DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254-9149

RECEIVED
NOV 28 89
WASTE MANAGEMENT DIVISION

REPLY TO
ATTENTION OF

CENED-OD-S

SDMS DocID 49870

24 November 1989

Superfund Records Center
SITE: New Bedford
BREAK: 4.04
OTHER: 49870

TO: Mary Sanderson/ EPA

SUBJECT: New Bedford Harbor, MA
Pilot Study Backup Data

1. The accompanying document contains backup data to the Interim Pilot Study Report and a copy of the log book that I kept during the pilot study. Included in the document are the dredging contractors daily reports, calculations for quantities of material dredged and hydrographic surveys of the dredging sites. Charles Berring had indicated that he would like to review this information.

2. Please give me a call if there are any questions.

Mark J. Otto

SECTION 1 CUTTERHEAD DREDGE - DREDGE AREA 1
(contaminated sediment)

A. Summary of Daily Activities

B. Contractors Daily Reports

C. Plume & Dredgehead Sampling - TSS

D. Flow & Density Meter Readings

E. Volume Calculations

F. After Dredge Sediment Sampling Locations

NEW BEDFORD HARBOR, MA.
PILOT STUDY - SUMMARY OF ACTIVITIES
CUTTERHEAD DREDGE - AREA # 1

Wednesday 16 Nov. 1988

Cutterhead dredge arrived at Fairhaven Shipyard at approximately 1300 HRS. Had not been launched by 1600 HRS.

Thursday 17 Nov. 1988 High Tide 1430

Dredge (CH) towed from shipyard to site in early morning (0700). Spuds installed off Coggeshall Street Bridge. WES completing hookup of dredgehead sampler while dredge was anchored outside of cove.

Friday 18 Nov. 1988 High Tide 1504

Dredge (CH) moved into position and we attempted to dredge. Swing anchors would not hold so we were unable to operate. A large suspended sediment plume was created by the anchors sliding through the sediment and the boats working to set them.

Monitoring: EPA Narragansett collected ebb tide samples only.

Saturday 19 Nov 1988 High Tide 1602

AGM weld plates on anchors. Attempted to dredge and operated for only 10 minutes before anchors let go. Contractor was unable to set anchors so that they would hold. A large suspended sediment plume was created again by the slipping anchors and the small boats operating in the shallow water.

Monitoring: EPA Narragansett collected ebb tide samples only.

Sunday 20 Nov 1988 High Tide 1655

AGM onsite for approximately four hours to resolve problem with anchors. Anchors set on land. Severe storm with heavy rain and strong winds. Worst period was between 2000 - 2400 hours.

Monday 21 Nov 1988 (0645 - 0745) High Tide 0520

Dredge (CH) pumped material for 1 hour. Silt Curtain not in place due to pervious days storm. Dredge stopped due to lack of water.

Monitoring: Plume sampling (2 events, 1 composite). Dredge head sampling (1 composite). EPA Narragansett sampled ebb and flood tides starting at approximately 0700 hours (24 hour turnaround). Flowmeter operating, density gage not hooked up. Average flow 2073 gallons/minute.

Tuesday 22 Nov 1988 (0635 - 0820) High Tide 0612

Dredge (CH) pumped material for 1.87 hours. Dredge making a 2' cut and making a one foot advance. Ellicott representative on site. Slow swing speed. Flowmeter operating, density gage not operating. Average flowrate 1961 gallons/minute.

Monitoring: Received notice that decision criteria had been exceeded on Monday. Plume sampling (5 events, 2 composites): row 6 - 10 on second event, row 11 - 15 on fourth event. Dredge head sampling (1 composite) EPA Narragansett sampled ebb and flood tides starting at approximately 0730 (24 hour turnaround).

Wednesday 23 Nov 1988 (0650 - 1010) High Tide 0701

Dredge (CH) pumped material for 2.83 hours (downtime 0.58 hours). Dredge making 2 foot cut with 2 foot advance. Cutterhead was lowered an additional 1 - 2 feet from Tuesdays method of operation. Ellicott representative on site. Flowmeter operating, density gage not operating. Average flowrate 1979 gallons/minute.

Monitoring: Plume sampling (5 events - 3 composites): Sta 1 - 5 on 2nd event, Sta 6 - 10 on 3rd event, Sta 11 - 15 on 5th event. EPA Narragansett sampling (24 hours turnaround). Dredgehead Sampling (2 Composites)

Thursday 24 November 1988

Thanksgiving - Shutdown

Friday 25 November 1988 (0620 - 1130) High Tide 0835

Dredge (CH) pumped material for 3.18 hours. Encountered considerable debris which required numerous shutdowns to clear rock box and suction line (2.35 hours of downtime). Changed anchors at the end of the day which created a plume that was very visible. Flowmeter and density gage not operating.

Monitoring: Dredgehead sampling (suspended sediment only) EPA Narragansett sampling (24 hour turnaround).

Saturday 26 November 1988 (0705 - 1155) High Tide 0923

Dredge (CH) pumping contaminated material for 3.33 hours (1.50 hours downtime). Density gage and flowmeter installed today. Average flowrate 1856 gallons/minute. Average 1.027 density reading.

Monitoring: EPA Narragansett on site. Samples for biological monitoring.

Sunday 27 November 1988 (0745 - 1255) High Tide 1010

Dredge (CH) pumping contaminated material for 4.22 hours with 0.92 hours of downtime. Density gage and flowmeters operating. Average flowrate 1856 gpm. Average density 1.027.

Monday 28 November 1988 (0815 - 1500) High Tide 1101

Dredge (CH) pumping contaminated material for 5.75 hours (1 hour of downtime). Average flowrate 1823 gallons/minute. Average density reading 1.035. Mudcat dredge arrived today.

Monitoring: Well sampling.

Tuesday 29 November 1988 (0755 - 1355) High Tide 1154

Dredge (CH) pumping contaminated material for 3.45 hours with 1.13 hours of downtime.

Monitoring: Well sampling.

Wednesday 30 November 1988

No dredging

Monitoring: Well sampling. Sediment sampling in cutterhead dredge area. 32 cores composited into 8 samples.

Summary of Cutterhead Dredge Working in Area #1

Dredge made only on pass through area attempting to remove two feet of material. Dredge advanced two feet per set. Swing speed was kept as slow as possible. Dredge cut was approximately 65 feet in width.

Dredge operated on 8 days for 25.63 hours (7.48 hours of downtime).

Monitoring

3 well sampling events			21 samples
Plume sampling	11/21	3 events	30 samples 1 composite
	11/22	5 events	40 samples 2 composites
	11/23	5 events	50 samples 3 composites
Dredgehead sampling	11/21 11/22 11/23 11/25		1 composite 1 composite 2 composites
Sediment Samples	11/30		8 composites

Date	Station	PCB	Cu	Cd	Pb	TSS
11/21	2	1.7*	1.3*	0.47	7.6*	
	1	0.12	5.2	0.22	2.1	
11/22	2	0.97	3.3	0.17	2.1	
	1	0.23	2.3	0.13	1.6	
11/23	2	0.54	3.1	0.21	1.8	
	1	0.11	1.8	0.11	1.6	
11/25	2	0.26				
	1	0.11				

*Note: 1) One observation from this phase of the dredging is that the small workboats with their outboards and the swing anchors on the dredge caused more sediment resuspension that was visible than the dredging operation itself.

2) The silt curtain was not in place for any of the dredging activity.

Cutterhead Dredge - Area 1

o Completion of Matchbox dredge area

Friday 16 December 1988 (1345 - 1535) High Tide 1337

Dredge (CH) began work to complete Matchbox dredge area. Dredge working from east to west and will make two cuts to complete area. Attempting to remove two feet by making one pass through area. Dredge pumping water from 1300-1330 while walking up to the start of the cut. Moving material for 2.25 hours. Diffuser removed from discharge line.

Monitoring: Dredgehead sampling using hand held sampler. Hose lines and manifold were frozen and inoperable. Effluent sampling began at 1400 and continued hourly.

Saturday 17 December 1988 (1320 - 1645) High Tide 1438

Dredge (CH) operating for 3.67 hours. Depth of cut deepened at approximately 1500 hours when soundings behind dredge indicated that we were not removing two feet of material.

Monitoring: Dredgehead sampling by hand held sampler due to frozen hoses and manifold. Effluent sampling from weirs hourly (24 samples).

Sunday 18 December 1988 (1400 - 1900) High Tide 1537

Dredge (CH) operating for 3.83 hours. Dredge completed first cut and was moved back to remove remaining 25 foot wide ridge of contaminated material. Completed cut 35 feet short of western limit.

Monitoring: Effluent sampling from weirs hourly (24 samples).

Monday 19 December 1988 (1515 - 2030) High Tide 1633

Dredge (CH) operated for 2.97 hours and completed work in contaminated material.

Monitoring: Effluent sampling from both weirs hourly (24 samples).

Tuesday 20 December 1988 (1615 - 2015) High Tide 1705

Dredge (CH) began excavating CAD cell and placing cap material into CDF. Dredge operated for 3.33 hours. Production rate much higher than when contaminated sediment was being moved. Averaging 15% solids, 100 tons moved in approximately 2 1/2 hours. Discharge location in CDF shifted at the completion of dredging.

Monitoring: EPA Narragansett sampling ebb and flood tides. Effluent sampling at both weirs hourly (24 samples).

Wednesday 21 December 1988 (0515 - 0915) High Tide 0555

Dredge (CH) operating for 4.17 hours removing cap material. Polymer system started at 0920 hour. Pressure gage set at 3, Polymer pump on # 1 setting. 620 gallons of water in 4 hours and 40 minutes = 2.2 gpm. Flow from CDF discharge estimated at 500 gpm.

Monitoring: Effluent monitoring at both weirs hourly (24 samples).

Thursday 22 December 1988 (0540 - 1000) High Tide 0645

Dredge (CH) operated for 3.67 hours placing cap material on CDF. Production rate and advance less than previous days due to change in material. Polymer system operating. Polymer pump setting changed to #2 at 0700 hours. Pressure setting on 3 and 3440 gallons of water pumped at 1130. 2.2 gpm

Monitoring: Effluent sampling from both weirs hourly (24 samples).

Friday 23 December 1988 (0600 - 1200) High Tide 0731

Dredge (CH) operating for 4.37 hours placing cap material on CDF. Water began flowing over weir at approximately 0900 with weir set at elevation +8.0 mlw. Polymer system shut down at 0715 with 6,070 gallons of water in 2635 minutes = 2.3 gpm. Weir in secondary cell sandbagged to hold water in cell.

Monitoring: Effluent sampling at weirs hourly until 0600 (6 samples).

No dredging on 24, 25, & 26 December

Tuesday 27 December 1988 (0900 - 1300) High Tide 1029

Dredge (CH) operated for approximately 4.22 hours placing cap material on CDF.

Wednesday 28 December 1988 (0800 - 1415) High Tide 1113

Dredge (CH) operated for 5.77 hours. Length of pipe was added to discharge line. Discharge is now west of the foundation wall that divides the site in half. Polymer system was turned on at 0915 with the pressure gage set at 3 and the polymer pump at 2. Water was flowing over the weir at approximate elev. +8.5 mlw at 1300.

Monitoring: Effluent sampling at both weirs began at 0600 (19 samples).

Thursday 29 December 1988 (0800 - 1430) High Tide 1159

Dredge (CH) operating for 5.0 hours. Began work in second cut. Polymer system operating.

Monitoring: Effluent sampling hourly at both weirs (24 samples).

Friday 30 December 1988 (0930 - 1530) High Tide 1249

Dredge (CH) operating for 6 hours. Polymer system shutdown at 1400. 6472 gallons in 3165 minutes = 2.04 GPM. Two additional boards installed on weir bringing elevation up to approximately +9.0 MLW.

Monitoring: Last sample from weirs taken at 0600 (6 samples).

Saturday 31 December 1988 (1000 - 1600) High Tide 1341

Dredge (CH) operating for 2.42 hours. Discharge line moved so that material is being pumped within the area surrounded by foundation walls.

No work 1 and 2 January

Tuesday 3 January 1989 (1430 - 2000) High Tide 1625

Dredge (CH) operating for 5.5 hours.

Wednesday 4 January 1989 (0600 - 1630) High Tide 1715

Dredge (CH) operated for approximately 7.05 hours and completed dredging of CAD cell and capping of CDF.

Monitoring Summary

Dredgehead	12/16} samples from hand held sampler 12/17} due to frozen lines and manifold
Effluent	12/16 - began at 1400 12/17 - hourly 12/18 - hourly 12/19 - hourly 12/20 - hourly 12/21 - hourly 12/22 - hourly 12/23 - ended at 0600 12/28 - began 0600 12/29 - hourly 12/30 - ended at 0600

Dredging Summary

Contaminated Material: ~~15.5~~ 12.72 hours over 4 days

Clean Material: ~~63.3~~ 51.5 hours over 11 days

1-B CONTRACTORS DAILY ACTIVITIES

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION

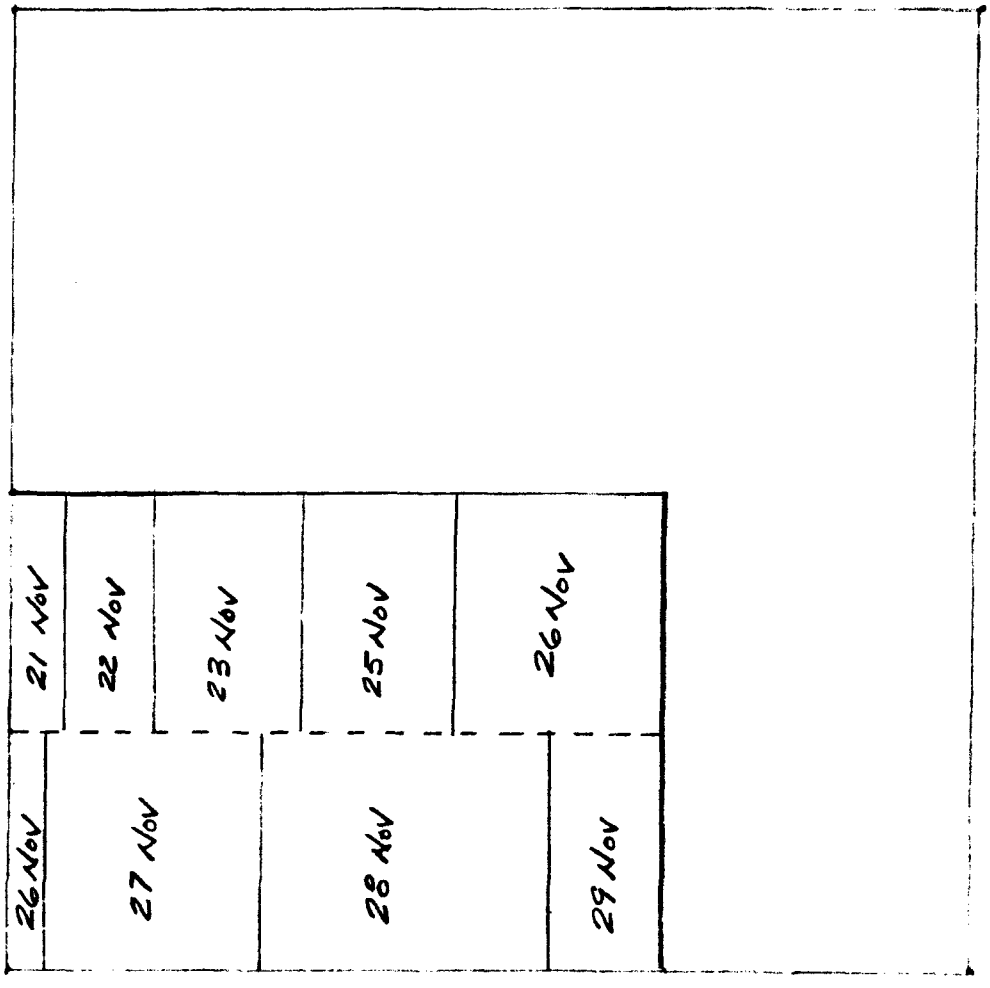
CORPS OF ENGINEERS, U.S. ARMY

PAGE

SUBJECT NEW BEDFORD HARBOR PILOT STUDY

COMPUTATION DREDGING AREA 1 - LOCATION OF CUTTERHEAD DREDGE

COMPUTED BY CHECKED BY DATE



RATE OF ADVANCE 340/25.63 = 13.3 ft/hr

NEW BEDFORD HARBOR SUPERFUND SITE - PILOT STUDY
REVIEW OF CONTRACTORS DAILY REPORTS - CUTTERHEAD DREDGE

Dredge	Area	Date	Operating Time (hours)	Downtime (hours)
CH	1	11-21	1.00	-
CH	1	11-22	1.87	-
CH	1	11-23	2.83	0.58
CH	1	11-25	3.18	2.35
CH	1	11-26	3.33	1.50
CH	1	11-27	4.22	0.92
CH	1	11-28	5.75	1.00
CH	1	11-29	3.45	1.13
Totals		8 days	25.63 hrs.	7.48 hrs.

1. Operating time refers to period when material is being moved.

2. Downtime was caused by debris.

Averages: 3.20 hours of operating time per day with 0.94 hours of downtime.

Pumping material 77.4% of available time.

* The Cutterhead dredge was removing contaminated material from dredge area 1 and pumping this material to the CDF during the period 11/21 - 11/29.

Review of Flow & Density Meter Recordings

November 27 - Readings noted every minute
Avg. flow 1918 GPM
Avg. density 1.030×10^6 mg/l

November 28 - Readings noted every 5 minutes
Avg. flow 1872 GPM
Avg. density 1.029×10^6 mg/l

November 29 - Readings noted every 5 minutes
Avg. flow 1882 GPM
Avg. density 1.028×10^6 mg/l

Average flow: 1891 GPM
Average density: 1.029×10^6 mg/l

[illegible]
[illegible] of contaminated dredge material - Cutterhead Dredge
MTS 2/2/9[illegible]

DREDGE	AREA	DATE	OPERATING TIME (hours)	DOWNTIME (hours)
CH	1	11-21	1.00	-
CH	1	11-22	1.87	-
CH	1	11-23	2.83	0.58
CH	1	11-25	3.18	2.35
CH	1	11-26	3.33	1.50
CH	1	11-27	4.22	0.92
CH	1	11-28	5.75	1.00
CH	1	11-29	3.45	1.13
TOTALS		8 DAYS	25.63 hours	7.48 hours

1. Operating time refers to period when material is being moved
2. Downtime was caused by debris

Averages: 3.20 hrs of operating time per day with 0.94 hours of downtime. 4.14 hours/day

Pumping material 77.4% of available time

* The cutterhead dredge was removing contaminated material from dredge area 1 and pumping this material to the CDF during the period 11/21 - 11/29.

* Quantity removed = 950.7 cy

950.7 / 33.11 = 28.7 cy/hr

950.7 / 25.63 = 37.1 cy/hr

Temp. 42 Clear
Wind 30-50 NW

-21-88 New Bedford ~~Low~~ High Tide 5:30 A.M.

Time Start - 6:45
Stop 7:45 No Water - Dredge on Bottom
Start
Stop
Start
Stop
Start
Stop
Start

11-22-88 New Bedford Temp. 34° Clear
Wind 15-25 NW
~~Low~~ High Tide 6:30

Time Start 6:33
Stop 8:25 No Water - Move Port Swing anchor
9:00 Finish Moving Swing Anchor

SUNNY – COLD 28°
LIGHT ICE ON WATER

11-23

START	6:45	
~~START~~		
STOP	7:05	Suction Plugged - Backwash
START	7:10	
0755	TAKE FUEL FROM PORT TANK. SECURE STAR.	
0800	PUMP PRESSURE 55 PSI	
	Hg - 3-8 IN.	
STOP	8:35	Suction Plugged Concrete
START	8:45	
STOP	9:10	ROCK BOX
START	9:30	
STOP	10:10	

New Bedford Harbor

6:30 A.M. Tide 2½

11-25

Start	5:55	Clean Suction Line 6:15 Digging
Stop	6:40	Rock Box Pluged
Start	6:50	Digging
Stop	7:00	Fix Sample Piping on cutter head
Start	7:10	
Stop	7:20	Rock Box Plugged
Start	7:30	
Stop	7:35	Rock Box Plugged
Start	7:45	
Stop	7:50	Obstruction in Pipe Line -Back-wash
Start	7:52	
Stop	8:00	Obstruction in Pipe Line
		~~Back wash~~
Start	8:15	
Stop	8:25	Rock Box Plugged
Start	8:47	
Stop	8:53	" " "
Start	8:57	
Stop	9:05	Rock Box Plugged Section Plugged
Start	9:12	
Stop	9:20	" " "
Start	9:25	
Stop	9:37	Rock Box Plugged
Start	940	
Stop	10:35	Rock Box Plugged
Start	10:40	
Stop	10:52	" " "

Start	11:00	
Stop	11:15	Rock Box
Start	11:25	
Stop	11:35	Move Swing anchor +
	12:30	Secure Dredge

5' + HYD TE

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 34° Wind: 5-10 North High Tide: 9:20 A.M.
Date: 11-26-88

	TIME	COMMENTS
START	6:25	Move Port Swing Anchor onto Beach
STOP		With Lenght of Cable
START	7:05	Start Digging
STOP	8:05	Rock Box
START	8:10	
STOP	9:50	Rock Box Move to New Cut Slack Pipeline Anchors
START	11:15	
STOP	11:55	Ran out of Water Low Tide 2½'
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 40° Wind: ~~Variable~~ 5 SW High Tide: 10:20
Date: 11-27-88

	TIME	COMMENTS
START		
STOP		Grease-up 6:15 Reset STB Swing Anchor
START	7:45	
STOP	8:03	Pump Water To Calibrate Guage
START	8:10	
STOP	8:25	Rock Box
START	8:30	
STOP	8:45	Rock Box Tire Tube
START	8:52	
STOP	9:20	Rock Box Motor Cycle Tire ~~Tube~~
START	9:25 ~~9:25~~	STILL Something in Rock Box
STOP		
START	9:40	
STOP	10:20	Rock Box
START	10:25	
STOP	10:55	Rock Box
START	11:00	
STOP	11:01	Something in Section (Wood)
START	11:02	
STOP	11:22	Rock Box
START	11:30	
STOP	11:40	Rock Box

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott_____ Mudcat_____
Temp: _____ Wind: _____ High Tide: _____
Date: 11-27-88

	TIME	COMMENTS
START	11:45	
STOP	12:55	Move Port Swing Anchor
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat ____
Temp: 50° Wind: SE 15-30 High Tide: 11:20 AM
Date: 11-28-88

	TIME	COMMENTS
START	7:00	Move STB Anchor - Swing To warm
STOP		Swing Winches
START	8:15	
STOP	9:05	Rock Box Backwashed
START	9:15	
STOP	9:20	Rock Box Stones
START	9:22	
STOP	9:32	Suction Plugged (asphalt)
START	9:37	
STOP	10:10	Rock Box (Stones Wood)
START	10:18	
STOP	10:40	Adjust Belts on Main Pump
START	10:50	
STOP	11:00	Obstruction in Discharge Line - Backwash
START	11:05	
STOP	11:22	Rock Box (Stones)
START	11:27	
STOP	11:40	Rock Box (Tire Tube)
START	11:47	
STOP	12:15	Rock Box
START	12:23	
STOP	3:00	No Water

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 34 Wind: W 5-10 High Tide: 12:20 PM
Date: 11-29-88

	TIME	COMMENTS
START	7:30	OPEN DREDGE - START MAIN ENG
~~STOP~~	7:40	WARM UP SWING WINCHES
START	7:50	~~START~~ BACKED UP 6' (LOW TIDE DIGGING PICK UP BANK)
~~STOP~~	7:55	START DIGGING
START		
STOP	9:02	Rock Box (Stones + Tin)
START	9:07	RPMS Fluctuating 1550 - 1625 Should Be Steady 1600 RPM
~~STOP~~		Something wrong with Throttle
~~START~~		
STOP	9:30	Rock Box (Tin) Work on Throttle
START	~~9:35~~ 9:45	
STOP	10:20	Rock Box Stones + Tin Wait For RPM To Straighten out
START	10:35	
STOP	11:05	Suction Wood
START	11:15	
STOP	12:22	Rock Box - Stone Clean Cutter (Tin)
START	12:30	
STOP	1:00	Rock Box
START	1:05	
STOP	1:10	Rock Box + Move MudCat
START	1:45	
STOP	1:55	Finish Cut - Wash out Thoughly - Secure

New Bedford Harbor Superfund Site - Pilot Study
Review of Contractors Daily Reports - Cutterhead Dredge

Removing Contaminated Material from MATCHBOX dredge area

Dredge	AREA	DATE	OPERATING TIME (hours)	DOWNTIME (hours)
CH	1	12/16	2.25	0.08
↓	↓	12/17	3.67	0.08
		12/18	3.83	0.58
		12/19	2.97	0.17
TOTALS		4 days	12.72 hrs	0.91 hrs

1. Operating time refers to period when material is being moved

2. Averages: 13.63 hrs / 4 = 3.4 hrs per day
3.18 hrs of operating time per day with 0.23 hours of downtime
pumping material 93% of available time

3. Method of operation: Cutterhead Dredge made 1 pass through this area attempting to remove 24" of material

Review of Flow & Density Meter Recordings

16 December — Readings noted every two minutes
Avg. flow 2262 GPM
Avg density 1.026×10^6 mg/l

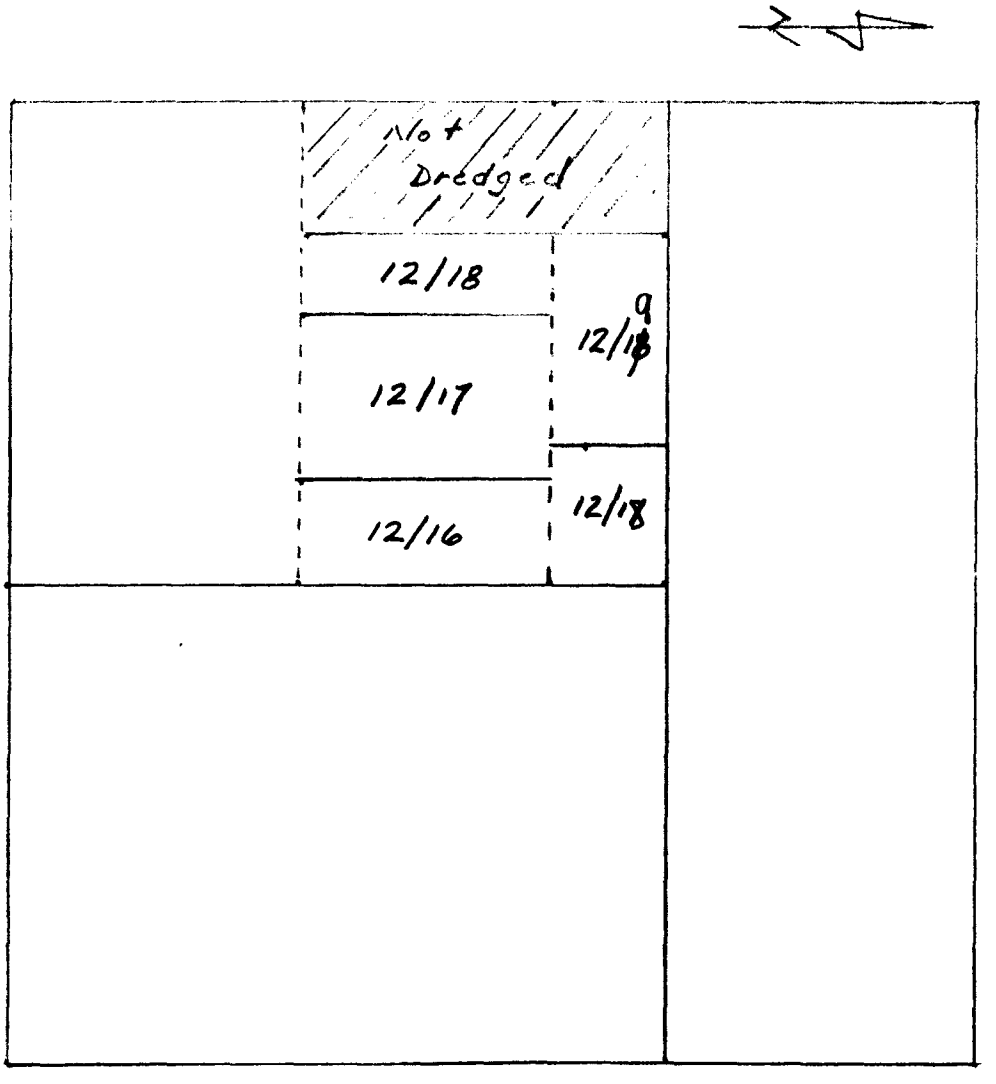
17 December — Readings noted every two minutes
Avg. flow 2161 GPM
Avg density 1.032×10^6 mg/l

18 December — Readings noted every two minutes
Avg flow 2068 GPM
Avg density 1.035×10^6 mg/l

19 December — Readings noted every two minutes
Avg flow 1996 GPM
Avg density 1.034×10^6 mg/l

AVERAGES 2122 GPM
1.032×10^6 mg/l

New Bedford Harbor Superfund Site - Pilot Study
Location of Dredges - CH Winning in Inner Dredge Area



Rate of advance: 90'/7.67 = 11.7 ft/hour - first cut

90'/5.1 = 17.6 ft/hour - 2nd cut

Production rate:

Assume avg. cut of 1.46' - same as other cutterhead area

95 x 90 x 1.46 = 12483/27 = 462 cy

462 cy/12.72 = 36.3 cy/hr

462/13.63 = 33.9 cy/hr

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: _____ Wind: 5 W High Tide: 5:00 PM.
Date: 12-19-88

	TIME	COMMENTS
START	3:00	Warm up Dredge - Dewinterize
STOP		
START	3:17	Start Digging
STOP	4:35	Suction Plugged
START	4:45	
STOP	6:25	Rock Box - Winterize + Secure
START		Dredge - End of Cut - Wood Stuck
STOP		In Impeller (Hard to Get out)
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 20° Wind: 5-10 W High Tide: 4:00 P.M.
Date: 12-18-88

	TIME	COMMENTS
START	1:45 PM	Warm up Dredge
STOP		
START	2:05	Start Digging
STOP	2:45	Move STB Swing Anchor
START	2:55	
STOP	4:00	Move over To New Cut
START	4:25	
STOP	6:30	Suction Plugged - Back Wash +
START		Clean Suction - Secure Dredge
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 19° Wind: 5-10 N High Tide: 3:00 PM
Date: 12-17-88

	TIME	COMMENTS
START	12:30	Prime up + Warm up
~~STOP~~		
START	1:15	Start Digging
STOP	3:15	Rock Box
START	3:20	
STOP	5:00	Shut Down Secure Dredge
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

~~37 PSI~~ 56 PSI
~~2½ IN~~ 3 IN.

