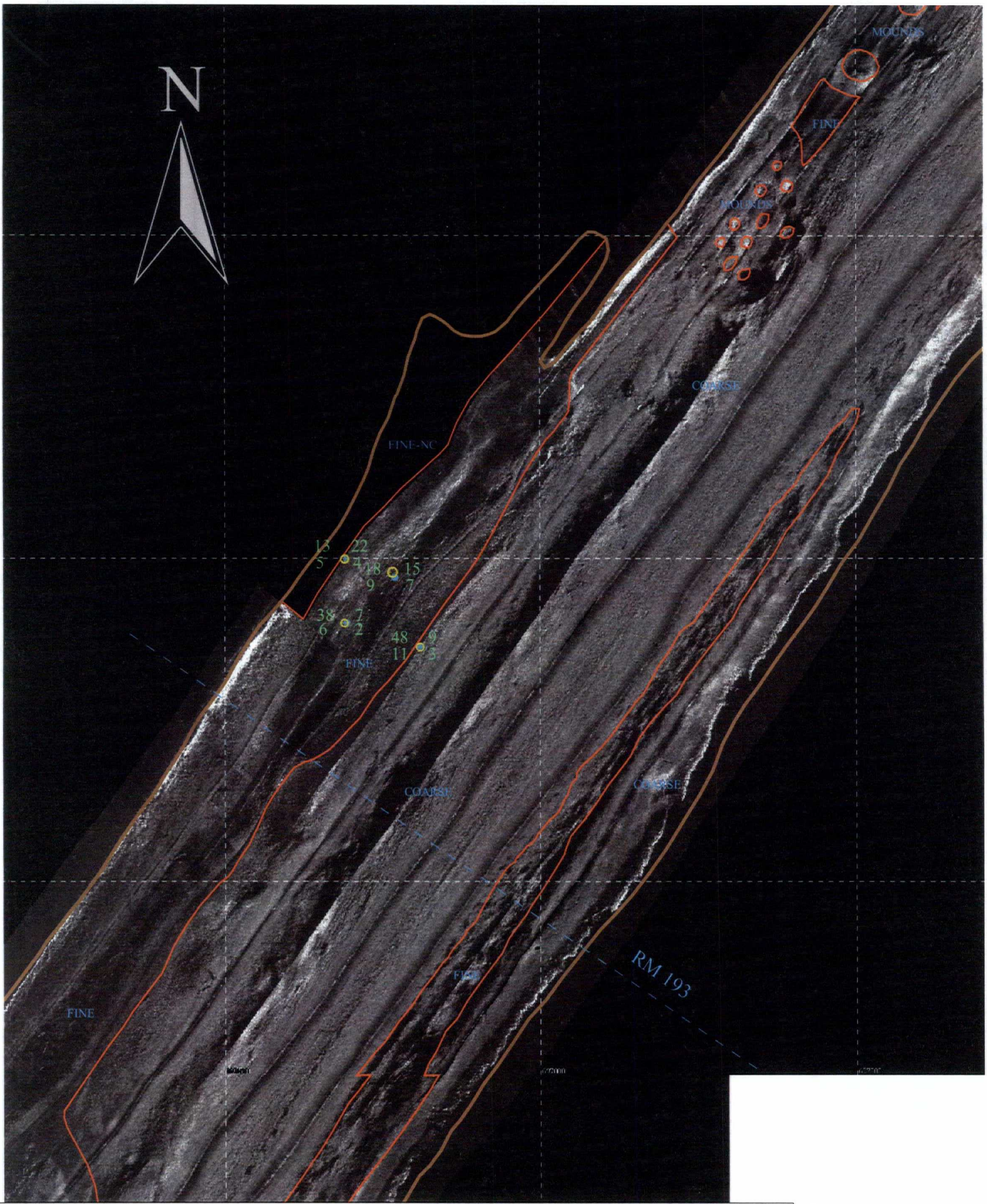


Plate 3-20
Determination of the DN50 Values for the Low Resolution Coring Locations in Hot Spots 34 and 35

AW 12/97
image3.apr



Legend:

1994 Low Resolution Core Location

NYSDEC 1984 Core Location

NYSDEC 1984 Grab Location

	1984	1994
Length Weighted Average PCB Concentration (mg/Kg)	4	4
Mass/Area (g/m^2)	4	4

NOTE: All values are rounded to the nearest integer.

Marker Scale:

1 g/m^2 200 g/m^2

Shoreline based on Normandeau, 1977

Interpretation of the Side Scan Sonar by R. Flood (1993)

Sedimentological Boundaries

Mounds = Underwater sediment mounds (historical dredge spoils?)

Rocky = Exposed bedrock or rocky sediment

Coarse = Coarse or coarser sediments

Fine = Fine or finer sediments

NC = Sediment type estimated, not covered by side scan sonar

100 0 100 200 Feet

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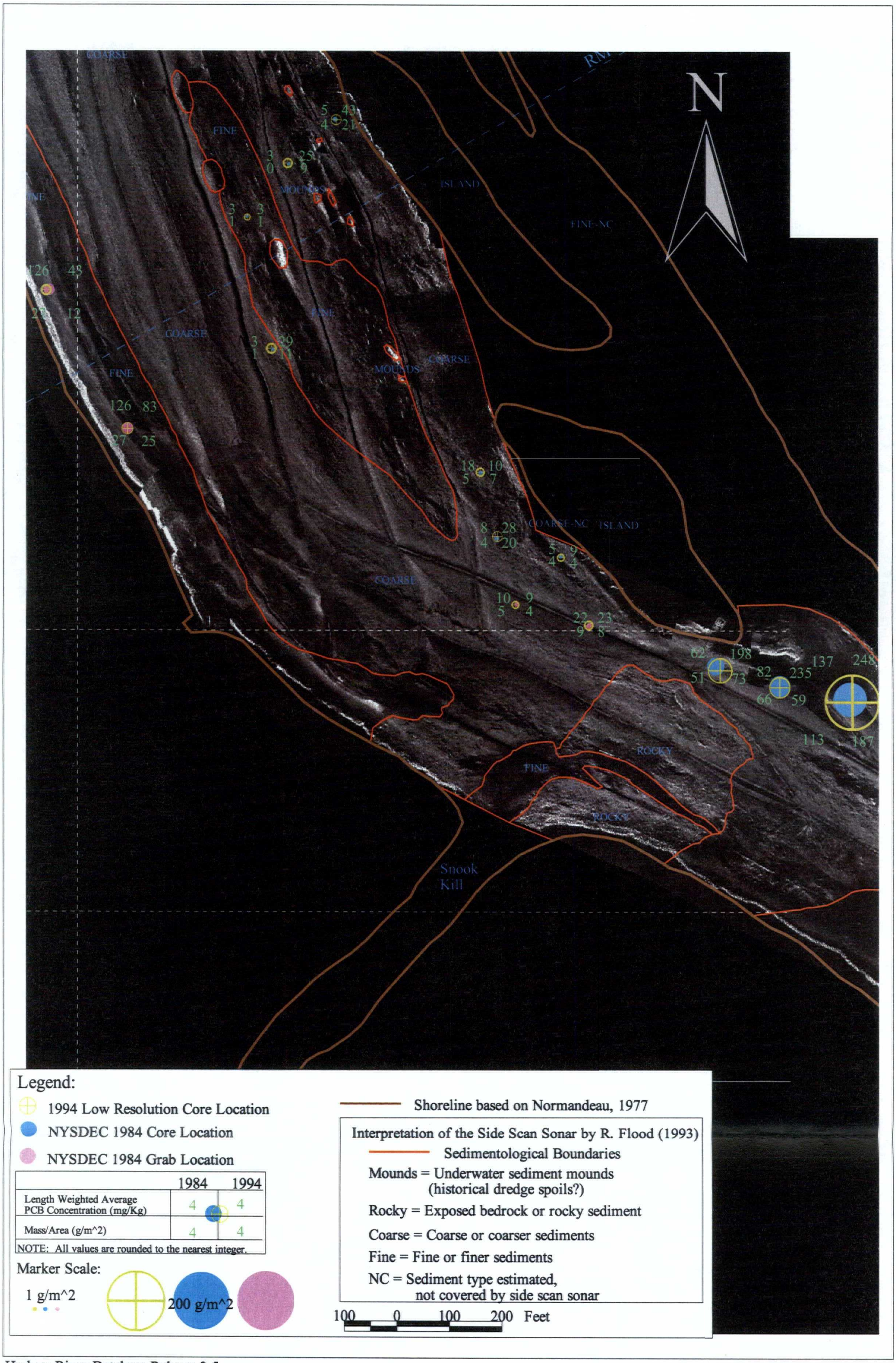
TAMS

Plate 4-2
Comparison Between 1984 and 1994 Coring Results in Thompson Island Pool

AW 12/97
MassArea28.apr



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TAMS

Plate 4-3
Comparison Between 1984 and 1994 Coring Results in Thompson Island Pool

AW 12/97
MassArea25.apr

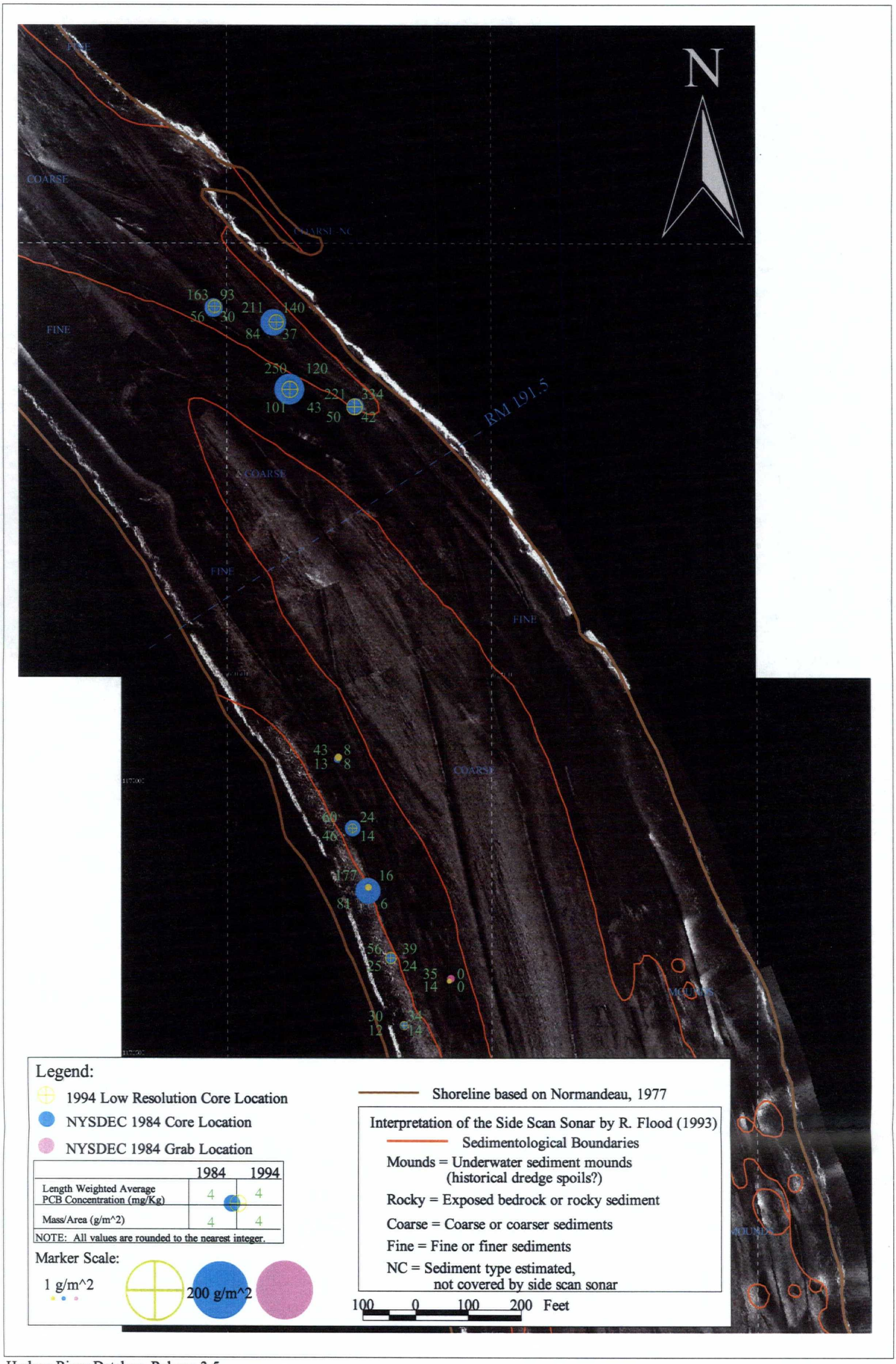


Plate 4-4
Comparison Between 1984 and 1994 Coring Results in Thompson Island Pool

