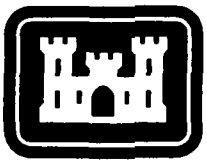
7.5 NBH



SDMS DocID 447610

Superfund Records Center
SITE: New Bedford
BREAK: 7.5
OTHER: 447610

Total Environmental Restoration Contract

New England District

USACE Contract No. DACW33-94-D-0002

TETRA TECH FW, INC.

USACE Contract
No. DACW33-94-D-0002
Task Order No. 24

TOTAL
ENVIRONMENTAL
RESTORATION
CONTRACT

Final
After Action Report
For
North Lobe
Dredging

New Bedford Harbor
Superfund Site
Operable Unit No. 1
New Bedford, MA

May 2005

Doc. No.
2005-24-0011 | 14.8

Prepared for

U.S. Army Corps of Engineers
New England District
Concord, Massachusetts

by

TETRA TECH FW INC

USACE CONTRACT NO. DACW33-94-D-0002
TASK ORDER NO. 024
TOTAL ENVIRONMENTAL RESTORATION CONTRACT

FINAL
AFTER ACTION REPORT
FOR
NORTH LOBE DREDGING

NEW BEDFORD HARBOR SUPERFUND SITE
OPERABLE UNIT NO. 1
NEW BEDFORD, MASSACHUSETTS

May 2005

Prepared by

Tetra Tech FW, Inc.
133 Federal Street, 6th Floor
Boston, Massachusetts 02110

2005-24-0011 | 14.8
5/17/05

TETRA TECH EC, Inc.

June 14, 2005
2005-24-0028
No Response Required

Maurice Beaudoin
Resident Engineer
US Army Corps of Engineers
103 Sawyer Street
New Bedford, MA 02746

Subject: USACE CONTRACT NO. DACW33-94-D-0002
TOTAL ENVIRONMENTAL RESTORATION CONTRACT (TERC)
TASK ORDER NO. 24 - NEW BEDFORD
North Lobe Dredging After Action Report

Dear Mr. Beaudoin:

Tetra Tech, EC, Inc. is pleased to submit the Final North Lobe Dredging After Action Report along with a 4025 submittal form for your approval. Also included is a consolidated response to comments on the draft versions of the document. This has gone through extensive review and comment by C. Turek of your office. Therefore, according to C. Turek's direction we are distributing this as a final copy to the EPA and DEP as noted on the attached 4025. In addition, according to C. Turek's direction, we are sending a compact disc (CD) with electronic versions of the application files as well as a PDF version of the entire document to Gary Morin, USACE PM and Jim Brown, EPA Remedial Project Manager.

If you have any questions, please call (617-457-8259) or E-mail (george.willant@tteci.com) me.

Sincerely,

George M. Willant
Project Manager

cc: G. Morin, USACE*
M. Anderson, USACE
J. MacKay, USACE
D. Dickerson, EPA
J. Brown, EPA*
P. Craffey, DEP
G. Willant
R. Gleason (letter only)
TO 24 File 1.1, 14.8

* Includes electronic version on CD

133 Federal Street, 6th Floor, Boston, MA 02110
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814000 814100 814200 814300 814400 814500

2698000 2697900 2697800 2697700 2697600 2697500 2697400 2697300 2697200

C007-001
C007-002
C007-003
C007-004
C007-005
C007-006
C007-010
C007-008
C007-007
C007-011
C007-009

Dredge Area C

C008-001-A
C008-002-A
C008-003-A
C008-004
C008-001
C008-002
C008-003
C008-004-A
C008-005-A
C008-006-A
C008-007-A
C008-008-A
C008-005
C008-007
C008-008
C008-009-A

Dredge Area D

Composite
C009-001
(a,b,c,d,e)

Composite
C010-001
(a,b,c,d,e)

Dredge Area A

Dredge Area B

814000 814100 814200 814300 814400 814500

- Confirmatory Sample Locations
- Topographic and Bathymetric Contours
- North Lobe Dredge Areas
- Buildings

N

0 50 100 Feet

TETRA TECH FW, INC

NEW BEDFORD HARBOR SUPERFUND SITE
BRISTOL COUNTY, MASSACHUSETTS

Figure 4-2
North Lobe Dredging
Proposed Dredge Areas and
Actual Confirmatory Sampling Locations

DRAFT: DECEMBER 31, 2003

MA STATE PLANE
NAD 83 FEET
NGVD 29
1 FOOT CONTOUR INTERVAL

P:\Tetra-5197\NBH\GIS\WORKDIR\03-n1220407-001.apr
North Lobe Sampling Layout

TETRA TECH EC, INC.

June 21, 2005
2005-24-0031
No Response Required

Maurice Beaudoin
Resident Engineer
US Army Corps of Engineers
103 Sawyer Street
New Bedford, MA 02746

Subject: USACE CONTRACT NO. DACW33-94-D-0002
TOTAL ENVIRONMENTAL RESTORATION CONTRACT (TERC)
TASK ORDER NO. 24 - NEW BEDFORD
North Lobe Dredging /North of Wood Street After Action Reports

Dear Mr. Beaudoin:

Per your request, we have made minor corrections to the reports above and are redistributing the corrected pages.

For North of Wood Street:	replace page 10-1 Corrected 4025 form
For North Lobe Dredging:	replace page 1-11

We are also distributing new copies of the CD to those who received the earlier version.

If you have any questions, please call (617-457-8259) or E-mail (george.willant@tteci.com) me.

Sincerely,

Kathleen Clifford for G.W.

George M. Willant
Project Manager

cc: G. Morin, USACE*
C. Turek, USACE
M. Anderson, USACE
J. MacKay, USACE
D. Dickerson, EPA* (NWS)
J. Brown, EPA* (NLD)
P. Craffey, DEP
G. Willant
R. Gleason (letter only)
TO 24 File 1.1, 14.8

* Includes electronic version on CD

133 Federal Street, 6th Floor, Boston, MA 02110
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Table 1-3
Summary of Compliance Demonstration Areas and Confirmation Sampling Results for North Lobe Dredging

Dredge Area	Contract Volumes (CY)		Volume of Sediments Removed (CY)	No. of Sample Locations	Surface (0 to 6") Average PCB Conc. (ppm)	Comments
	Net	Gross				
Area A	250	280	331	5	3.2	
Area B	120	180	173	6	20	
Area C	900	1,130	1,307	11	10	The volume of sediments removed includes 255 CY of additional dredging due to results of confirmation sampling.
Area D	2,200	2,500	2,134	9	35	
Total	3,470	4,090	3,945	31	-	

1.6 Key Subcontractors

TtFW provided construction management for the work.

Maxymillian Technologies, Inc. (Maxymillian) performed the following work as a subcontractor to TtFW:

- Dredging of contaminated materials;
- Transportation of dredged materials to the DDA at Sawyer Street; and
- Processing of materials at DDA and placement in Cell No. 1 for future desanding, dewatering, and off-site disposal.

Bourne Consulting Engineering (BCE) performed the bathymetric surveys as a subcontractor to Maxymillian.

Kevric Company, Inc. (Kevric) performed air sampling as a subcontractor to TtFW. Kevric subcontracted the analysis of the collected samples to Axys Analytical Ltd.

TtFW collected the confirmation samples. Severn Trent Laboratories performed laboratory testing of the sediment samples.