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 17° Wind: NW 10-20 High Tide: 2:00 PM
Date: 12-16-88

	TIME	COMMENTS
START	12:30 pm	Warm up Engine + Hydralics
STOP		
START	1:00 Digging	
STOP	1:05	Warm up Hydralics & More
START	1:30	COMMENCE DIGGING
STOP	3.30	Suction Plugged - Backwash
START	3:35	
STOP	3:50	Shut Down + Winter Rize Dredge
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 40° Wind: W-5-10 High Tide: 1:00 PM
Date: 12-15-88

	TIME	COMMENTS
START	12:00	Put 370 on Range - Put Pipeline
~~STOP~~		Together - Set out Anchors - Prime up +
START		Pump water To Check System
STOP	4:00	Shut Down + Winterize Pumps
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

1-C Plume & Dredgehead TSS

NED FORM 223
27 Sept 49

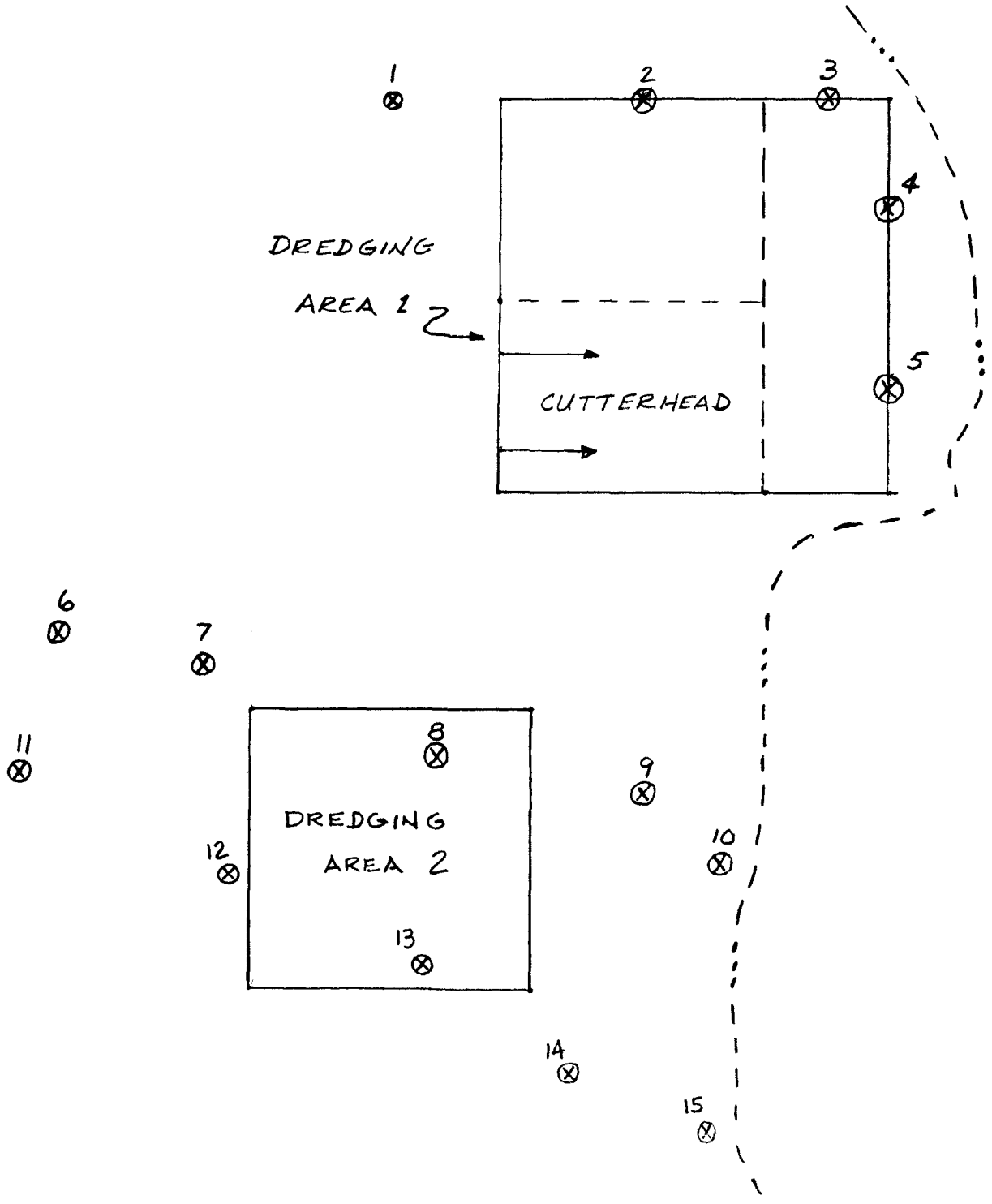
NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE _____

SUBJECT NEW BEDFORD HARBOR PILOT STUDY

COMPUTATION PLUME SAMPLING STATIONS - CUTTERHEAD DREDGE

COMPUTED BY _____ CHECKED BY _____ DATE _____



SCALE 1" = 100'

⊗ PLUME SAMPLING STATIONS

Plume Sampling

November 21

o Dredging on ebb tide. High water @ 0520, began dredging 0700. Sampling began approximately 10 minutes later, samples taken at 45 minute intervals. Dredging stopped after 45 minutes.

STATION	0700-0720 EVENT 1	0745-0815 EVENT 2
6	1.78	9.88
7	2.86	24.26
8	4.02	15.00
9	3.04	80.04
10	4.24	56.98
11	4.86	4.58
12	5.92	1.98
13	6.94	3.98
14	7.10	2.74
15	7.34	

Dredgehead Sampling

November 21

	Ports						
Time	1	2	3	4	5	6	
0726	65.68			46.28			P-S
0741	33.76			7.60			S-P

Composite 59.56

Cutterhead Speed 16.5 RPM

PLUME SAMPLING
NOVEMBER 22

Dredging on ebb tide. High water at 0612, began dredging at 0635, sampling began approximately 20 minutes later, samples taken at 45 minute intervals. Dredging for 1 hour, 45 minutes.

Station	Sampling Event				
	0645-0700 1	0730-0745 2	0810-0825 3	0840-0855 4	5
6	2.86	7.24	8.26	16.18	4.92
7	7.76	5.84	7.54	22.90	12.98
8	2.70	6.22	6.72	13.18	7.08
9	12.06	7.32	5.44	17.14	4.38
10	9.44	4.16	9.36	12.62	9.14
11	7.56	6.38	16.38	14.08	6.48
12	6.34	4.12	5.58	7.62	13.74
13	4.26	5.80	10.62	40.94	16.10
14	5.44	5.28	24.34	8.88	28.02
15	5.02	5.42	8.84	7.90	7.12

Dredgehead Sampling

November 22

Time	Port						
	1	2	3	4	5	6	
0654	236.84	443.52	109.12	591.92	221.48	227.64	S-P
0709	208.72	176.96	126.20	224.64	252.96	65.56	P-S
0726	213.56	209.92	49.12	50.60	98.08	65.44	P-S
0743(C)	122.08	26.92	184.80	47.16	56.96		S-P
0755	111.80	169.20		77.00	30.96		S-P
0813	47.60	103.96		68.32	168.68		S-P

Swing speed: 0.52 ft/sec

Cutterhead Speed: 20.8 RPM

DREDGEHEAD SAMPLING
NOVEMBER 25

Time	Port 1	2	3	4	5	6	
0730	17.4	64.92		64.92	115.40		P-S
0741	63.12	21.28		76.16	25.28		S-P
0752	107.36	86.88		65.84	89.92		P-S
0817	48.04	97.00		69.88	24.52		P-S
0856	26.60	111.40	66.76	41.04	34.52	17.56	S-P
0925	6.68	120.84	35.48	30.72	24.44	26.00	S-P
0941	13.64	23.76	15.64	18.56	13.08	27.24	P-S
0953	15.56	39.84		6.24	9.84		S-P
1008	59.76	73.48	71.68	76.32	66.72	43.84	P-S
1023	39.56	245.48	143.28	185.04	96.80	96.64	S-P
1039	156.40	120.52	109.32	85.24	77.68	76.04	S-P
1056	53.36	48.24		78.32			S-P
1108	27.08	35.32		59.76			P-S
1123	69.52	32.16		65.52	65.88		S-P
	78.24	126.00		96.24	230.36		

PSA Sample Taken at 0945 - Port 5

swing speed: 0.54 ft/sec

NOVEMBER 23
PLUME AND DREDGEHEAD SAMPLING - CUTTERHEAD DREDGE

Dredging began just prior to high tide. Initial plume sample taken 10 minutes after the start of dredging. Plume samples taken at 45 minute intervals. Dredging continued for 3 hours and 20 minutes.

Plume Sampling - (TSS mg/l)

Station	Sampling Event 0700-0715 1	0745-0800 2	0830-0840 3	0915-0925 4	0945-1000 5
1	2.84	4.56			
2	-	3.02			
3	2.64	7.00			
4	3.40	7.38			
5	6.34	5.40			
6	5.42	10.08	2.82	3.86	4.56
7	6.48	12.12	6.58	5.74	7.02
8	5.48	4.06	5.12	4.20	8.40
9	5.54	4.24	9.16	2.22	5.20
10	3.12	5.46	3.98	3.42	3.96
11			4.70	4.64	3.98
12			4.72	10.42	5.10
13			2.66	3.66	3.44
14			4.18	6.42	4.40
15			3.88	5.26	7.46

Dredgehead Sampling - (TSS mg/l)

Samples taken approximately every 15 minutes. Sampling ports situated on both sides of the dredgehead at 3 different elevations. Ports 1 and 4, 2 and 5, and 3 and 6 are at the same elevation.

Time	Port 1	2	3	4	5	6	
0710	16.44	68.84	26.36	15.84	34.00	62.56	P-S
0719	69.84	29.72	19.96	82.32	92.56	39.00	S-P
0732	26.16	79.48	96.24	36.32	70.80	19.04	P-S
0748	38.64	77.40	40.76	41.12	51.52	25.92	S-P
0804	34.76	46.12	47.40	39.56	70.56	34.24	S-P
0819	38.16	55.08	37.00	25.04	35.88	54.16	P-S
0842	32.56	46.32	39.96	23.92	22.88	22.48	S-P
0848	28.60	79.04		13.76	33.40		P-S
0903(C)	79.04	56.60		67.08	41.72		S-P
0928	83.08	162.52		121.56	41.68		P-S
0933	67.64	74.28		50.80	44.12		S-P
0948	71.20	129.88		30.32	43.68		S-P
0741 (c)							P-S

swim [illegible]: 0.50 ft/sec

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U S ARMY

PAGE

SUBJECT NEW BEDFORD HARBOR PILOT STUDY
COMPUTATION PARTICLE SIZE ANALYSIS

COMPUTED BY | CHECKED BY | DATE

PLUME		DREDGEHEAD	
November 22, 1988	CUTTERHEAD DREDGE		
TSS mg/l	TIME	TSS mg/l	TIME
26.48	7:40		
26.60	7:55		
30.20	8:10		
25.24	8:25		
24.56	8:54		
32.36	10:29		
24.52	12:30		
32.28	14:29		
November 23, 1988	CUTTERHEAD DREDGE		
58.84	8:05	30.60	7:55
62.28	8:20	20.20	8:10
64.88	8:35	22.60	8:25
1.36	9:05	26.64	8:40
1.48	9:35	13.32	9:10
1.92	8:50	21.04	9:40
1.24	10:35	19.56	10:40
0.88	12:35	12.88	12:40
November 25, 1988	CUTTERHEAD DREDGE		
		59.00	10:00
		55.72	10:15
		40.72	10:30
		37.00	10:45
		30.88	11:15
		26.60	11:45
		48.80	12:45
		21.84	13:45

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE

SUBJECT NEW BEDFORD HARBOR PILOT STUDY
COMPUTATION DREDGEHEAD SAMPLING - CUTTERHEAD DREDGE
COMPUTED BY CHECKED BY DATE

CUTTERHEAD DREDGE - CONTAMINATED SEDIMENT
17 DECEMBER - AREA 1

TIME	PORT 1	2	3	4	5	6	
1430	144.5	29.4		185.4	151.3		P-S
1445	217.6	213.9		185.3	87.2		S-P
1500	46.0	32.6		124.4	53.4		P-S
1515	68.5	81.1		86.6	108.0		P-S
1530	73.5	55.6		39.8	89.5		P-S
1545	76.5	160.9		108.8	55.2		S-P
1600		170.4		81.6	143.0		P-S
1615		202.8		180.4	108.0		P-S
1630	531.1	101.2		385.0	1208.0		S-P

* SAMPLE TAKEN FROM BOAT (HOSE LINES AND MANIFOLD FROZEN)

~~Swing Speed: 0.15, 0.24, 0.11, 0.12, 0.10 Average 0.14 ft/sec~~

Cutter Speed: Average 21.2 RPM

SWING SPEED

8.70	7.38	9.16
7.96	7.41	9.21
8.85	7.26	9.04
25.51/3	22.05/3	27.41/3
= 8.5 sec	= ~~7.36~~ 7.35 sec	= 9.14 sec

2.83/8.5 = 0.33 ft/sec

~~7.36/8.5~~

~~9.14/8.5~~

2.83/7.35 = 0.39 ft/sec

2.83/9.14 = 0.31 ft/sec

Avg 0.34 ft/sec

1-D Flow & Density Meter Readings

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE

SUBJECT NEW BEDFORD HARBOR PILOT STUDY

COMPUTATION CUTTERHEAD DREDGE - SWING SPEED & CUTTERHEAD ROTATION

COMPUTED BY _____ CHECKED BY _____ DATE _____

Diameter of swing anchor cable drum 0.9 ft (as measured in field)

Swing speed determined by timing the rotations of the drum

Circumference of Drum: $\pi(.9) = 2.83$ ft

Nov 22

5.56 sec	4.96
6.03 "	5.16
5.86 "	4.92
17.45/3 = 5.82 sec	15.04/3 = 5.01 sec

2.83/5.42 = 0.52 ft/sec

Nov 23

5.18	5.53	5.39
5.24	5.83	6.05
5.40	6.05	5.89
15.82/3 = 5.27	6.45	17.33/3 = 5.77
	23.86/4 = 5.97	

2.83/5.67 = 0.50 ft/sec

Nov 25

4.60	5.88	4.47	5.80
4.74	5.74	4.51	5.91
4.64	5.83	4.61	5.86
13.98/3 = 4.66	17.45/3 = 5.81	13.59/3 = 4.53	17.57/3 = 5.86

2.83/5.22 = 0.54 ft/sec

Cutterhead Speed

Nov 22

2.78
2.88
2.98
8.64/3 = 2.88 sec

60/2.88 = 20.8 RPM

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE

SUBJECT New Bedford Harbor Superfund Site - Pilot Study
COMPUTATION DREDGEHEAD SAMPLING
COMPUTED BY CHECKED BY DATE

16 December

Swing Speed

Circumference of Spool 0.9 ft

5.86	6.88	6.48
6.02	6.92	6.41
5.98	7.30	6.66
Avg 6.0	Avg 7.0	Avg 6.5
0.9/6.0 =	0.9/7.0 =	0.9/6.5 =
.15 ft/sec	.13 ft/sec	.14 ft/sec

Cutterhead Speed

2.52
2.90
2.87

Avg 2.76 sec/rev
= 21.7 RPM

17 December

8.70	7.38	9:16
7.96	7:41	9:21
8.85	7:26	9:04
Avg 8.5	Avg 7.35	Avg 9.14
0.9/8.5 =	0.9/7.35 =	0.9/9.14 =
.11 ft/sec	.12 ft/sec	0.10 ft/sec

2:88
2:84
2:79
2:81

Avg 2.83 sec/rev
= 21.2 RPM

NEW BEDFORD HARBOR SUPERFUND SITE - PILOT STUDY
DATA REDUCTION - FLOW & DENSITY RECORDER
MST

2/2

DREDGE: CUTTERHEAD

AVG FLOW 1918 GPM
AVG DENSITY 1.030×10^6

WORK AREA: DREDGE AREA #1 (Contaminated)

DATE: NOVEMBER 27

TIME	AVERAGE FLOW (GPM)	AVERAGE DENSITY (mg/l) $\times 10^6$
8:40	1455	1.01
41	2340	1.02
42	1750	1.06
43	1920	1.01
44	2340	1.02
45	2050	1.02
	2160	1.01
	1800	1.01
	2340	1.01
	–	–
50	–	–
	–	–
	1500	1.00
	2370	1.01
	2370	1.01
	2160	1.05
	1560	1.02
	2250	1.02
	1140	1.05
	2110	1.02
9:00	2340	1.01
AVG	1998	1.02
9:01	2160	1.05
	1225	1.02
	2340	1.04
	1800	1.04
	2130	1.01
	2430	1.02
	1200	1.04
	2020	1.02
	1950	1.04
9:10	1950	1.01
AVG	1921	1.03

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

SUBJECT New Bedford Harbor Superfund Site - Pilot Study
COMPUTATION Data Reduction - Flow & Density Recorder
COMPUTED BY MJO DATE 2/2 CHECKED BY

DREDGE: CUTTERHEAD DATE: 27 NOVEMBER

TIME	AVG FLOW (GPM)	AVG DENSITY (mg/l) x10⁶
9:11	2410	1.01
	2220	1.05
	1560	1.02
	2300	1.05
	1020	1.02
	2340	1.01
	2430	1.04
	2070	1.06
	1800	1.02
9:20	2350	1.01
* AVG	2050	1.029
1001	1470	1.02
	2250	1.02
	1920	1.05
	1350	1.06
	2340	1.02
	1980	1.03
	1830	1.02
	2420	1.03
	1740	1.06
1010	2010	1.02
* AVG	1931	1.033
1011	2300	1.01
	1680	1.01
	2170	1.01
	2240	1.06
	1200	1.05
	1860	1.02
	1790	1.07
	1370	1.02
	2350	1.02
10:20	1860	1.07
* AVG	1882	1.034

TIME	AVG FLOW (GPM)	AVG DENSITY (mg/l) x10⁶
10:21	1980	1.02
	180	1.00
	—	—
	—	—
	2040	1.00
	2450	1.00
	2100	1.06
	1680	1.02
	1680	1.01
10:30	1060	1.07
* AVG	1856	1.026
10:31	1340	1.06
	2100	1.02
	1950	1.02
	1380	1.03
	2190	1.01
	2260	1.03
	1220	1.05
	2025	1.02
	2340	1.03
10:40	1440	1.02
* AVG	1825	1.029
10:41	1910	1.02
	2400	1.03
	2370	1.05
	2120	1.02
	2320	1.02
	1300	1.03
	2280	1.02
	2340	1.03
	1500	1.06
10:50	1440	1.02
* AVG	1998	1.030

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

NED FORM 223
27 Sept 49

SUBJECT New Bedford Harbor Superfund Site - Pilot Study
COMPUTATION Data Reduction - Flow & Density Recorder
COMPUTED BY MJO CHECKED BY DATE 2/2

DREDGE: Cutterhead DATE: 27 November

TIME	AVG FLOW (GPM)	AVG DENSITY (mg/l) $\times 10^{-6}$	TIME	AVG FLOW (GPM)	AVG DENSITY (mg/l) $\times 10^{-6}$
1051	2160	1.07	1121	1800	1.02
	1770	1.02		2400	1.01
	2280	1.01		1620	1.03
	2340	1.01		—	—
	—	—		—	—
	—	—		—	—
	—	—		—	—
	1690	1.00		—	—
	2400	1.01		—	—
1100	2430	1.01	1130	2190	1.00
* AVG	2153	1.019	* AVG	2002	1.018
1101	1800	1.03	1131	2390	1.01
	—	—		2410	1.01
	—	—		2410	1.05
	1930	1.01		1500	1.03
	2380	1.01		2115	1.02
	1800	1.04		1050	1.03
	1730	1.02		1960	1.02
	2070	1.06		1860	1.05
	1425	1.03		1350	1.06
1110	1590	1.02	1140	—	—
* AVG	1841	1.028	* AVG	1894	1.031
1111	1800	1.06	1141	—	—
	1500	1.07		—	—
	1680	1.02		—	—
	2040	1.08		2130	1.00
	1500	1.02		2370	1.00
	2090	1.02		2410	1.06
	1830	1.06		1800	1.02
	1360	1.02		2400	1.09
	2220	1.06		1560	1.01
1120	1800	1.02	1150	2370	1.01
* AVG	1782	1.043	* AVG	2149	1.027

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

SUBJECT New Bedford Harbor Superfund Site - Pilot Study
COMPUTATION Data Reduction - Flow & Density Recorder
COMPUTED BY MJO CHECKED BY DATE 2/2 PAGE

DREDGE: CUTTERHEAD DATE 27 November

TIME	AVG Flow (GPM)	AVG Density (mg/L x 10^-6)	TIME	AVG FLOW (GPM)	AVG DENSITY (mg/L x 10^-6)
1151	1500	1.06	1221	1530	1.06
	1320	1.02		1440	1.02
	2130	1.02		2190	1.02
	1620	1.07		2100	1.06
	1950	1.02		1770	1.02
	2400	1.01		1980	1.01
	2400	1.01		2160	1.02
	2400	1.04		1500	1.06
	2100	1.04		1680	1.02
1200	2010	1.05	1230	1960	1.07
* AVG	1808	1.034	* AVG	1831	1.036
1201	1950	1.02	1231	1950	1.03
	1425	1.05		2100	1.02
	1770	1.05		2325	1.02
	1650	1.02		1850	1.05
	1680	1.08		1200	1.01
	1710	1.02		2150	1.03
	2270	1.02		1670	1.06
	2420	1.05		1370	1.02
	1350	1.06		2050	1.01
1210	1680	1.02	1240	1600	1.06
* AVG	1791	1.039	* AVG	1827	1.031
1211	2130	1.02	1241	1620	1.05
	1720	1.07		1490	1.06
	1500	1.02		2280	[illegible]
	2340	1.01		2020	1.02
	2090	1.05		2040	1.01
	1380	1.06			
	2280	1.02			
	1080	1.06			
	1740	1.02			
1220	2190	1.02	1250		
* AVG	1845	1.035	* AVG	1890	1.036

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE _____

SUBJECT NEW BEDFORD HARBOR SUPERFUND SITE - PILOT STUDY
COMPUTATION DATA REDUCTION - FLOW
COMPUTED BY C. COLVIN CHECKED BY _____ DATE _____

DREDGE - [illegible] WORK AREA - DREDGE AREA #1
Avg. Flow = 1872 GPM
DATE: NOVEMBER 28 Avg Density 1.029 x 10⁶ mg/l

TIME		AVG FLOW	AVG DENSITY
8:20		1560	1.01
:25		2400	1.01
:30		2370	1.01
:35		2385	1.01
:40		2370	1.01
:45		2100	1.02
:50		1800	1.06
:55		2100	1.01
9:00		1410	1.09
9:05		1150	—
	AVG	1965	1.026
9:15		1560	1.07
:20		2390	1.01
:25		2370	1.02
:30		2340	1.01
:35		450	—
:40		2390	1.02
:45		1800	1.065
:50		1800	1.01
:55		2160	1.06
10:00		1500	[illegible]
	AVG	1876	1.032
10:05		2010	1.01
:10		2010	[illegible]
:15		—	—
:20		[illegible]	1.01
:25		[illegible]	1.01
[illegible]		1970	1.03
[illegible]		[illegible]	1.01
[illegible]		1530	1.01
[illegible]		—	—
[illegible]		—	—
:55		[illegible]	[illegible]
11:00		[illegible]	[illegible]
	AVG	[illegible]	1.026

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE

SUBJECT

COMPUTATION

COMPUTED BY

DATE

CHECKED BY

DREDGE - CUTTER HEAD DATE 22 NOVEMBER

TIME	AVG FLOW	AVG DENSITY
11:10	1860	1.065
:15	750	1.015
:20	2420	1.02
:25	360	—
:30	1890	1.04
:35	1680	1.015
:40	2380	1.01
:45	—	—
:50	2310	1.01
:55	1530	1.02
12:00	1470	1.065
AVG	1665	1.029
12:05	2100	1.02
:10	2250	1.015
:15	1710	1.05
:20	—	—
:25	1830	1.01
:30	2460	1.03
:35	1800	1.02
:40	1950	1.07
:45	1950	1.03
:50	2100	1.01
:55	1290	1.03
AVG	1944	1.030

TIME	AVG [illegible]	AVG [illegible]
1:00	2160	[illegible]
:05	2150	[illegible]
:10	1870	[illegible]
:15	1560	[illegible]
:20	1270	[illegible]
:25	[illegible]	[illegible]
:30	1750	[illegible]
:35	2010	[illegible]
:40	900	[illegible]
:45	2250	[illegible]
	1843	1.035
:50	1500	[illegible]
:55	1800	[illegible]
2:00	1500	[illegible]
:05	1910	[illegible]
:10	1470	[illegible]
:15	1950	[illegible]
:20	2280	1.02
:25	1620	[illegible]
:30	1080	[illegible]
:35	1890	[illegible]
:40	1710	[illegible]
AVG	1871	1.027
2:45	2010	[illegible]
:50	2450	1.01
:55	1830	[illegible]
3:00	2010	[illegible]
AVG	2075	1.03

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE 1 of 2

SUBJECT NEW BEDFORD HARBOR SUPERFUND SITE - PILOT STUDY
COMPUTATION DATA REDUCTION - Flow & Density Recorder
COMPUTED BY C. Cohen CHECKED BY DATE 2/3

DREDGE - (CH)

WORK AREA [illegible]

DATE : NOV 29

Avg Flow : 1882
Avg Density: 1.028 x 10^6 mg/l

TIME	AVG FLOW	AVG DENSITY
8:15	2420	—
.20	2400	1.01
.25	2250	1.01
.30	1050	1.01
.35	1800	1.07
.40	2160	1.04
.45	1290	1.02
.50	1920	1.01
.55	1590	1.055
AVG	1691	1.028

9:00	2400	1.01
.05	—	—
.10	2460	1.01
.15	1650	1.06
.20	1960	1.02
.25	2310	1.02
.30	1710	1.01
.35	—	—
.40	2370	—
.45	2470	—
.50	1500	1.05
.55	1640	1.07
AVG	1973	1.03

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

SUBJECT [illegible]
COMPUTATION [illegible]
COMPUTED BY [illegible] CHECKED BY _____ DATE _____

NOV 29

[illegible]

Time	[illegible]	[illegible]
10 00	1672	[illegible]
05	1800	[illegible]
[illegible]	1700	1.02
15	[illegible]70	1.01
20	[illegible]	1.04
[illegible]	—	—
[illegible]	—	—
35	1780	[illegible]
40	[illegible]20	1.01
45	1800	1.01
50 }	[illegible]	[illegible]
55 }	[illegible]	[illegible]
11 00	[illegible]	[illegible]
11.05	[illegible]40	1.01
AVG	1972	1.27

NED FORM 225
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE 162

SUBJECT NEW BEDFORD HARBOR SEDIMENT DISPOSAL [illegible]
COMPUTATION DATA REDUCTION - FLOW
COMPUTED BY C COLLA CHECKED BY DATE

DREDGE

DATE: 16 DECEMBER

AVG FLOW 2262
AVG DENSITY 1.03

TIME	AVG FLOW	AVG DENSITY
13.32	1530	1.02
.34	2460	1.02
.36	2450	1.02
.38	2460	[illegible]
.40	2460	[illegible]
.42	2460	1.02
.44	2460	[illegible]
.46	[illegible]	[illegible]
.48	[illegible]	1.02
.50	2460	[illegible]
AVG	2306	1.02

13.52	2460	[illegible]
.54	[illegible]	1.02
.56	[illegible]	[illegible]
.58	[illegible]	[illegible]
14.00	[illegible]	[illegible]
.02	2460	[illegible]
.04	[illegible]	[illegible]
.06	2450	[illegible]
.08	[illegible]	[illegible]
AVG	2438	1.02

14.10	1080	1.02
12	2270	1.02
14	2100	1.02
16	2460	1.02
18	2460	1.02
20	2460	1.03
22	2460	1.02
24	2100	1.02
26	2450	1.03
28	1800	1.02
AVG	2164	1.02