AW 12/97
MassArea23.apr

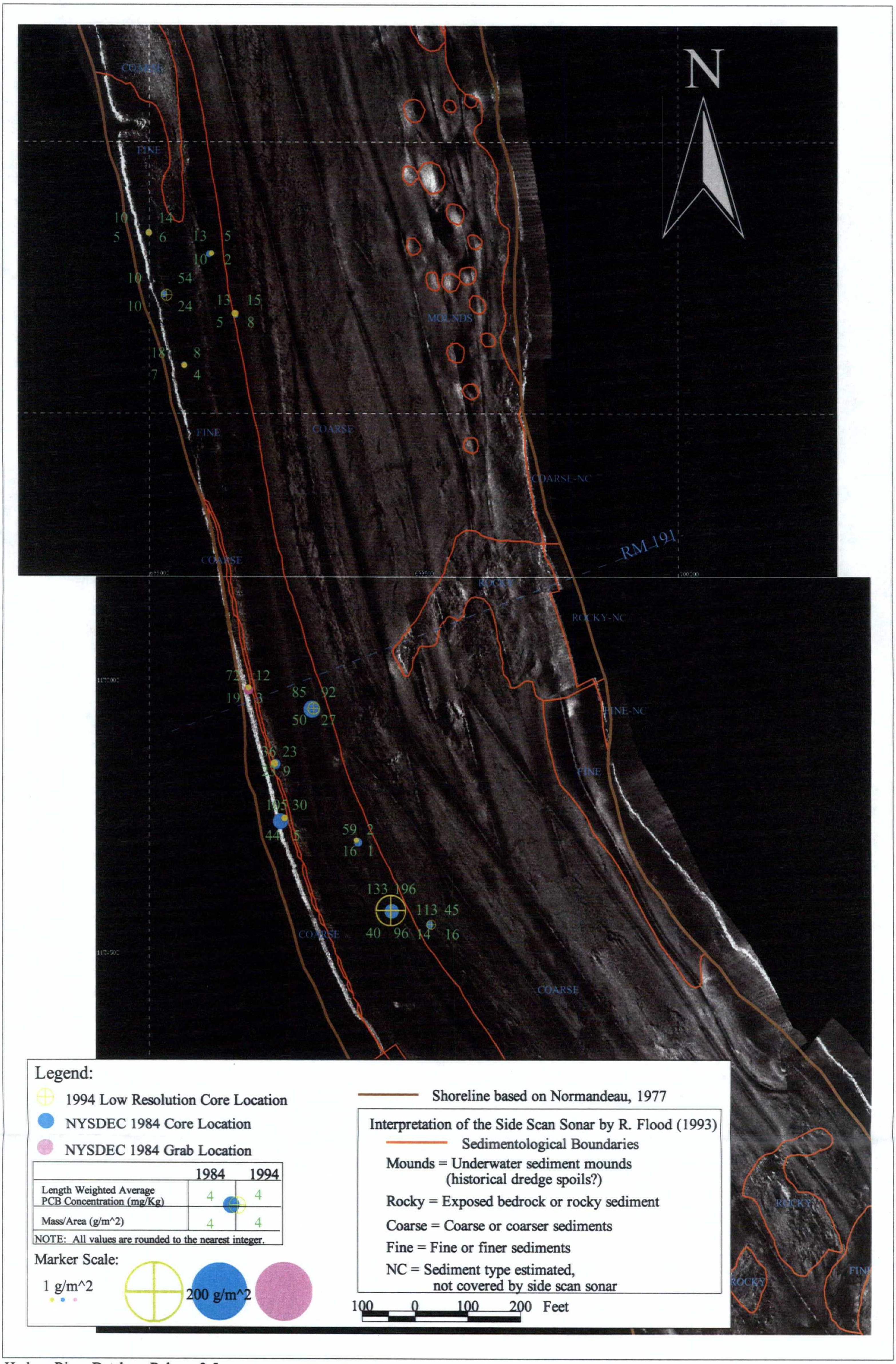
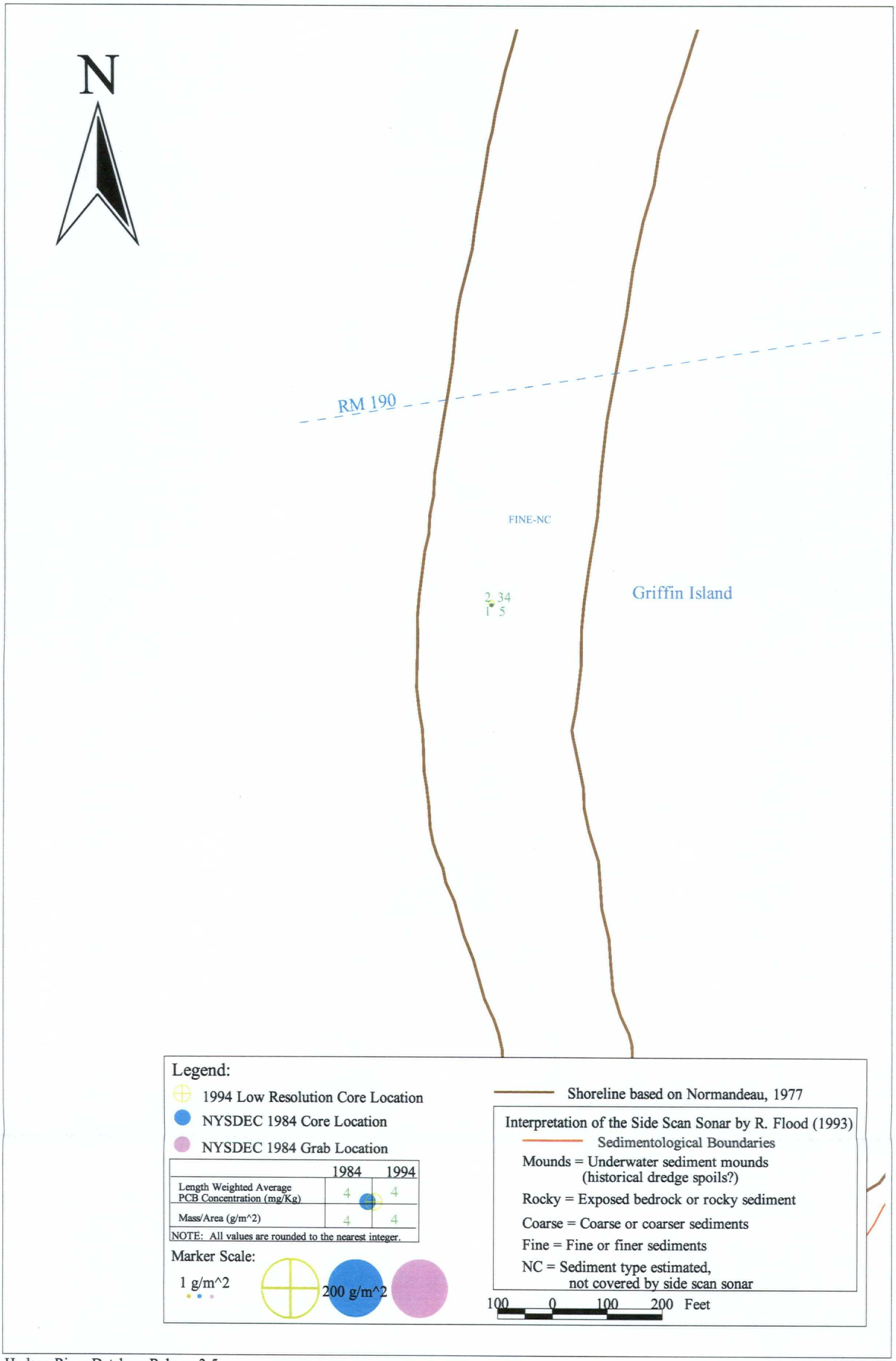


Plate 4-5
Comparison Between 1984 and 1994 Coring Results in Thompson Island Pool

CH 07/98
MassArea22new.apr



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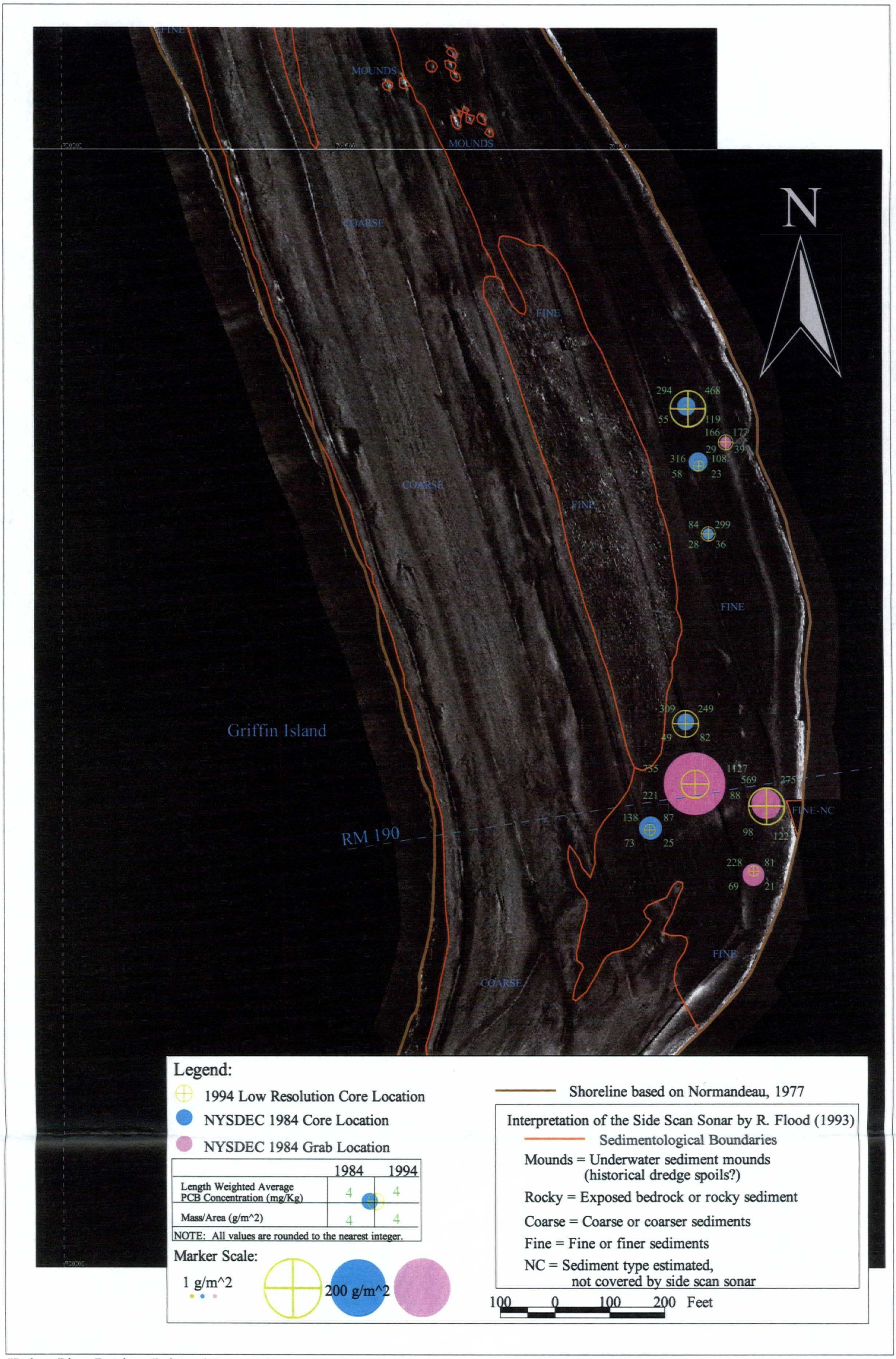
TAMS

Plate 4-6
Comparison Between 1984 and 1994 Coring Results in Thompson Island Pool

AW 12/97
MassArea21.apr



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TAMS

Plate 4-7
Comparison Between 1984 and 1994 Coring Results in Thompson Island Pool