10.0 CONTACT INFORMATION

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Massachusetts Department of Environmental Protection
Paul Craffey, State Coordinator
Massachusetts Department of Environmental Protection
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Boston, MA 02108
617.292.5591

United States Army Corp of Engineers
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USACE - New England District
USACE - New Bedford Resident Office
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Cynthia Jenson and Tony Whall
Landscape Architects
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George Willant
Chief Project Manager
Tetra Tech FW, Inc.
133 Federal Street, 6th Floor
Boston, MA 02110
617.457.8259

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on reverse side prior to initiating this form)*	DATE 7-Jun-05	TRANSMITTAL NO. 24-WS.21.06-01-001

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by the Contractor)

TO:	FROM:	CONTRACT NO:	CHECK ONE:
U.S. Army Corps of Engineers 103 Sawyer St. New Bedford, MA 02746 Attention: M. Beaudoin	TetraTech FW, Inc. 133 Federal Street Boston, MA 02110	DACW33-94-D-0002	THIS IS A NEW TRANSMITTAL X THIS IS A RESUBMITTAL OF TRANSMITTAL _____

SPECIFICATION SECTION NO: (Cover only one section with each transmittal)	PROJECT TITLE AND LOCATION:
NA	New Bedford Harbor Superfund Project, New Bedford, MA

ITEM NO. a.	DESCRIPTION OF ITEM SUBMITTED (Type, size, model number, etc.) b.	MFG. OR CONTR. CAT. CURVE DRAWING OR BROCHURE NO. (See instruction No. 8) c.	NO. OF COPIES d.	CONTRACT REFERENCE DOCUMENT SPEC. PARA. NO. e.	CONTRACT REFERENCE DOCUMENT DRAWING SHEET NO. f.	FOR CONTRACTOR USE CODE g.	VARIATION (See instruction No. 6) h.	FOR CE USE CODE i.
1	Final North of Wood St. After Action Report	na	1	na	na	GA	na	

REMARKS

TtFW Document #: 2005-24-0010

Distribution:
M. Beaudoin/C. Turek (1)
G. Morin
M. Anderson
D. Dickerson
J. Brown
P. Craffey
G. Willant
TO 24 File 13.7

I certify that the above submitted items have been reviewed in detail and correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

North Lobe Dredging After Action Report
Consolidated Response to Comments

There are two sets of comments and response to comments that built upon each other. The following is the key to the comment/response cycle.

USACE October 1, 2004 Comments
TTFWI Responses to USACE comments on October 1, 2004.
* **USACE Replies to TTFWI Responses on December 13, 2004.**
- *TTFWI responses to December 13, 2004 Comments.*

1. Reference TTFWI's "Draft After Action Report for North Lobe Dredging" dated April 2004 (Trans. No. N1.02.06-02-001).

TtFW has updated the April 2004 draft North Lobe Dredging After Action Report incorporating the following USACE comments. The cost in Section 7 have been updated to reflect the costs in the updated cost report in Appendix F which included the final work performed at the DDA after the April 2004 draft was prepared.

2. I have reviewed the subject report and submit the following comments:

- Page iii, List of Tables: Change "Verification" to "Confirmatory".
  - Changes made as indicated in the List of Tables and in other areas of the report as. required.
  - * Accepted

- Page iii, List of Appendices: After "Appendix C.5 Area D" insert "Appendix C.6 Plan View of All Areas" (as stamped & dated 1/03/04).
  - Appendix C.6 was added as suggested. This is BCE Drawing 23468-02-01, dated 11/26/03. If USACE can supply a copy of the stamped and dated 1/03/04 drawing, then that version of the drawing will be included in the final report.
  - * USACE will keep the original and supply a copy (attachment) to be inserted into the Report. Where is TTFWI's copy? TTFWI should have requested a copy prior to knowingly issuing an incomplete Report.
    - *A copy of the drawing provided by the USACE has been included in the report.*

- Page iii, List of Appendices, Appendix C: Before "As-Built Surveys" add "BCE's".
  - Changes made as indicated. Also other references to Bourne Consulting

Engineers (BCE) have been updated as required.

* Accepted.

- Page iii, List of Appendices, Appendix E: Change "Water Quality Monitoring Data" to "ENSR's Water Quality Monitoring Summary Report".
  - The title of Appendix E was changed. The USACE did provide a copy of the text for the ENSR report and has been included in the new draft for the NLD After Action Report. USACE did not provide any of the figures, tables or appendices to that report.
  - * USACE will provide the copies (attachments). TTFWI should have requested the copies prior to knowingly issuing an incomplete Report.
    - *Copies of attachments provided by the USACE have been included in the report.*

- Page iii, List of Appendices: Add "Appendix J Final Government Acceptance Inspections" (pre-final & final).
  - This appendix was added to the List of Appendices. USACE did provide a copy of the final acceptance inspection dated December 15, 2003 and signed by the USACE on December 17, 2003, which is included in the updated NLD After Action Report.
  - * The inspection form provided by USACE was actually a pre-final, since it contained items yet to be corrected. TTFWI should sign the pre-final inspection form and submit a signed final inspection form as well.
    - *G. Willant, TTFWI Project Manager signed the Pre-Final and Final Inspection form. Both are included in Appendix J.*

- Page iii, List of Appendices: Add "Appendix K Photo Log".
  - This appendix was added to the List of Appendices. The appendix in the updated NLD After Action Report does include the six photographs which were taken for the NLD work.
  - * There were more than six photos taken by TTFWI. USACE will forward these via E-mail.
    - *Copies of the photos provided by the USACE have been included in the report.*

- Page iii, List of Appendices: Add "Appendix L Confirmatory Sampling Data".
  - This Appendix L was added to the List of Appendices. The Confirmatory Sampling Report was separate submittal made to the USACE, now included as an appendix to the NLD After Action Report.
  - * Include a signed copy of the Eng. Form 4025 indicating that the Report has been approved. Figure B-1 of the Report is illegible and should be replaced.
    - *The signed Eng. Form 4025 has been included as well as a legible copy of Figure B-1.*

- Page iii, List of Appendices: Add "Debris Disposal Area As-Built".
  - This Appendix M was added to the List of Appendices. The as-built drawing for the as-built conditions as indicated by the USACE has been included for this appendix.
  * USACE provided TTFWI with a rough sketch indicating what information was missing from the original. It was not intended to be copied and used as the as-built. USACE requests that the actual survey data be utilized for the limits of steel debris placement and the elevation of the I-beam deadmen.
    - *The survey data can not be found. The drawing that was included with the draft report is all that is we have for the location of the deadmen and the steel debris. The following note will be added to the drawing, "Actual survey data is not available. Location of steel I beam deadmen and limits of steel debris placement are approximate."*

- Page iii, List of Appendices, General: Use full-size drawings where applicable.
  - Will do this where applicable and where full size drawings are available.
  * There are currently no full size drawings included. Appendices A, B & C.6 should be full size drawings.
    - *Full size drawings have been included in the report.*

- Page 1-1, Section 1.0, 2nd para., 2nd sent.: Change "Remediation" to "Remedial".
  - Changes made as indicated.
  * Accepted.

- Page 1-1, Section 1.0, 3rd para., 1st sent.: Add "of" between "removal" and "about".
  - Changes made as indicated.
  * Accepted.

- Page 1-1, Section 1.0, 3rd para., last sent.: Delete "is to be" and add "was"; delete "March 2004" and add "April 2004".
  - Changes made as indicated.
  * Accepted.

- Page 1-1, Section 1.0, last sent.: Change "latter" to "later".
  - Changes made as indicated.
  * Accepted

- Page 1-2, 1st para., 3rd sent.: Add "and water treatment" after "dewatering".
  - Changes made as indicated. Deletion of new water treatment plant at Area C was deleted after the Draft NLD AAR was written.
  * Accepted.

- Page 1-2, 2nd para.: Figures 1-2 and 1-3 are not included.

- These figures are in final report.
* Accepted.

- Page 1-2, 2nd para., 4th sent.: Change "After Action" to "Remedial Action Completion Report".
  - Changes made as indicated.
  * Accepted.

- Page 1-2, 2nd para., 5th sent.: Change "will be" to "is".
  - Changes made as indicated. Packer is now in the process of constructing the new docking facilities at the North Lobe.
  * Accepted.