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U S ARMY

SUBJECT NEW BEDFORD HARBOR SUPERFUND SITE [illegible]
COMPUTATION DATA ACQUISITION [illegible]
COMPUTED BY C. Colum[illegible] CHECKED BY DATE

DECEMBER 10th [illegible] 40)

TIME	AVG FLOW	AVG DENSITY	TIME	AVG FLOW	AVG DENS
14:30	2250	[illegible]	15:30	2200	1.02
2	2400	1.02	32	2150	1.04
34	2460	1.02	34	1500	—
36	2460	1.02	36	2220	1.02
38	2460	1.02	38	2450	1.02
40	2340	1.02	40	1400	1.03
42	2160	1.04	42	1800	1.02
44	2400	1.03	44	2430	1.03
46	2250	1.02	46	2420	1.02
AVG	2353	1.03	AVG	2003	1.03
14:48	2490	1.03	15:48	1050	1.03
50	2100	1.04	50	2140	1.02
52	2280	1.03		1595	1.03
54	1000	1.03			
56	2450	1.03			
58	2470	1.03			
15:00	1320	1.02			
02	2190	[illegible]			
04	2460	1.02			
06	2450	1.03			
08	2460	1.02			
	2347	1.03			
15:10	2390	1.03			
12	2430	[illegible]			
14	2100	1.02			
16	[illegible]	1.04			
18	1440	1.04			
20	[illegible]	[illegible]			
22	[illegible]	[illegible]			
24	[illegible]	[illegible]			
26	[illegible]	[illegible]			
	[illegible]	1.02			
AVG	2106	1.03			

17 DEC

TIME	[illegible]	[illegible]
12:[illegible]	[illegible]	—
[illegible]	1[illegible]	[illegible]
[illegible]	1740	[illegible]
[illegible]	1750	[illegible]
08	1750	[illegible]
10	1750	[illegible]
12	1750	1.02
14	1830	1.02
16	2460	1.02
18	2460	1.02
AVG	1972	1.02

TIME	[illegible]	[illegible]
14:[illegible]	[illegible]	1.03
[illegible]	1500	1.03
[illegible]	[illegible]	[illegible]
[illegible]	2460	1.02
[illegible]	[illegible]	1.02
10	2310	1.02
12	2470	1.02
14	2460	1.02
16	2400	1.02
18	2460	1.02
AVG	2380	1.02

TIME		
13.20	2460	1.02
22	2360	1.02
24	2220	1.02
26	2400	1.03
28	2400	1.02
30	2[illegible]0	1.02
32	2[illegible]0	1.02
34	2100	1.02
36	2400	1.02
38	2470	1.02
AVG	2114	1.02

14.20	2450	1.02
22	2460	1.02
24	2400	1.02
26	2460	1.02
28	2490	1.02
30	2470	1.02
32	2460	1.02
34	2480	1.02
36	2460	1.02
38	2460	1.02
AVG	2453	1.02

13:40	2430	1.02
42	1350	1.02
44	2460	[illegible]
46	2400	1.02
48	1650	1.03
50	2460	1.02
52	2250	1.03
54	1500	1.02
56	2460	1.03
58	1950	1.02
AVG	1900	1.02

[illegible]	2400	1.03
[illegible]	2250	1.03
42	2250	1.02
46	2250	1.02
48	2480	1.02
50	2250	1.02
52	2250	1.03
54	2400	1.02
56	1950	1.03
58	2250	1.03
	2279	1.03

17 DEC

TIME	[illegible]	[illegible]
15:00	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
06	1750	[illegible]
08	2220	[illegible]
10	2100	[illegible]
12	1830	[illegible]
14	2340	1.03
16	—	—
18	—	—
15:20	2040	1.02
22	2450	1.04
AVG	2070	1.03

TIME	[illegible]	[illegible]
16:00	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
08	1920	[illegible]
10	[illegible]	1.06
12	[illegible]	1.03
14	[illegible]	1.06
16	1560	1.03
18	2460	1.07
20	2250	1.03
22	2100	[illegible]
AVG	2155	1.05

15:24	2130	1.03
26	2280	1.05
28	2100	1.03
30	2400	1.06
32	2450	1.03
34	2100	1.03
36	2130	1.03
38	2100	1.05
40	2550	1.03
42	1950	1.06
	2219	1.04
15:44	2250	1.03
46	1650	1.05
48	2410	1.07
50	1500	[illegible]
52	[illegible]	[illegible]
54	1650	1.04
56	2460	1.07
58	1650	1.03
16:00	2370	[illegible]
02	1830	1.05
AVG	2020	1.05

16:24	2100	1.02
26	2400	1.05
28	2490	1.03
30	1920	1.04
32	2430	1.04
34	1860	1.03
36	2400	1.02
38	2400	1.05
40	2340	1.02
42	2250	1.06
AVG	2019	1.04

16:44	2430	1.03
46	2460	1.05
48	1950	1.03
50	[illegible]	1.06
52	[illegible]	[illegible]
AVG	2268	1.04

18 DEC

Time	Air	Water
14 [illegible]	[illegible]	[illegible]
2	[illegible]	[illegible]
4	[illegible]	[illegible]
6	[illegible]	1.03
8	1650	1.02
20	2460	[illegible]
22	2460	1.03
24	2400	1.04
26	1440	[illegible]
14.42	2400	1.02
AVG	[illegible] 5	1.02
14.44	2460	1.03
46	1950	1.03
48	2200	1.02
50	1860	1.07
52	2460	1.03
54	2250	1.02
56	2400	1.03
58	2250	1.04
15.00	1500	1.03
[illegible]	2460	[illegible]
AVG	[illegible]	1.04
15.04	1920	[illegible]
06	2240	[illegible]
8	1740	[illegible]
10	1470	[illegible]
12	2430	[illegible]
14	2400	[illegible]
16	1740	1.03
18	[illegible]	[illegible]
20	2470	[illegible]
22	[illegible]	[illegible]
AVG	[illegible]	1.04

Time	Air	Water
[illegible]	[illegible]	[illegible]
[illegible]	1100	[illegible]
[illegible]	2280	[illegible]
[illegible]	2040	[illegible]
32	1050	[illegible]
[illegible]	2430	1.03
36	[illegible]	[illegible]
38	[illegible]	1.02
40	2480	[illegible]
42	1950	1.03
AVG	2141	1.04
15.44	2310	1.02
46	2100	1.03
48	2250	1.04
50	1950	1.03
52	2430	1.05
54	2250	1.03
56	1650	1.04
58	2250	1.03
16.32	2400	1.02
34	2410	1.02
AVG	2200	1.03
16.36	[illegible]	[illegible]
38	2400	1.02
40	2410	1.02
42	2130	1.02
44	[illegible]	1.02
46	[illegible]	[illegible]
48	[illegible]	[illegible]
50	2100	1.02
52	[illegible]	1.03
54	[illegible]	1.02
AVG	2173	1.02

18 DEC

TIME	AV	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	2100	1.03
02	1700	1.03
04	1500	1.03
06	1500	1.04
08	1800	[illegible]
10	1800	[illegible]
12	2130	1.04
14	2040	1.03
AVG	1837	1.04

TIME	AV	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	2100	1.03
02	1700	1.03
04	1500	1.03
06	1500	1.04
08	1800	[illegible]
10	1800	[illegible]
12	2130	1.04
14	2040	1.03
AVG	1837	1.04

TIME	AV	[illegible]
1716	2040	1.04
18	1920	1.03
20	2250	1.03
22	2100	1.06
24	2220	1.04
26	2320	1.04
28	1350	1.03
30	1830	1.04
32	2100	1.06
34	1950	1.02
AVG	2041	1.04

TIME	AV	[illegible]
1816	1650	1.03
18	2190	1.02
20	1500	1.05
22	2190	1.05
24	2100	1.03
26	2040	1.06
28	1900	1.06
30	1600	1.03
32	1800	1.02
AVG	1883	1.04

TIME	AV	[illegible]
1736	2040	1.02
38	2040	1.06
40	2040	1.04
42	1800	1.03
44	1650	1.02
46	1900	1.07
48	1650	1.03
50	2130	1.06
52	1700	1.08
54	1500	1.03
AVG	1900	1.05

DEC [illegible] 19

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	1850	1.04
40	2200	1.03
44	2100	[illegible]
46	2100	1.03
48	1800	[illegible]
50	[illegible]	1.05
52	2260	1.05
AVG	1885	1.03
17.54	2100	1.03
.56	2240	[illegible]
.58	1500	1.03
18.00	2320	1.04
02	2220	[illegible]
.04	2280	1.06
06	2260	1.04
08	[illegible]	1.07
10	2100	1.06
12	2100	1.04
AVG	2140	1.05
[illegible]	2080	1.03
16	1800	1.03
18	[illegible]	1.03
20	1810	[illegible]
22	[illegible]	1.05
24	2220	[illegible]
26	2220	1.04
AVG	2047	1.04

1-E VOLUME CALCULATIONS

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

SUBJECT NEW BEDFORD HARBOR SUPERFUND SITE - PILOT STUDY
COMPUTATION CUTTERHEAD DREDGE - AREA #1 QUANTITY CALCULATION
COMPUTED BY MJO CHECKED BY _____ DATE 2/2

STATION	AREA	AVERAGE AREA	VOLUME
0+00	0		
		56.3	1407.5
0+25	112.5		
		121.3	3032.5
0+50	130.0		
		143.2	3580.0
0+75	156.3		
		165.2	4128.8
1+00	174.0		
		190.8	4768.8
1+25	207.5		
		204.0	5100.0
1+50	200.5		
		182.5	3650.0
1+70	161.0		

TOTAL 25,667.60 ft^3/27

= 950.7 cy

Note:

1. Stations run south to north
2. Dredge operated south to north and made two cuts, each 60+ feet in width.
3. Dredge made one pass over the area and attempted to remove two feet of sediment.

Average depth: Pre dredge 0.72

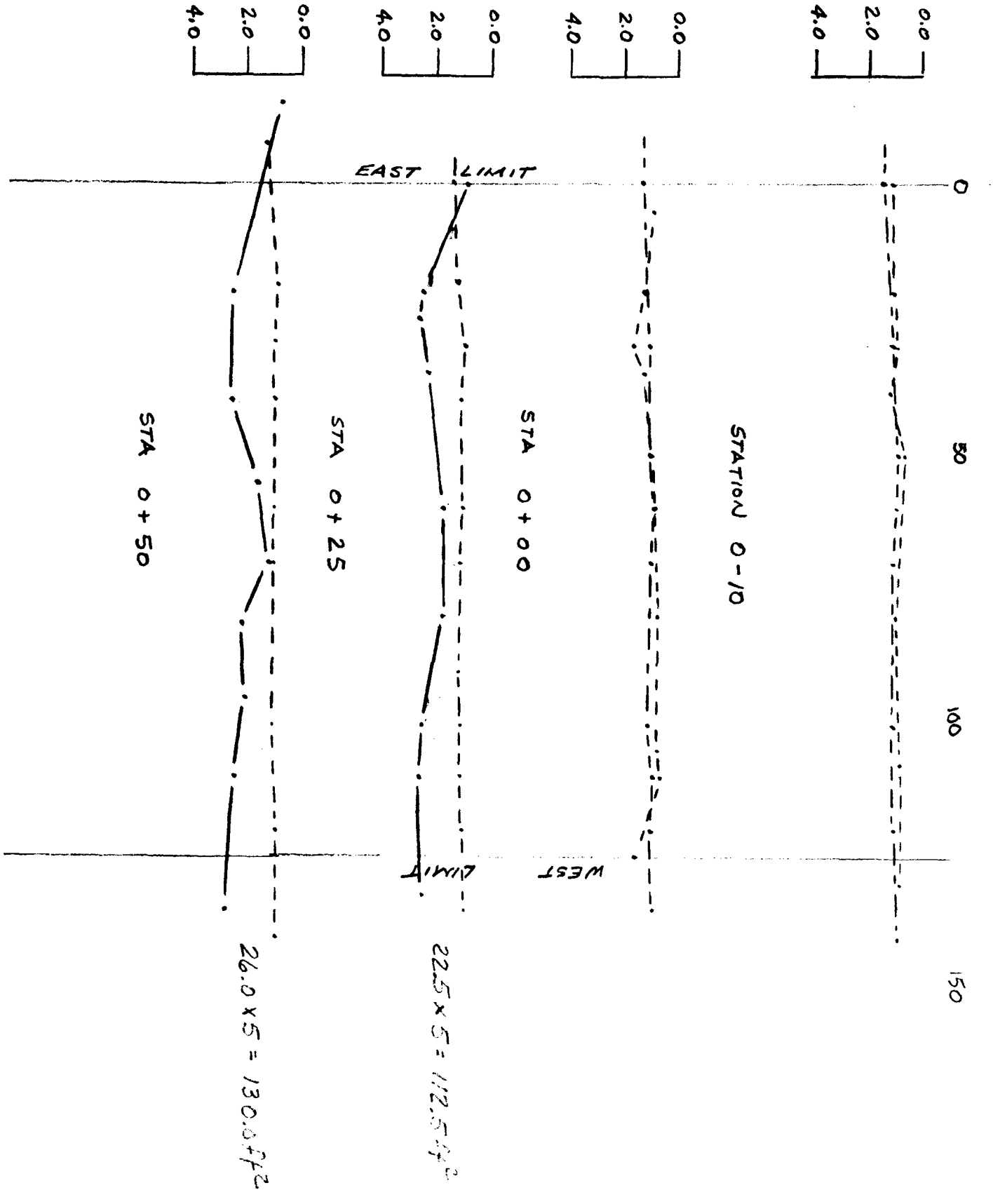
After Dredge 2.18

Average depth of cut 1.46'

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

SUBJECT NEW BEDFORD HARBOR SUPERFUND SITE - PILOT STUDY
COMPUTATION CUTTERHEAD DREDGE - AREA #1 QUANTITY CALCULATION
COMPUTED BY MJO CHECKED BY DATE 2 February



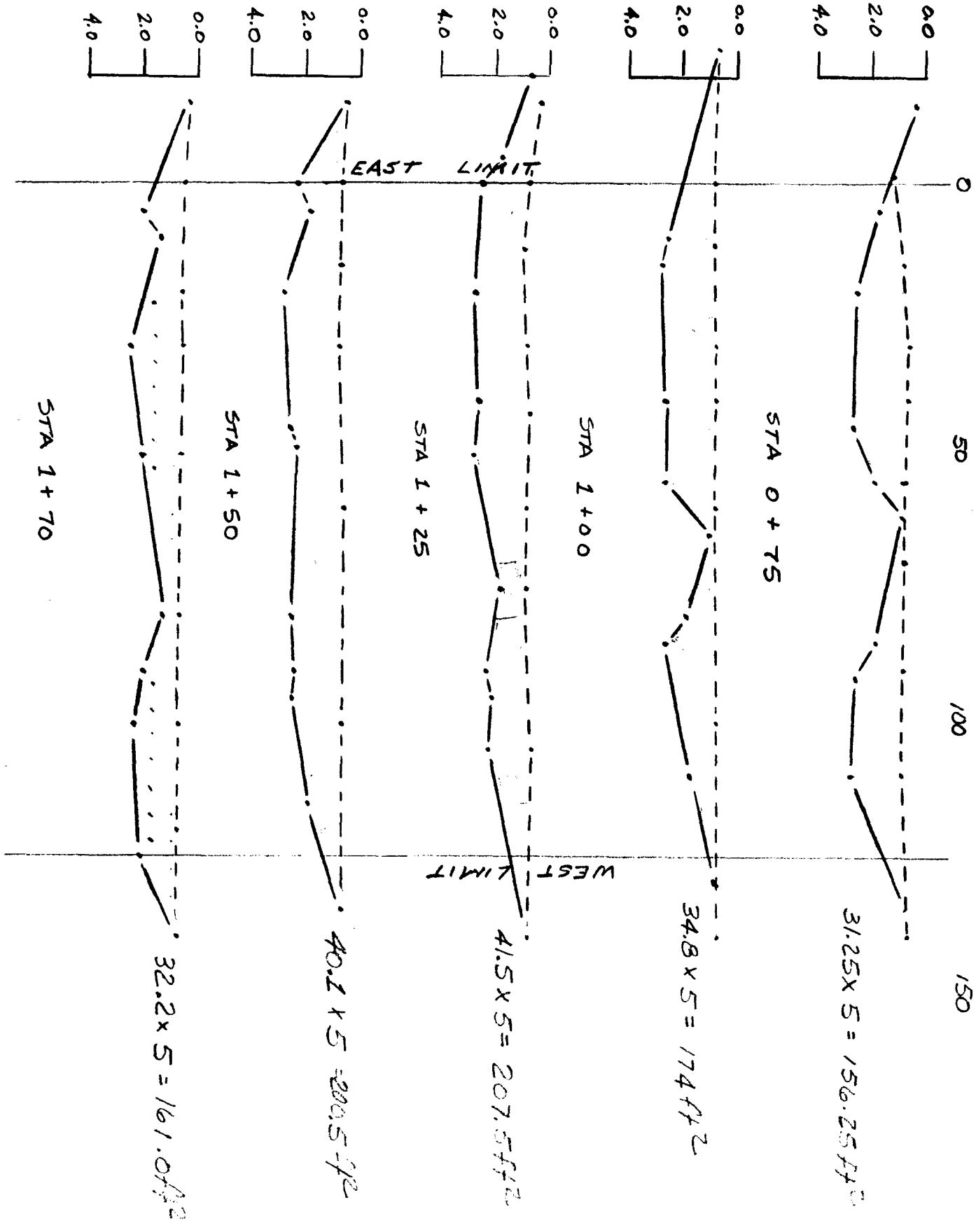
NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

SUBJECT New Bedford Harbor Superfund Site - Pilot Study

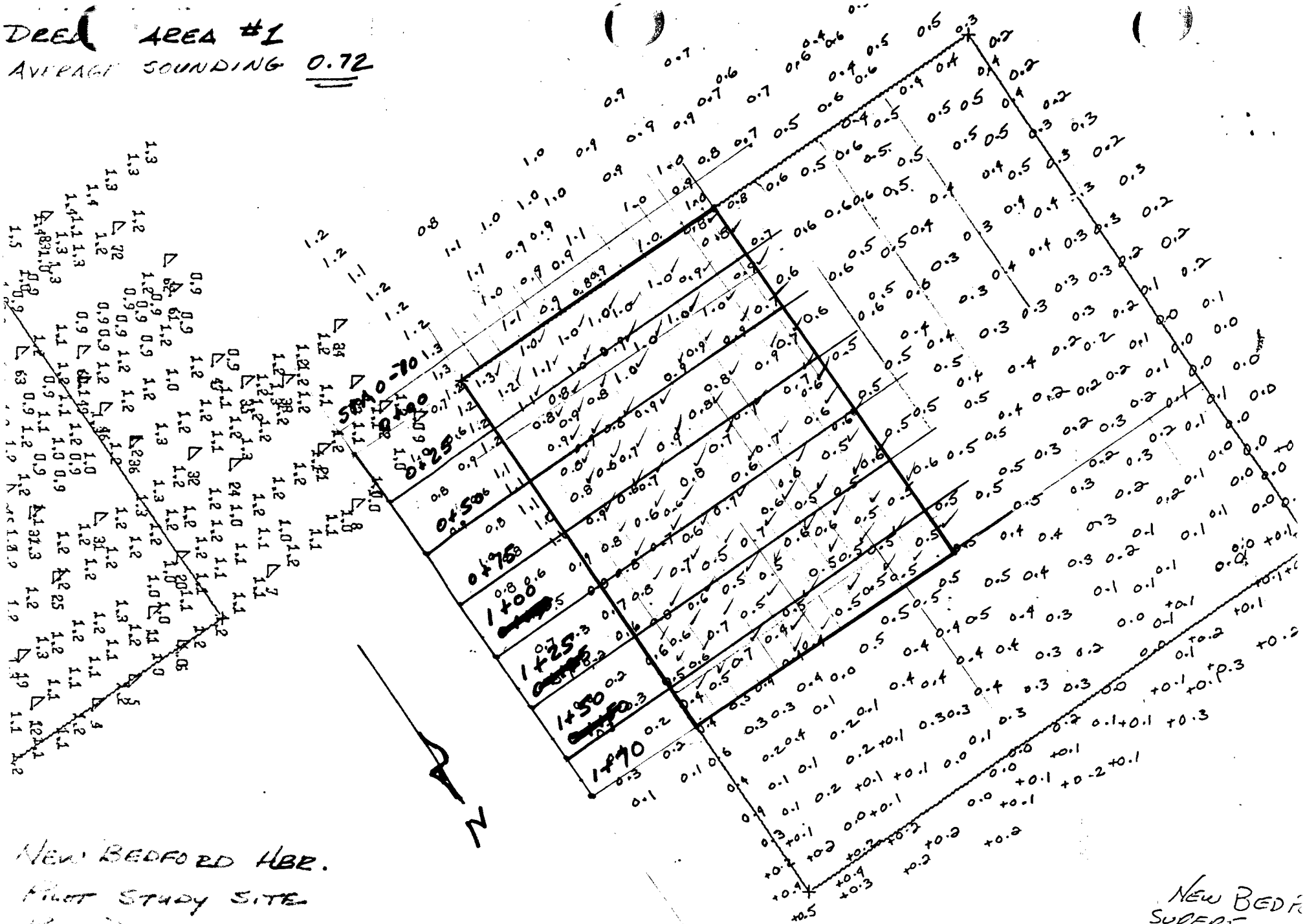
COMPUTATION Cutterhead Dredge - Area #1 Quantity Calculation

COMPUTED BY MJO CHECKED BY DATE 2/2



DREDGE AREA #1

AVERAGE SOUNDING 0.72



NEW BEDFORD HBR.

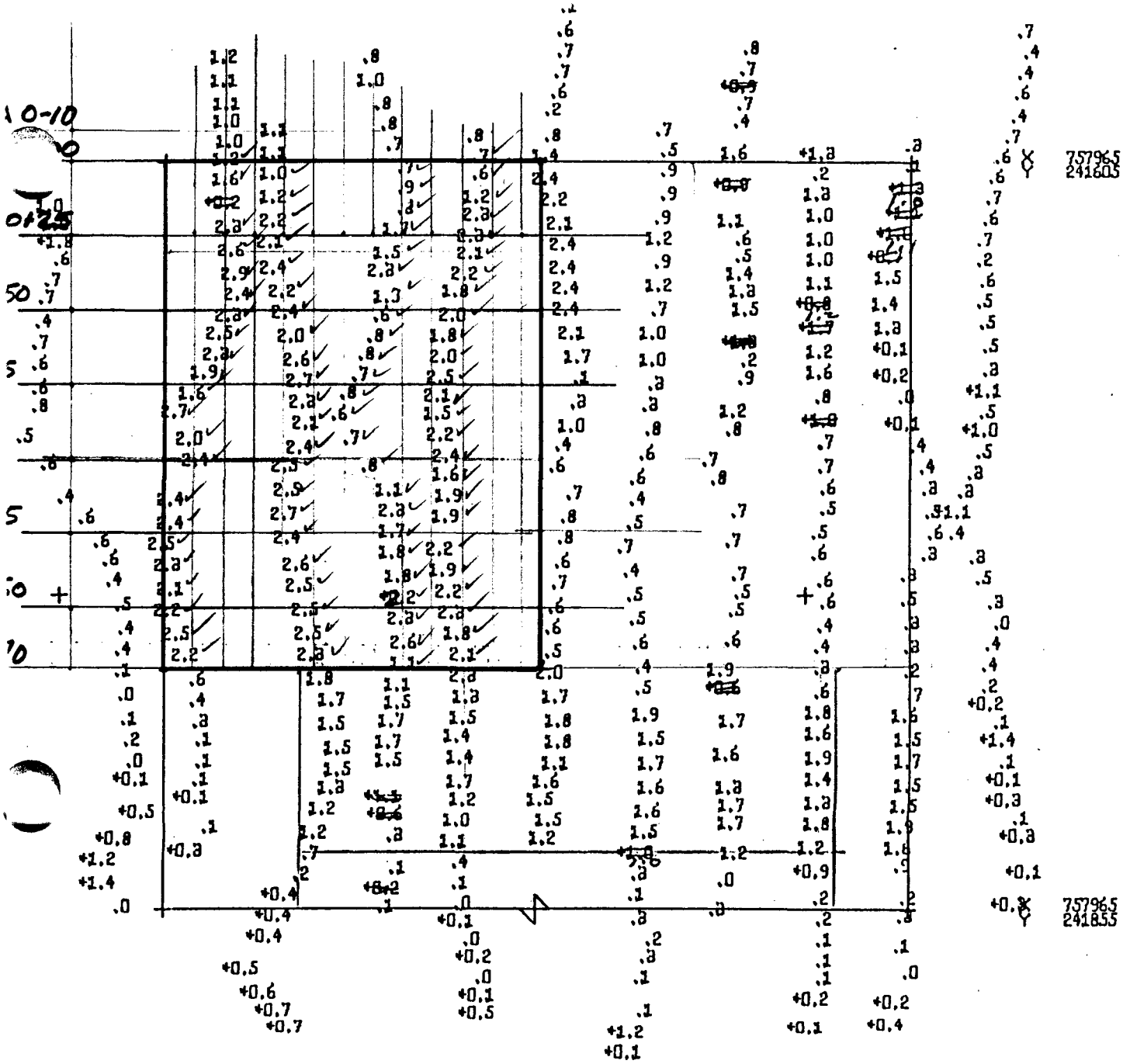
PILOT STUDY SITE

PRE-DREDGE

SCALE 1" = 50'

NEW BEDF
SUPERFUND

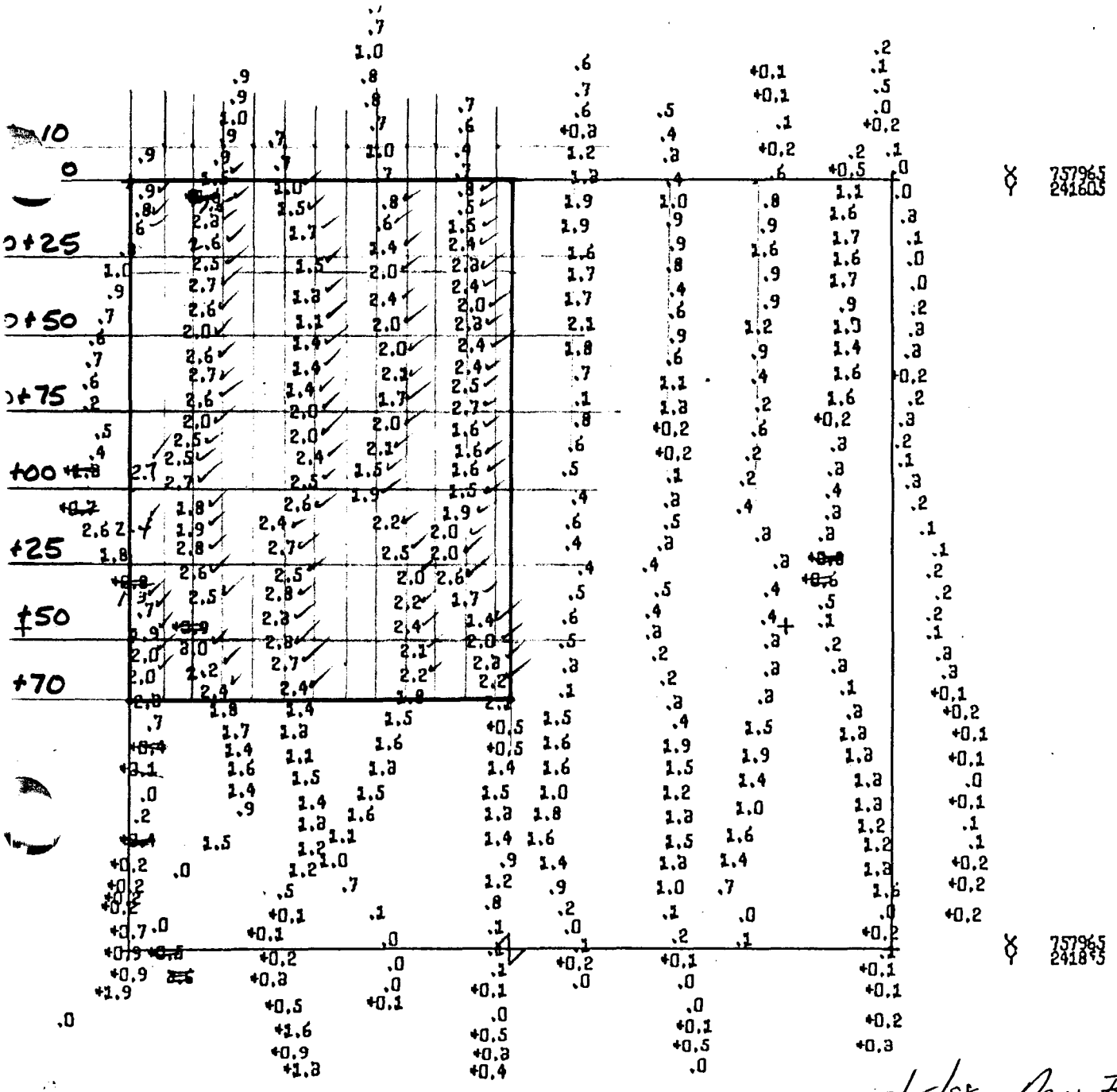
LOCATION: AROUND NET



BOAT PLOT
(1 OF 2)

12/15/88 NEW BEDFO
SUPERFUND
AFTER dredge survey
ESS #3 - McINTYRE
REF. BK. R+H 2309
SCALE 1" = 50'
DATUM M.L.W.