AW 12/97
MassArea20.apr

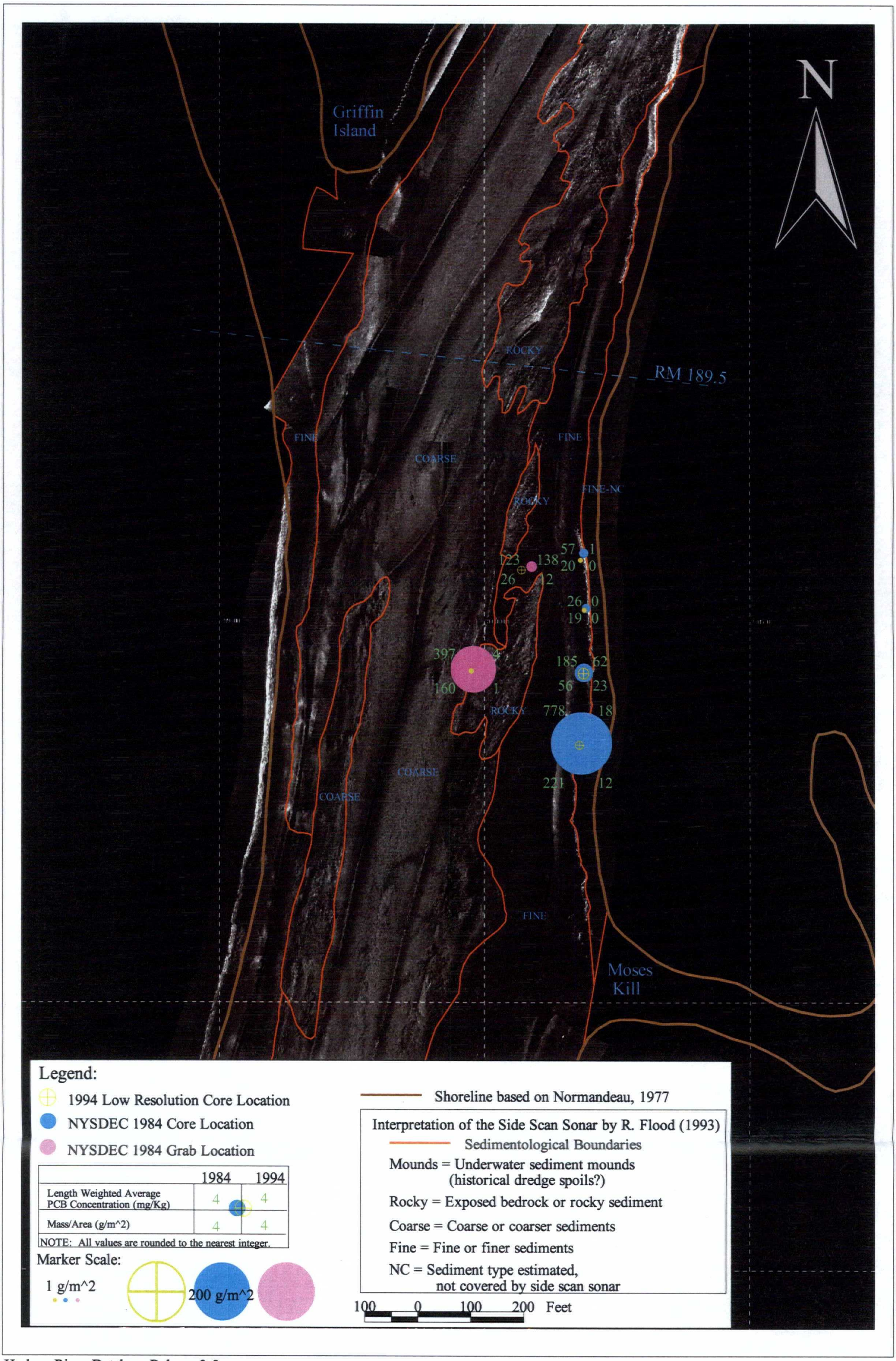
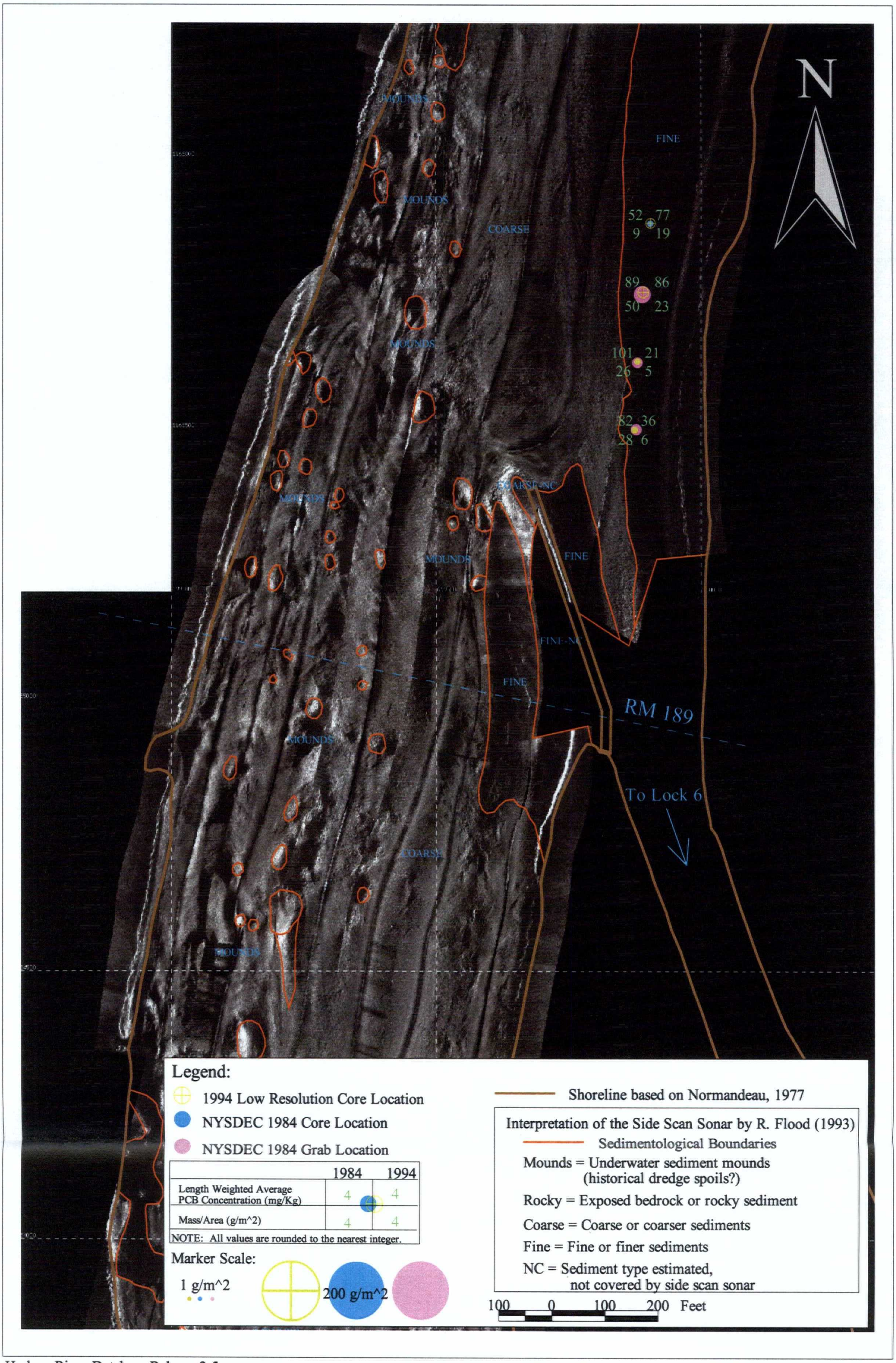


Plate 4-8
Comparison Between 1984 and 1994 Coring Results in Thompson Island Pool

AW 12/97
MassArea19.apr

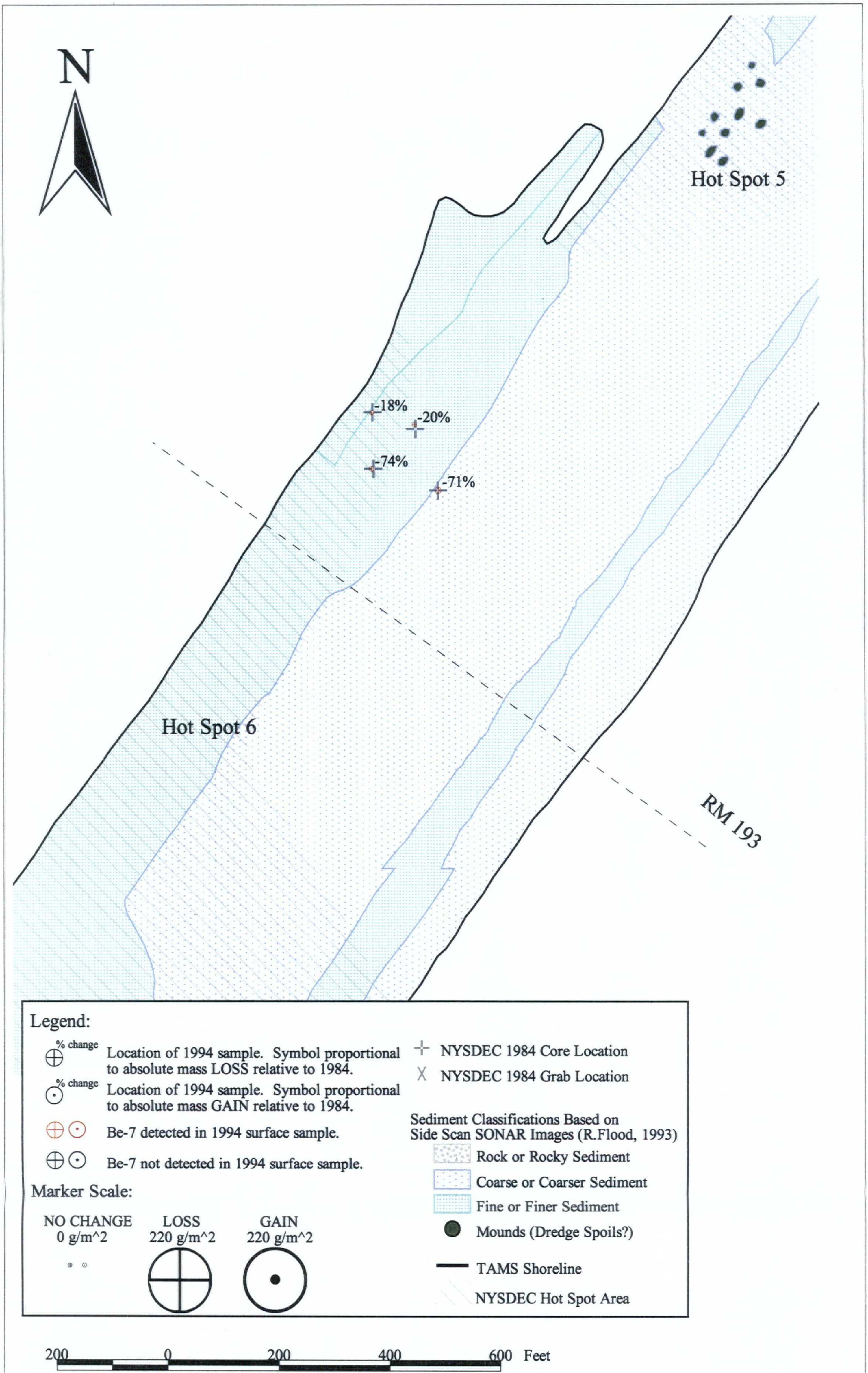


	1984	1994
Length Weighted Average PCB Concentration (mg/Kg)	4	4
Mass/Area (g/m^2)	4	4

NOTE: All values are rounded to the nearest integer.

Plate 4-9
Comparison Between 1984 and 1994 Coring Results in Thompson Island Pool

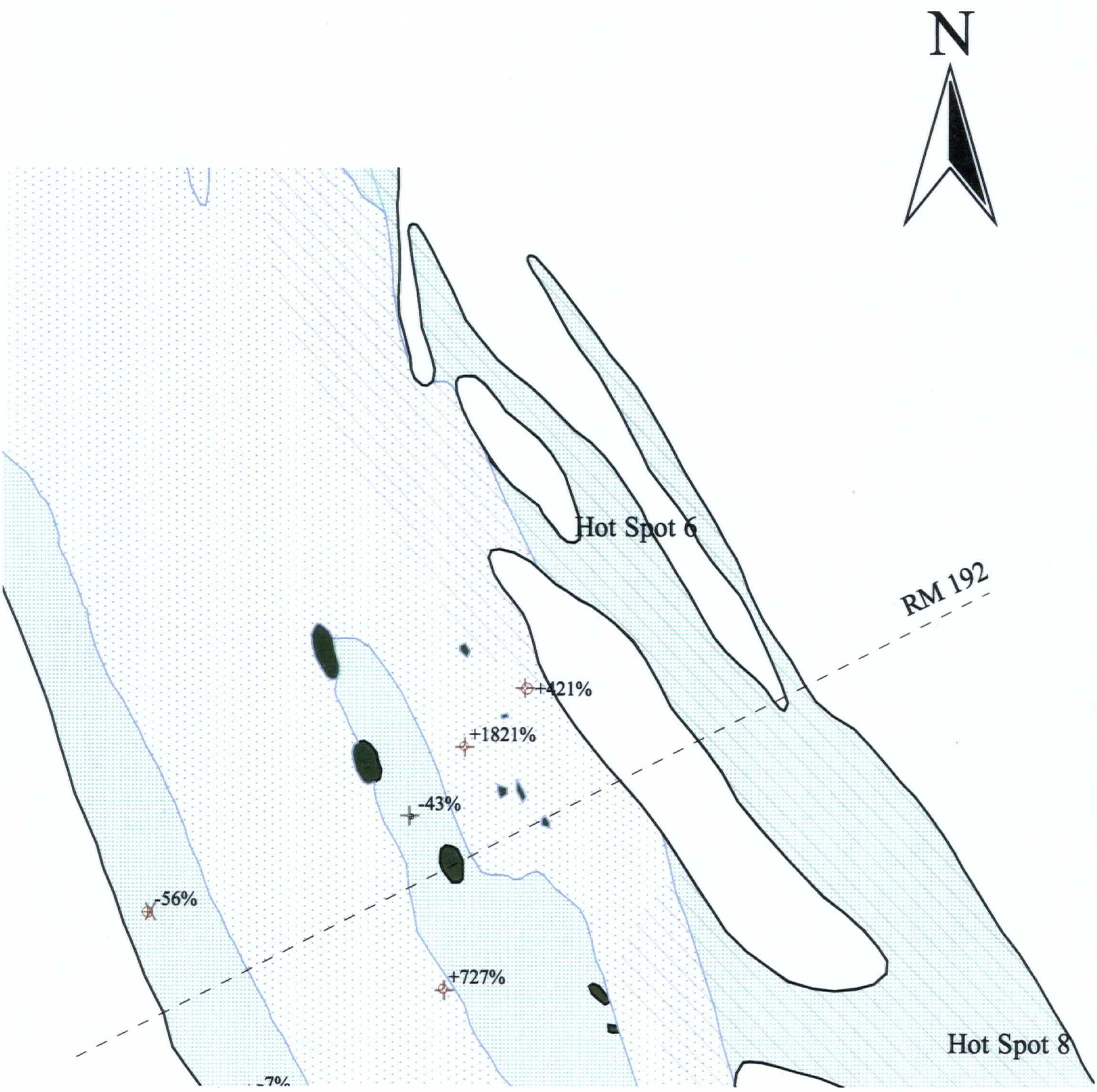
AW 12/97
MassArea18.apr



Notes:
1. Hot Spot locations were digitized from NYSDEC's "PCB Reclamation Project" Drawings (December 1985)
2. % Change is calculated as follows: [(Mass/Area1994 - Mass/Area1984)/ Mass/Area 1984] *100%

Plate 4-11
Changes in Inventory in the Thompson Island Pool 1984 vs. 1994

AW 12/97
%MassChange28.apr



Legend:

% change	Location of 1994 sample. Symbol proportional to absolute mass LOSS relative to 1984.
% change	Location of 1994 sample. Symbol proportional to absolute mass GAIN relative to 1984.
	Be-7 detected in 1994 surface sample.
	Be-7 not detected in 1994 surface sample.