- Page 1-2, 2nd para., last sent.: Figure 1-4 is labeled "Sawyer Street Facilities" in the Table of Contents which does not seem to fit this text reference. It is also not included.
  - Figure 1-4 will be in final report. Text is added in Section 1.2 to provide explanation of the DDA and Cell No. 1 at Sawyer Street, and how these areas were used for processing/storing materials dredged from the North Lobe.
  * Accepted.

- Page 1-7, 1st sent.: Reference the report (with Trans. #) that contains the sediment characterization data for this area.
  - Did provide the document name, transmittal number and report date that provides the characterization sampling performed from August 2001 to May 2003.
  * Disagree. Transmittal number was not provided.
    - *Transmittal numbers have been included.*

- Page 1-7, 1st para.: Figures 1-5 and 1-6 are not included.
  - Figures 1-5 and 1-6 are included in the updated draft report.
  * Accepted.

- Page 1-7, last para., 1st sent.: Was "material characterization report" the official title? If so, capitalize it and include the Trans. #.
  - The official name was "North Lobe Dredging Area Characterization Report", prepared by ENSR Corporation for the USACE, and was dated August 7, 2003. The USACE transmitted a copy of this report to TTFW on August 11, 2003. Name of report was corrected.
  * Accepted.

- Page 1-10, 2nd bullet: Delete "egg-shaped".
  - Changes made as indicated.
  * Accepted.

- Page 1-10, Section 1.4, 1st sent.: Include the Trans. #s.

- Provided Transmittal numbers and dates that (1) the North Lobe Dredging Confirmation Sampling Plan and (2) Draft North Lobe Confirmatory Sample Results reports were transmitted to the USACE.

* Disagree. The Results Report was referenced as Appendix L; please provide a signed approval sheet. The Plan, however, was removed from the text without request; please reinsert and include transmittal number.

  - *A signed approval sheet has been included in Appendix L and the transmittal number has been included in the first sentence of Section 1.4.*

- Page 1-10, Section 1.4, 2nd para., last sent.: Change "Bourne" to "BCE".
  - Changes made as indicated.
  * Accepted.

- Page 1-10, Section 1.4, 3rd para., last sent.: Change "testing" to "analysis". Add the following sentence "All confirmatory sampling results are summarized in Appendix L.".
  - Changes made as indicated.
  * Accepted.

- Page 1-11, Section 1.6, last sent.: "Axys" is not listed in "Abbreviations and Acronyms".
  - "Axys" is the name of the company that tested the collected air samples for Kevric. TTFW to provide full name for "Axys".
  * Accepted.

- Page 2-1, 1st sent.: Delete "of Wood Street Remediation work" and add "Lobe Environmental Dredging project".
  - Corrections were made as indicated.
  * Accepted.

- Page 2-1, Table 2-1, Date 8/25/03: Change "Setup" to "Install".
  - Changes made as indicated.
  * Accepted.

- Page 2-1, Table 2-1, Date 8/26/03 – 9/30/03: Change "Setting up" to "Install".
  - Changes made as indicated.
  * Accepted.

- Page 2-1, Table 2-1: Change "March 2004" to "April 21, 2004".
  - Changes made as indicated. It is noted that the Draft NLD AAR was written in March before the final grading of the DDA was performed.
  * Accepted.

- Page 3-1, Section 3.0: Include subsections describing the Performance Standards for

water quality criteria and [PCB] cleanup goal of 50 ppm.

- o Did add Sections 3.5 and 3.6 to address these two points.
- * There are errors in Section 3.5. Change "200" to "300"; change "10" to "50"; and add "above background levels" at the end of the sentence.
    - *Errors have been fixed and the sentence has been revised accordingly.*

- Section 4.0, General: Insert references to appropriate photos in the photo log throughout this section.
    - o There were only six pictures of the North Lobe Dredging Operations. Five photos were of dredging Area D and one was of the scow used to transport the dredged materials to the DDA. Reference to these photos was added to Section 4.5. There were no photos of the DDA operations.
    - * Disagree. Additional photos taken by TTFWI will be E-mailed separately.
        - *USACE provided photographs are included in Appendix K. Reference to photographs of DDA operations has been inserted in Section 4.8.*

- Page 4-1, Section 4.1: After Item #10 insert "Redredge Area C".
    - o Changes made as indicated.
    - * Accepted.

- Page 4-1, Section 4.1: Add "15. Cut and spread debris at DDA." and "16. Cap and grade DDA.".
    - o These were added as points 16 and 17.
    - * Accepted.

- Page 4-1, Section 4.3, 2nd para.: After the last sentence, add "See Appendix E for ENSR's Water Quality Monitoring Summary Report".
    - o Changes made as indicated.
    - * Accepted.

- Page 4-2, Section 4.5, 1st sent.: Change "-mount 100,000" to "-mounted 100,000 pound"; after "3-CY" delete "hydraulic".
    - o Changes made as indicated.
    - * Accepted.

- Page 4-2, Section 4.5, 4th para., 1st sent.: Delete "clam" and change "equipped with GPS" to "mounted with a GPS antenna".
    - o Changes made as indicated.
    - * Accepted.

- Page 4-3, Section 4.5, last para., last sent.: Change "pending" to "before receiving".
    - o Changes made as indicated.

    * Accepted.

- Page 4-3, Section 4.5: After the last sentence, add "This could be done for all the areas except the final area, which was the redredge of Area C.".
    o Changes made as indicated.
    * Accepted.

- Page 4-3, Section 4.6: After the last sentence, add "See Appendix E for ENSR's Water Quality Monitoring Summary Report".
    o Changes made as indicated.
    * Accepted.

- Page 4-4, Section 4.8, 3rd para., 2nd sent.: Delete "add water to the"; and after "sediments" add "from the +2" material".
    o Wording was revised to reflect this suggested change.
    * Accepted.

- Page 4-4, Section 4.9, 1st sent.: Include the Trans. #s.
    o TTFW to add transmittal numbers for the FSP and QAPP plans there used for North Lobe sampling and testing.
    * Disagree. Transmittal numbers have not been included.
        - *Transmittal numbers have been included.*

- Page 4-4, section 4.9.1, 1st sent.: Figure 4-1 is not included.
    o Figure 4-1 is included in the updated draft report.
    * Accepted.

- Page 4-4, Section 4.9.1, 2nd para.: Delete the first sentence.
    o Sentence was deleted.
    * Accepted.

- Page 4-4, Section4.9.1: After the last sentence, add "See Appendix D for complete Air Sampling Data.".
    o Sentence was added.
    * Accepted.

- Page 4-6, Section 4.9.2: In the title, change "Confirmation" to "Confirmatory".
    o Changes made as indicated.
    * Accepted.

- Page 4-6, Section 4.9.2, 2nd sent.: Figure 4-2 is not included.
    o Figure 4-2 was included in the updated draft report.
    * Accepted.