NEW BEDFORD HIBE
PLOT STUDY SITE
AFTER DREDGE



12/15/88 New Bedford
SUPERFUND
AFTER dredge Surv
ESS#3 - McINTYRE
REF. BK. R+H 2309
SCALE 1" = 50'
DATUM M.L.W.

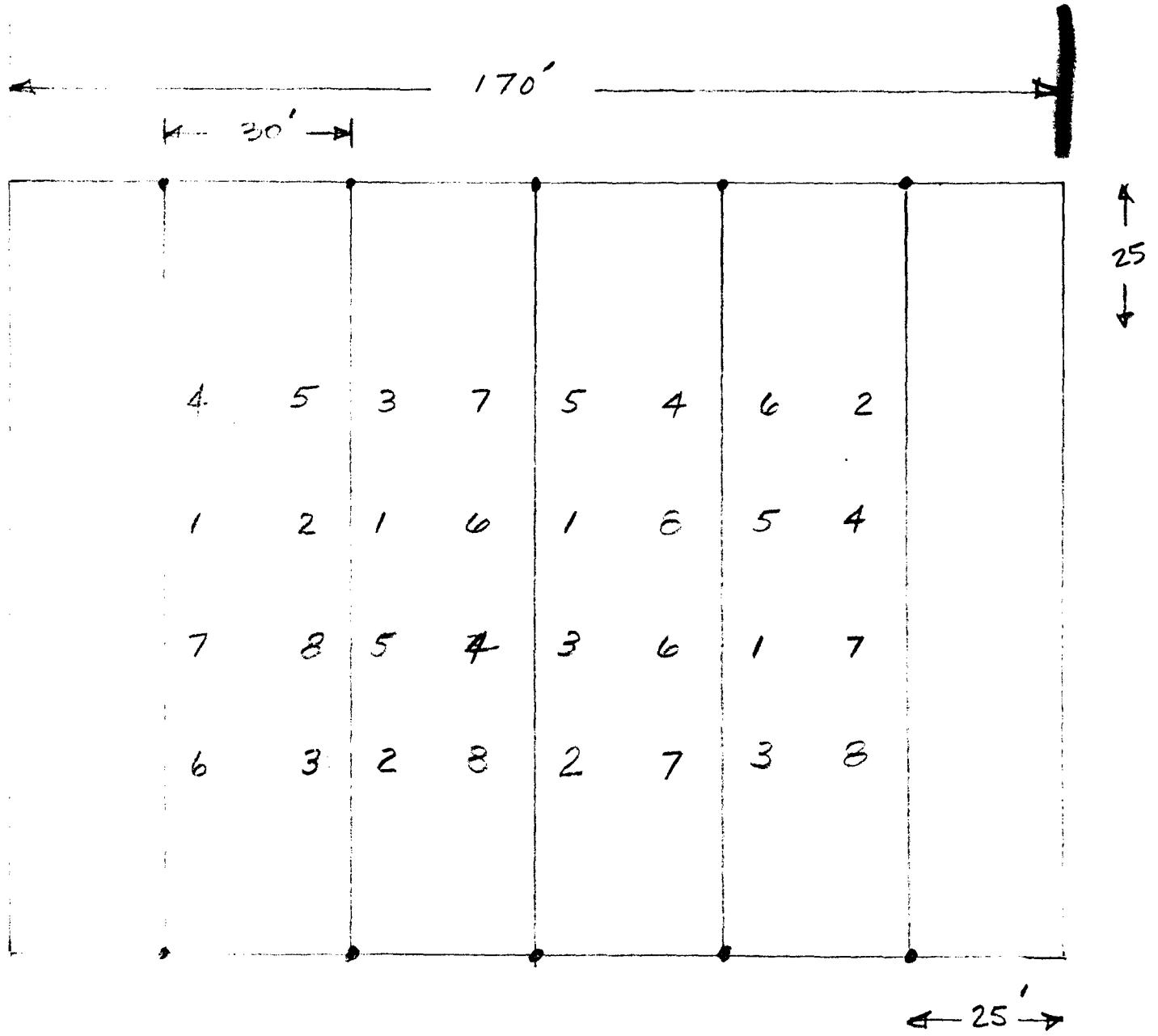
BOAT PLOT
(2 of 2)

New BEDFORD HBR.
PLOT STUDY SITE.
AFTER DREDGE
SCALE 1" = 50'

Average Sounding
2.18

1-F SEDIMENT SAMPLING LOCATIONS

SEDIMENT SAMPLING



SECTION 2 MUDCAT DREDGE - DREDGE AREA 1
(contaminated sediment)

G. Summary of Daily Activities

H. Contractors Daily Reports

I. Plume & Dredgehead Sampling - TSS

J. Flow & Density Meter Readings

K. Volume Calculations

L. After Dredge Sediment Sampling Locations

NEW BEDFORD HARBOR, MA
PILOT STUDY - SUMMARY OF ACTIVITIES
MUDCAT DREDGE - AREA #1

Thursday 1 December 1988 (1525 - 1645) High Tide 1341

Dredge (MC) operating for approximately 1 hour. ~~and 20 minutes~~. Dredge was making a two foot cut and was advancing at the rate of 20 feet per minute. Completed approximately a 220 foot long cut today. Visually was causing a large amount of turbidity.

Monitoring: Completed sediment sampling of Cutterhead area in morning. EPA Narragansett not on site.

Friday 2 December 1988 (1300 - 1630) High Tide 1434

Dredge (MC) operating for 1.9 hours (1.6 hours downtime). The same operating procedure as the previous day was used.

Monitoring: EPA Narragansett monitoring ebb and flood tides starting at 1530. (24 hour turnaround). Plume sampling (4 events). Dredgehead sampling. First day of effluent sampling from primary weir of CDF. Hourly samples starting at 1430.

Saturday 3 December 1988 (1300 - 1830) High Tide 1525

Dredge (MC) operating for 4.25 hours (1.25 hours downtime). Dredge making four passes per cut (two forward, two reverse). Attempting to remove 12" per forward cut. The plume of resuspended material was most visible on the initial forward pass. Speed was reduced to 15 feet per minute.

Monitoring: EPA Narragansett sampling ebb and flood tides beginning at 1630 (24 hour turnaround). Plume sampling, dredgehead sampling, well sampling. Effluent sampling from primary weir of CDF. Ten hourly samples starting at 1330.

Sunday 4 December 1988 (1615-1900) High Tide 1614

Dredge (MC) operating for 1.55 hours (1.17 hours downtime). Same operating procedure as previous day.

Monitoring: EPA Narragansett sampling ebb and flood tides beginning at 1715. Plume sampling - 3 events. Dredgehead sampling. Effluent sampling from primary weir, 10 samples taken on the half hour starting at 1630.

Monday 5 December 1988 (1445-2015) High Tide 1700

Dredge (MC) operating for 3.43 hours (1.93 hours downtime).

Monitoring: EPA Narragansett (no 24 hour turnaround) sampling for biological tests. Primary weir sampling, 10 samples from 1600 to 0200 on 12/6.

Tuesday 6 December 1988 (0500 - 0920) High Tide 0526

Dredge (MC) operated for 1.68 hours and completed work in area 1 (2.68 hours downtime).

Monitoring: EPA Narragansett sampling for biological tests. Well samples and preparations for sediment sampling.

Wednesday 7 December 1988 High Tide 0608

Matchbox dredge moved into cove.

Monitoring: Sediment samples taken from Mudcat dredging area.

SUMMARY OF MUDCAT DREDGE WORKING IN AREA #1

Dredge made four passes per cut (two forward, two reverse) attempting to remove 12" per forward advance. Speed of advance was 15 feet per minute.

Dredge operated on 6 days for approximately 21 hours.

Monitoring

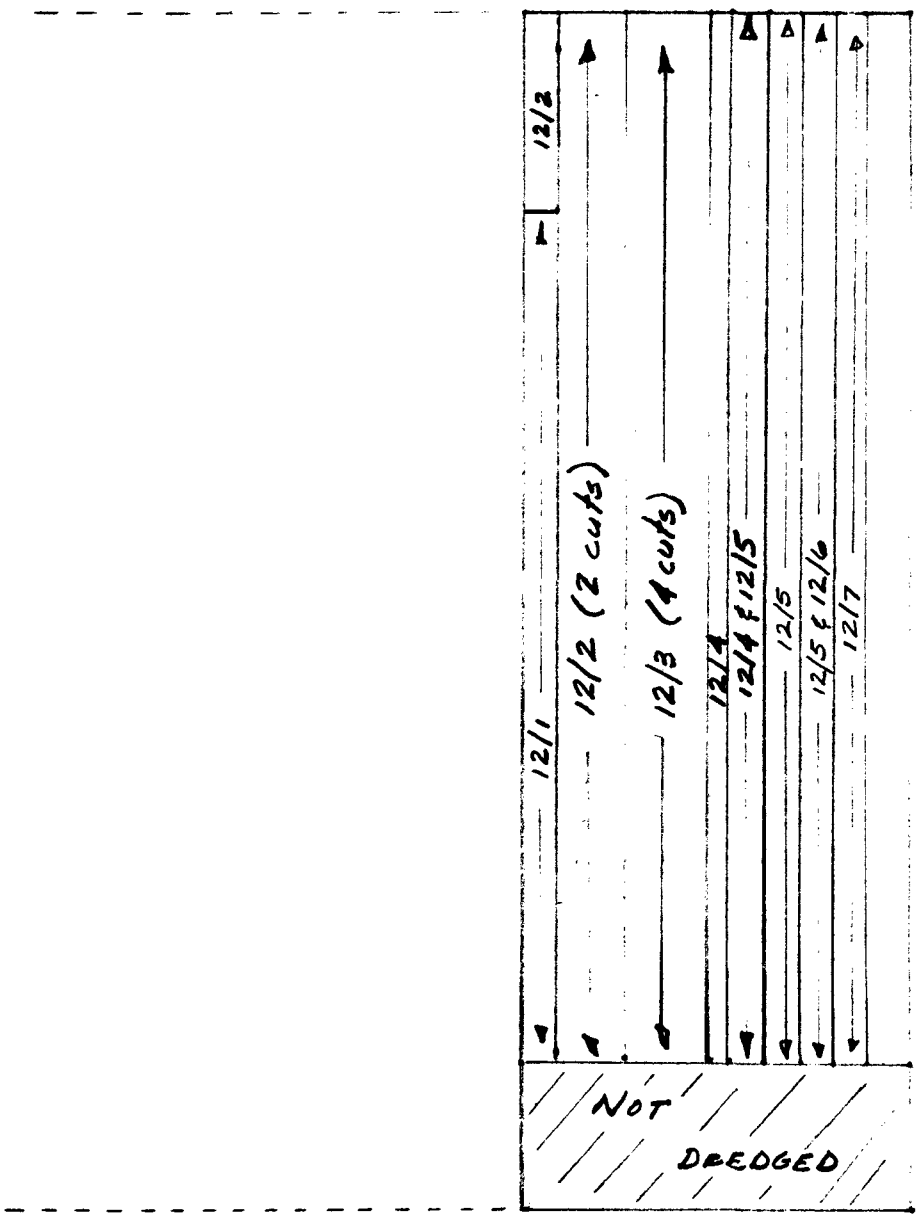
Plume Sampling:	12/2	4 events	40 samples
	12/3		
	12/4	3 events	30 samples
Dredgehead Sampling:	12/2		
	12/3		
	12/4		
Effluent Sampling: (primary weir)	12/2		10 samples
	12/3		10 samples
	12/4		10 samples
	12/5		10 samples

Date	Station	PCB	Cu	Cd	Pb
12/2	2	0.68	3.6	0.22	1.6
	1	0.16	1.9	0.07	1.1
12/3	2	0.44	5.0	0.29	2.1
	1	0.08	2.3	0.08	0.65
12/4	2	0.91	8.0	0.26	3.8
	1	0.19	4.0	0.14	1.8

Note:
1) The silt curtain was not in place for any of the dredging activity.
2) The wind makes it very difficult to keep this dredge on line.

New Bedford Harbor Pilot Study
Dredge Area 1 - Location of Mudcat Dredge

scale: 1" = 40'



Rate of Advance	Cut #1	440' / 1.2 hrs	= 6.1 ft/min
	Cut #2	440' / .75 hrs	= 9.8 ft/min
	Cut #3	440 / .75	= 9.8 ft/min
DREDGE MAKING 4 passes per cut avg. rate of advance = 13 ft/min	Cut #4	880 / .75 =	19.5 ft/min
	Cut #5	880 / 1.17 =	12.5 ft/min
	Cut #6	880 / 1.08 =	13.6 ft/min
	Cut #7	880 / 1.25 =	11.7 ft/min
	Cut #8	880 / .72 =	20.4 ft/min
	Cut #9	880 / 1.75 =	8.4 ft/min
	cut #10	880 / 1.45 =	10.1 ft/min
	cut #11	880 / 1.98 =	7.4 ft/min
	cut #12	not completed	

2-H CONTRACTORS DAILY REPORTS

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE _____

SUBJECT New Bedford Harbor Superfund Site - Pilot Study

COMPUTATION Review of daily progress - Mudcat Dredge

COMPUTED BY MJO CHECKED BY _____ DATE 2/27/89

DREDGE	AREA	DATE	OPERATING TIME (HR)	DOWNTIME (HR)
MC	1	12-1	0.97	0.38
↓	↓	12-2	1.90	1.60
		12-3	4.25	1.25
		12-4	1.55	1.17
		12-5	3.43	1.93
		12-6	1.68	2.68
TOTALS		6 days	13.78	9.01

1. Operating time refers to period when material is being moved.

2. Downtime includes periods when dredge was being moved. Each move took 20-30 minutes

3. Averages
   - 2.30 Hrs of operating time per day with 1.50 hrs of downtime 3.8 hrs/day
   - pumping material 60% of available time

4. Operating Procedures
   - On 12/1 & 12/2 dredge made 1 cut attempting to remove 18" of material
   - On 12/3 - 12/6 dredge made 2 cuts attempting to remove 12" per cut
   - A cut consisted of a forward & reverse pass over the area.

5. Production Rate 568 CY removed / 13.78 HRS = 41.2 CY/HR

   568 CY / 22.79 = 24.92 CY/HR

Review of Flow & Density Meter Readings

December 1 — READINGS NOTED EVERY MINUTE
AVG FLOW 1749 GPM
AVG Density 1.046×10^6 mg/l

December 2 — Avg flow 1631 GPM
Avg Density 1.050×10^6 mg/l

→ 1690 GPM, 1.048×10^6 mg/l

December 3 — Method of dredging changed
flow 1719 GPM
density 1.030×10^6 mg/l

December 5 — flow 1737 GPM

→ 1728 GPM, 1.036×10^6 mg/l

Location: Acushnet River, New Bedford, Massachusetts
ydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott_____ Mudcat ✓
Temp: 40 Wind: 5-10 NW High Tide: 2:18 pm
Date: 12-2-88

	TIME	COMMENTS
START	1:00	
STOP	1:06	Suction Plugged Rocks in Pump
START	1:42	
STOP	2:00	Move To New Cut
START	2:18	Cut #2
STOP	2:43	Pipe Line Caught in Cable
START	2:50	
STOP	3:10	Shut Down To move
START	3:30	Cut #3
STOP	3:35	Something in Pump + Suction
START	3:50	
STOP	4:30	Wash-out + Secure
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

ocation: Acushnet River, New Bedford, Massachusetts
ydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott _____ Mudcat ✓
Temp: 34 Wind: W-5'-10-15-25 High Tide: 3:18 P.M.
Date: 12-3-88

	TIME	COMMENTS
START	1200	Put Dredge on Line - Put Bouys on
STOP		Cable Wire - Pull Pipe Belly out
START	1:00	Digging 1' cut 15' Per Minute Cut #4
STOP	1:15	Suction Clean-out
START	1:25	
STOP	1:55	Move Dredge over 3' Make 4' overlap To
START	~~3:15~~	Compensate For Wind Push Dredge
STOP		
START	2:15	Cut #5
STOP	3:25	Move Dredge over 4' Clean Suction
START	3:45	Cut #6
STOP	4:50	Move Dredge over 4' Clean Suction
START	5:15	Cut #7
STOP	6:30	Run out of water Secure Dredge
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott _____ Mudcat ✓
Temp: 34° Wind: 20-30 NW High Tide: 4:32
Date: 12-4-88

	TIME	COMMENTS
START	4:15 PM	Cut #8 Move Dredge over 4' Start Digging
STOP	4:58	Move over 7' Wind Died out
START	5:15	#9
STOP	5:33	Something in Pump Backwash
START	5:35	
STOP	6:00	Plug in Shore Line
START	6:36	
STOP	6:53	Something in Pump Elbow
START	7:08	Wash-out & Secure
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott _____ Mudcat ✓
Temp: 28° Wind: 5-10 NW High Tide: 5:07
Date: 12-5-88

	TIME	COMMENTS
START	2:45 PM	Warm up Dredge - Start Digging
STOP	3:13	Suction Blocked - Pump Blocked
START	3:35	
STOP	3:52	Move over 7'
START	4:18 ~~4:48~~	#10
STOP	5:12	Something in Pump - Cleared itself
START	5:14	
STOP	5:40	Something in Pump - Backwash
START	5:43	
STOP	5:50	Move over 7'
START	6:13	#11
STOP	6:22	Something in Pump - Backwash
START	6:26	
STOP	6:57	" " " " "
START	7:00	
STOP	7:05	" " " " "
START	7:06	
STOP	7:07	" " " " "
START	7:10	
STOP	7:18	" " " " "
START	7:22	
STOP	7:30	Something in Auger ~~Stone~~ Steel Grate

/cation: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott_____ Mudcat ✓
Temp: 28° Wind: 5-10 NW High Tide: 5:07
Date: 2-5-88

		TIME	COMMENTS
STOP	~~START~~	7:32	Stones in Pump
START	~~STOP~~	7:55	
STOP	~~START~~	8:07	Ran Out of Water - Secure Dredge
	STOP		
	START		
	STOP		
	START		
	STOP		
	START		
	STOP		
	START		
	STOP		
	START		
	STOP		
	START		
	STOP		
	START		
	STOP		
	START		
	STOP		
	START		
	STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott _____ Mudcat ✓
Temp: 18° Wind: Calm High Tide: 5:19 AM
Date: 12-6-88

	TIME	COMMENTS
START	5:00	Set-up - Warm-up Dredge - Dig
STOP	5:45	Move over 7'
START	6:05	#12
STOP	6:06	Something in Pump - Back wash
START	6:07	
STOP	6:20	Plugg in Line
START	8:40	
STOP	9:22	Ran out of water - Washout - Secure Dredge
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

2-I PLUME & DREDGEHEAD SAMPLING

NED FORM 223
27 Sept 49

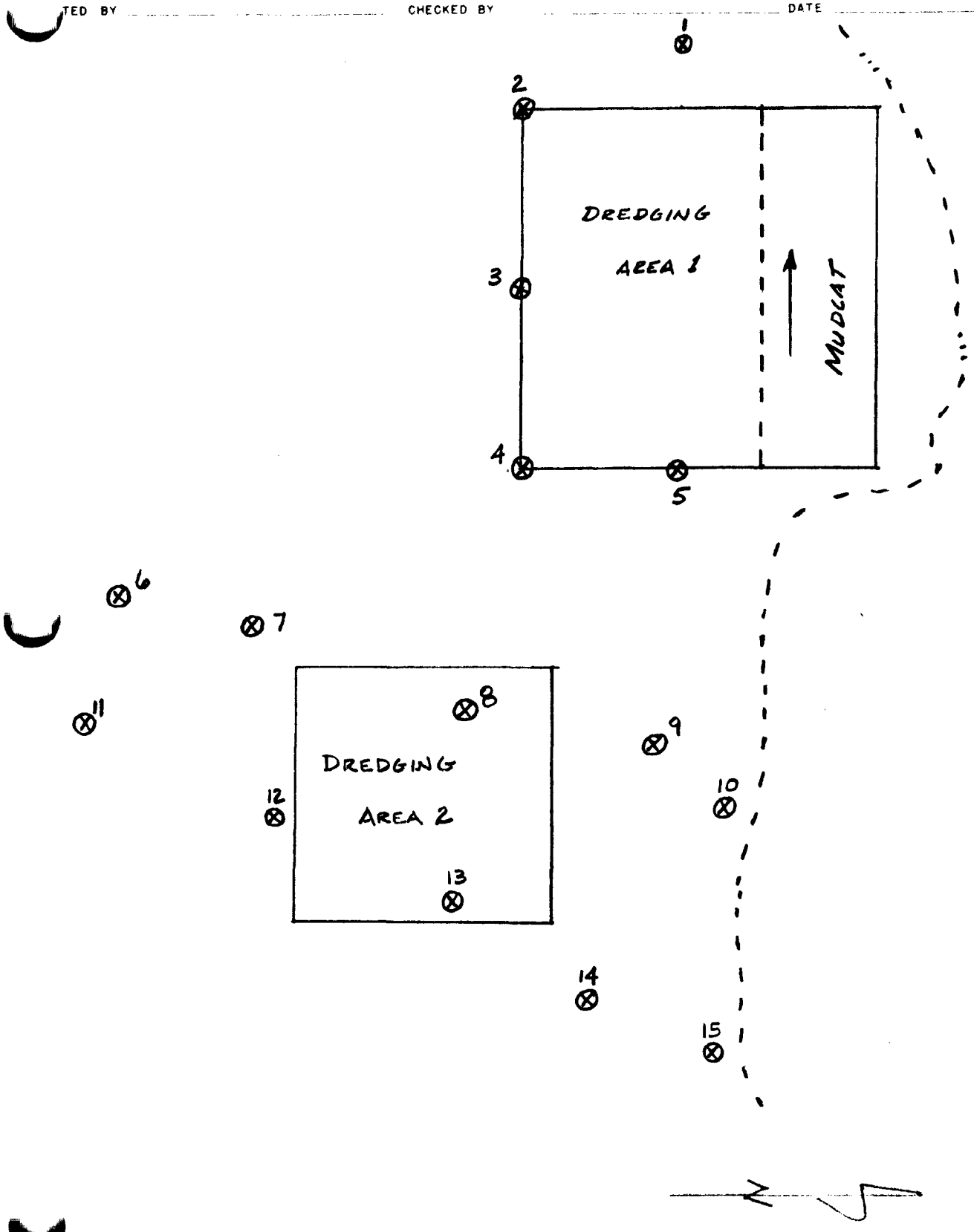
NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE

SUBJECT NEW BEDFORD HARBOR PILOT STUDY

COMPUTATION PLUME SAMPLING STATIONS - MUDCAT DREDGE

TED BY CHECKED BY DATE



⊗ Plume Sampling Station

SCALE 1" = 100'

Dredgehead and Plume Sampling

4 December

- o Dredge began operating just prior to high tide and operated over a 3.1 hour period.

Plume

Station	1615-1630	1645-1700	1730-1745
		Event	
	1	2	3
1	8.08	6.04	
2	13.06	15.50	
3	28.50	66.76	
4	11.08	9.60	
5	16.02	18.64	
6	12.10	15.56	9.22
7	12.76	9.12	10.70
8	9.18	4.72	7.82
9	6.68	7.58	11.30
10	10.78	9.08	9.10
11			13.14
12			9.12
13			7.42
14			8.60
15			11.16

Dredgehead

Time	Port 1	Port 2	Port 3	
1555	1799.32	1460.32		F
1615	401.08	2055.40	349.40	R
1640	1913.20	1422.60	355.60	R
1715	1331.20	2552.60	4007.60	F
1735	539.80	2602.80	473.60	R
1750	7378.80	4833.80	3248.40	F

1630 Composite

Rate of Advance
Cable Length 6.5"

Forward	Reverse
0.21	0.31
0.29	0.39
0.29	

Auger Speed 1.8 rev/sec

Dredgehead and Plume Sampling

3 December

- o Dredge began operating approximately 2 1/2 hours prior to high tide and worked for over a 5 1/2 hour period.

Plume

Station	Event 1345-1400 1	1430-1440 2	1515-1600 3	1600- 4	1645 5
1	9.38	17.46	21.50		
2	6.80	7.46			
3	6.84	6.44			
4	17.64	2.82	4.80		
5	5.00	9.60	13.18		
6	2.68	2.06	21.32	3.78	3.68
7	2.94	3.82	36.50	1.78	1.86
8	2.06	1.50	34.24	2.82	1.54
9	4.90	4.78	36.38	2.44	3.00
10	6.40	12.60	41.34	12.20	8.36
11				9.00	2.52
12				1.80	1.52
13				0.86	0.68
14				0.34	3.52
15				1.42	4.70

Dredgehead

Time	Port 1	2	3	4	5	6		Rate of Advance
1630	131.60	1185.84	971.00	1149.28	355.64	358.16	R	
1637	416.48	1564.48	912.00	162.48	63.16	53.20	F	
1640	257.96	2340.16	6552.80				A	.24
1720	2077.60	1276.72	551.12				F	.21
1755	726.88	1853.76	604.24	267.92	140.92	209.48	F	.20
1815	1007.28	721.68	679.52				A	.22

1755 Composite
1650 PSA Sample
Cable length 6.5'

Additional Measurements of Rate of Advance

Forward	Reverse
0.27	.25
0.26	.26
0.28	.27
0.32	

Auger Speed 1.8 rev/sec

MUDCAT DREDGE
Dredgehead and Plume Sampling

2 December:

- o Dredge began operating 1 hour prior to high tide, operated over 3.5 hour period.