Marker Scale:

NO CHANGE	LOSS	GAIN
0 g/m^2	220 g/m^2	220 g/m^2

NYSDEC 1984 Core Location

NYSDEC 1984 Grab Location

Sediment Classifications Based on Side Scan SONAR Images (R.Flood, 1993)

- Rock or Rocky Sediment
- Coarse or Coarser Sediment
- Fine or Finer Sediment
- Mounds (Dredge Spoils?)

TAMS Shoreline

NYSDEC Hot Spot Area

200 0 200 400 600 Feet

Notes:
1. Hot Spot locations were digitized from NYSDEC's "PCB Reclamation Project" Drawings (December 1985)
2. % Change is calculated as follows: [(Mass/Area1994 - Mass/Area1984)/ Mass/Area 1984] *100%

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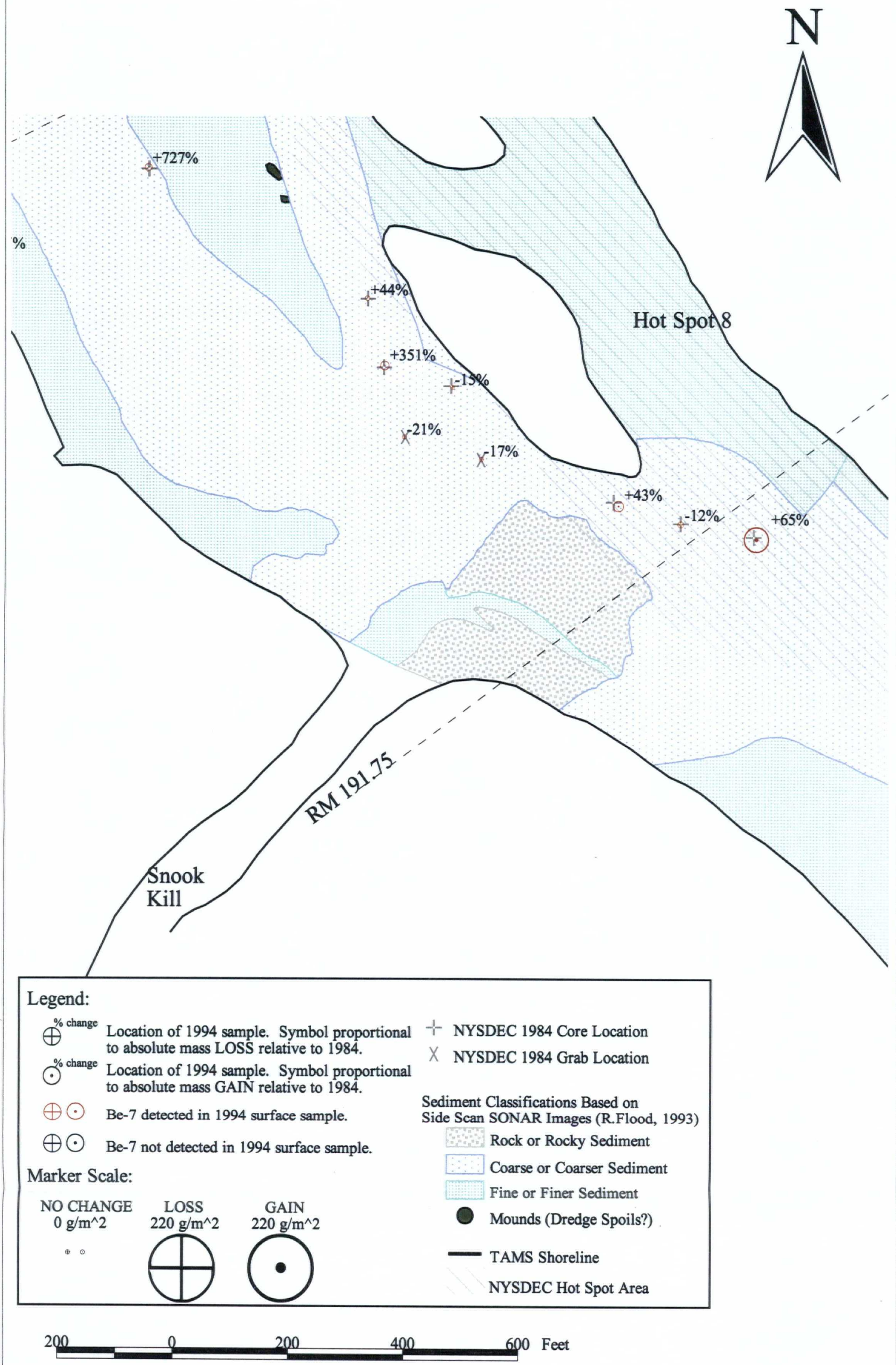
TAMS

Plate 4-12
Changes in Inventory in the Thompson Island Pool 1984 vs. 1994

AW 12/97
%MassChange26.apr



Notes:
1. Hot Spot locations were digitized from NYSDEC's "PCB Reclamation Project" Drawings (December 1985)
2. % Change is calculated as follows: [(Mass/Area1994 - Mass/Area1984)/ Mass/Area 1984] *100%

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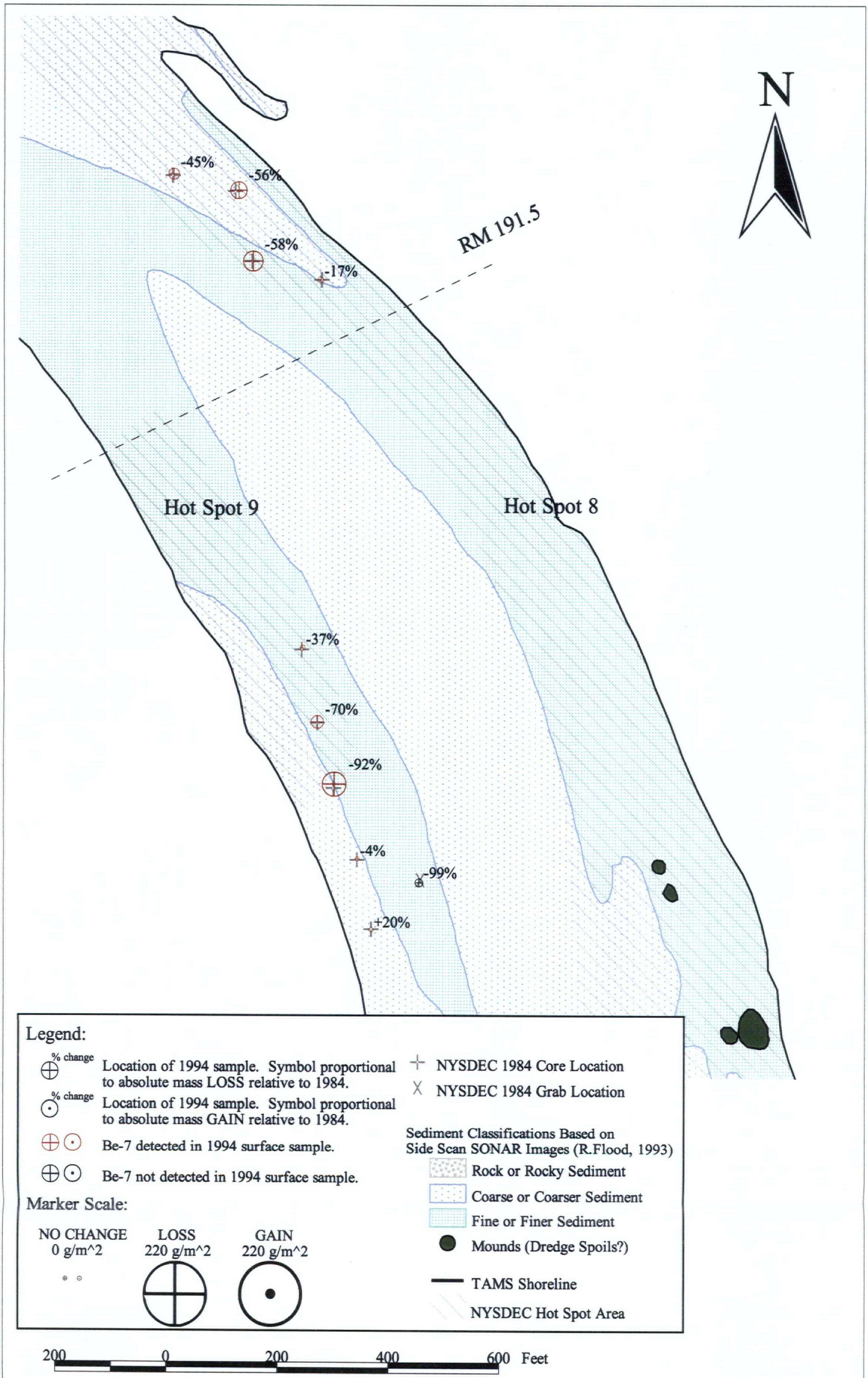
TAMS

Plate 4-13
Changes in Inventory in the Thompson Island Pool 1984 vs. 1994

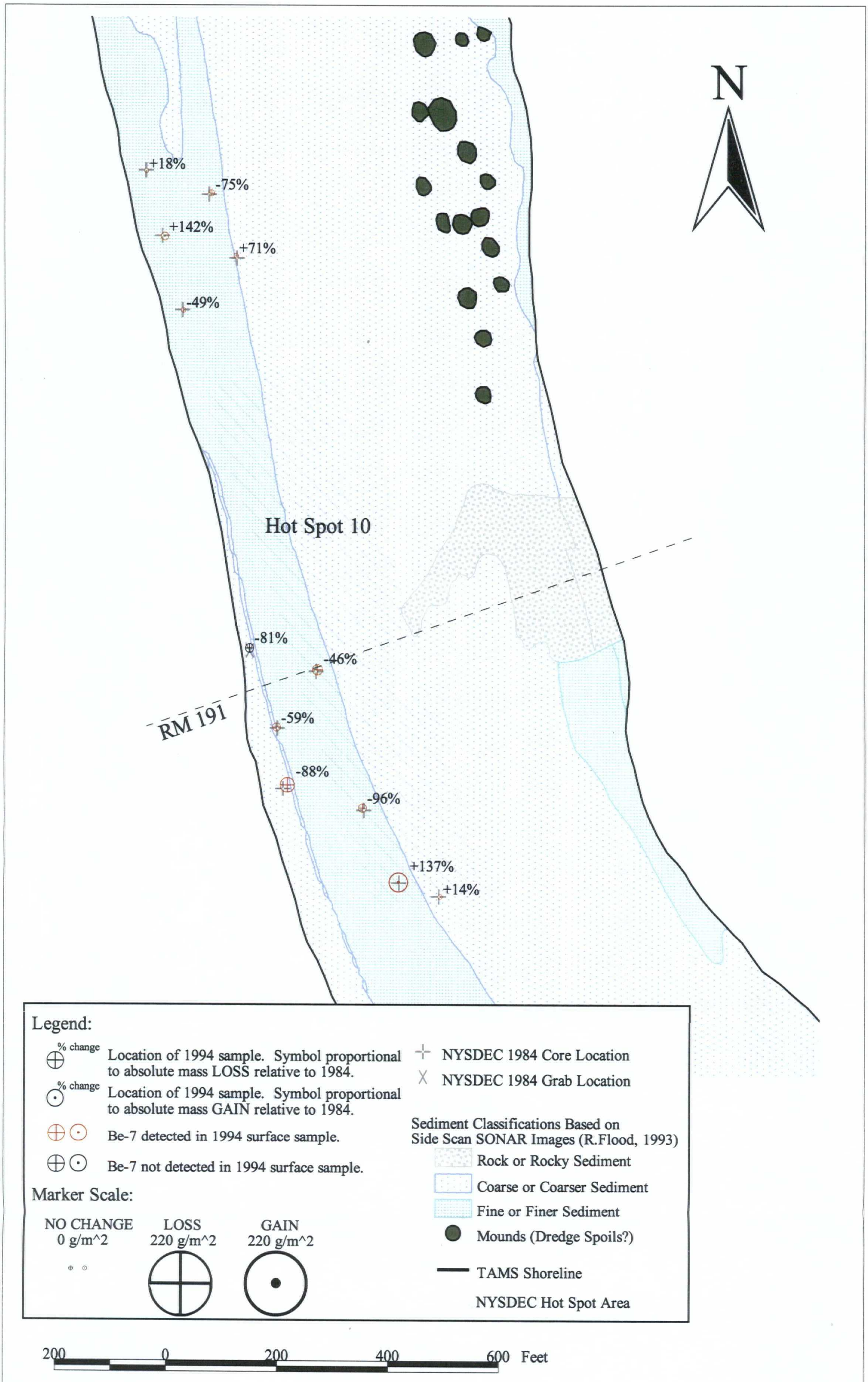
AW 12/97



Notes:
1. Hot Spot locations were digitized from NYSDEC's "PCB Reclamation Project" Drawings (December 1985)
2. % Change is calculated as follows: [(Mass/Area1994 - Mass/Area1984)/ Mass/Area 1984] *100%