- Page 4-6, Section 4.9.2, last sent.: Include Trans #s. After the last sentence, add "See Appendix L for Confirmatory Sampling Results". Include in Appendix L a plan view of the actual sample locations and sample profiles showing results at half-foot intervals.
    - o Added the transmittal number for the NBH FSP and QAPP plans.
    - * Disagree. Transmittal numbers are not included.
        - *Transmittal numbers have been included in the text.*
    - o Sentence was added as suggested.
    - * Accepted.
    - o Appendix L in the updated draft report does include a copy of the Confirmatory Results for the North Lobe. Plan of actual sample locations has been included, but there were no sample profile drawings generated.
    - * Sample profiles were previously generated by TTFWI for the re-dredge of Area C only and are requested to depict actual sample results and document the condition that was evaluated by USEPA for acceptance.
        - *The USACE has provided a copy of the referenced sample profles. The following changes have been made to include this graphical depiction in the report: In Section 4.9.2, the last sentence has been revised to say "See Appendix L.1 for North Lobe Dredging Confirmatory Sampling Results Report. See Appendix L.2 for a Graphical Depiction of Confirmatory Sampling Results." In addition, Appendix has been revised to include two sections described above.*

- Page 5-1, last sent.: Include Trans #. After the last sentence, add "See Appendix J for Pre-Final and Final Government Acceptance Inspection Forms."
    - o Did provide transmittal number for the North Lobe Dredging Confirmation Sample Results Report.
    - * Disagree. In fact, the sentence referring to the Results Report was deleted. Please reinsert and include transmittal number.
        - *The deleted sentence has been reinserted.*
    - o Sentence was added as suggested.
    - * Disagree. Sentence was added but revised from what was requested. The inspection form included in Appendix J is a pre-final, since it refers to items required to be complete prior to final acceptance.
        - *Sentence has been revised as requested and a Final Inspection Report has been included in Appendix J.*

- Page 7-1, Section 7.1, 1st sent.: The cost report predates the current version of the After Action Report. Update the cost report and include as Appendix F once this After Action Report has been finalized.
    - o Did provide the October 2004 updated cost report. The cost values in Section 7 were updated to reflect the final cost report. Final NLD After Action Report will be updated to reflect the final costs for the After Action Report.
    - * Accepted.

- Page 7-2, last Activity: Change "Remedial" to "After" for consistency.
  - o This change was made, but the title in the cost report for Activity N1.21.06.91 will remain "Remedial Action Report".
  - * Accepted.

- Page 7-6, Section 7.4, 1st sent.: Change "I" to "H".
  - o Changes made as indicated.
  - * Accepted.

- Page 8-3, Section 8.5, 2nd sent.: After "entitled" add "to".
  - o Changes made as indicated.
  - * Accepted.

- Page 9-1, Section 9.0, USACE info: Include pertinent info for Maurice Beaudoin and Robert Simeone. Change Chris Turek's phone number to "978-318-8234".
  - o Information added as requested. TTFW to confirm addresses and phone numbers for Mo and Bob.
  - * Please change Maurice Beaudoin's phone number to 978-318-8223.
  - o Turek's phone number was changed.
  - * Accepted.

Additional USACE comments, as of 12/13/04.

- Page 4-3, 3rd para, last sent.: Change "loaded into" to "segregated and loaded into separate".
  - *Sentence has been revised accordingly.*

- Page 7-2, Section 7.2.3: This is new text which unfairly puts all the blame of the cost overrun for this report on USACE & USEPA. Review comments that were generated were warranted due to the quality of the product. Unnecessary review cycles have also contributed. By TTFWI's own admission, the original draft was issued prior to project completion and the subject revised draft was issued knowing that certain attachments were missing and could be supplied by USACE. TTFWI has also ackowledged difficulty recovering its own information. The text should be revised to reflect TTFWI's ownership of the cost overrun.
  - *Section has been revised to read as follows: "This activity had a $23,794 (111.10%) cost overrun from what was originally estimated due the report being more detailed in terms of sediment sampling mapping and data presentation than originally anticipated in the original cost estimate and due to additional review cycles because of missing or incomplete data in original drafts".*

Note that the previous version of this report was submitted through the submittal process

(Trans. No. N1.02.06-02-001). The current version was not. Please assure that the next and hopefully final version is a “resubmittal”.

- *A new Eng. Form 4025 will provided as a resubmittal.*

USACE CONTRACT NO. DACW33-94-D-0002
TASK ORDER NO. 024
TOTAL ENVIRONMENTAL RESTORATION CONTRACT

FINAL
AFTER ACTION REPORT
FOR
NORTH LOBE DREDGING

NEW BEDFORD HARBOR SUPERFUND SITE
OPERABLE UNIT NO. 1
NEW BEDFORD, MASSACHUSETTS

May 2005

Prepared by

Tetra Tech FW, Inc.
133 Federal Street, 6th Floor
Boston, Massachusetts 02110

2005-24-0011 | 14.8
5/17/05

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Prepared for

U.S. Army Corps of Engineers
New England District
Concord, Massachusetts

Prepared by

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133 Federal Street, 6th Floor
Boston, Massachusetts 02110

Revision	Date	Prepared by	Approved by	Pages Affected
2	05/17/05	D. Beck, P.E.	G. Willant	All

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ABBREVIATIONS AND ACRONYMS

BCE	Bourne Consulting Engineering
CDF	Confined Disposal Facility
CY	cubic yards
DDA	Debris Disposal Area
EPA	U.S. Environmental Protection Agency
ENSR	ENSR Corporation
FCN	Field Change Notice
FSP	Field Sampling Plan
GPS	Global Positioning System
iscy	in situ cubic yards
Kevric	Kevric Company, Inc.
Maxymillian	Maxymillian Technologies, Inc.
MLLW	Mean Lower Low Water
NBH	New Bedford Harbor
NOAA	National Oceanographic and Atmospheric Administration
NTU	nephelometric turbidity unit
Packer	R. M. Packer Company, Inc.
PCB	polychlorinated biphenyls
PPE	personal protection equipment
ppm	parts per million
QAPP	Quality Assurance Project Plan
QC	quality control
RFP	Request for Proposal
ROD	Record of Decision
RTK	Real Time Kinematics
sf	square feet
SOW	Statement of Work
SSHP	Site Safety and Health Plan
TERC	Total Environmental Restoration Contract
TSCA	Toxic Substances Control Act
TtFW	Tetra Tech FW, Inc.
TTSP	Transportation and Temporary Storage Plan
USACE	U.S. Army Corps of Engineers

1.0 INTRODUCTION

Tetra Tech FW, Inc. (TtFW), formerly Foster Wheeler Environmental Corporation, has prepared this After Action Report for the North Lobe Dredging Remediation pursuant to Request for Proposal No. 92 from the U.S. Army Corps of Engineers (USACE). This remedial action was conducted under Task Order No. 24 of the Total Environmental Restoration Contract (TERC) No. DACW33-94-D-0002. This After Action Report is based on the remediation work performed from August 2003 through November 2003 at the North Lobe area located on the west shoreline of the New Bedford Lower Harbor. The work was performed in accordance with the *North Lobe Dredging Work Plan* submitted to the USACE on July 23, 2003.

This After Action Report is a compilation of data and information gathered during the performance of this work. This report generally follows the suggested contents for a Remedial Action Report as defined in the U.S. Environmental Protection Agency (EPA) *Close Out Procedures for National Priorities List Sites* (EPA 540-R98-016) dated January 2002 and as modified by EPA e-mail dated November 12, 2003.

The North Lobe Dredging involved the removal of about 4,100 cubic yards (CY) of contaminated sediments having polychlorinated biphenyl (PCB) concentrations greater than 50 parts per million (ppm). Prior to remediation, PCB concentrations in the sediments ranged from non-detect to a high reading of about 300 ppm. Dredging work was performed from September 2003 to November 2003 with final demobilization of equipment from the Debris Disposal Area (DDA) in January 2004. Final grading of the DDA was completed in April 2004.

The dredged sediments were transported in small scows from the dredge barge at the North Lobe to the existing Sawyer Street Facilities, which was about one mile north of the North Lobe. At Sawyer Street, the material was screened and then slurry pumped into Cell No. 1 for interim storage. The materials stored in Cell No. 1 will be desanded, dewatered, and transported to an off-site disposal facility at a later date under a separate USACE contract.

TtFW provided construction management, procurement services, engineering support, and subcontracts for excavation, transport, processing, and air sampling.

1.1 Operable Unit No. 1 Background

1.1.1 Site Description

The New Bedford Harbor Superfund Site (the Site), located in Bristol County, Massachusetts, extends from the shallow northern reaches of the Acushnet River estuary south through the commercial harbor of New Bedford and into adjacent areas of Buzzards Bay. Industrial and urban development surrounding the harbor has resulted in sediments becoming contaminated with many pollutants, notably PCBs and heavy metals, with PCB contaminant gradients generally decreasing from north to south. From the 1940s into the 1970s, two electrical capacitor manufacturing facilities, one located near the northern boundary of the site and one located just south of the New Bedford Harbor hurricane barrier, discharged PCB-wastes either directly into the harbor or indirectly via discharges to the city's sewerage system.