Plume

Station	Event 1430-1440 1	1515-1545 2	1610-1615 3	1628-1638 4
1	7.46	11.06		
2	6.58	14.48		
3	4.22	12.14		
4	30.62	4.90		
5	10.72	16.18		
6	11.02	11.98	4.48	16.26
7	6.52	6.10	6.06	8.62
8	7.82	8.94	10.02	7.46
9	5.40	8.74	7.64	7.34
10	8.54	12.24	11.00	7.34
11			11.54	10.76
12			8.90	6.66
13			6.70	9.14
14			5.24	5.74
15			11.40	6.16

Dredgehead

Time	Port 1	2	3	4	5	6		Rate of Advance ft/sec
1345	596.44	1011.72	1894.76	615.52	360.72	147.04	F	
1350	2942.32	5020.08		4715.60	953.68	273.60	A	.56
1425	1286.96	2840.24					F	.50
1430	1693.52	1221.68	729.60				A	.68
1438	2616.13	1751.87	1450.40				F	.46
1535(C)	6162.20	1329.60	4619.60				F	
1555	1811.80	4141.20	1138.20				A	.49
1602	4354.40	2820.40	3046.80				F	
1620	2197.40	2149.80	3115.00				A	.45

Cable Length 6.5'

Auger Speed 10 Rev/5.30 sec = 1.9 rev/sec @ 1547

[illegible]
PARTICLE SIZE ANALYSIS

PLUME		DREDGEHEAD	
2 December 1988 Mudcat Dredge			
TSS mg/l	Time	TSS mg/l	Time
80.08	0:00	1270.8	0:00
49.48	0:15	1630.2	0:15
50.52	0:30	396.2	0:30
19.24	0:45	433.4	0:45
8.88	1:00	455.6	1:00
16.72	1:30	250.2	1:30
10.80	2:00	229.8	2:00
19.24	3:00	159.0	3:00
12.52	4:00	164.2	4:00
3 December 1988 Mudcat Dredge			
23.84	0:00		
39.20	0:15		
14.64	0:30		
8.68	0:45		
7.76	1:00		
8.92	1:30		
8.84	2:00		
10:64	3:00		
4 December 1988 Mudcat Dredge			
1023.52	0:00	295.16	0:00
15.52	0:15	246.12	0:15
11.56	0:30	249.88	0:30
15.64	0:45	216.92	0:45
16.08	1:00	186.28	1:00
5.04	1:30	115.16	1:30
9.24	2:00	118.00	2:00
7.08	3:00	144.80	3:00
9.92	4:00	28.96	4:00

2-J FLOW & DENSITY METER READINGS

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

NED FORM 223
27 Sept 49

PAGE ____
SUBJECT New Bedford Harbor Pilot Study
COMPUTATION Data Reduction - Density & Flow Meters
DATE ____
COMPUTED BY ____ CHECKED BY ____

Mudcat Dredge December 2, 1988

TIME	FLOW (GPM)	Density ($\times 10^6$ mg/l)
1532	2070	1.00
	2070	1.00
	1920	1.02
	2100	1.01
	2070	1.01
	1980	1.02
	2010	1.03
	1860	1.06
	1680	1.08
	1800	1.04
	1950	1.02
	1800	1.14
	1725	1.07
	1650	1.03
	1860	1.02
	1980	1.02
1548	1860	1.04
1517		
AVG	1905	1.036
AVG		

DAILY AVERAGE 1.046×10^6 mg/l
1777 GPM

TIME	FLOW (GPM)	Density ($\times 10^6$ mg/l)
1600	1530	1.05
01	2040	1.08
02	1830	1.00
1606	2070	1.03
	1500	1.10
	1860	1.10
	1500	1.04
1610	1560	1.10
	1800	1.12
	1650	1.05
1613	1800	1.10
1619	1740	1.03
	1230	1.05
	1500	1.04
	1860	1.01
	1920	1.05
	1920	1.01
	2010	1.06
	1740	1.08
	1290	1.02
	1800	1.01
	1500	1.03
	1470	1.03
	1650	1.02
	780	1.08
	1500	1.12
1634	1500	1.02
AVG	1650	1.053

SUBJECT

COMPUTATION

COMPUTED BY C. CONNA CHECKED BY M/O DATE 2-7-89

MUDCAT DREDGE

DECEMBER 2, 1988

Average Flow 1631 GPM
Average Density 1.050×10^6 mg/l

13:23	1180	1.07
:24	1350	1.01
AVG	1265	1.04
13:44	~~2040 - 1830~~	—
:45	1920	1.03
:46	1740	1.04
:47	1620	1.04
:48	1870	1.06
:49	1200	1.07
:50	1320	1.04
:51	1950	1.02
:52	1050	1.07
:53	1590	1.03
AVG	1584	1.044
13:54	1260	1.05
:55	1500	1.06
:56	1200	1.07
:57	1290	1.02
:58	1640	1.01
:59	~~450~~	—
14:00-14:20	—	—
14:21	1950	1.01
:22	1340	1.07
:23	1530	1.07
:24	1680	1.01
AVG	1488	1.041

MUDCAT DREDGE
DECEMBER 2, 1988 (continued)

14:25	1890	1.01
:26	1590	1.08
:27	1560	1.13
:28	1140	1.11
:29	1530	1.08
:30	1590	1.02
:31	1490	1.03
:32	1710	1.04
:33	1620	1.03
:34	1930	1.02
AVG	1605	1.055

14:35	1770	1.02
:36	1350	1.02
:37	1800	1.04
:38	1020	1.04
:39	1740	1.01
:40	1900	1.02
:41	1660	1.06
:42	1710	1.13
:43	1380	1.15
:44	~~600~~	
	1592	1.054

14:52	1650	1.02
:53	2040	1.01
:54	1650	1.07
:55	1560	1.12
:56	1650	1.12
:57	1620	1.10
:58	1500	1.17
:59	1260	1.07
15:00	1440	1.04
:01	1980	1.02
AVG	1635	1.079

15:02	1800	1.02
:03	2050	1.03
:04	1620	1.04
:05	1800	1.03
:06	1950	1.03
:07	1920	1.05
:08	1500	1.03
:09	1680	1.05
:10	1590	102
:11		1.03
AVG	1768	1.033

PAGE
CORPS OF ENGINEERS, U.S. ARMY
DATE
CHECKED BY
SUBJECT
COMPUTATION
COMPUTED BY
27 Sept 49

CORPS OF ENGINEERS, U.S. ARMY
27 Sept 49

SUBJECT
COMPUTATION
COMPUTED BY
DATE
CHECKED BY

MUDCAT DREDGE
DECEMBER 2, 1988 (cont)

15:29	1190	1.04
:30	1380	1.01
:31	2070	1.01
:32	1950	1.05
:33	1770	1.08
:34	1720	1.07
:35	1420	1.06
:36	1380	1.08
15:50	990	1.01
:51	2100	1.01
AVG	1597	1.042

15:52	2140	1.01
53	1860	1.02
:54	1350	1.03
:55	1560	1.08
:56	1440	1.08
:57	1050	1.03
:58	1860	1.03
:59	1890	1.03
16:00	1500	1.03
16:01	1440	1.03
AVG	1609	1.037

16:02	1200	1.03
:03	1620	1.03
:04	1500	1.03
:05	1710	1.09
:06	1500	1.10
:07	1630	1.09
:08	1440	1.11
:09	960	1.11
:10	630	1.09
:11	1690	1.08
AVG	1388	1.076

16:14	1740	1.04
:15	1950	1.01
:16	1980	1.07
:17	1500	1.07
:18	1800	1.11
:19	1950	1.12
:20	1830	1.04
:21	1890	1.04
:22	1950	1.04
:23	1860	1.03
AVG	1845	1.057

CORPS OF ENGINEERS, U.S. ARMY

SUBJECT

COMPUTATION

COMPUTED BY C. Colin CHECKED BY DATE 2-8-89

MUDCAT DREDGE

DECEMBER 2, 1988 (cont)

16.24	1950	1.05
.25	1800	1.04
.26	1530	1.04
.27	1740	1.04
.28	1650	1.04
.29	2100	1.02
.30	2010	1.01
.31	~~2000~~	
AVG	1826	1.034

SUBJECT

COMPUTATION

COMPUTED BY C. [illegible] CHECKED BY DATE 2-1-89

Method of dredging changed
4 posses per cut (2 forward, 2 reverse)

DECEMBER 3, 1988

Overall
Avg. Flow, 1719 GPM
Avg. Density 1.030 mg/L x 10^6

Forward Cut 1514 GPM
1.043

TIME		
15:40	180	1.01
:42	240	1.01
:44	2100	1.01
:46	1950	1.02
:48	2040	1.02
:50	1680	1.01
:52	2040	1.02
:54	1650	1.02
:56	1650	1.03
:58	2010	1.02
AVG	1554	1.017

16:20	1620	1.04
:22	1800	1.04
:24	1740	1.06
:26	1800	1.05
:28	1680	1.05
:30	1800	1.06
:32	1200	1.08
:34	2010	1.03
:36	1800	1.02
:38	1800	1.02
AVG	1731	1.045

16:00	1740	1.02
:02	1740	1.01
:04	2040	1.01
:06	2100	1.01
:08	2100	1.01
:10	2070	1.01
:12	2090	1.01
:14	2070	1.01
:16	2080	1.01
:18	2010	1.05
AVG	2004	1.015

~~16:20~~	~~1620~~	~~1.04~~
~~:22~~	~~1800~~	~~1.04~~
~~:24~~	~~1680~~	~~1.06~~
~~:26~~	~~1800~~	~~1.05~~
~~:28~~	~~1680~~	~~1.05~~
~~:30~~	~~1800~~	~~1.06~~
~~:32~~	~~1200~~	~~1.08~~
~~:34~~	~~2010~~	~~1.03~~
~~:36~~	~~1800~~	~~1.02~~
~~:38~~	~~1830~~	~~1.02~~
~~AVG~~	~~1728~~	~~1.045~~

SUBJECT

COMPUTATION

COMPUTED BY CHECKED BY DATE

DECEMBER 3, 1988 - continued

16:40	1860	1.03
:42	1650	1.03
:44	1750	1.03
:46	1260	1.04
:48	1200	1.04
:50	1050	1.04
:52	~~450~~	
17:12	570	1.03
:14	270	1.03
:16	1710	1.01
AVG	1258	1.031

17:58	1050	1.05
18:00	1560	1.05
:02	1500	1.06
:04	1440	1.06
:06	1800	1.07
:08	1500	1.07
:10	1650	1.01
:12	1680	1.06
:14	1800	1.07
:16	1560	1.02
AVG	1554	1.052

17:18	2040	1.02
:20	1800	1.02
:22	1920	1.02
:24	1680	1.01
:26	2100	1.01
:28	2070	1.02
:30	2070	1.02
:32	2040	1.02
:34	1920	1.03
:36	1560	1.03
AVG	1920	1.020

18:18	1980	1.02
:20	1920	1.02
:22	1920	1.02
:24	1920	1.02
:26	1560	1.02
:28	2080	1.03
:30	1710	1.02
	1870	1.021

17:38	1680	1.02
:40	1980	1.02
:42	1950	1.02
:44	2070	1.02
:46	2040	1.02
:48	2020	1.01
:50	1800	1.02
:52	1350	1.02
:54	2010	1.07
:56	1650	1.06
AVG	1855	1.028

MUDCAT DREDGE December 5, 1988

TIME	FLOW (GPM)	DENSITY ($\times 10^6$ mg/l)	TIME	FLOW (GPM)	DENSITY $\times 10^6$ mg/l
16:22	1890	1.07	17:02	1800	1.08
:24	1590	1.03	:04	1560	1.07
:26	2040	1.04	:06	1740	1.06
:28	1640	1.05	:08	1440	1:08
:30	1500	1.04	:10	1170	1:05
:32	1830	1.03	:12	1680	1:05
:34	1800	1.04	:14	1380	1:02
:36	1500	1.03	:16	2080	1:07
:38	1800	1.04	:18	1860	1:02
16:40	1200	1.04	17:20	1830	1.11
AVG	1649	1.041		1654	1.061
16:42	1380	1.02	17:22	1350	1:06
16:44	1860	1.02	:24	1650	1:07
46	1500	1.02	:26	1740	1:04
48	1740	1.02	:28	1500	1:02
50	2010	1.02	:30	1980	1:04
52	2070	1.02	:32	1950	1:03
54	1980	1.02	:34	2040	1:04
56	2140	1.02	:36	2020	1:03
58	1680	1.02	:38	2025	1:03
17:00	1680	1.08	17:40	1890	1:04
AVG	1804	1.02		1814	1.040

NEW BEDFORD HARBOR PILOT STUDY
DATA REDUCTION - DENSITY & FLOW METERS

* DREDGE MAKING 2 Forward passes and 2 reverse passes per cut

Averages: 1. overall 1737 GPM, 1.041×10^6 mg/l 2. Forward cut 1672 mg/l, 1.054×10^6 mg/l

Mudcat Dredge December 5, 1988

TIME	FLOW (GPM)	Density ($\times 10^6$ mg/l)
1838	1650	1.020
:40	2040	1.025
:42	1670	1.025
:44	1875	1.025
:46	1800	1.020
:48	1860	1.025
:50	1830	1.030
:52	1680	1.030
:54	1680	1.030
	1787	1.026
18:56	1680	1.08
:58	1380	1.12
19:00	1240	1.01
:02	1980	1.08
:04	1500	1.07
:06	1560	1.07
:08	1980	1.02
:10		
:12	2100	1.06
:14	1740	1.06
:16	1920	1.06
:18	1980	1.06
:20	1440	1.02
:22	1960	1.02
:24	1650	1.08
:26	1350	1.08
:28	1950	1.07
	1713	1.060

2K- VOLUME CALCULATIONS

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

SUBJECT New Bedford Harbor Superfund Site - Pilot Study
COMPUTATION Mudcat Dredge - Area 1 Quantity Calculation
COMPUTED BY MJO CHECKED BY DATE 13 February

STATION	AREA	AVERAGE AREA	VOLUME
0+00	0		
		24.9	622.5
0+25	49.8		
		63.4	1585.0
0+50	77.0		
		72.0	1800.0
0+75	67.0		
		52.9	1322.5
1+00	38.8		
		51.2	1280.0
1+25	63.5		
		67.4	1685.0
1+50	71.3		
		61.3	1532.5
1+75	51.3		
		62.6	1565.0
2+00	73.8		
		78.8	1970.0
2+25	83.8		
		78.4	1960
2+50	73.0		

TOTAL 15 322.5 ft^3 /27
= 567.5 cy

Note:

1. Stations run east to west
2. Dredge operated east to west and made 10 cuts. On 12/1 & 12/2 dredge was attempting to remove 18" of material per pass (2 passes, approx 14 feet in width total) On 12/3 - 12/6 dredge was making 4 passes per cut and attempting to remove 24" total

Avg. Sounding
Pre dredge 0.2
After dredge 1.1
Avg. depth of cut 0.9

27 Sept 49

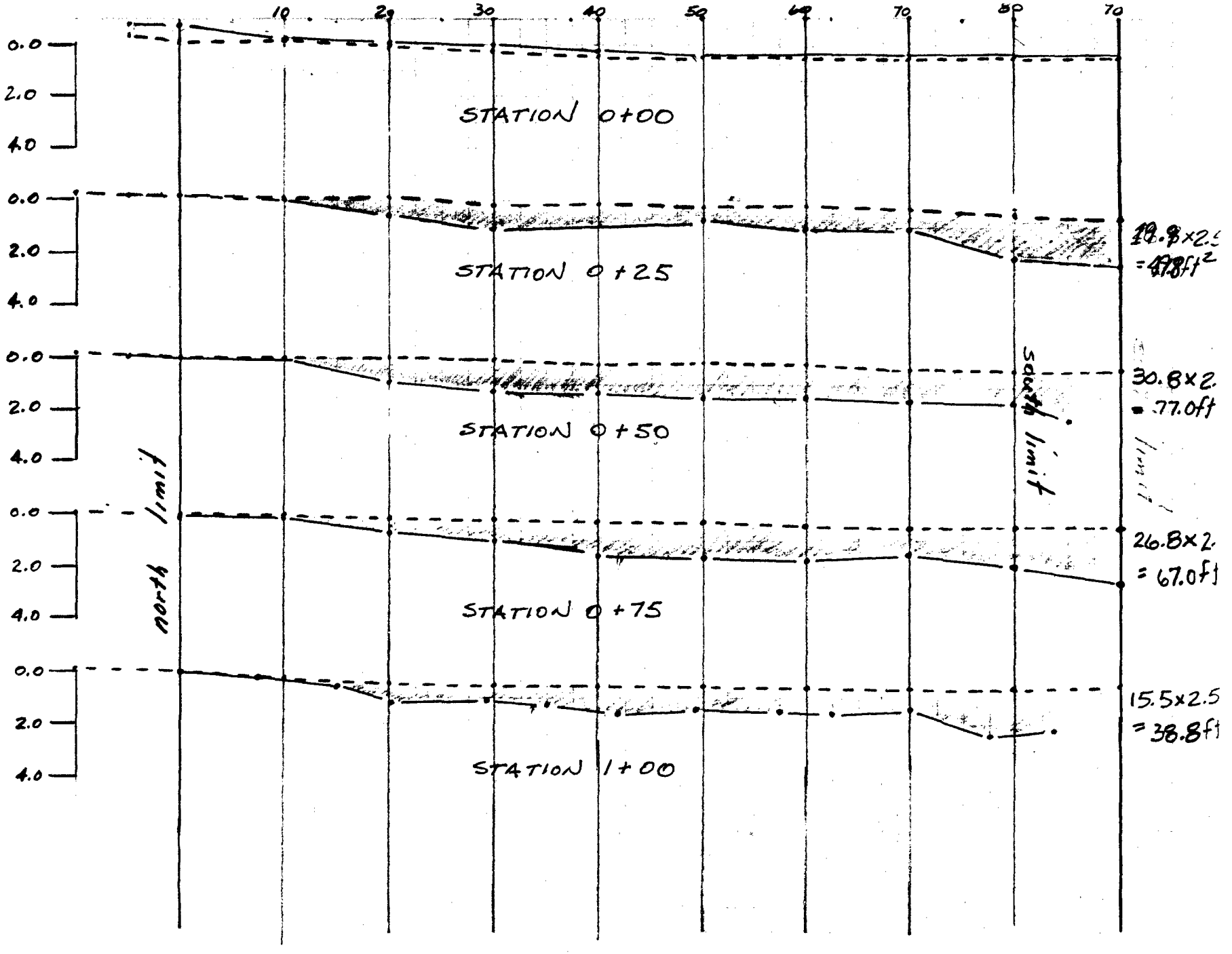
CORPS OF ENGINEERS, U.S. ARMY

PAGE 10 of 9

SUBJECT New Bedford Harbor Superfund Site - Pilot Study

COMPUTATION Mudcat Dredge - AREA 1 Quantity Calculation

COMPUTED BY MJO CHECKED BY _____ DATE 10 February



27 Sept 49

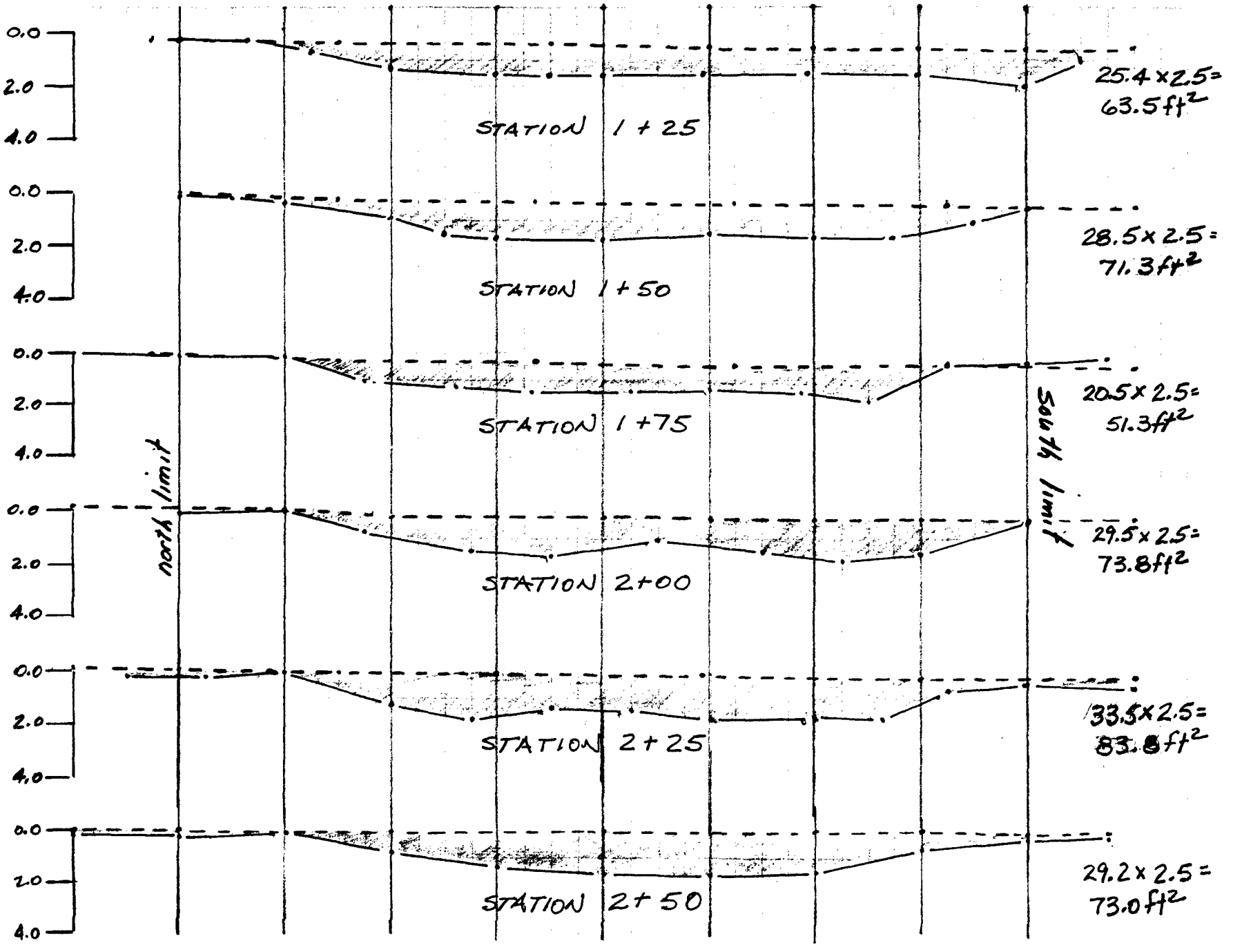
CORPS OF ENGINEERS, U.S. ARMY

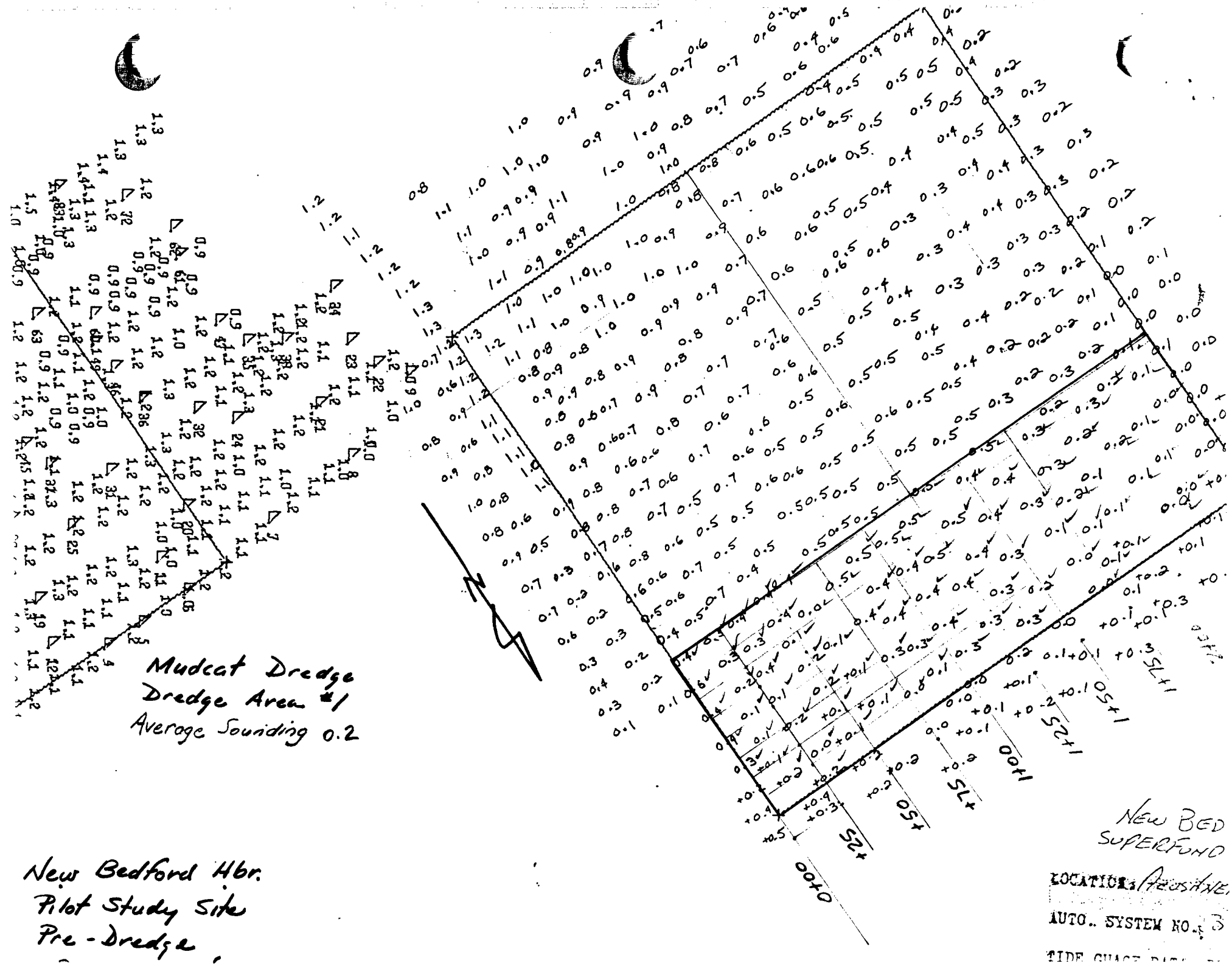
PAGE 6 of 2

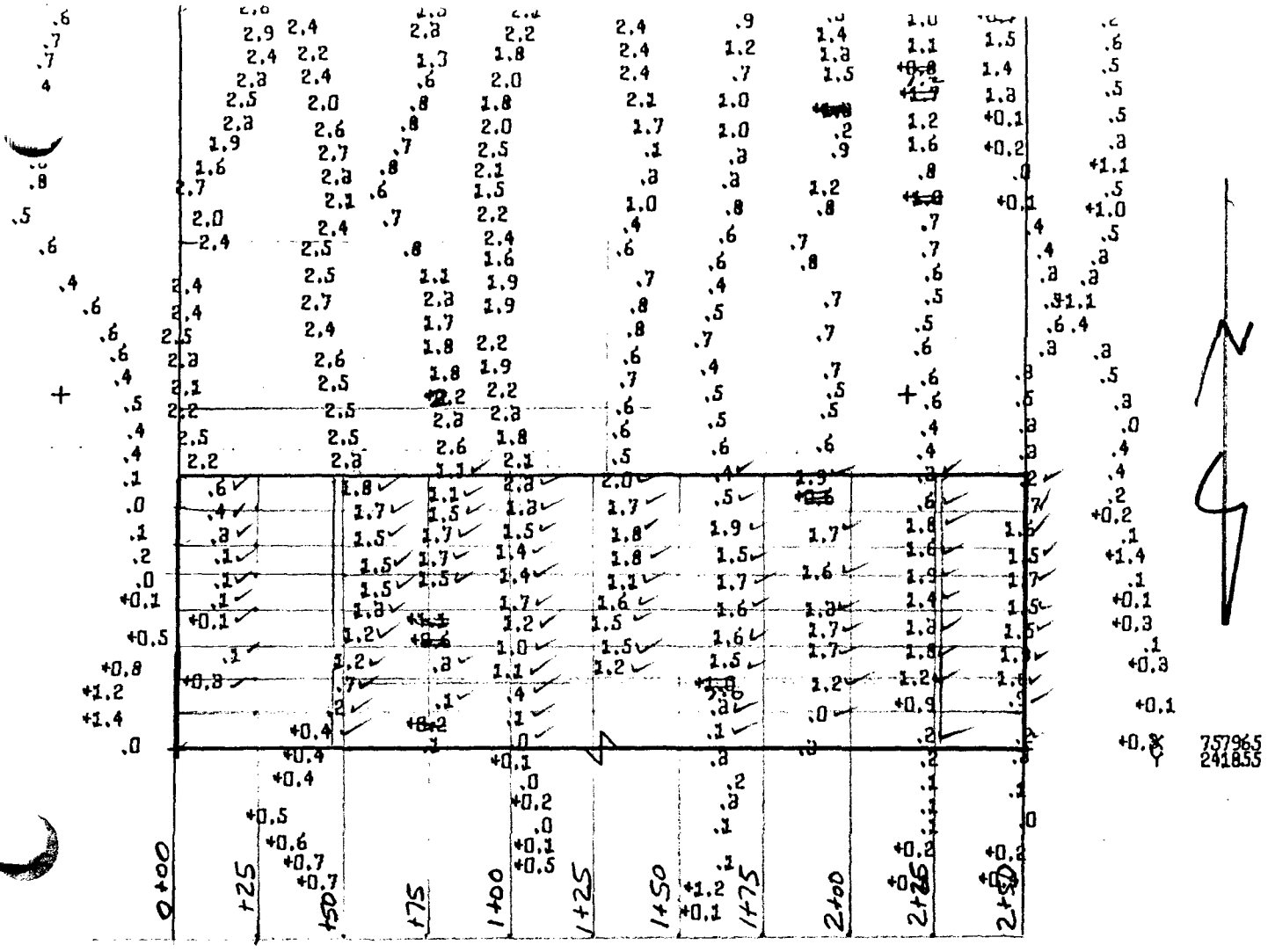
SUBJECT New Bedford Harbor Superfund Site - Pilot Study

COMPUTATION Mudcat Dredge - Area 1 Quantity Calculation

COMPUTED BY MJO CHECKED BY _____ DATE 10 February




Mudcat Dredge
Dredge Area #1
Average Sounding 0.2
New Bedford Hbr.
Pilot Study Site
Pre-Dredge
N
NEW BED
SUPERFUND
LOCATION: PROSHNE
AUTO. SYSTEM NO. 3
TIDE GAGE

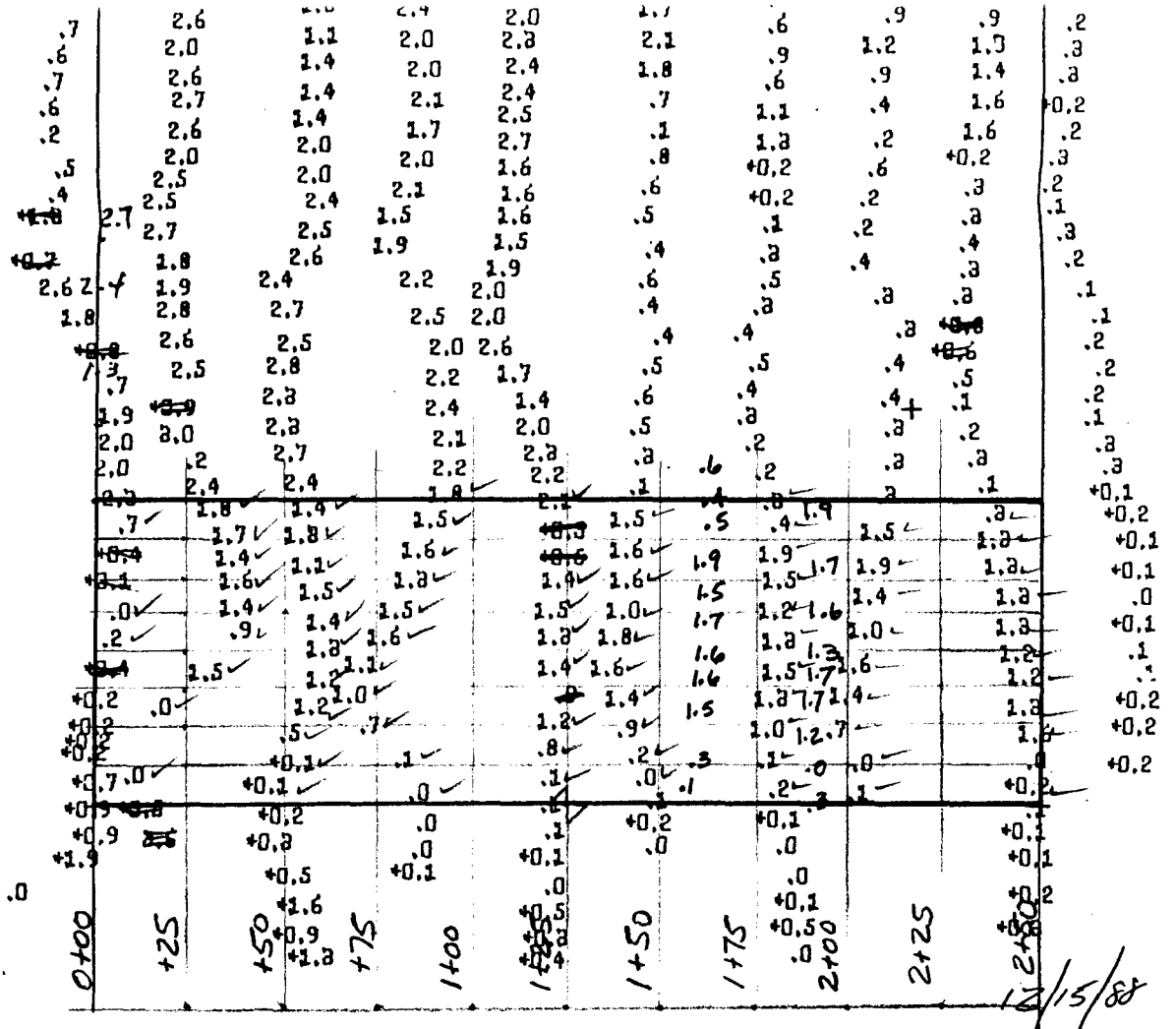


BOAT PLOT
(1 OF 2)

Mudcat Dredge
Dredge Area #1

12/15/88 NEW BEDF
SUPERFUND
AFTER dredge SURVE
ESS #3 - McINTYRE
REG. BK. R+H 23c
SCALE 1" = 50'
DATUM M.L.W.