Plate 4-14
Changes in Inventory in the Thompson Island Pool 1984 vs. 1994

AW 12/97
%MassChange23.apr

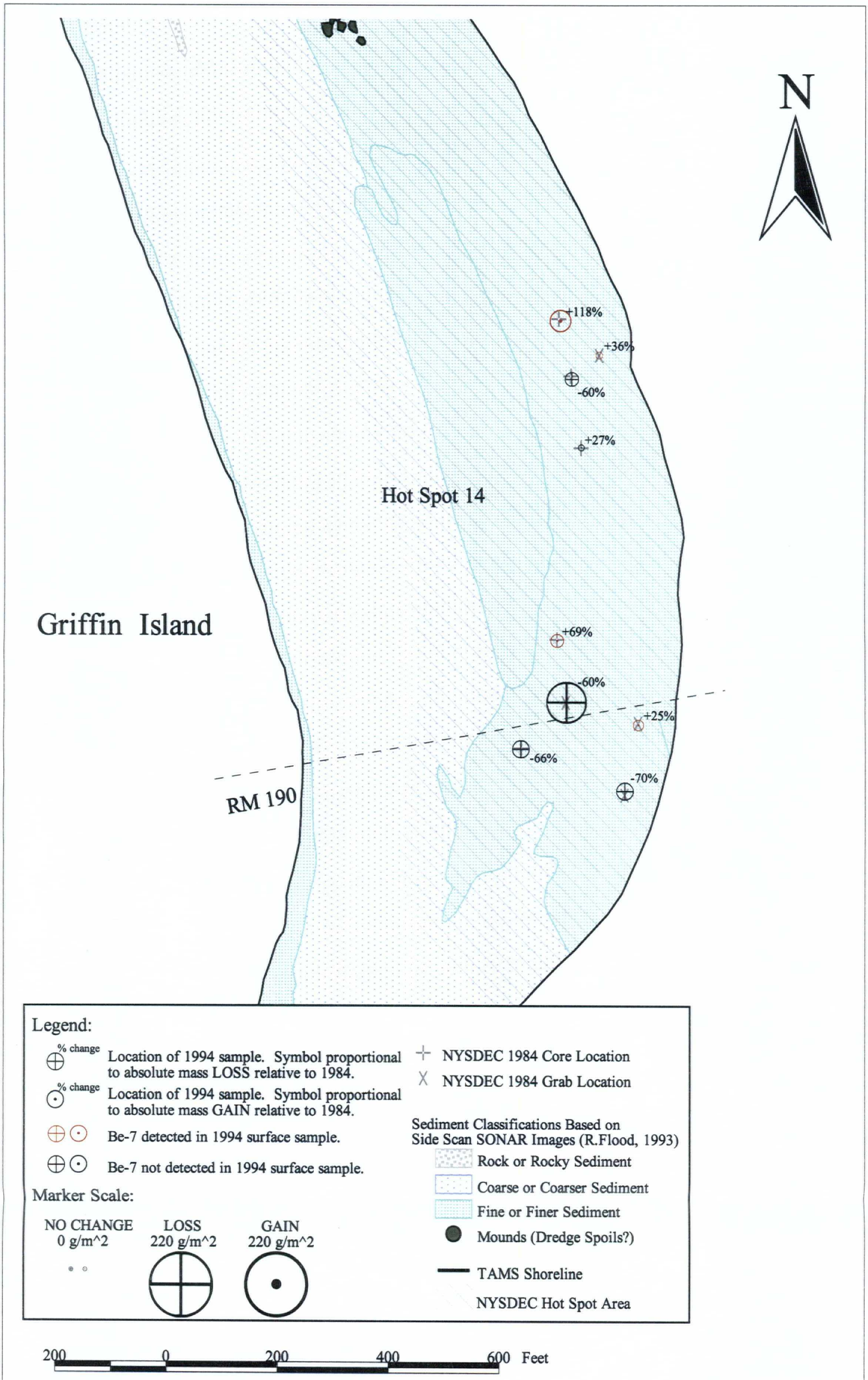


Notes:
1. Hot Spot locations were digitized from NYSDEC's "PCB Reclamation Project" Drawings (December 1985)
2. % Change is calculated as follows: [(Mass/Area1994 - Mass/Area1984)/ Mass/Area 1984] *100%

TAMS

Plate 4-15
Changes in Inventory in the Thompson Island Pool 1984 vs. 1994

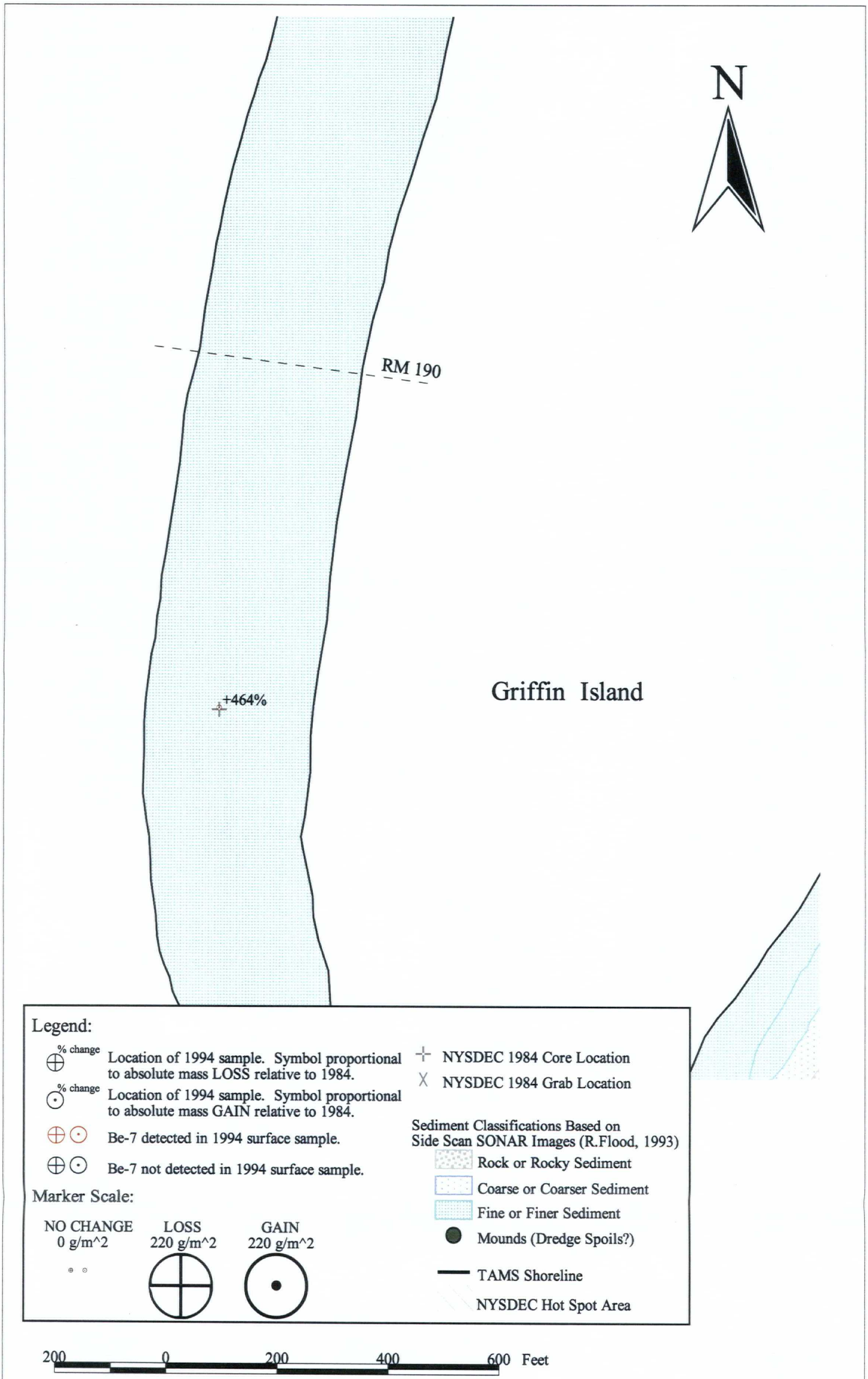
AW 12/97
%MassChange22.apr



Notes:
1. Hot Spot locations were digitized from NYSDEC's "PCB Reclamation Project" Drawings (December 1985)
2. % Change is calculated as follows: [(Mass/Area1994 - Mass/Area1984)/ Mass/Area 1984] *100%

Plate 4-16
Changes in Inventory in the Thompson Island Pool 1984 vs. 1994

AW 12/97
%MassChange20.apr



Notes:
1. Hot Spot locations were digitized from NYSDEC's "PCB Reclamation Project" Drawings (December 1985)
2. % Change is calculated as follows: [(Mass/Area1994 - Mass/Area1984)/ Mass/Area 1984] *100%

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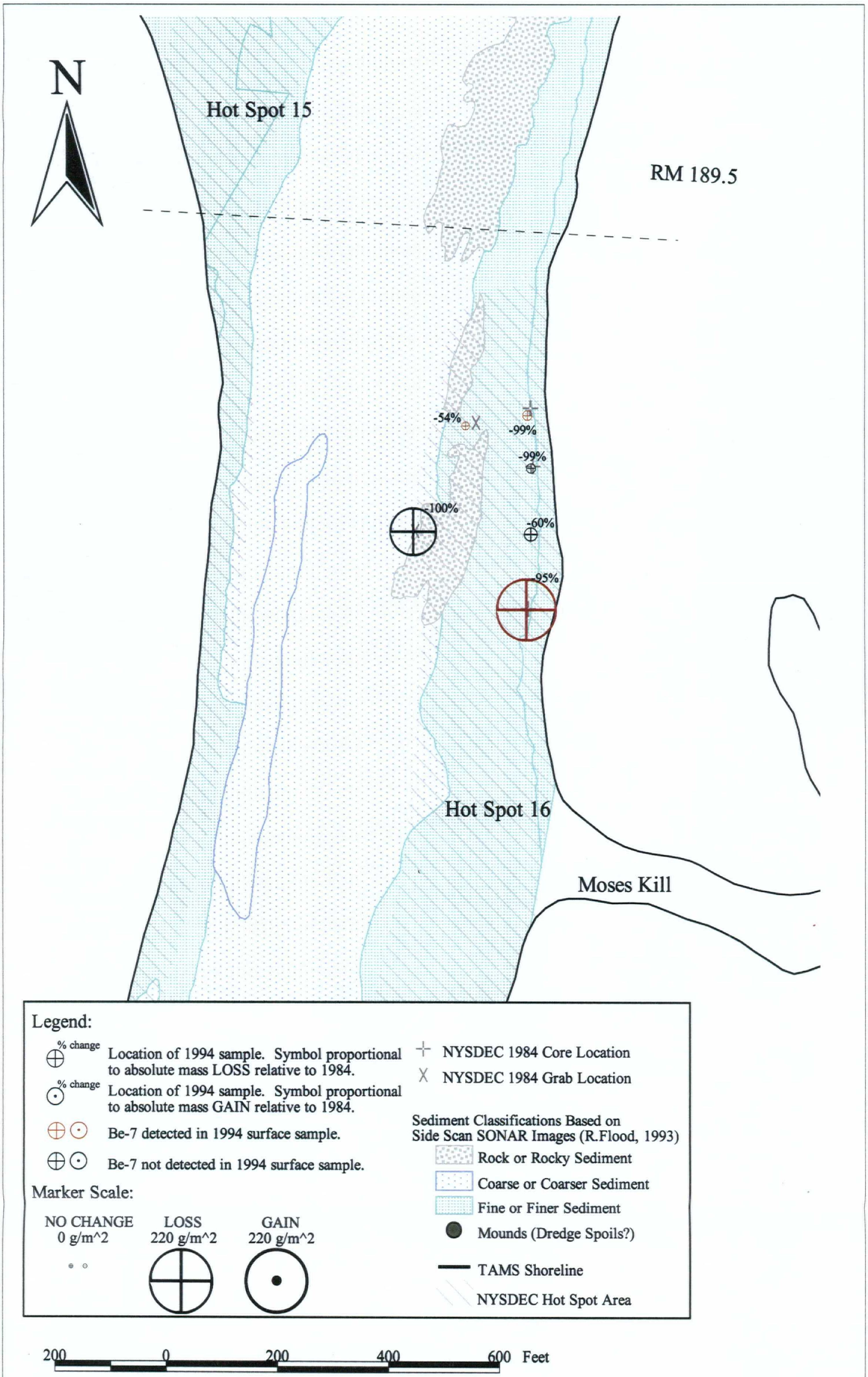
TAMS