Refer to the 1998 Record of Decision (ROD) for a detail description the Site background issues.

1.1.2 Response Action Summary

The major components of the 1998 remedy include the following:

- Approximately 880,000 CY of sediment contaminated with PCBs will be removed. In the upper harbor north of Coggeshall Street, sediments above 10 ppm PCBs will be removed, while in the lower harbor and in salt marshes, sediments above 50 ppm will be removed.
- In certain shoreline areas prone to beach combing, sediments between the high and low tide levels will be removed if above 25 ppm PCBs. In areas where homes directly abut the harbor and where contact with sediment is expected, sediments between the high and low tide levels will be removed if above 1 ppm PCBs.
- Institutional controls, including seafood advisories, no-fishing signs, and educational campaigns will be implemented to minimize ingestion of the local PCB-contaminated seafood until PCBs in seafood reach safe levels. State fishing restriction will also be in effect until such time as the Commonwealth deems it appropriate to amend them.

The EPA directed the removal of contaminated sediments having PCB concentrations above 50 ppm at the North Lobe in areas where the new bulkhead and navigational channel are to be constructed by R. M. Packer Company, Inc. (Packer).

1.2 North Lobe Dredging

The New Bedford Harbor (NBH) Superfund project includes the dredging of approximately 880,000 CY of PCB-contaminated sediments from the harbor and adjacent wetlands to commence in August 2004. The removed materials will be mechanically dewatered and transported off-site for disposal. The sediment dewatering and water treatment facility is being constructed at the South Lobe, Area D, located at the intersection of Herman Melville Boulevard and Hervey Tichon Avenue.

As part of the Area D site preparation, the Packer lease facilities (bulkhead and dock loading area) will be relocated to the North Lobe property off Herman Melville Boulevard. Refer to Figure 1-2 for aerial photo showing prior conditions at both the North and South Lobes as of 2002, and to Figure 1-3 for North Lobe Existing Site Conditions as of August 2003. The Boatyard at the North Lobe shown in Figure 1-2 was removed by USACE/FWENC in 2002 as part of the overall remedial action for the harbor. See Boatyard Demolition Remedial Action Completion Report for a description of this activity. Packer is constructing a new bulkhead with associated extension of the existing navigation channel to the new North Lobe location as shown on USACE Drawing C-1 in Appendix A. The EPA directed removal of contaminated sediments having PCB concentrations above 50 ppm at the North Lobe in areas where the new bulkhead and navigational channel are to be constructed.

The dredged materials were transported in scows from the North Lobe area to the existing facilities at Sawyer Street. Refer to Figure 1-4 for layout of the Sawyer Street Facilities. The dredged material was offloaded from the scows and transported to the DDA. The debris was separated from the dredged sediments and placed in the DDA. The dredged sediments were pumped into Cell No. 1 for future processing and disposal.