New Bedford Harbor
Pilot Study Site
After Dredge,
Scale 1" = 50'



12/15/88 New

Superfund
After Drew
ESS#3 - Mc
Ref. BK. R
Scale 1" = 5
Datum M.L.

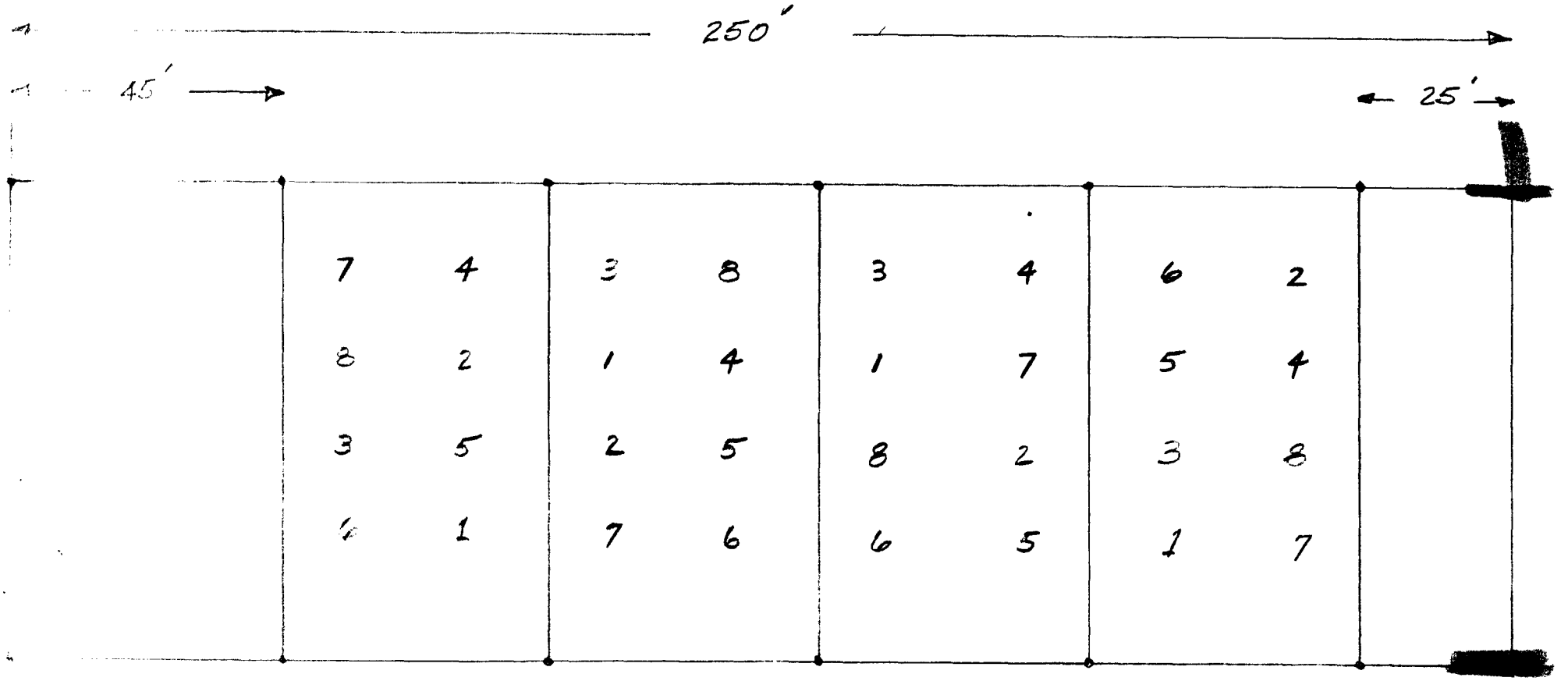
BOAT PLOT
(2 of 2)

~~Actual~~ Mudcat Dredge
Dredge Area #1
Avg. Sounding 1.1

New Bedford Hbr
Pilot Study Site
After Dredge
Scale 1" = 50'

2L- SEDIMENT SAMPLING LOCATIONS

MUDCAT Dredge Da



SECTION 3 MATCHBOX DREDGE - DREDGE AREA 1

M. Summary of Daily Activities

N. Plume & Dredgehead Sampling - TSS

O. Volume Calculations

P. Flow & Density Meter Readings

Q. Sediment Sampling Locations - After Dredge

NEW BEDFORD HARBOR, MA
PILOT STUDY - SUMMARY OF ACTIVITIES
MATCHBOX DREDGE - AREA 1

Friday 9 December 1988 High Tide 0733

First day of dredging with this equipment. Dredge had continuous mechanical problems and moved material for 0.75 hours.

Monitoring: No plume or dredgehead sampling. EPA taking 24 hour turnaround samples at Coggeshall Street Bridge. One large sample taken at CDF discharge for biological testing.

Saturday 10 December 1988 (0615 - 1000) High Tide 0817

Dredge operated for three hours with 1.43 hours of downtime. Encountered considerable debris which required the numerous shutdowns. Dredgehead was plugged at approximately 1000 hours. Hydraulic system was not operating correctly and dredgehead could not be removed from the water.

Monitoring: No dredgehead sampling due to frozen lines. Five events of plume sampling. EPA monitoring operation (24 hr. turnaround samples). Effluent sampling (24 hourly samples taken from both weirs).

Sunday 11 December 1988 High Tide 0904

Dredgehead was plugged with debris and dredge operated for only 20 minutes.

Monitoring: EPA monitoring operation (24 hour turnaround). Hourly samples from both weirs (0700-1400).

Monday 12 December 1988 (1130 - 1315) High Tide 0950

Dredge had numerous frozen lines which had to be thawed before it could be operated. Moved material for 1.4 hours. Depth of cut reduced to 1 foot. Previously had been attempting to remove 18 inches.

Monitoring: Three events of plume sampling. Dredgehead sampling from a boat. Effluent sampling hourly (0700 - 1100) then large grab sample for biological tests.

Tuesday 13 December 1988 (0915 - 1045) High Tide 1043

Dredging for 2.3 hours before dredgehead became plugged. We were unable to clear dredgehead due to faulty hydraulic system which made it impossible to lift dredgehead from water.

Monitoring: Dredgehead sampling from a boat. Plume sampling (3 events). Effluent sampling hourly until 1700 hours.

SUMMARY OF MATCHBOX DREDGE OPERATING IN AREA # 1

Dredge made only one pass through the area. Initially attempted to remove 18 inches of material but reduced this to 12 inches on last two days of operation. Swing speed was kept as slow as possible. Dredge cut was approximately 65 feet in width.

Monitoring			
Plume Sampling	12/10	5 events	50 samples 3 composites
	12/12	3 events	
	12/13	3 events	30 samples 1 composite
Dredgehead Sampling	12/12} samples taken 12/13} from boat		
Sediment Sampling	12/14	4 composites	
Effluent Samples	12/9 - 1 grab sample 12/10 - 24 samples 12/11 - 8 samples 12/12 - 4 samples & 1 grab 12/13 - 10 samples		

Date	Station	PCB	Cu	Cd	Pb
12/10	2	0.36	4.0	0.20	1.1
	1	0.09	2.5	0.07	0.89
12/11	2	0.33	3.1	0.17	1.5
	1	0.09	1.3	0.07	1.5
12/12	2	0.39	5.3	-	1.4
	1	0.09	2.9	-	0.70

New Bedford Harbor Superfund Site [illegible] Study
Review of Density, Flow Charts
MB

2/24

DREDGE	AREA	DATE	OPERATING TIME (HRS)	DOWNTIME (Hours)
MB	1	12/9	0.75	1.30
MB	1	12/10	3.00	1.43
MB	1	12/11	0.18	—
MB	1	12/12	1.40	—
MB	1	12/13	2.27	1.13
TOTALS		5 days	7.6 hours	3.86 hour

1. Operating time refers to period when material is being moved

2. Dredge had numerous mechanical problems which limited the dredging time. Dredgehead also became plugged very easily. Bars (vertical) were welded onto dredgehead but problems were still encountered.

3. Dredge averaged 1.52 hours of operating time per day.

4. Production Rate 227 cy / 7.6 hr = 29.9 cy/hr

227 / 11.46 = 19.8 cy/hr

Review of Flow & Density Meter Readings

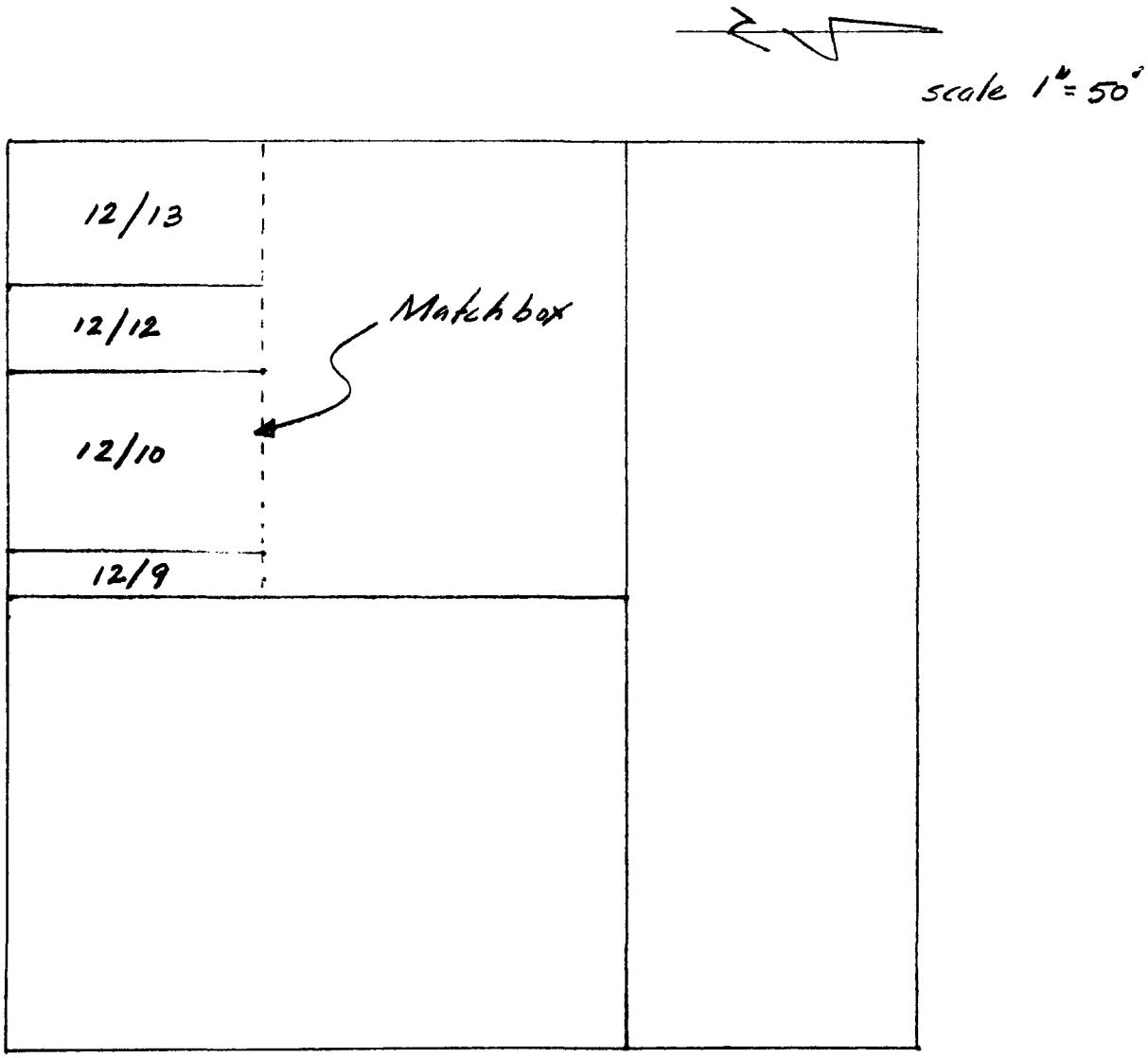
December 10 Readings noted every 2 minutes
Avg. flow 2193 GPM
Avg density 1.039×10^6 mg/l

Dredge attempting to remove 18" of material per cut

December 13 Readings noted every 2 minutes
Avg. flow 2410 GPM
Density 1.038×10^6 mg/l

Dredge attempting to remove 12" of material per cut

New Bedford Harbor Pilot Study
Dredge Area 1 - Location of Matchbox Dredge



Advance: 125' / 7.6 HRS = 16.4 ft/hr.

3-N PLUME & DREDGEHEAD SAMPLING

NED FORM 223
27 Sept 49

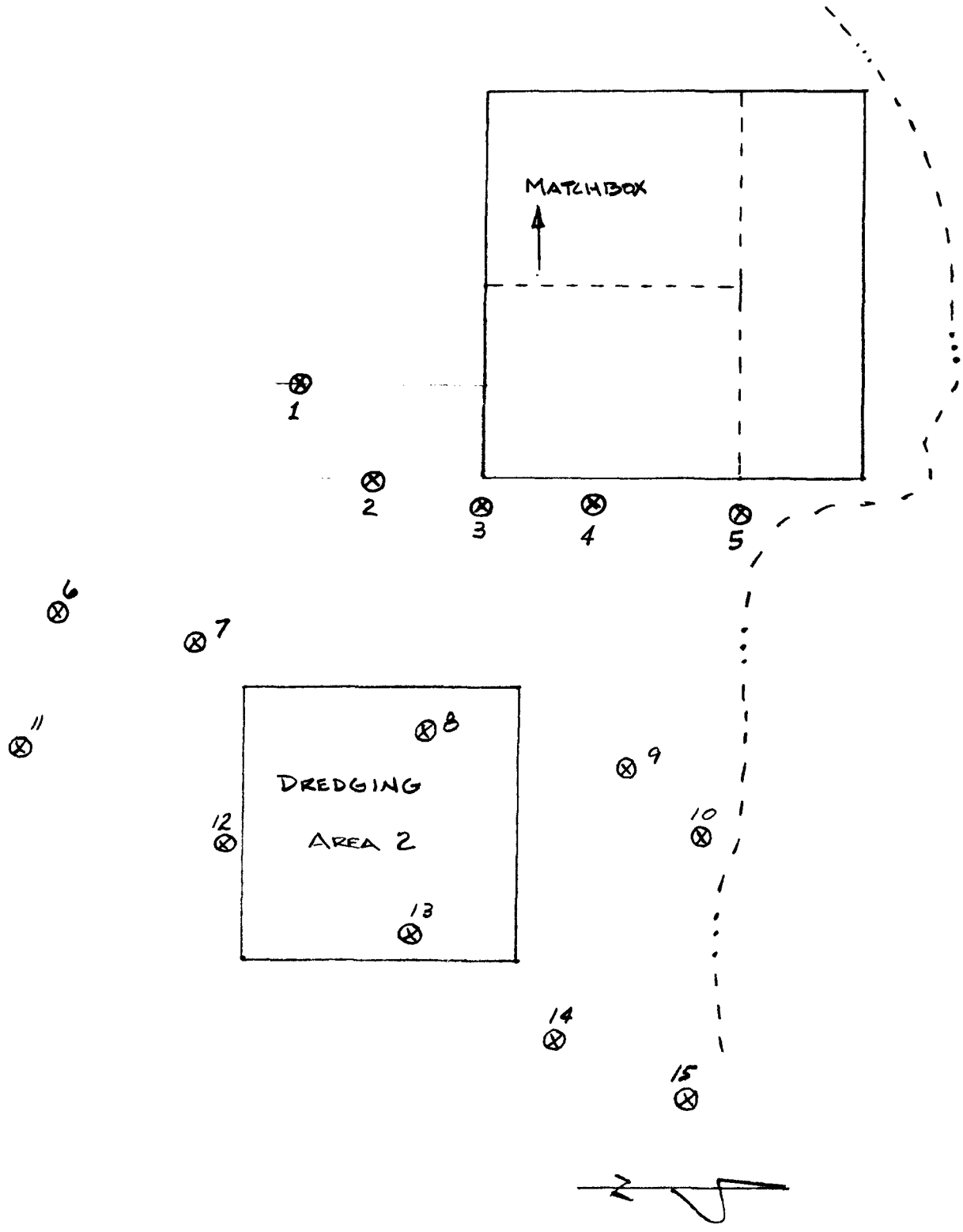
NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE _____

SUBJECT NEW BEDFORD HARBOR PILOT STUDY

COMPUTATION Plume Sampling Stations - MATCHBOX DREDGE

COMPUTED BY _____ CHECKED BY _____ DATE _____



⊗ PLUME SAMPLING STATIONS

Scale 1" = 100'

MATCHEDA DREDGE - AREA I
12 DREMASER

DREDGEHEAD (TSS mg/l)

TIME	PORT 1	2	3	4	5	6		swing speed (ft/sec)
								.26
1220	67.9			44.7	33.3		S-P	.18
1230	246.3			44.5	51.3		P-S	
1235	58.5			45.0	38.4		S-P	
1243	20.0				110.4		P-S	.21
1252	111.7			38.5			S-P	.25
1257	87.0			89.3			P-S	
1301	126.7			135.7			S-P	

* PORT 5 (Field samplers log indicates that no samples were taken)
SAMPLES TAKEN FROM BOAT DUE TO FROZEN LINES

Plume

STATION	EVENT 1210 - 1220		1230 - 1240	1305 - 1315	
1	12.2	C			
2	3.7				
3	5.8				
4	6.0				
5	11.4				
6	8.2		14.3	36.6	C
7	9.2		13.9	53.1	
8	8.5		10.0	9.5	
9	8.1		5.0	6.4	
10	20.3		19.7	13.9	
11			8.9	17.1	C
12			16.4	13.6	
13			7.0	8.7	
14			4.1	3.7	
15			4.7	9.6	

[illegible]

MATCHPOX [illegible] - AREA I
13 DECEMBER

DREDGEHEAD (TSS mg/l)

TIME	PORT 1	2	3	4	5	6		swing speed (ft/sec)
945	293.0	46.8	62.8	34.8	49.2	352	P-S	0.20
950	85.1	26.4	20.0				S-P	
955				17.1	22.9	26.6	P-S	
1000	18.8	21.2	24.6	25.2	21.9	30.4	S-P	
1005	46.0	18.1	18.9				S-P	
1010				36.7	7.2		P-S	
1025	43.2	30.9	53.0	39.1	63.0		P-S	
1035	27.8	23.1	23.8	1148.6	25.2	20.8	S-P	
								0.25

SAMPLES TAKEN FROM A BOAT DUE TO FROZEN LINES

PLUME

STATION	EVENT 0938-0948	1033-1040	1205-1215	
1	41.4	18.8	13.4	C
2				C
3	38.7	5.6	7.3	C
4	44.9	17.9	19.8	C
5	45.5	66.1	45.0	C
6	12.4	10.4	40.5	C
7	12.7	9.3	12.9	
8	8.5	2.9	10.2	
9	8.8	10.5	18.6	
10	16.1	14.0	10.2	
11				
12				
13				
14				
15				

3-0 VOLUME CALCULATIONS

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

SUBJECT New Bedford Harbor - Superfund Site - Pilot Study
COMPUTATION Quantity Calculation
COMPUTED BY WBM CHECKED BY DATE 22 February

STATION	AREA	(ft²) AVERAGE AREA	(ft³) VOLUME
0 + 00	113.1		
		89.05	2226.25
0 + 25	65.0		
		43.30	1082.50
0 + 50	21.6		
		28.95	723.75
0 + 75	36.3		
		46.15	1153.75
1 + 00	56.0		
		37.90	947.5
1 + 25	19.8		

TOTAL = 6133.75/27

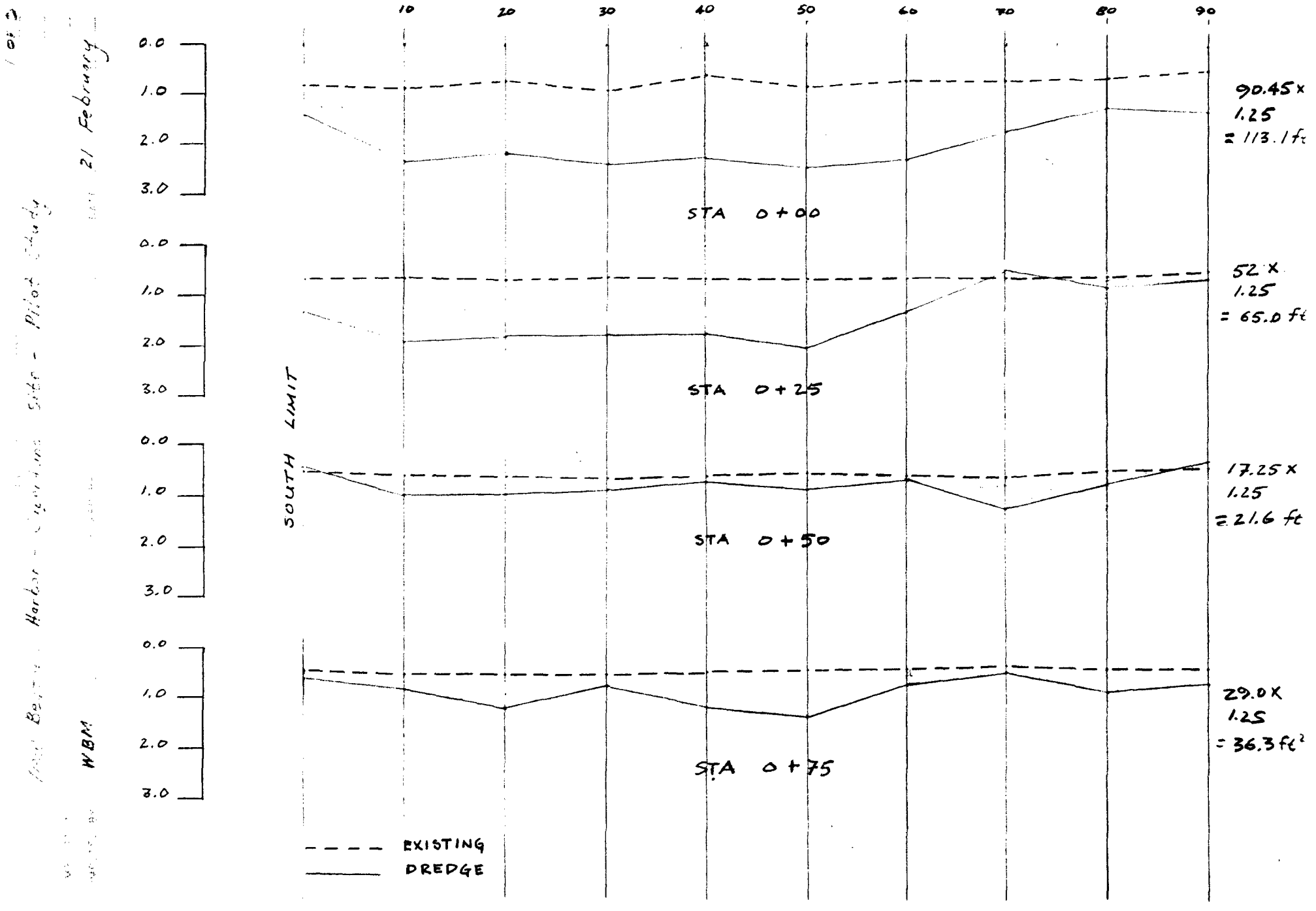
= 227.2 C.Y.

NOTE:
1. Stations run east to west
2. Dredge operated east to west making one cut. Attempted to remove 18" of material on 12/9 - 12/11. Reduced depth of cut to 12" on 12/12 and 12/13

AVERAGE SOUNDING Pre dredge 0.5

After dredge 1.4

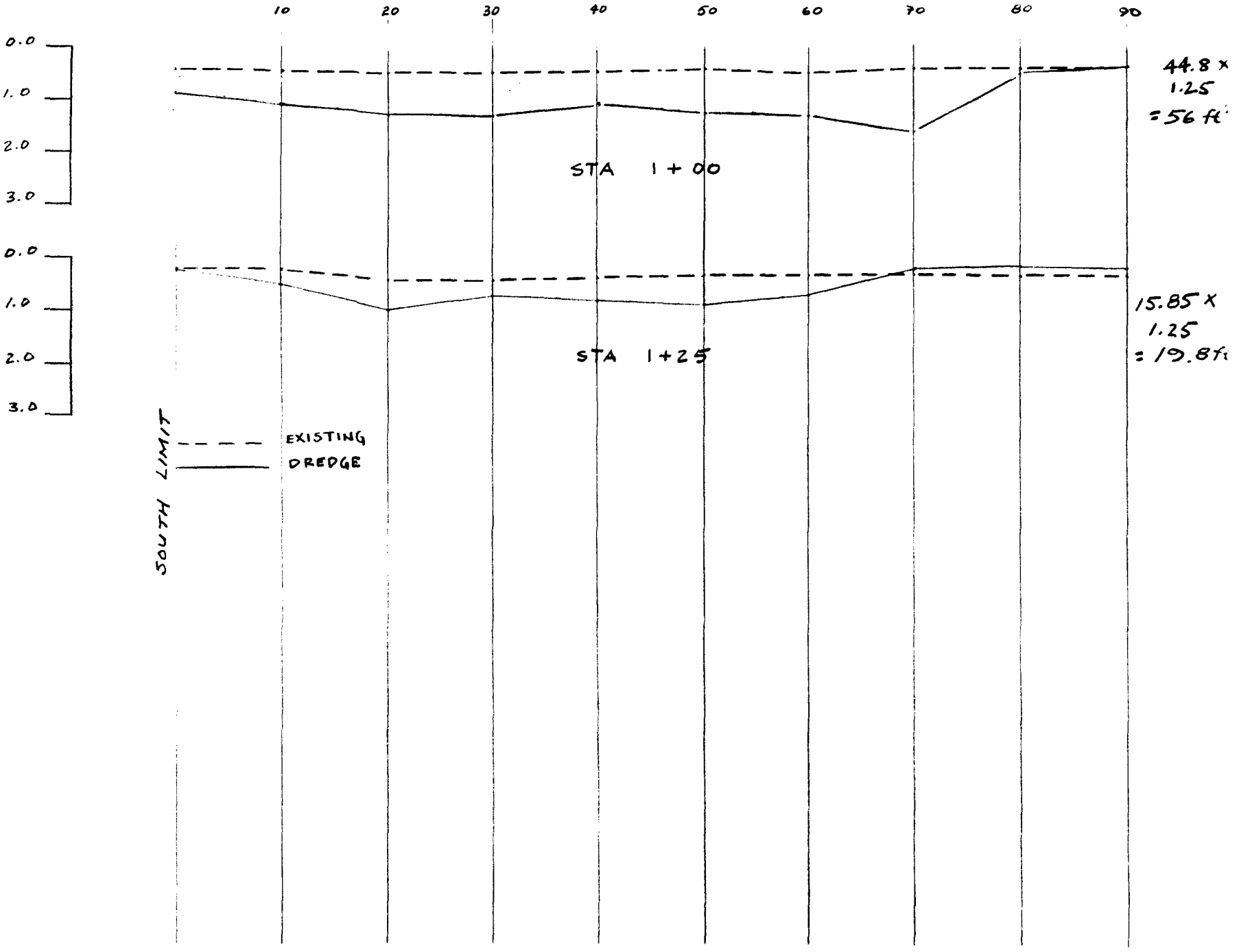
Average depth of cut 0.9

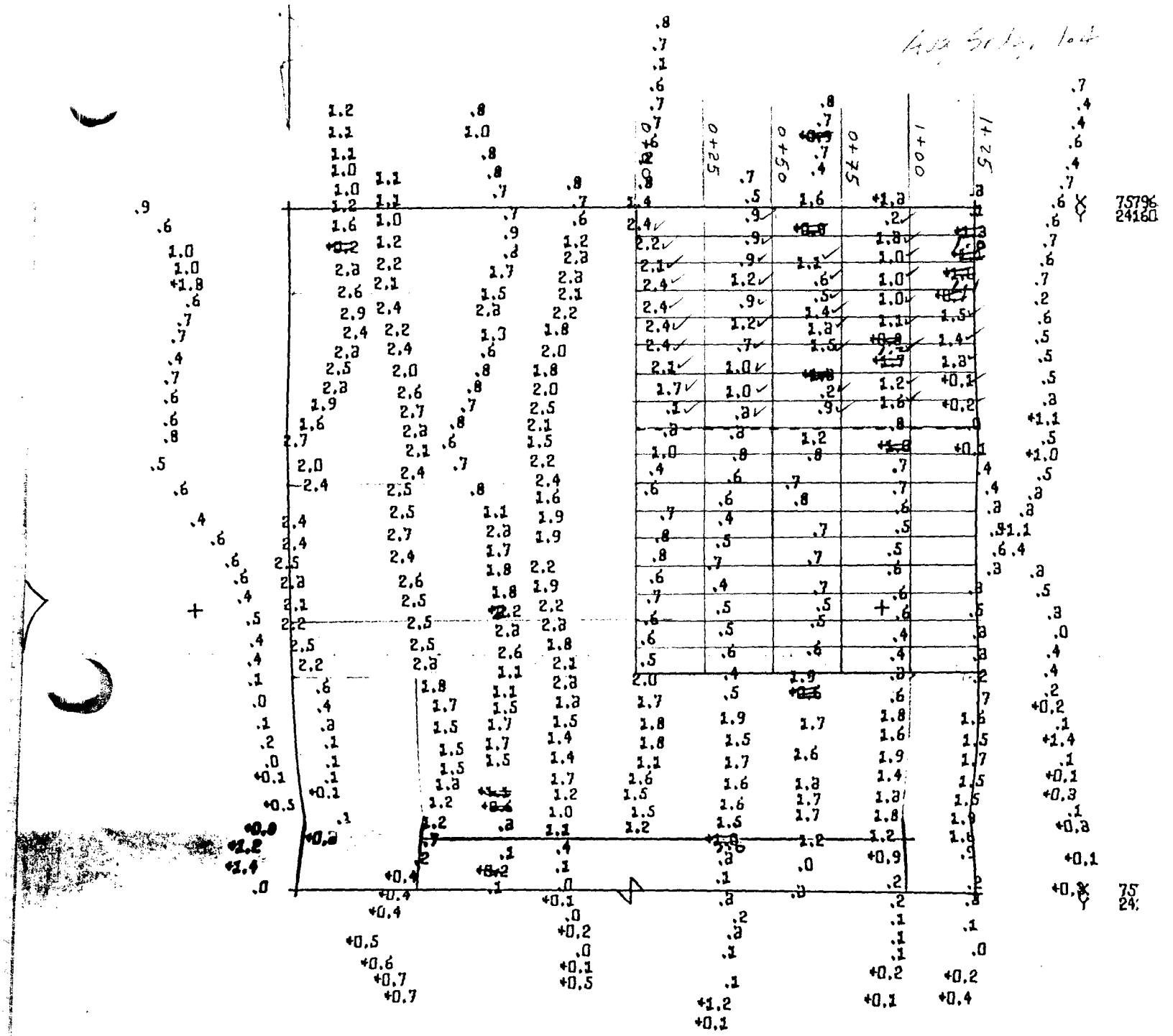

10
20
30
40
50
60
70
80
90
0.0
1.0
2.0
3.0
SOUTH LIMIT
STA 0+00
STA 0+25
STA 0+50
STA 0+75
90.45 x 1.25 = 113.1 ft
52 x 1.25 = 65.0 ft
17.25 x 1.25 = 21.6 ft
29.0 x 1.25 = 36.3 ft²
EXISTING
DREDGE