Plate 4-17
Changes in Inventory in the Thompson Island Pool 1984 vs. 1994

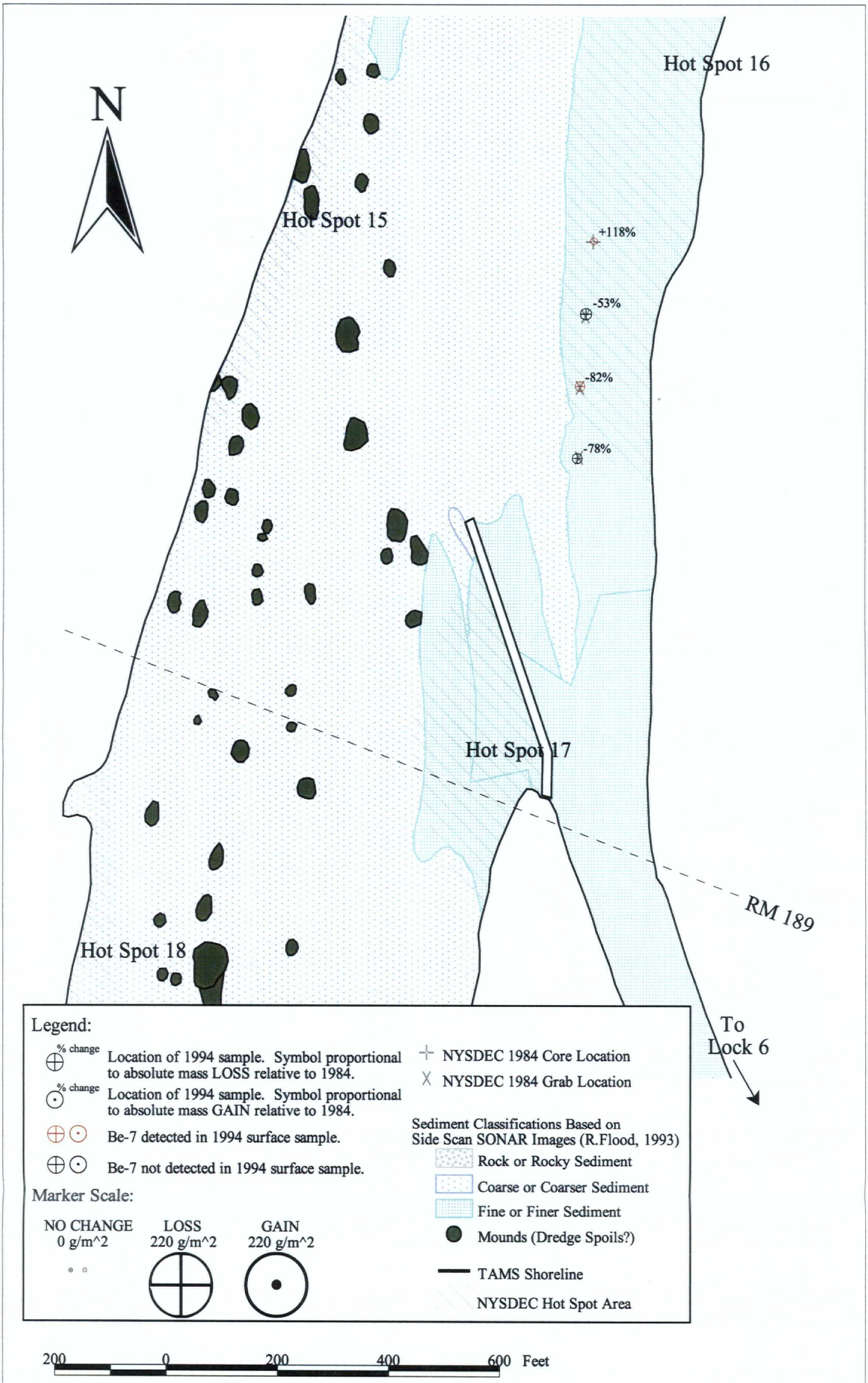
AW 12/97
%MassChange21.apr



Notes:
1. Hot Spot locations were digitized from NYSDEC's "PCB Reclamation Project" Drawings (December 1985)
2. % Change is calculated as follows: [(Mass/Area1994 - Mass/Area1984)/ Mass/Area 1984] *100%

Plate 4-18
Changes in Inventory in the Thompson Island Pool 1984 vs. 1994

AW 12/97
%MassChange19.apr



Notes:
1. Hot Spot locations were digitized from NYSDEC's "PCB Reclamation Project" Drawings (December 1985)
2. % Change is calculated as follows: [(Mass/Area1994 - Mass/Area1984)/ Mass/Area 1984] *100%

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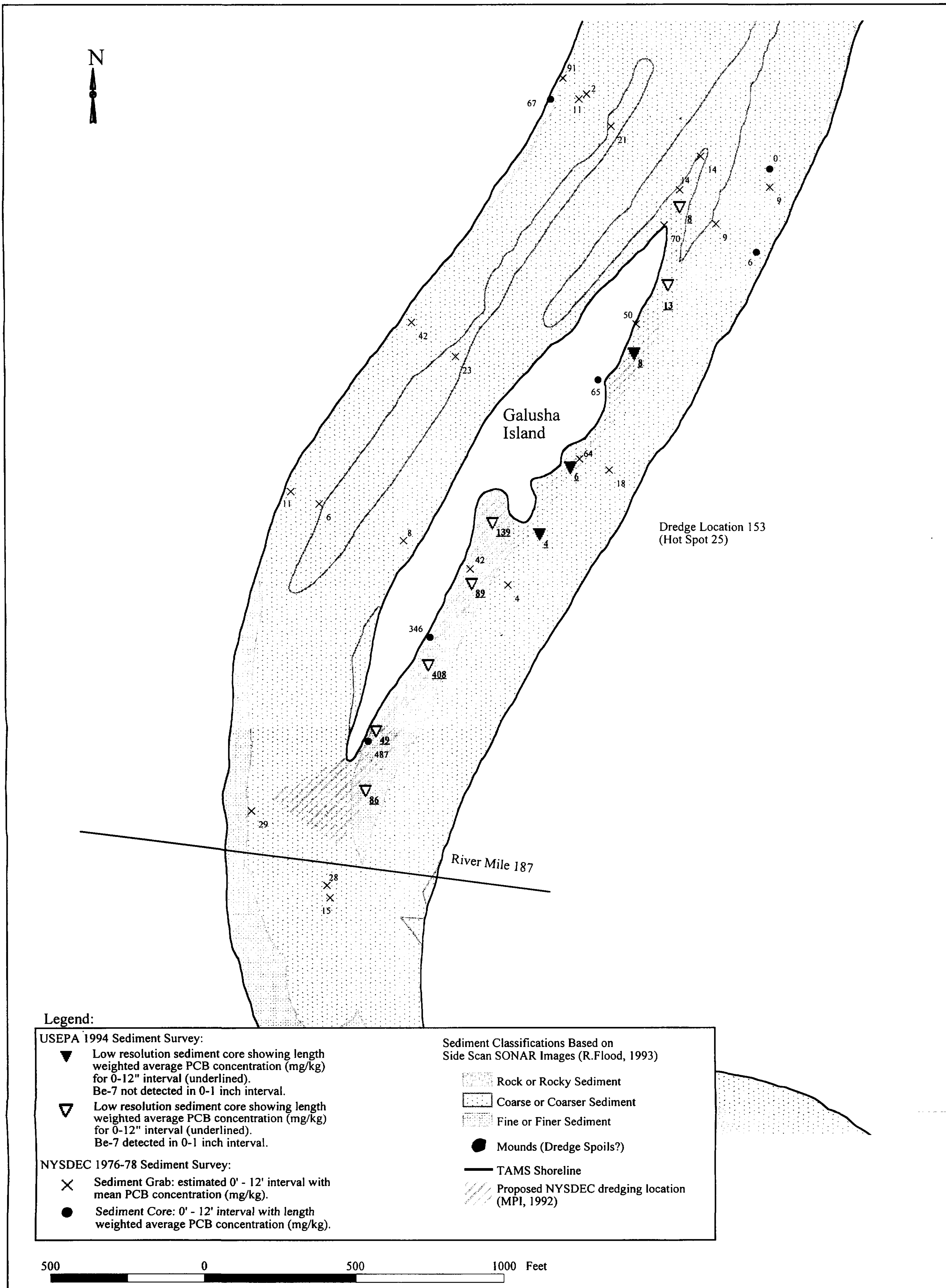
TAMS

Plate 4-19
Changes in Inventory in the Thompson Island Pool 1984 vs. 1994

AW 12/97
%MassChange18.apr

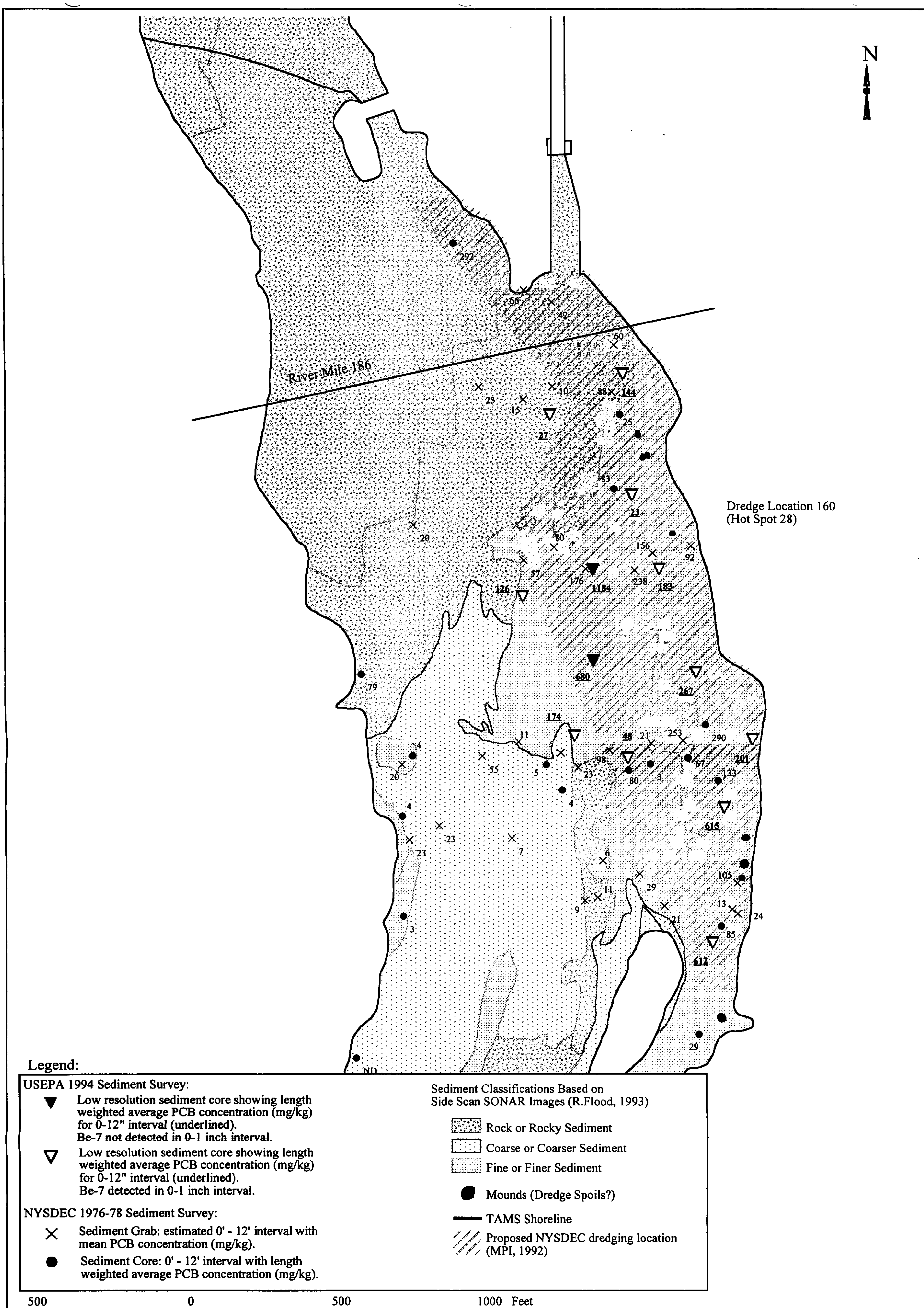
Plate 4-20

Low Resolution Coring and 1984 NYSDEC Sampling Results in the Thompson Island Pool: Change in Sediment Inventory for Trichloro to Decachlorohomologues Exclusive of Dechlorination



Notes:
1. Length-weighted average PCB concentrations for core sites exclude slices which are <10% of the overlying layer.
2. PCB concentration values are rounded to the nearest integer.
3. PCB concentration values for 1976-78 sediment survey from MPI, 1992.

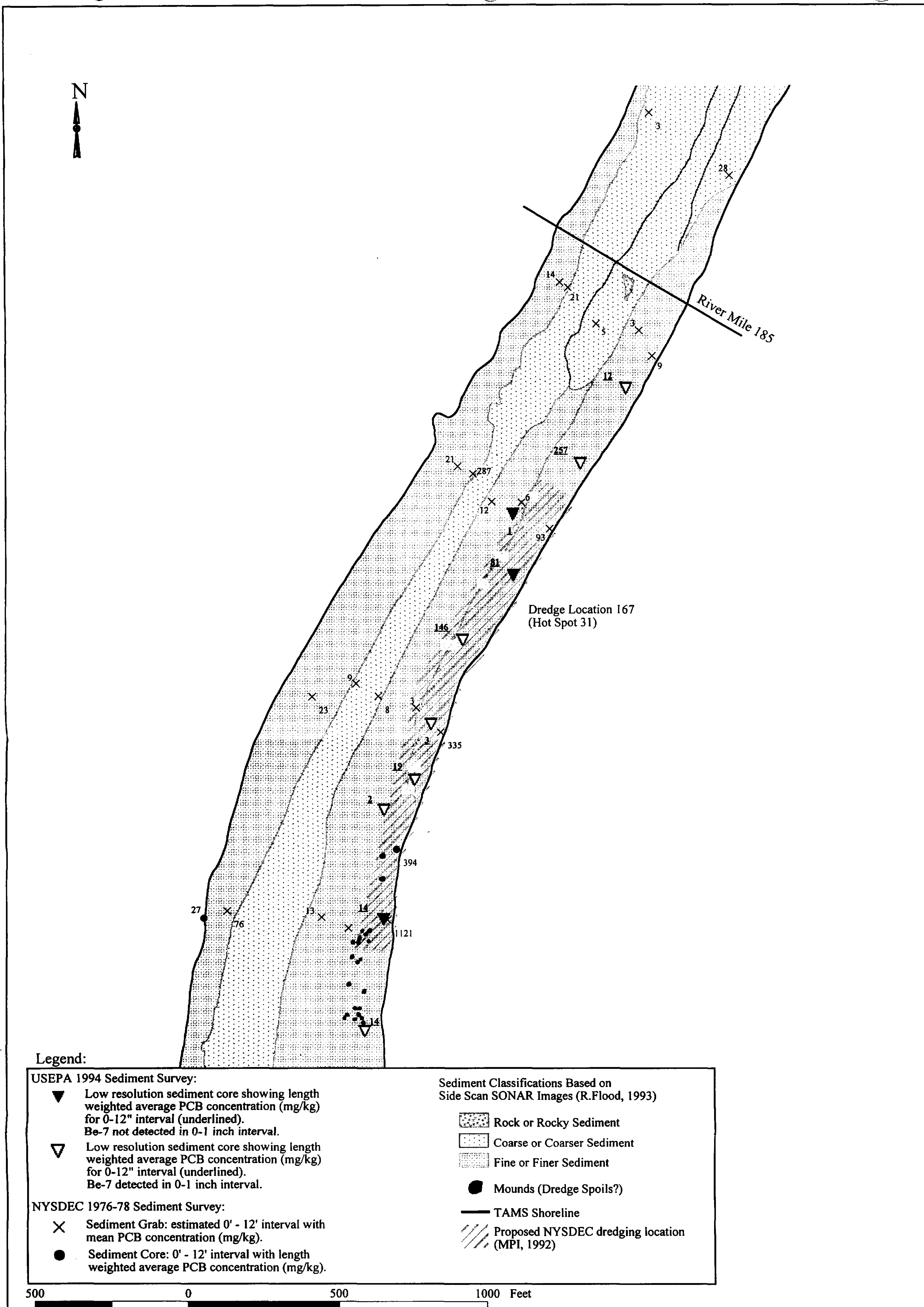
Plate 4-21
Low Resolution Coring and 1976-78 NYSDEC Sampling Results Near Hot Spot 25