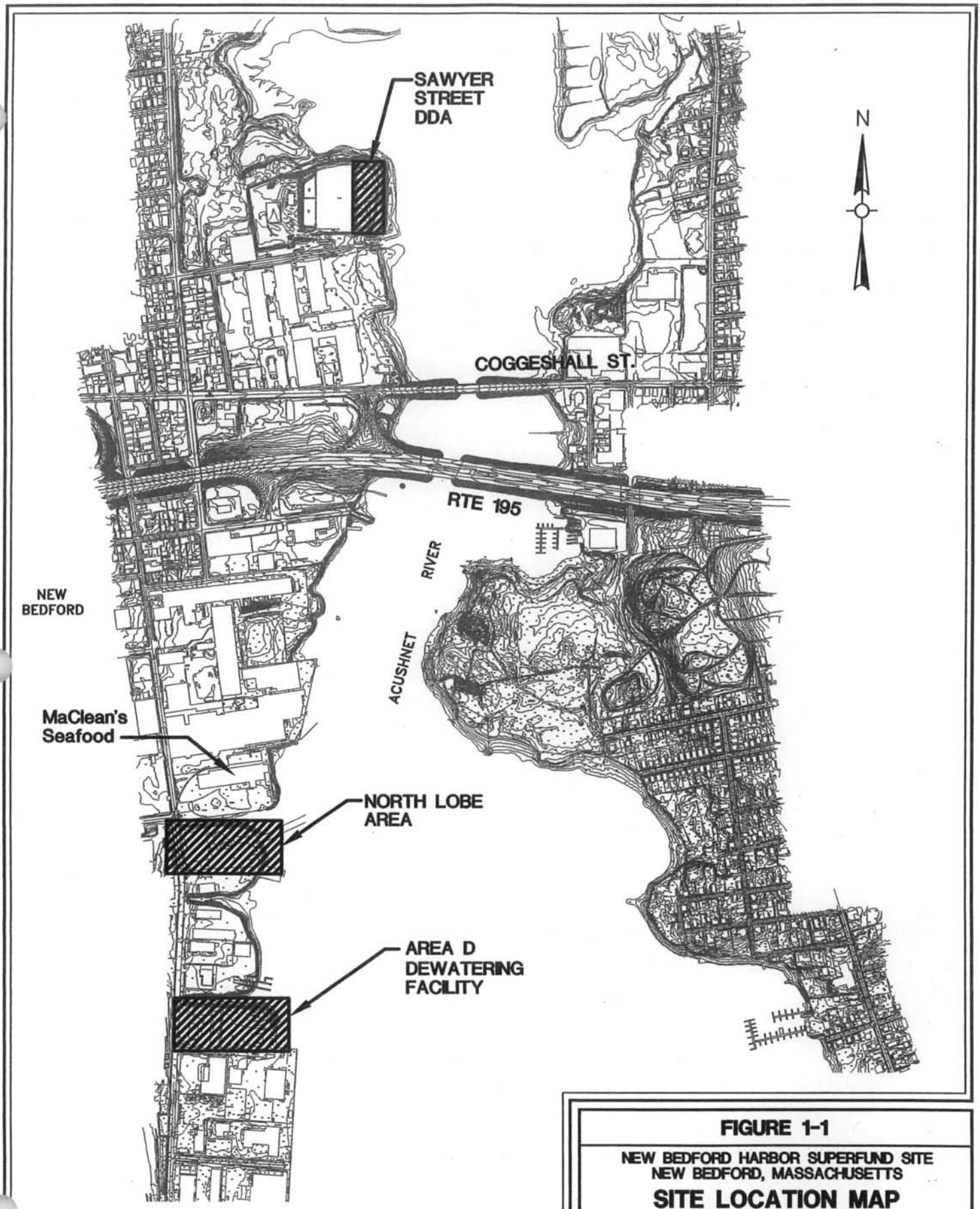

FIGURE 1-1

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS

SITE LOCATION MAP OF DEWATERING FACILITY AND DESANDING FACILITIES

FOSTER WHEELER ENVIRONMENTAL CORPORATION
TERC PROGRAM

CADDFILE: 5197NB15a.DWG

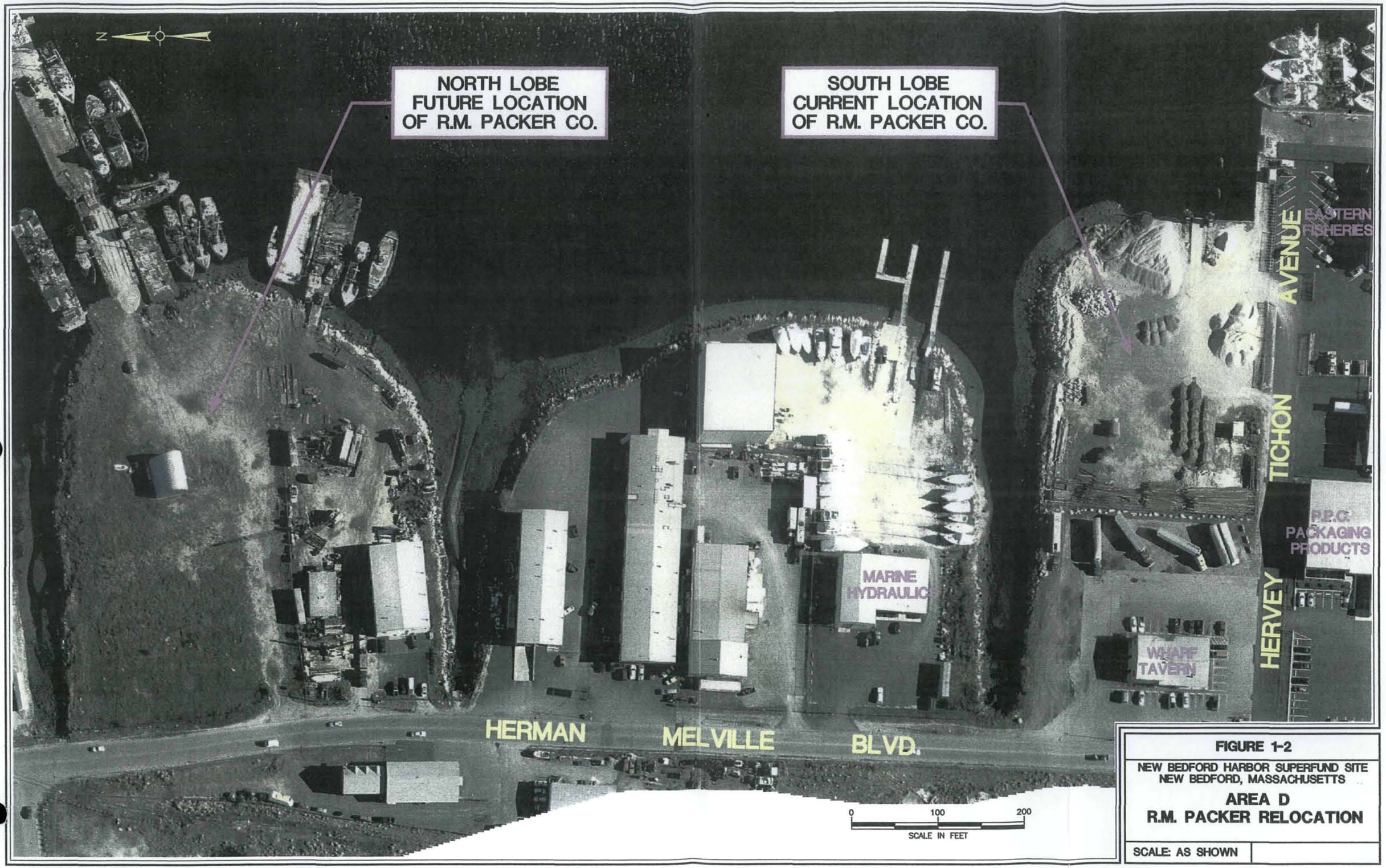

FIGURE 1-2

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS

AREA D
R.M. PACKER RELOCATION

SCALE: AS SHOWN

CAD FILE:0290_A_VISUAL_16.DWG

A B C D E F G H

1 2 3 4 5 6

HERMAN MELVILLE BOULEVARD

APPROXIMATE LOCATION OF 500 GAL SUMP

EXISTING ASPHALT PAD

EXISTING QUONSET HUT

EXISTING STEEL PIPE PILE STORAGE AREA

APPROXIMATE LOCATION OF TEMPORARY 4' HIGH FENCE

GRAVEL PERIMETER

CSO-03 CSO-04 FD-27 FD-26 MW-D1 TP-D1 TP-D2 TP-D3 TP-D5A TP-D12 TP-D13 TP-D14 TP-D15 TP-D16 TP-D17 TP-D18 TP-D20 TP-D21 TP-D22