New Bedford Harbor - Upper Inner Side - Pilot Study

22 February

WBM

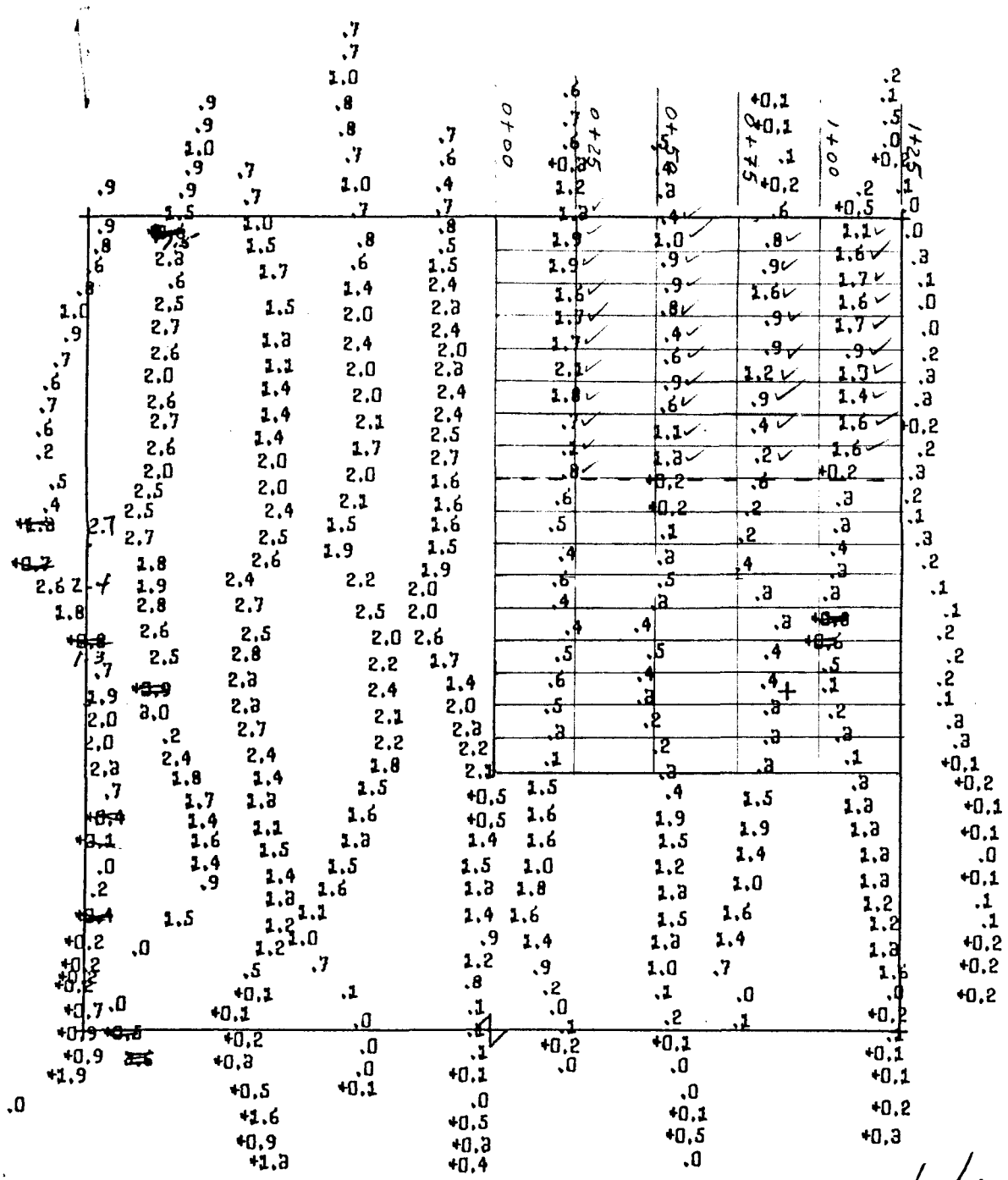




BOAT PLOT
(1 OF 2)

MATCHBOX DREDGE
AREA #1

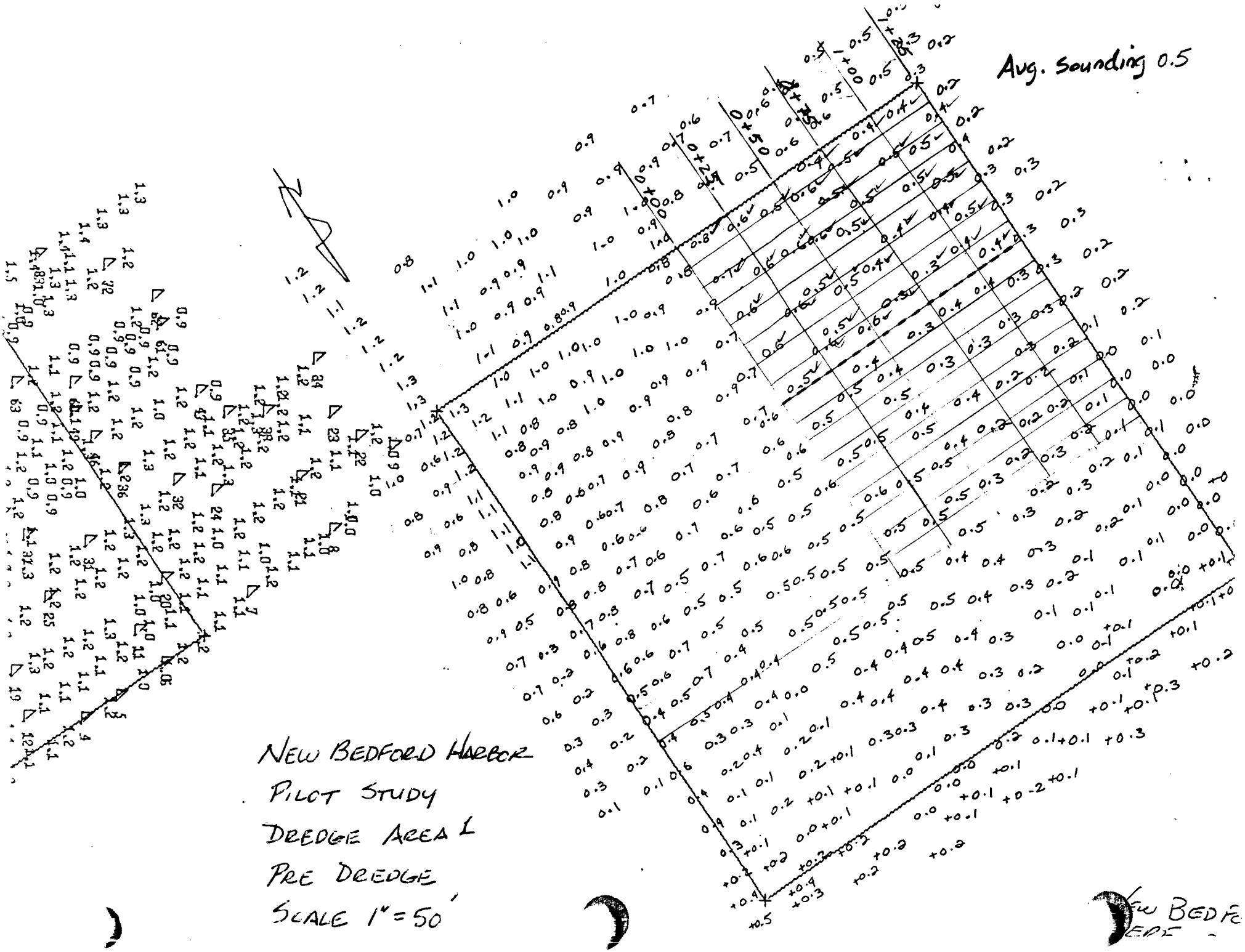
12/15/88 NEW
SUPERFUND
AFTER dredge
ESS #3 - MC
REF. BK. R+H
SCALE 1" = 5
DATUM M



12/15/88 New
Superfund
MATCHBOX DREDGE/After dredge
ESS#3 - MC/
REF. BK. R+H
SCALE 1" = 50
DATUM M.L.

BOAT PLOT
(2 OF 2)

AREA #1


Avg. Sounding 0.5
NEW BEDFORD HARBOR
PILOT STUDY
DREDGE AREA 1
PRE DREDGE
SCALE 1" = 50'

3-P FLOW & DENSITY METERS

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U. S. ARMY

SUBJECT New Bedford Harbor Pilot Study
COMPUTATION Data Reduction - Density/Flow Meters
COMPUTED BY MJD CHECKED BY DATE 2-24 PAGE

10 December 1988 Matchbox Dredgehead

TIME	FLOW (GPM)	DENSITY ($\times 10^6$ mg/l)	TIME	FLOW (GPM)	DENSITY ($\times 10^6$ mg/l)
6:20	1770	1.02	7:02	2640	1.03
:24	2520	1.01	:04	2040	1.06
:26	2520	1.02	:06	2100	1.02
:28	1560	1.02	:08	2250	1.10
:30	2460	1.02	:10	1870	1.08
:32	2550	1.02	:12	2250	1.06
:34	2550	1.02	:14	2160	1.03
:36	2340	1.02	:16	2250	1.03
:38	2400	1.03	:18	2600	1.03
:40	2610	1.02	:20	1740	1.03
	2328	1.02		2190	1.047
6:42	2460	1.08	7:22	2010	1.06
6:44	1860	1.04	:24	1860	1.02
6:46	2610	1.04	:26	2580	1.02
6:48	2400	1.04	:28	2460	1.04
6:50	1530	1.04	:30	1860	1.09
:52	2650	1.02	:32	1920	1.05
:54	2650	1.04	:34	2400	1.02
:56	1800	1.06	:36	1500	1.10
:58	2040	1.03	:38	1650	1.02
7:00	2640	1.02	:40	1650	1.04
	2264	1.041		1989	1.046

AVERAGE FLOW = 2193 GPM

Density 1.039×10^6 mg/l

Dredge attempting to remove 18" of material per cut

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U. S. ARMY

PAGE

SUBJECT NEW BEDFORD HARBOR PILOT STUDY

COMPUTATION DATA REDUCTION - DENSITY/FLOW METERS

COMPUTED BY

CHECKED BY

DATE

13 December 1988 Matchbox Dredgehead

TIME	FLOW (GPM)	DENSITY ($\times 10^6$ mg/l)	TIME	FLOW (GPM)	DENSITY ($\times 10^6$ mg/l)
0900	1950	1.06	9:40	3000	1.03
02	1500	1.02	:42	1350	1.02
04	2760	1.02	44	3000	1.02
06	2760	1.06	46	3000	1.02
08	2100	1.06	48	2160	1.04
10	3000	1.02	50	2400	1.02
12	3000	1.04	52	1980	1.03
14	2100	1.05	54	2430	1.02
16	3000	1.08	56	2820	1.02
18	2940	1.02	58	2160	1.04
	2511	1.043		2430	1.026
0920	3000	1.02	10:00	1440	1.04
22	2160	1.06	02	2700	1.04
24	2160	1.02	04	2250	1.05
26	2920	1.03	06	1650	1.05
28	3000	1.05	08	2160	1.02
30	1960	1.06	10	2550	1.05
32	3000	1.02	12	2100	1.04
34	3000	1.02	14	2700	1.03
36	2220	1.04	16	2400	1.05
09:38	3000	1.02	18	2550	1.02
	2642	1.034		2250	1.039

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U. S. ARMY

PAGE

SUBJECT

COMPUTATION

COMPUTED BY

CHECKED BY

DATE

13 December 1988 Matchbox Dredgehead

TIME	FLOW (GPM)	DENSITY ($\times 10^6$ mg/l)
10:20	1950	1.06
1:22	1800	1.06
24	2640	1.02
26	3000	1.02
28	1980	1.08
30	1740	1.02
32	2280	1.04
34	2250	1.07
36	1620	1.10
38	2900	1.03
	2216	1.050

AVERAGE FLOW 2410 GPM
DENSITY 1.038×10^6 mg/l

Dredge attempting to remove 12" of material per cut

3-Q SEDIMENT SAMPLING LOCATIO

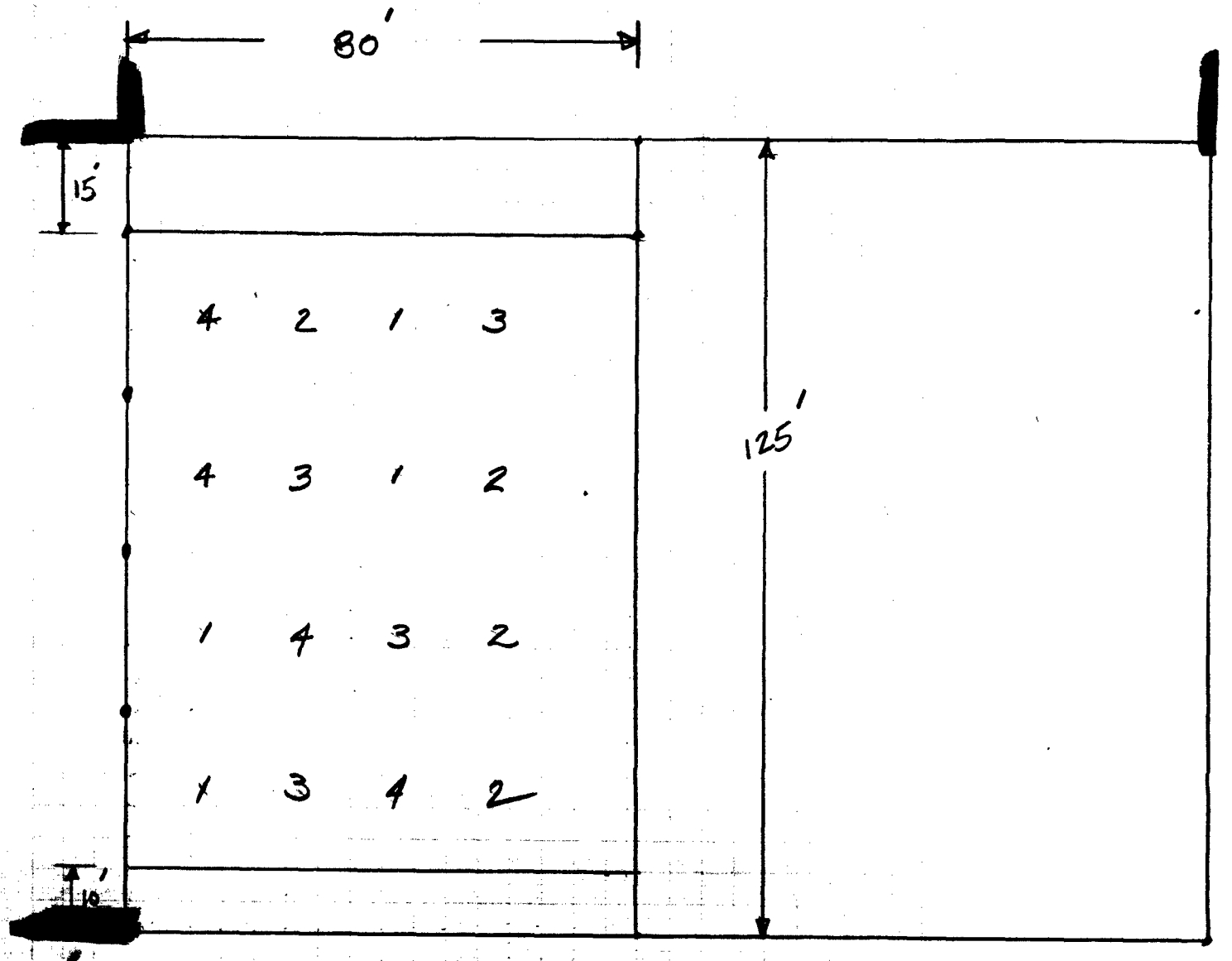
NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

SUBJECT New Bedford Harbor Pilot Study
COMPUTATION Sediment Sampling - Area #1 - Matchbox

COMPUTED BY _____ CHECKED BY _____ DATE _____ PAGE _____

SEDIMENT SAMPLING
MATCHBOX



SECTION 4 CUTTERHEAD DREDGE - AREA 1 (CAP MATERIAL)

R. CONTRACTORS DAILY REPORTS

S. DREDGEHEAD SAMPLING - TSS

T. FLOW & DENSITY METER READINGS

W. QUANTITY CALCULATION
- hydrographic surveys

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE

SUBJECT New Bedford Harbor Superfund Site - Pilot Study
COMPUTATION Review of Contractors Daily Reports - Cutterhead Dredge
COMPUTED BY _____ CHECKED BY _____ DATE _____

Dredging clean material from dredge area 1

Dredge	Area	Date	Operating Time (hours)	Downtime (hours)
CH	1	12/20	3.33	0.47
		12/21	4.17	0.38
		12/22	3.67	0.42
		12/23	4.37	0.55
		12/27	4.22	0.45
		12/28	5.77	0.40
		12/29	5.00	0.50
		12/30	6.00	0.42
		12/31	2.42	0.42
		1/3	5.50	—
		1/4	7.05	1.28
TOTALS		11 days	51.5 hours	5.29 hours

1. Operating time refers to period when material is being moved

2. Averages: 56.79/11 = 5.16 hrs per day
4.68 hours of operating time with 0.48 hours of downtime
pumping material ≈90.7% of available time

3. Production Rate: 3929 cy / 51.5 hours = 76.3 cy/hr
3929 cy / 56.79 hours = 69.2 cy/hr

Review of Flow and Density Meter Recordings

20 December — Average Flow 1635 GPM
Average Density 1.078×10^6 mg/l

21 December — Average Flow 1591 GPM
Average Density 1.066×10^6 mg/l

72 1800
3 in
108 S.W.

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 48° Wind: 15-25 SW High Tide: 6:00 PM
Date: 12-20-88

	TIME	COMMENTS
START	2:00 PM	Set up Ranges To Dig Cell - Move Dredge
STOP		To New Cut
START	4:30	
STOP	5:55	Stop To Sound
START	6:10	Drop 1' More FT To Get Grade
STOP	7:30	Rock Box.
START	7:40	
STOP	8:15	Secure Dredge - No Water
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

67 P.S.I.

3 in. 1700

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat ____
Temp: 50° Wind: 10-20 SW High Tide: 6:28
Date: 12-21-88

	TIME	COMMENTS
START	5:00	Warm Dredge up - adjust Belts
STOP	6:40	Some Thing in Suction
START	6:48	
STOP	9:00	Pull Swing Wires out of Bank
START	9:15	
STOP	9:30	Ran out of Water Secure Dredge
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
·draulic Dredge Rental, US Army Corp of Engineers
ntract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 32° Wind: N 5-10 High Tide: 7:08
Date: 12-22-88

	TIME	COMMENTS
START	5:00	Warm up Dredge ~~Put up Range Lights~~
STOP		
START	5:45	
STOP	6:55	Suction Plugged Cutter Plugged with Mud
START	7:05	
STOP	7:15	Rock Box.
START	7:20	
STOP	8:45	Suction Plugged with Mud (Cutter)
START	8:55	
STOP	9:50	Secure Dredge - No Water
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 21° Wind: N - 5 High Tide: 8:00 AM
Date: 12-23-88

	TIME	COMMENTS
START	5:00 AM	Warm up Dredge
STOP		
START	5:35	Start Digging
STOP	7:45	Pick Wire out of Bank (STB)
START	8:00	
STOP	8:10	Suction Plugged (Wood)
START	8:18	
STOP	9:35	Rock Box (Stones)
START	9:45	
STOP	10:30	Secure Dredge - Winterize
START		Secure For Christmas Weekend Merry Christmas
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

12-27-88

Dredge Type Ellicott 370

Temp. 22° Wind NE 5+10 Hightide 11:00 AM

	Time	
Start	8:00	Get Dredge Ready For Operation
Stop		
Start	9:15	Start Digging
Stop	10:18	Rock Box
Start	10:25	
Stop	11:50	Swing Wires in Bank
Start	12:00	
Stop	12:10	Rock Box
Start	12:20	
Stop	1:55	No Water - Secure Dredge

Ellicott 370 12-28-88

Temp. 50° Wind 15-30 SW High Tide 11:30 AM

Start 7:00 Add Pipe on Dump Grease up Warm up

Stop Prime up

Start 8:05

Stop 9:30 Swing Wires caught in Bank

Start 9:40

Stop 11:22 Something on Cutter Head

Start Free Swing Wires from Bank

Stop

Start 11:30

Stop 12:07 Rock Box

Start 12:13

Stop 2:15 Ran out of Water Secure Dredge

Start

Stop

Start

Stop

Start

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 30° Wind: 15-25 NW High Tide: 12:20 PM
Date: 12-29-88

	TIME	COMMENTS
START	8:00 AM	Warm up Dredge - Grease up - Prime up
STOP		
START	8:30	Start Digging
STOP	10:15	Move To New Cut
START	11:00	
STOP	11:10	Clean Service Water Strainer - No Water under Dredge
START	11:15	
STOP	12:40	Lost Service Water - Clean Cutter
START	12:50	
STOP	2:30	No Water - Secure Dredge - Winterize
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat ____
Temp: 30° Wind: Variable High Tide: 1:10 PM
Date: 12-30-88

	TIME	COMMENTS
START	9:00	Warm up Dredge - Grease up - Prime up
~~START~~ STOP	9:45	
START		
STOP	12:30	Rock Box
START	12:40	
STOP	3:15	Rock Box
START	3:20	
STOP	3.45	Pull Swing Wires out of Bank
START	3:55	
STOP	4:10	Wash out Secure Dredge
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 32° Wind: Variable High Tide: 1:50 pm
Date: 12-31-88

	TIME	COMMENTS
START	10:30	Warm up Dredge - Pull Swing Wire up
STOP		
START	11:00	Start Digging
STOP	11:10	Fix Pipe in Dike
START	11:15	
STOP	12:20	Move STB Swing Anchor
START	12:40	
STOP	1:50	Rock Box - Secure + Winterize
START		
STOP		
START		Happy New Year!
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 37° Wind: 10-20 NW High Tide: 4:30 PM
Date: 1-3-88

	TIME	COMMENTS
START	1:00 PM	Prepare Dredge For Digging
STOP		
START	2:00	Start Digging
STOP	7:30	Finish Cut - Winterize Dredge
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		
START		
STOP		

Green house
Past Stone

Location: Acushnet River, New Bedford, Massachusetts
Hydraulic Dredge Rental, US Army Corp of Engineers
Contract #: DACW33-88-C-0023

Dredge Type: Ellicott ✓ Mudcat _____
Temp: 25 Wind: 15-30 N High Tide: 4:50 AM
Date: 1-4-88

	TIME	COMMENTS
START	5:00 AM	Prefare Dredge - Move To New Cut
STOP		Put Lines on Ranges - Move Swing wire
START	6:45	Arme up - Start Digging
STOP	7:15	Vacum Line Plugged - Blow out
START	7:30	
STOP	8:40	Thaw Guages
START	8:45	
STOP	11:55	Thaw Guages
START	12:00	
STOP	12:25	Rock Box (Stone)
START	12:30	
STOP	12:45	Thaw Guages
START	12:55	
STOP	1:05	Move To New Cut
START	1:25	
STOP	1:45	Rock Box
START	1:50	
STOP	2:15	Thaw Guages
START	2:20	
STOP	2:35	Thaw Guages
START	2:37	
STOP	3:25	Rock Box

over

Start	3:30	
Stop	405	End of Cut - Winterize Dredge
Start		
Stop		
Start		
Stop		
Start		
Stop		

4-5 DREDGEHEAD SAMPLING

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U. S. ARMY

PAGE _____

SUBJECT New Bedford Harbor Pilot Study
COMPUTATION Dredgehead Sampling - Cutterhead Dredge
COMPUTED BY _____ CHECKED BY _____ DATE _____

Cutterhead Dredge - Cap Material
30 December - Area 1

TIME	PORT 1	2	3	4	5	6	
1000	509.5	597.6		1013.6	198.0	1666.6	P-S
1015	1140.1	1469.7	426.8	3190.8	2787.5	2454.3	S-P
1030	458.1	509.2	151.8	2606.0	2492.4	846.4	S-P
1045	531.3	443.3	303.0	844.1	980.6	1571.6	S-P
1100	105.9	540.8	204.3	612.5	547.0	301.6	P-S
1115	287.3	322.5	176.3	302.2	791.0	474.4	P-S
1130	272.2	367.0	350.0	768.4	636.5		P-S
1145	235.9	326.2	883.5	207.6	441.6	128.6	S-P
1200	148.6	435.1	1101.7	1026.3	449.2	191.3	P-S
1215	166.7	247.6	713.2	150.5	25' 5	198.1	S-P
1230	173.7	201.0	910.2		280.0		P-S

~~Cutterhead Speed: 3.96/REV (3.5, 6.7, 2.4, 3.4,) Average 4 sec/rev = 15RPM~~

SWING SPEED

3.41	6.13	3.36	2.22	3.34	2.74
3.47	6.87	3.39	2.60	3.38	4.62
3.49	7.03		2.39		5.08

4-T FLOW & DENSITY METERS

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

PAGE 1 of 1

SUBJECT: NEW BEDFORD HARBOR SUPERFUND - PILOT STUDY
COMPUTATION: DATA REDUCTION - FLOW
COMPUTED BY: C. Colvin CHECKED BY: DATE:

21 DECEMBER 1988

TIME	AVG FLOW	AVG DENSITY
5:30	2550	1.02
:34	2670	1.02
:38	2690	1.06
:42	2340	1.07
:46	1410	1.03
:50	1200	1.04
:54	1650	1.03
:58	1160	1.14
6:02	1200	1.07
:06	1650	1.05
AVG	1852	1.053

6:10	2080	1.04
:14	1800	1.04
:18	2600	1.07
:22	1660	1.04
:26	1200	1.07
:30	1620	1.05
:34	1800	1.04
:38	900	1.07
:42	1320	1.05
:46		
:50	2700	1.02
AVG	1768	1.054

6:54	1800	1.04
:58	1020	1.06
7:02	1350	1.07
:06	1800	1.06
:10	1650	1.08
:14	1350	1.12
:18	2250	1.03
:22	1980	1.04
:26	1140	1.06
:30	1650	1.09
AVG	1599	1.065

TIME	AVG FLOW	AVG DENSITY
7:34	1080	1.11
:38	1290	1.03
:42	780	1.02
:46	1500	1.08
:50	1060	1.05
:54	1200	1.04
:58	1440	1.07
8:02	2250	1.14
:06	1080	1.05
:10	1420	1.05
AVG	1310	1.064