Notes:
1. Length-weighted average PCB concentrations for core sites exclude slices which are <10% of the overlying layer.
2. PCB concentration values are rounded to the nearest integer.
3. PCB concentration values for 1976-78 sediment survey from MPI, 1992.

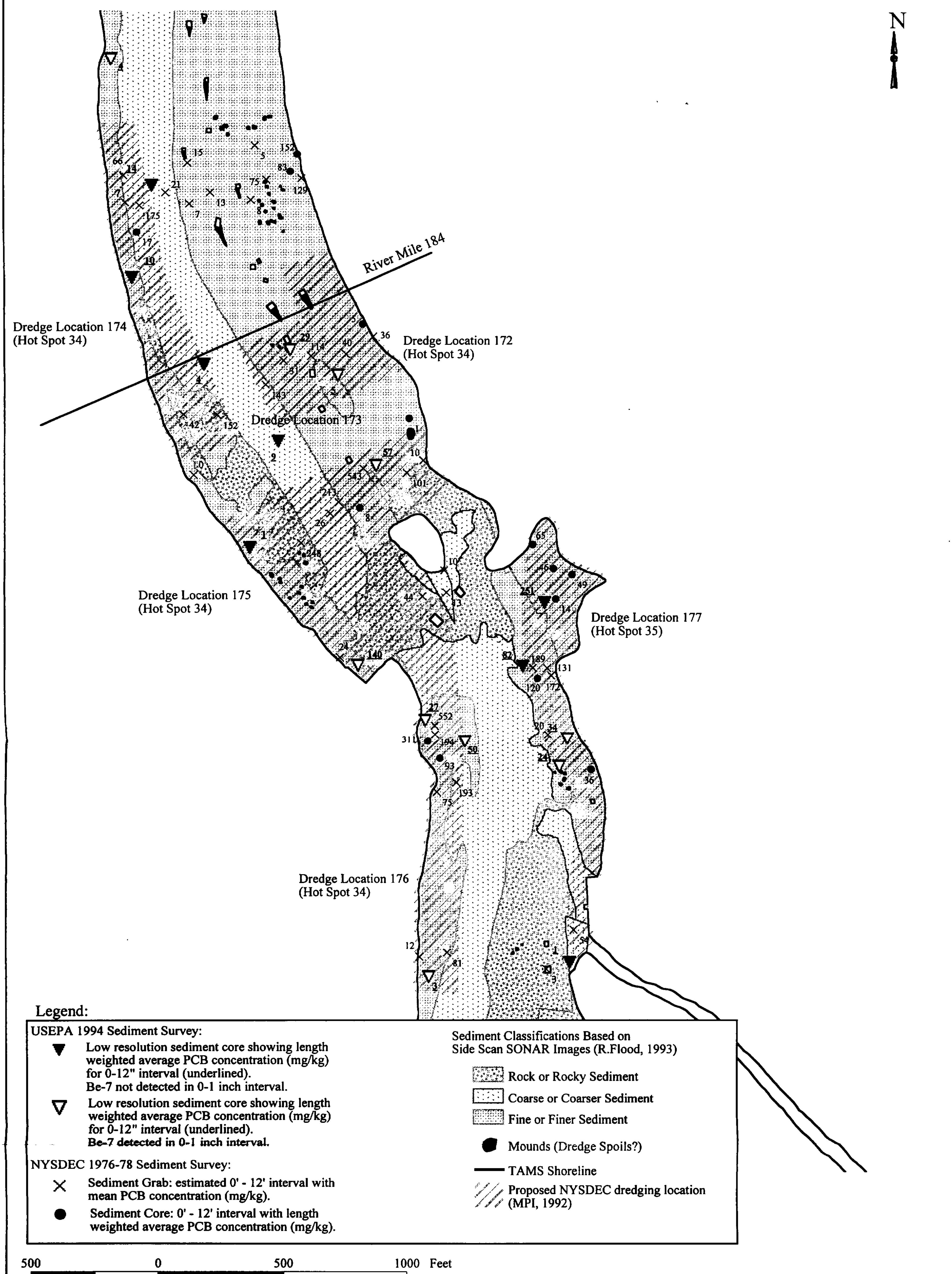
Hudson River Database Release 3.5 TAMS

Plate 4-22
Low Resolution Coring and 1976-78 NYSDEC Sampling Results Near Hot Spot 28



Notes:
1. Length-weighted average PCB concentrations for core sites exclude slices which are <10% of the overlying layer.
2. PCB concentration values are rounded to the nearest integer.
3. PCB concentration values for 1976-78 sediment survey from MPI, 1992.

Plate 4-23
Low Resolution Coring and 1976-78 NYSDEC Sampling Results Near Hot Spot 31



Notes:
1. Length-weighted average PCB concentrations for core sites exclude slices which are <10% of the overlying layer.
2. PCB concentration values are rounded to the nearest integer.
3. PCB concentration values for 1976-78 sediment survey from MPI, 1992.

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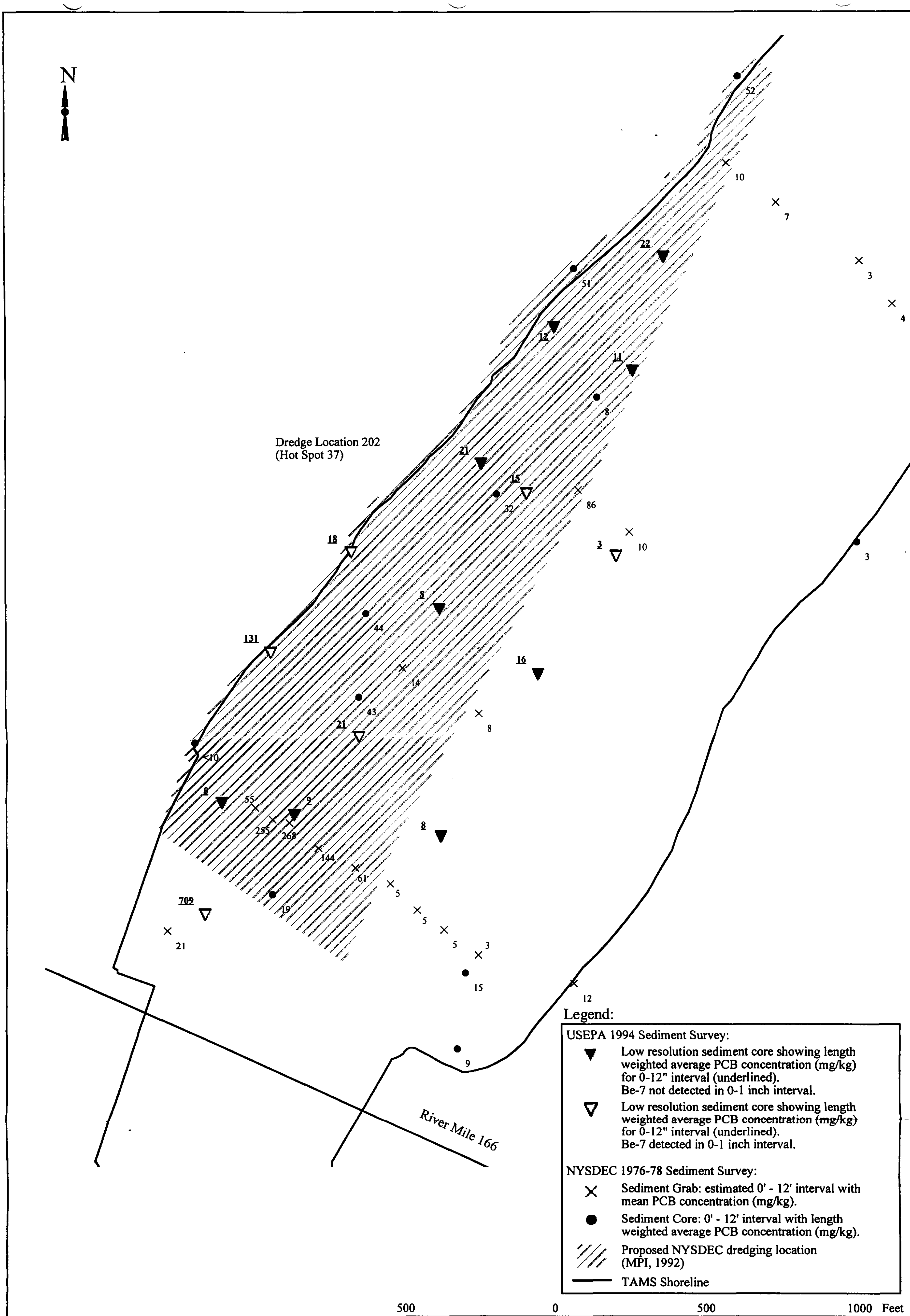
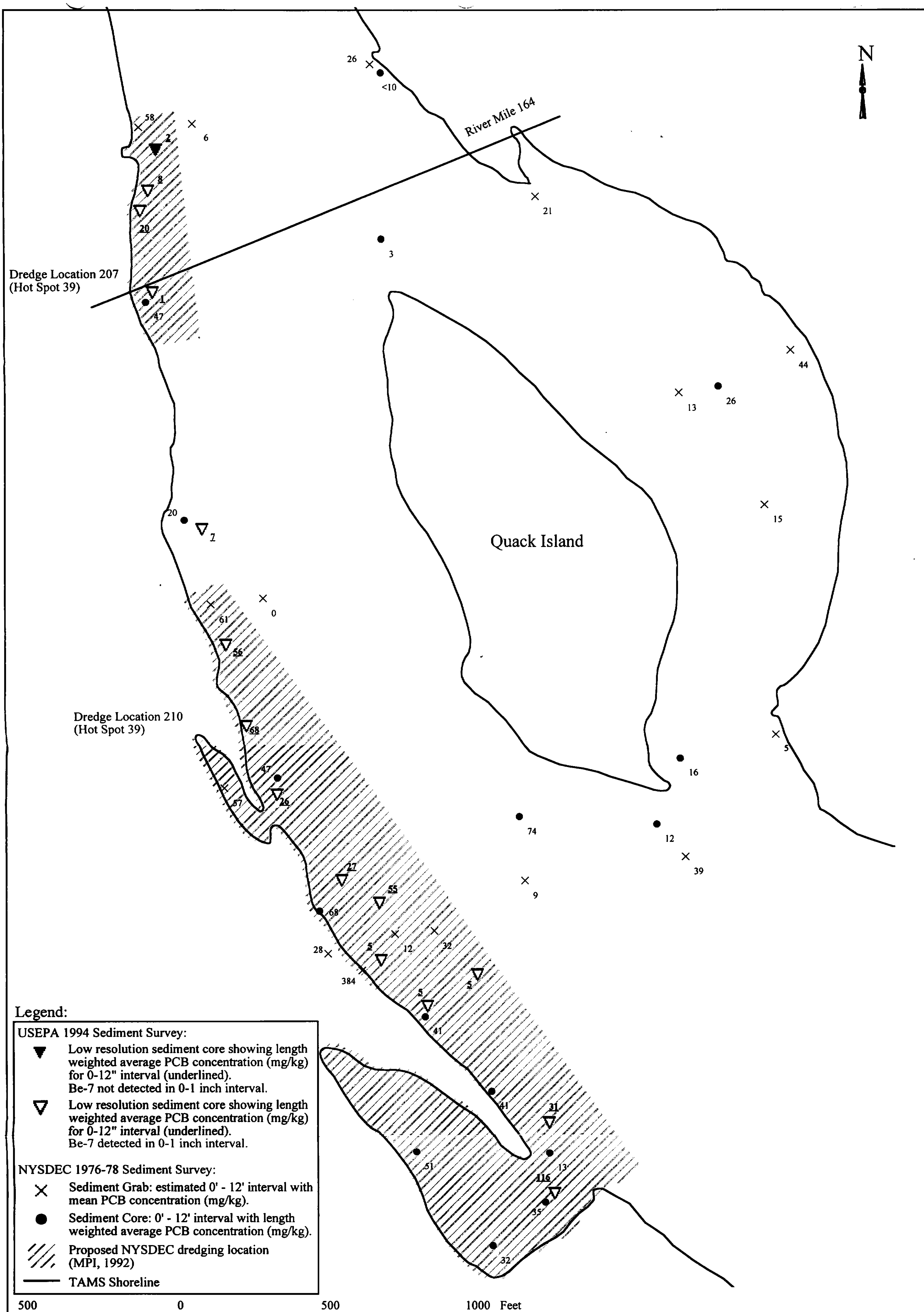
Plate 4-24
Low Resolution Coring and 1976-78 NYSDEC Sampling Results Near Hot Spots 34 and 35



Notes:
1. Length-weighted average PCB concentrations for core sites exclude slices which are <10% of the overlying layer.
2. PCB concentration values are rounded to the nearest integer.
3. PCB concentrations for 1976-78 sediment survey from MPI, 1992.