GRAPHIC SCALE

LEGEND

800 EXISTING CONTOUR

US Army Corps of Engineers New England District

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS CONCORD, MASSACHUSETTS

FOSTER WHEELER ENVIRONMENTAL CORP. 133 FEDERAL STREET BOSTON, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS

NORTH LOBE
EXISTING SITE CONDITIONS

Reference number:
FIGURE 1-3

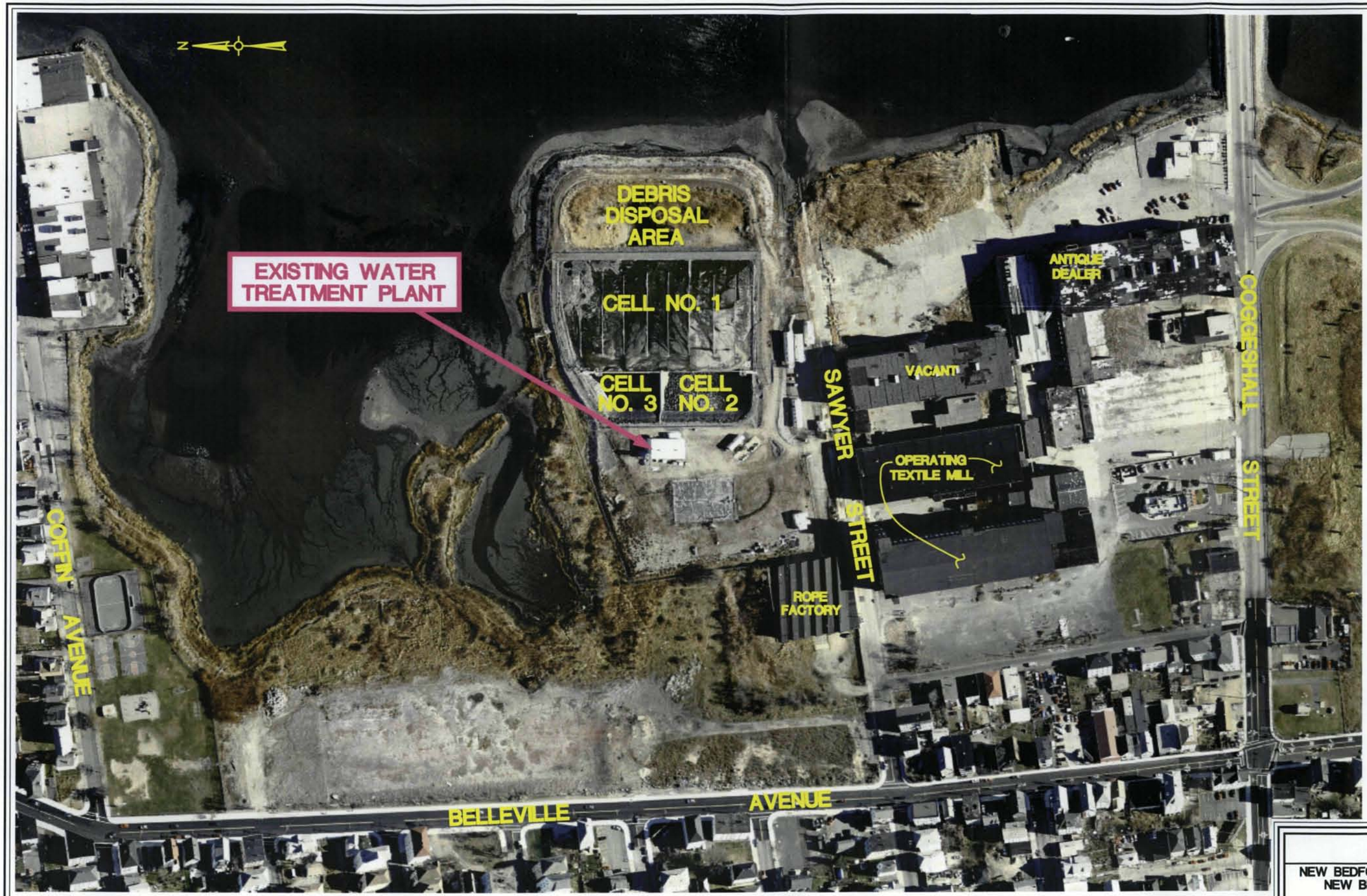

FIGURE 1-4

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS

SAWYER STREET FACILITIES

SCALE: AS SHOWN

CAD FILE: 0290_A_VISUAL_14a.DWG

1.3 North Lobe Dredging Design

The characterization sampling for PCBs was performed from August 2001 through May 2003, refer to Phase III Sediment Sampling Report dated December 2002 (Transmittal No. 17.11.02-17-002) and Phase IV A Sediment Sample Results dated August 2003 (Transmittal No. GM.02.09-03-001). Based on the results of those samples, the USACE prepared dredging plans to remove materials with PCB concentrations greater than 50 ppm. This included the area where Packer was to construct its new bulkhead with navigational channel and the area to the east of the MacLean property. Figure 1-5 shows the sample locations in the area of the North Lobe and MacLean's Seafood. Figure 1-6 shows the highest PCB concentrations for each of the sample locations.

The USACE issued the initial dredging design in May 2003, which is contained in Appendix A. The dredge areas were labeled as Dredge Areas A, B, C, D, F2, F3, F4, and F6. The areas as defined in the May 2003 design drawings are summarized in Table 1-1. This is the scope of work upon which the Work Plan and the Dredging Subcontract was awarded.

Table 1-1
Dredge Area Data – May 2003 Design

Areas of Dredging	Dredge Volumes (iscy)		Cut Dept (feet)		Areal Extent (sf)	Existing Water Depths (feet below MLLW)		High PCB Readings (ppm)
	Base	Total	Min	Max		Minimum	Maximum	
Area A	420	470	4	4	3,200	1	2	90
Area B	130	190	1	1	3,500	5	5	79
Area C	310	400	1	4	5,200	4	8	130
Area D	2,200	2,500	2	5	18,000	0	10	300
Area F-2	150	180	3	3	1,400	3	3	90
Area F-3	160	200	1.5	1.5	2,900	4	8	54
Area F-4	340	390	3	3	3,100	4	5	100
Area F-6	150	180	2	2	2,000	3	3	77
Totals	3,860	4,510			39,300	+4	10	

Note: Area E was optional area that was deleted by the USACE prior to the May issued drawings.

The total May 2003 design dredge volume of 4,510 CY is the base volume and includes a 6-inch over dredge allowance.

In August 2003, the USACE deleted the dredging for Areas F2, F3, F4, and F6 east of MacLean Seafood's property due to the results of the ENSR North Lobe Dredging Area Characterization Report, dated August 7, 2003, that showed high levels of heavy metals, and limited capacity of Cell No. 1 at the Sawyer Street Facilities for the temporary storage of the dredged sediments. Also, the configuration of Dredge Areas A, B, C, and D were revised in USACE revised dredge drawings that are contained in Appendix B. The data for the dredge area based on these revised drawings is presented in Table 1-2.

Table 1-2
Dredge Area Data – August 2003 Design

Areas of Dredging	Dredge Volumes (iscy)		Cut Dept (feet)		Areal Extent (sf)	Existing Water Depths (feet below MLLW)		High PCB Readings (ppm)
	Base	Total	Min	Max		Minimum	Maximum	
Area A	250	280	4	4	3,200	1	2	90
Area B	120	180	1	1	3,500	5	5	79
Area C	900	1,130	1	4	5,200	4	8	130
Area D	2,200	2,500	2	5	18,000	0	10	300
Totals	3,470	4,090			29,900	+0	10	

814100 814200 814300 814400 814500 814600 814700

2698100 2698000 2697900 2697800 2697700 2697600 2697500 2697400 2697300

Dredge Area F5
Dredge Area F6
Dredge Area F4
Dredge Area F2
Dredge Area F3
Dredge Area F1
Dredge Area C
Dredge Area D
Dredge Area A
Dredge Area B

S-4089 S-4090 S-4091 S-4088 S-4074 S-4073 S-4075 S-4096 S-4097 S-4095 S-206416 S-4099 S-4100 S-4101 S-4102 S-3937 S-4103 S-4077 S-3936 S-4078 S-4108 S-4106 S-4107 S-4109 S-4110 S-4111 S-4112 S-4080 S-3938 S-3911 S-3912 S-4115 S-3939 S-4116 S-3940 S-4119 S-4120 S-4121 S-4122 S-4123 S-4124 S-4125 S-4082 S-4130 S-4131 S-3942 S-4129 S-3914 S-3941 S-4083 S-4133 S-4135 S-4134 S-4136 S-4137 S-4132 S-3943 S-4056 S-4058 S-4057 S-4053 S-3944 S-4054 S-4055 S-4139 S-4060 S-4061 S-3086 S-4138 S-4063 S-4065 S-4066 S-4067 S-4022 S-3052 S-4016 S-4085 S-4071 S-4068 S-3085 S-4072 S-3945 S-4015 S-3227 S-4019 S-4000 S-3228 S-4024 S-4013 S-4001 S-4002 S-3226 S-3946 S-4020 S-4012 S-4027 S-3947 S-4023 S-3916 S-3129 S-4021 S-4026 S-4029 S-4003 S-3919 S-4062 S-4004 S-4011 S-4028 S-3920 S-4059 S-3918 S-4005 S-3923 S-4007 S-3225 S-4014 S-4030 S-4086 S-3925 S-4006 S-3921 S-3922 S-4032 S-ac308 S-4087 S-4031 S-4010 S-3924 S-4140 S-4008 S-4141 S-4033 S-4142 S-4018 S-3127 S-4009 S-3128 S-4143

Pre and Post ROD Actual Sediment Sample Locations
Topographic and Bathymetric Contours
North Lobe Dredge Areas
North Lobe Dredge Areas (deleted)
Buildings

N

0 50 100 Feet

FOSTER WHEELER
FOSTER WHEELER ENVIRONMENTAL CORPORATION
133 FEDERAL STREET, BOSTON, MASSACHUSETTS 02110

NEW BEDFORD HARBOR SUPERFUND SITE
BRISTOL COUNTY, MASSACHUSETTS

North Lobe Dredging
Sample Locations and
Proposed Dredge Areas

FIGURE 1-5

DRAFT: MAY 28, 2003

MA STATE PLANE
NAD 83 FEET
NGVD 29
1 FOOT CONTOUR INTERVAL

P:\Tetra-5197\NBH\GIS\WORKDIR\03-n1010313-001.apr
North Lobe Layout 4

Pre and Post ROD Actual Sediment Sample Locations

Topographic and Bathymetric Contours

North Lobe Dredge Areas

North Lobe Dredge Areas (deleted)

Buildings

N

0 50 100 Feet

FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION
133 FEDERAL STREET, BOSTON, MASSACHUSETTS 02110

NEW BEDFORD HARBOR SUPERFUND SITE
BRISTOL COUNTY, MASSACHUSETTS

North Lobe Dredging
Sample Locations/Highest PCB Concentration (ppm)
and Proposed Dredge Areas

FIGURE 1-6

DRAFT: MAY 28, 2003

MA STATE PLANE
NAD 83 FEET
NGVD 29
1 FOOT CONTOUR INTERVAL

P:\Tetra-5197\NBH\GIS\WORKDIR\03-n1010313-001.apr
North Lobe Layout 5

The final dredge areas are described as follows:

- Dredge Areas A and B are the two areas south of the proposed Packer navigational channel. Dredge Area A is the area closer to the shore (more westerly).
- Dredge Area C is the area just north of the Packer-MacLean property line, within the footprint of the proposed MacLean-Revere bulkhead.
- Dredge Area D is the area necessary for construction of the Packer bulkhead, including a buffer of approximately 20 feet north of the north side of the Packer bulkhead to facilitate construction.
- Dredge Area F was made up of the six small areas of contamination east of the MacLean's Seafood facility and north of Dredge Area C. Due to limitations of capacity in Cell No. 1 at the Sawyer Street Facilities, the dredging of the Area F locations, F-2, F-3, F-4, and F-6, were deleted from the scope of work by the USACE in August 2003.