8:14	1300	1.03
:18	900	1.22
:22	1500	1.03
:26	900	1.10
:30	900	1.04
:34	1800	1.14
:38	1920	1.06
:42	800	1.06
:46	1200	1.07
:50	1500	1.04
AVG	1272	1.079

8:54	1800	1.08
:58	1800	1.18
9:02	1680	1.03
:16	2600	1.03
:20	2310	1.05
:24	1200	1.12
:28	1380	1.10
:30	1200	1.04
AVG	1746	1.079

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

SUBJECT: NEW BEDFORD HARBOR SUPERFUND - PILOT STUDY
COMPUTATION: DATA REDUCTION - FLOW
COMPUTED BY: C. COLVIN CHECKED BY: DATE:

20 DECEMBER 1988

TIME	AVG FLOW	AVG DENSITY	TIME	AVG FLOW	AVG DENSITY
16:26	1320	1.02	17:26	1800	1.14
:28	2390	1.02	:28	2100	1.04
:30	2400	1.03	:30	2400	1.10
:32	2390	1.02	:32	900	1.05
:34	2640	1.02	:34	1380	1.06
:36	2340	1.02	:36	1200	1.04
:38	2550	1.02	:38	1800	1.16
:40	2580	1.03	:40	1260	1.05
:42	1800	1.07	:42	1500	1.05
:44	2400	1.03	:44	1440	1.03
AVG	2281	1.028	AVG	1578	1.072
:46	1950	1.03	18:00	1800	1.02
:48	1650	1.04	:02	2160	1.03
:50	1650	1.03	:04	1840	1.11
:52	1800	1.05	:06	1260	1.07
:54	2460	1.05	:08	1260	1.04
:56	1500	1.03	:10	2120	1.08
:58	1560	1.15	:12	840	1.16
17:00	2400	1.06	:14	1440	1.10
:02	1620	1.04	:16	1680	1.08
:04	2520	1.04	:18	1500	1.04
AVG	1911	1.052		1590	1.073
17:06	1800	1.03	18:20	1500	1.03
:08	2000	1.08	:22	1800	1.07
:10	1020	1.04	:24	1800	1.04
:12	1740	1.08	:26	2070	1.20
:14	1730	1.04	:28	1380	1.10
:16	1200	1.04	:30	1350	1.12
:18	1380	1.05	:32	1200	1.04
:20	1350	1.03	:34	1920	1.06
:22	2220	1.04	:36	1200	1.11
:24	1740	1.17	:38	1500	1.07
AVG	1618	1.060	AVG	1572	1.084

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

SUBJECT
COMPUTATION DATA REDUCTION - FLOW
COMPUTED BY C. Colvin CHECKED BY DATE

20 DECEMBER 1988

TIME	AVG FLOW	AVG DENSITY
18:40	1200	1.09
:42	1650	1.05
:44	1050	1.16
:46	1200	1.11
:48	1500	1.13
:50	1800	1.04
:52	1800	1.15
:54	1500	1.14
:56	1700	1.10
:58	1350	1.15
AVG	1340	1.122
19:00	1500	1.15
:02	1620	1.08
:04	1800	1.20
:06	1380	1.13
:08	1500	1.06
:10	1620	1.04
:12	1800	1.05
:14	1740	1.23
:16	1560	1.03
:18	1920	1.05
	1644	1.102
19:20	1050	1.10
:22	1500	1.06
:24	1680	1.08
:26	750	1.06
:28	1020	1.05
:30	1620	1.05
:32	300	—
19:42	1560	1.03
:44	2060	1.12
AVG	1409	1.069

TIME	AVG FLOW	AVG DENSITY
19:46	1200	1.08
:48	1200	1.05
:50	1620	1.29
:52	1350	1.13
:54	1350	1.09
:56	1350	1.07
:58	1650	1.17
20:00	1320	1.14
:02	1620	1.10
:04	1380	1.05
AVG	1404	1.117
20:06	1980	1.07
:08	1200	1.11
:10	900	1.05
AVG	1360	1.08

4-W QUANTITY CALCULATIONS

NED FORM 223
27 Sept 49

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U. S. ARMY

PAGE

SUBJECT New Bedford Harbor - Superfund Site - Pilot Study

COMPUTATION DREDGING AREA #1 - QUANTITY CALCULATION

COMPUTED BY _____ CHECKED BY _____ DATE _____

STATION	(ft²) AREA	(ft²) AVERAGE AREA	(ft³) Volume
0+00	185.6		
		416.7	10417.5
0+25	647.8		
		722.2	18055.0
0+50	796.6		
		829.0	20725.0
0+75	861.3		
		891.6	22290.0
1+00	921.9		
		873.2	21830.0
1+25	824.4		
		793.8	19845.0
1+50	763.1		
		774.7	19367.5
1+75	786.3		
		768.8	19220.0
2+00	751.3		
		466.3	11657.5
2+25	181.3		
		90.7	2267.5
2+50	0.0		

165,675/27

6,136 cy

Note:

1. Stations run west to east

2. TOTAL MATERIAL PLACED IN CDF 6,136 cy

   CONTAMINATED MATERIAL 2207 cy

   CLEAN MATERIAL 3929 cy

3. The Cutterhead and Matchbox dredges made one pass over their respective work areas while removing contaminated sediment. The Mudcat dredge made two passes.

CLEAN MATERIAL REFERS TO THE MATERIAL REMOVED IN THE EXCAVATION OF THE CAD CELL.

NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

NED FORM 223
27 Sept 49

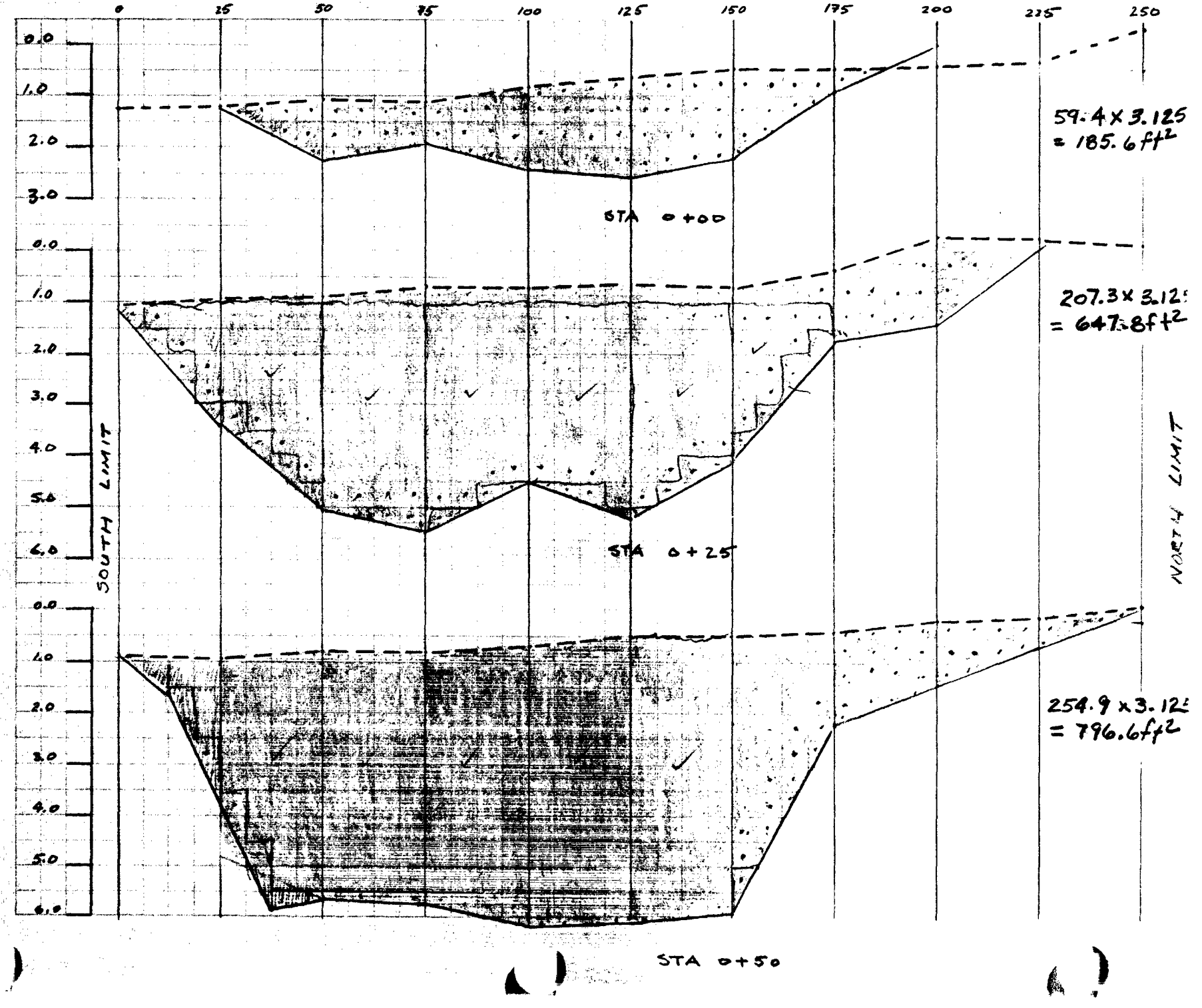
SUBJECT New Bedford Harbor - Superfund Site - Pilot Study

COMPUTATION

COMPUTED BY WBM CHECKED BY

DATE 23 February

PAGE 1 OF 4



NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

NED FORM 223
27 Sept 49

SUBJECT New Bedford Harbor - Superfund Site - Pilot Study

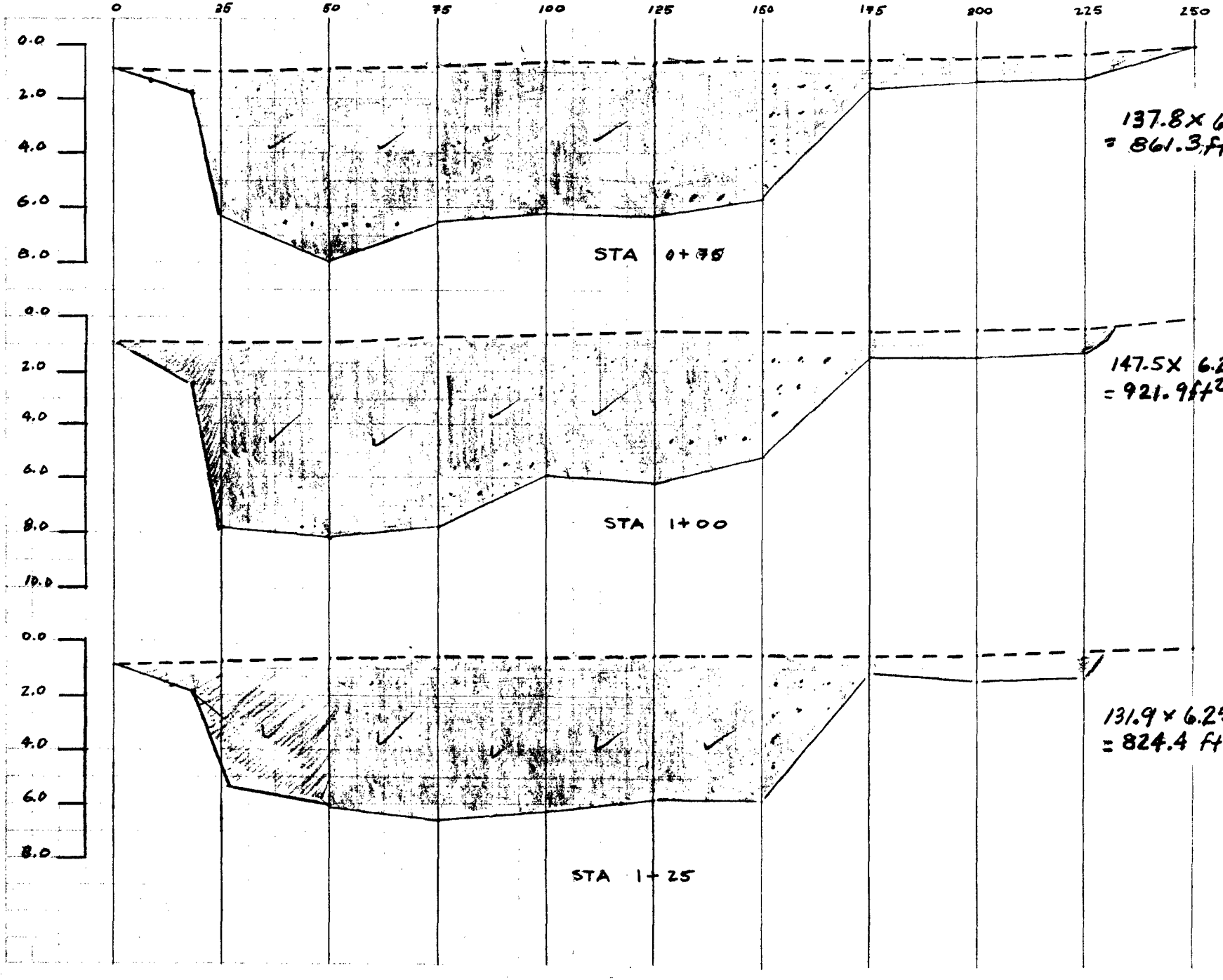
COMPUTATION

COMPUTED BY WBM

CHECKED BY

DATE 23 February

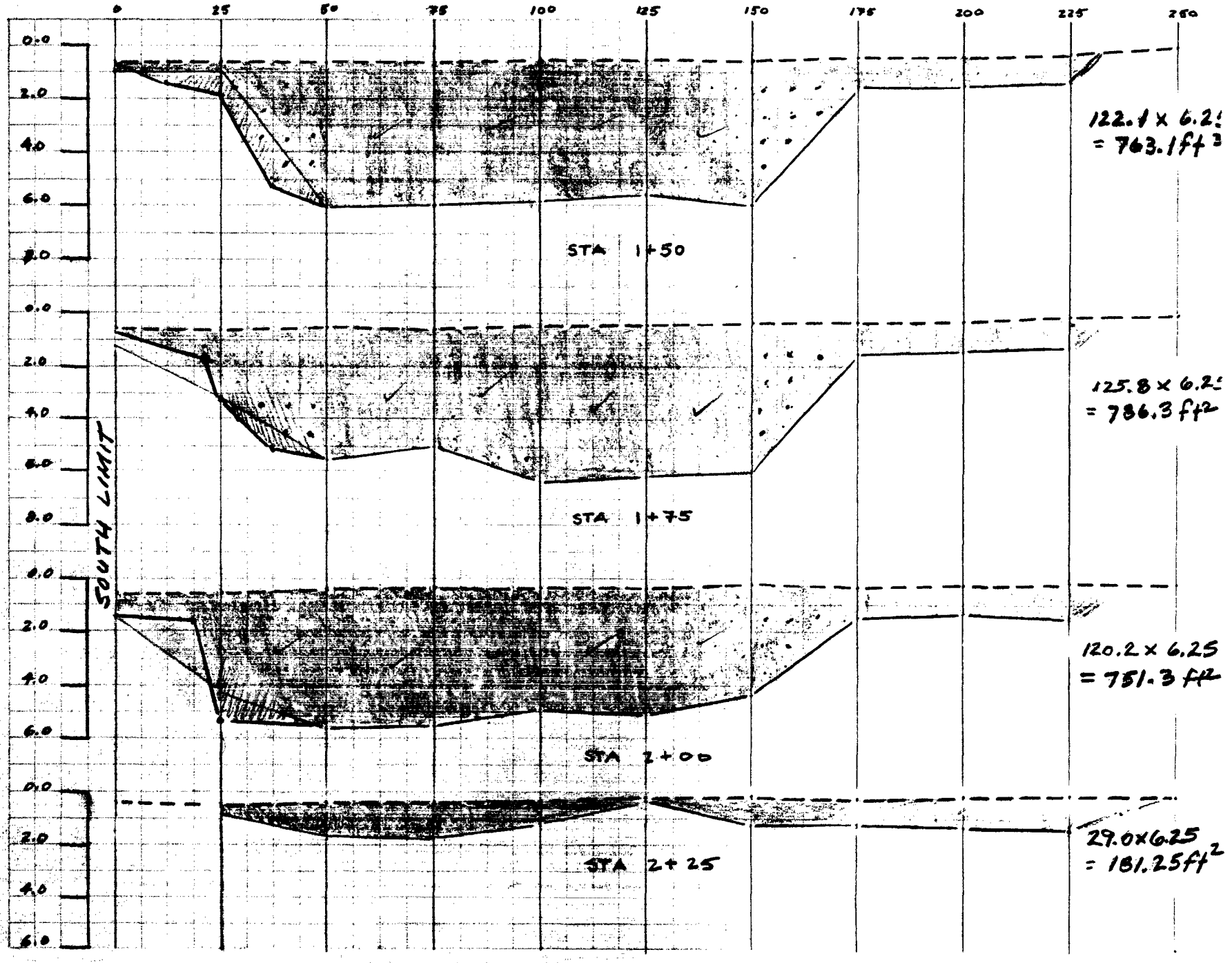
PAGE 2 of 4

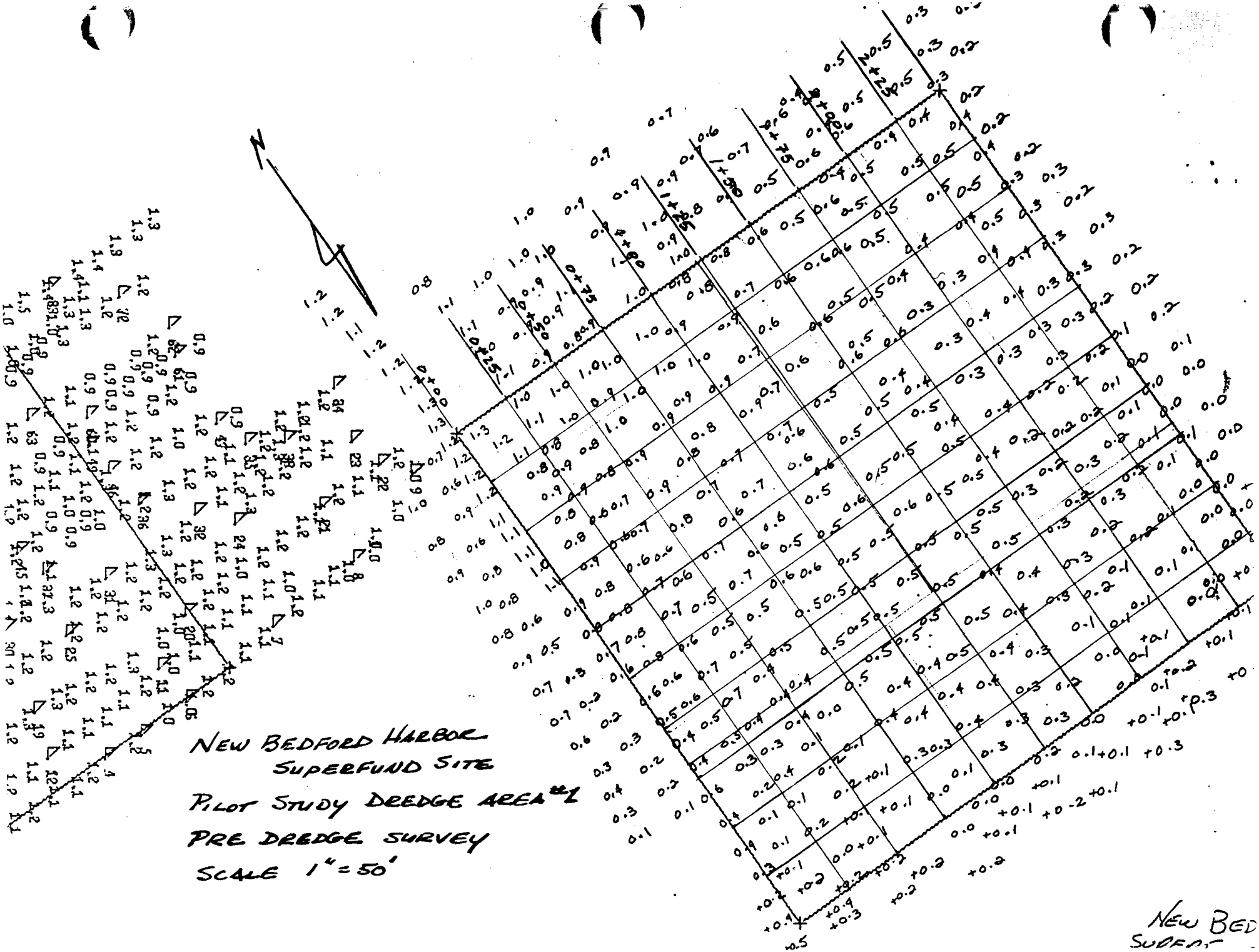


NEW ENGLAND DIVISION
CORPS OF ENGINEERS, U.S. ARMY

NED FORM 223
27 Sept 49

SUBJECT New Bedford Harbor - Superfund Site - Pilot Study
COMPUTATION
COMPUTED BY WBM CHECKED BY
DATE 23 February
PAGE 3 of 4




NEW BEDFORD HARBOR
SUPERFUND SITE
PILOT STUDY DREDGE AREA #1
PRE DREDGE SURVEY
SCALE 1" = 50'
NEW BED
SUPERF

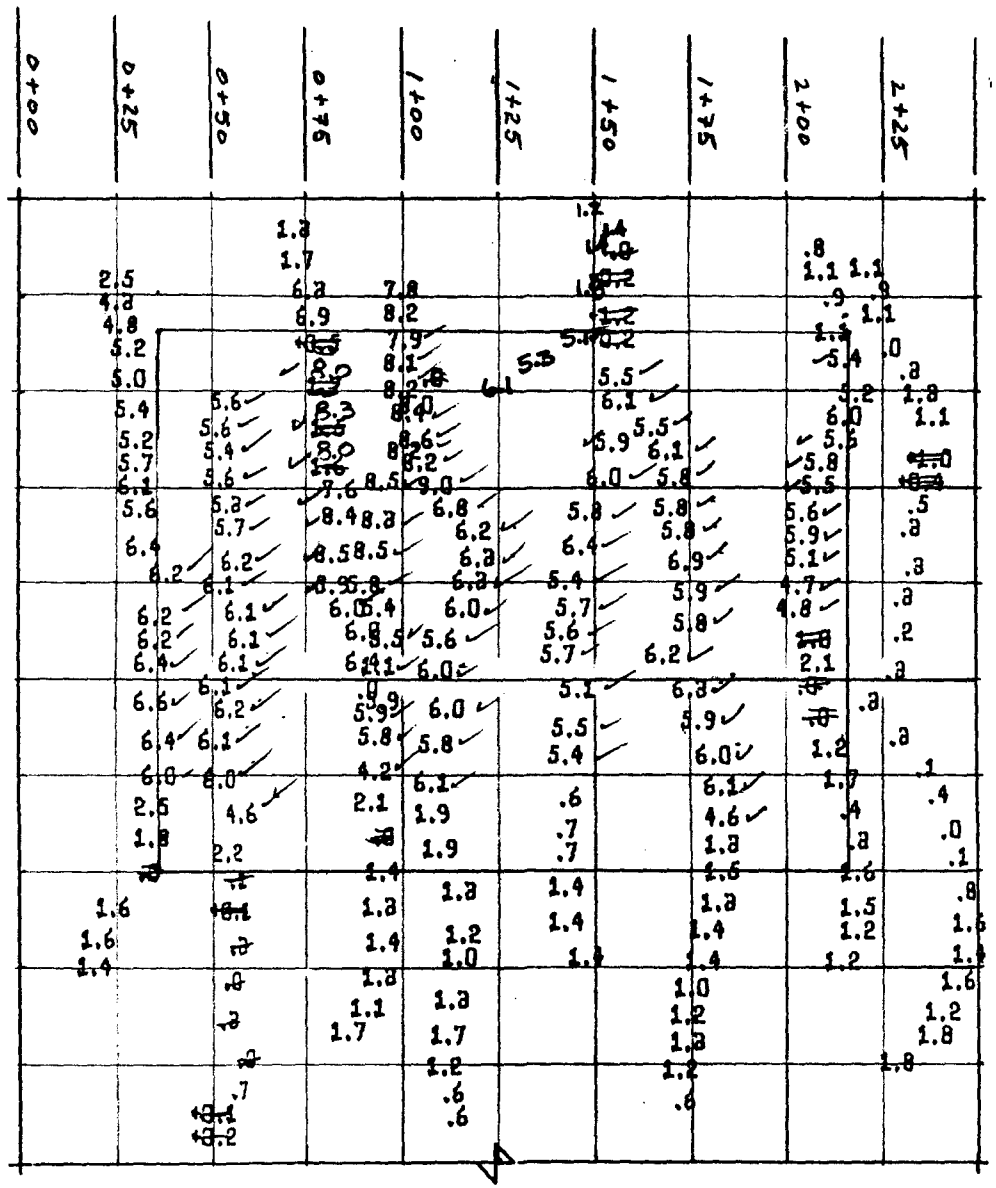
ED, MA
TER DREDGE
SS #3 McIntyre
Ref. Bk R&H 2309
Scale 1" 50'
Datum MLW

NEW BEDFORD HARBOR
SUPERFUND SITE

PILOT STUDY DREDGE
AREA #1

SURVEY AFTER
COMPLETION OF
DREDGING

SCALE 1" = 50'



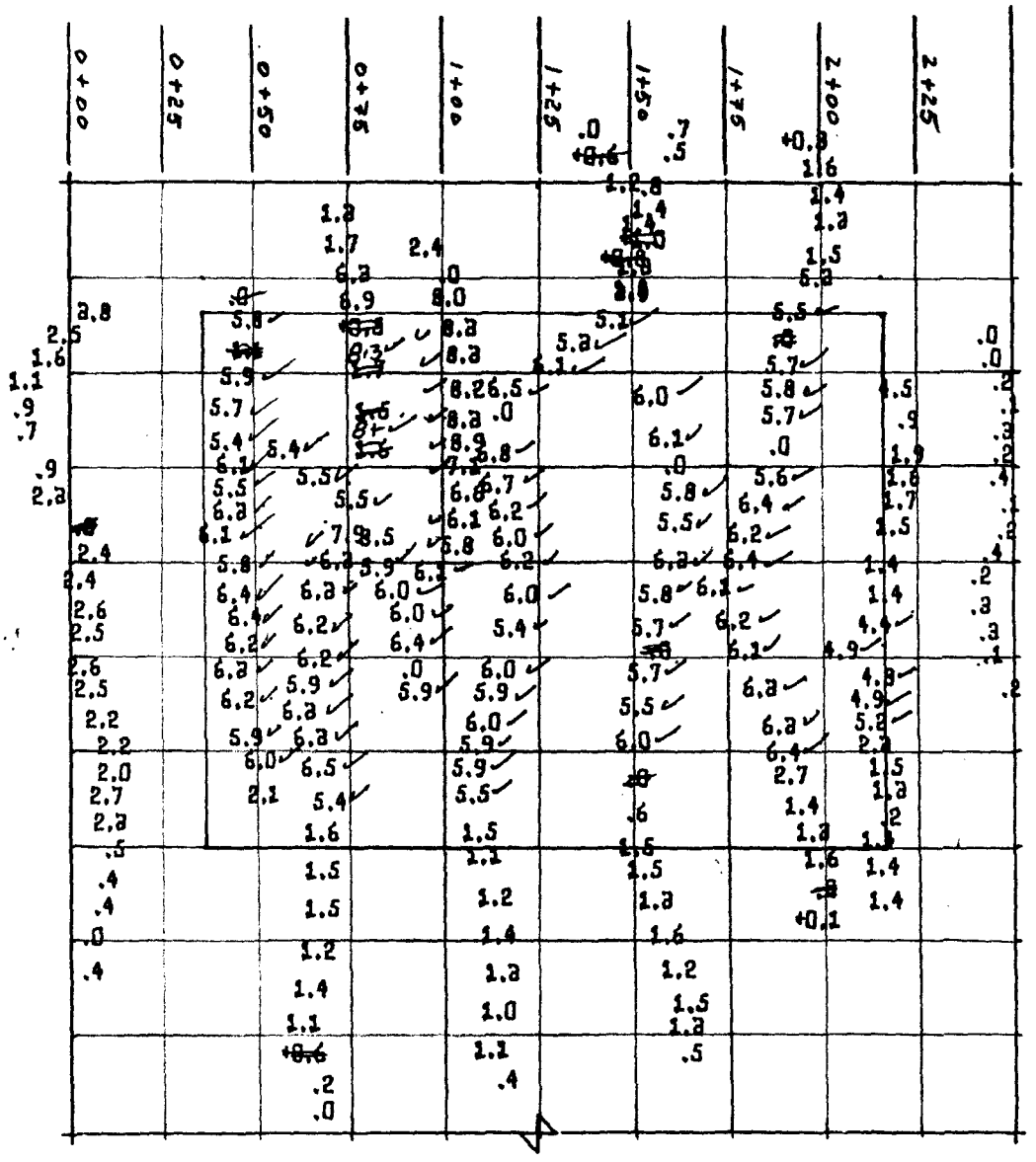
757965
241605

757965
241855

Average 6.4
Soundings (94)

FIELD PLOT 1 of 2

NEW( )ORD, MA
AFTER DREDGE
ESS #3 McIntyre
Ref. BL R&H 2309
Scale 1"=50'
Datum MLW
DREDGE AREA #1
SURVEY AFTER
COMPLETION OF
DREDGING



Aug - 6.1
Sounding (91)

Plot
2 of 2

1/6/89