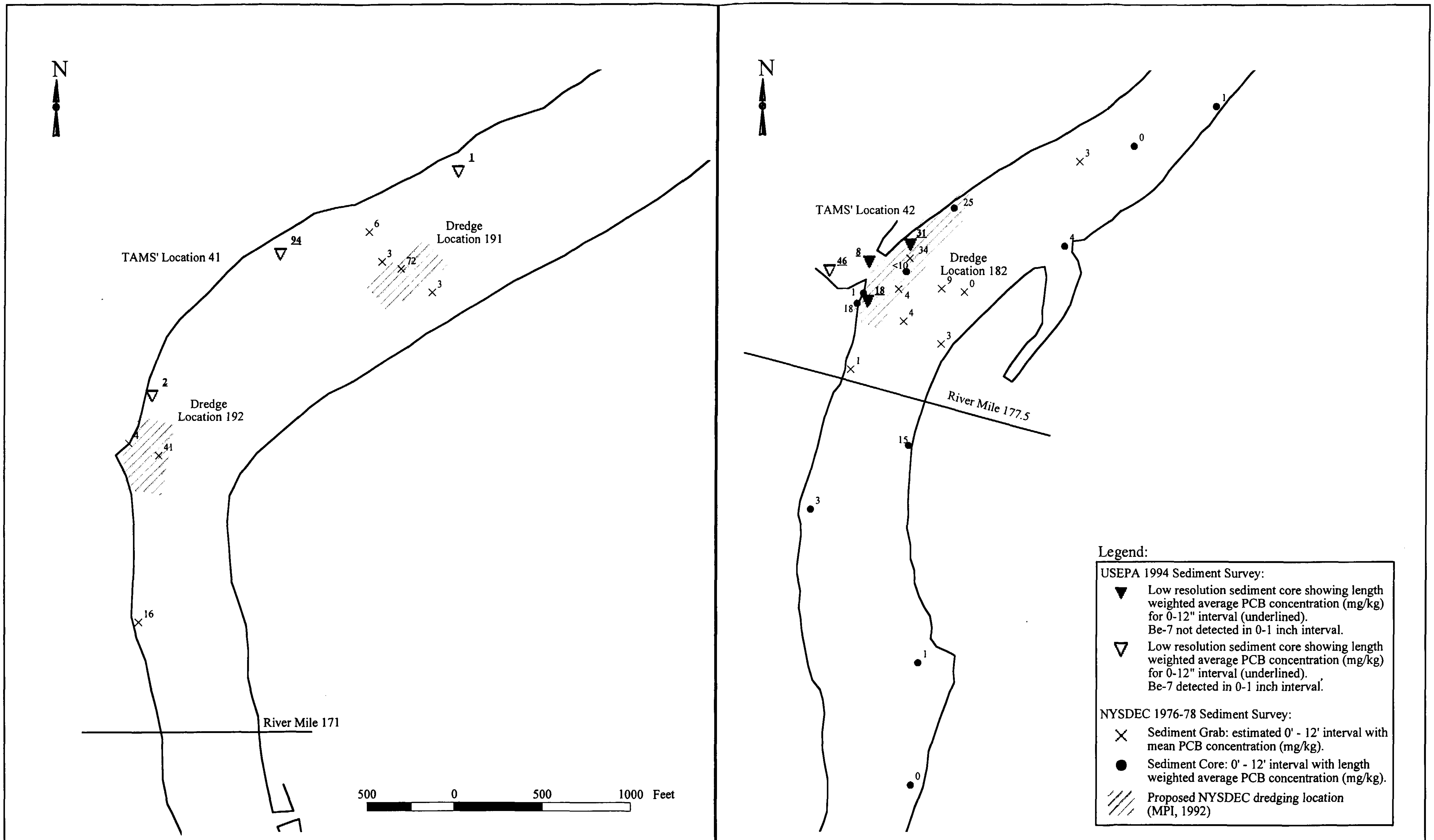
Plate 4-25
Low Resolution Coring and 1976-78 NYSDEC Sampling Results Near Hot Spot 37



Notes:
1. Length-weighted average PCB concentrations for core sites exclude slices which are <10% of the overlying layer.
2. PCB concentration values are rounded to the nearest integer.
3. PCB concentration values for 1976-78 sediment survey from MPI, 1992.

Hudson River Database Release 3.5 TAMS

Plate 4-26
Low Resolution Coring and 1976-78 NYSDEC Sampling Results Near Hot Spot 39



Notes:
1. Length-weighted average PCB concentrations for core sites exclude slices which are <10% of the overlying layer.
2. PCB concentration values are rounded to the nearest integer.
3. PCB concentrations for 1976-78 sediment survey from MPI, 1992.

Plate 4-27

Low Resolution Coring and 1976-78 NYSDEC Sampling Results In TAMS' Location 41 and 42

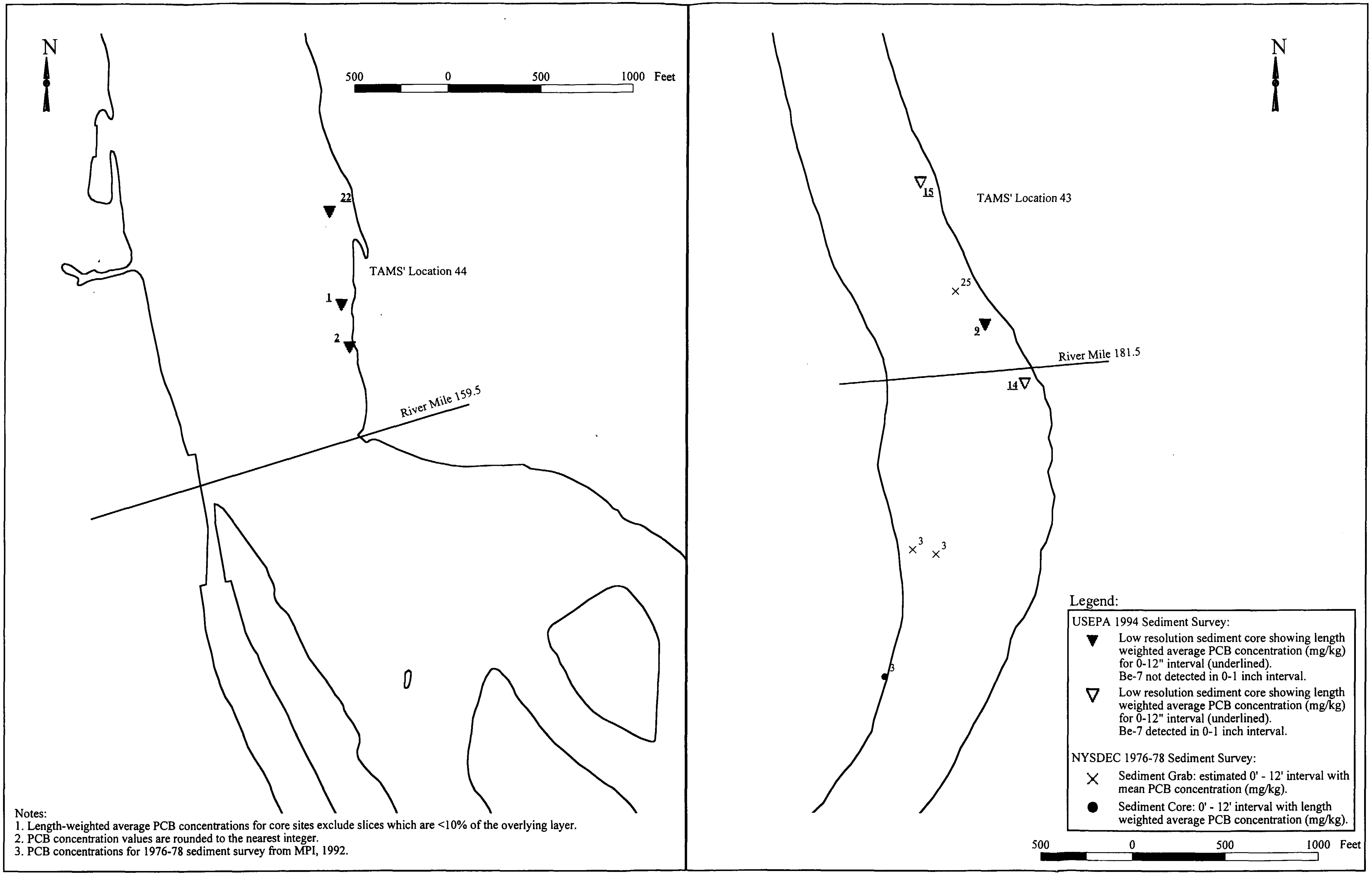


Plate 4-28

Low Resolution Coring and 1976-78 NYSDEC Sampling Results In TAMS' Location 43 and 44

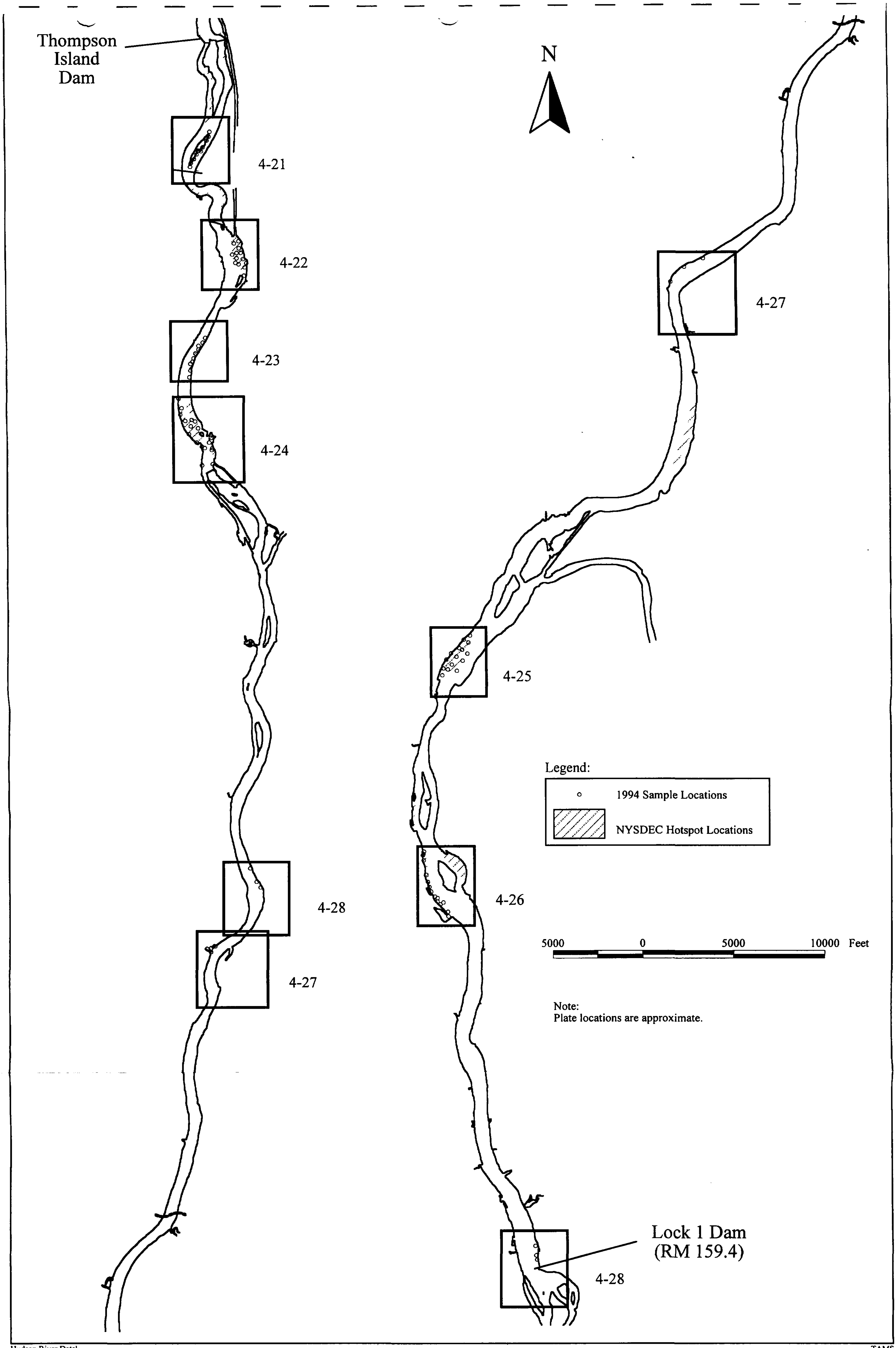


Plate 4-29
Key to Locations of Plates 4-21 Through 4-28

300521