The Dredging Subcontract was modified in August 2003 to accommodate the revised design. The Dredging Subcontractor, under the direction of TtFW, was responsible for dredging approximately 4,090 CY from this area of proposed North Lobe construction (Dredge Area A, B, and D) and one area to the north near the MacLean property (Dredge Area C). The water depths ranged from shoreline to approximately 10 feet below Mean Lower Low Water (MLLW). Dredge cut depth ranged from approximately 1.5 feet to 5.5 feet below the mud line as indicated on the USACE dredge plans.

Dredged sediments were transported in small scows from the North Lobe Dredging operations to the existing Sawyer Street Facilities. Refer to Figure 1-4 for an aerial photo of the Sawyer Street Facilities.

1.4 Confirmatory Sampling

Details of the confirmation sampling are presented in the North Lobe Dredging Confirmatory Sample Results report dated January 16, 2004 (Transmittal No. N1.02.06.01) as contained in Appendix L.

The clean-up goal was to remove material having an average PCB concentration greater than 50 ppm from the dredge area designated on the USACE drawings. Final results of the confirmation sampling for each dredge area are summarized in Table 1-3. The contract volumes for each of the areas was supplied by the USACE based on the USACE August 2003 issued drawings. The revised August 2003 drawings deleted areas F-2, F-3, F-4 and F-6, and revised the scope of dredging required for Area A, Area B, and Area C. The contract volumes in Table 1-2 are based on the August 2003 drawings. The volumes of sediments removed were obtained from the BCE as-built surveys, which are included in Appendix C.

TtFW personnel collected the sample using a boat and sampling equipment supplied by CR Environmental. The collected samples were sent to Severn Trent Laboratories for analysis. All confirmatory sampling results are shown in Appendix L.

1.5 Air Sampling

One air sampling station was set up at the North Lobe. In addition, three existing air-sampling stations at the Sawyer Street Facilities were used to document PCB air concentrations during the handling of the material at the DDA and Cell No. 1.

Results of the air sampling are summarized in Appendix D. There were no readings that exceeded acceptable limits.

Table 1-3
Summary of Compliance Demonstration Areas and Confirmation Sampling Results for North Lobe Dredging

Dredge Area	Contract Volumes (CY)		Volume of Sediments Removed (CY)	No. of Sample Locations	Surface (0 to 6") Average PCB Conc. (ppm)	Comments
	Net	Gross				
Area A	250	280	331	5	3.2	
Area B	120	180	173	6	20	
Area C	900	1,130	1,307	11	10	The volume of sediments removed includes 255 CY of additional dredging due to results of confirmation sampling.
Area D	2,200	2,500	2,134	9	35	
Total	3,470	4,090	3,952	31	-	

1.6 Key Subcontractors

TtFW provided construction management for the work.

Maxymillian Technologies, Inc. (Maxymillian) performed the following work as a subcontractor to TtFW:

- Dredging of contaminated materials;
- Transportation of dredged materials to the DDA at Sawyer Street; and
- Processing of materials at DDA and placement in Cell No. 1 for future desanding, dewatering, and off-site disposal.

Bourne Consulting Engineering (BCE) performed the bathymetric surveys as a subcontractor to Maxymillian.

Kevric Company, Inc. (Kevric) performed air sampling as a subcontractor to TtFW. Kevric subcontracted the analysis of the collected samples to Axys Analytical Ltd.

TtFW collected the confirmation samples. Severn Trent Laboratories performed laboratory testing of the sediment samples.

2.0 CHRONOLOGY OF EVENTS

Table 2-1 provides a chronology of events related to the North Lobe Environmental Dredging Project. This Table 2-1 provides a summary of key events. A detailed Project Schedule is presented in Appendix G.

Table 2-1
Chronology of Events

Date	Event
May 2002	Boatyard Demolition Completed
May 2, 2003	USACE issues RFP 92 to TtFW for North Lobe Dredging
May 16, 2003	USACE revised scope of dredging by deleting 6,000 CY of optional dredging
May 27, 2003	USACE issues dredge drawings for Dredging at Areas A, B, C, D and F Areas and revised scope of dredging work from 4,200 CY to 4,500 CY
May 29, 2003	Draft Work Plan for the North Lobe Dredging transmitted to the USACE
July 23, 2002	TtFW Submitted Final Negotiated North Lobe Dredging Work Plan and Cost Estimate
July 24, 2003	Subcontract Awarded to Maxymillian for the North Lobe Dredging
August 7, 2003	North Lobe Dredging Area Characterization Report issued by ENSR
August 12, 2003	USACE deleted F areas from scope of work
August 12, 2003	Pre-dredge Bathymetric Surveys for Areas B, C and D were performed
August 18/27, 2003	Project Mobilization: Dredge equipment to the North Lobe and setting up equipment at the DDA
August 25, 2003	Install Air Monitoring Station at North Lobe
August 26, 2003/ September 30, 2003	Install material processing equipment at the DDA
September 2/4, 2003	Dredge Area B (173 CY)
September 4, 2003/ October 1, 2003	Dredge Area D (2,134 CY)
September 8, 2003	Post-Dredge Bathymetric Survey Area B
September 18, 2003	Confirmation Sampling at Area B, 5 samples taken
October 1/14, 2003	Dredge Area C (1,052 CY)
October 2, 2003	Post Dredge Bathymetric Survey at Area D, and Pre-dredge Bathymetric Survey for Area A
October 8/14, 2003	Dredge Area A (331 CY)
October 7, 2003	Sampling at Area D, Samples collected at 9 Locations, 6 at required depth
October 16, 2003	Post Dredge Bathymetric Surveys at Areas C and A
October 17, 2003	Confirmation Sampling at Area D. Last 3 samples at required depth
October 20/21, 2003	Confirmation Sampling at Area C (9 sample locations) and Area A (5 sample locations)
November 3, 2003	Additional Dredging at Area C (255 CY)
November 3/4, 2003	Process additional dredged sediments at the DDA
November 5, 2003	Shut down processing of materials at the DDA
November 11, 2003	Demobilize Dredge Barge from the Site
November 18, 2003	Final Bathymetric Survey of Area C to verify remedial dredging
November 23, 2003	Demobilize Transport Scows from the Site
November 25, 2003	Final Confirmation Sampling at Area C (2 sample locations)
January, 2004	Decontamination and demobilization of DDA material processing equipment
February, 2004	Cutting of steel debris for placement into DDA
April 21, 2004	Final grading of DDA

3.0 PERFORMANCE STANDARDS AND CONSTRUCTION QUALITY CONTROL

3.1 Surveying Control

BCE performed the pre-dredge bathymetric surveys with sonar sounding survey equipment. Maxymillian used its Real Time Kinematics (RTK) Global Positioning System (GPS) survey equipment mounted onto the dredge bucket to control excavation. BCE performed the post-dredge bathymetric surveys with sonar sounding survey equipment.

Final as-built survey data for each of the four dredged areas is presented in Appendix C. These surveys verified that dredging had been completed to depths as indicated on the USACE August 2003 Dredging Plans.

3.2 Health and Safety

Health and Safety activities were completed in accordance with the contract specifications and the Site Safety and Health Plan (SSHP). All site personnel were given a site orientation and were required to acknowledge by signature that they read and understood the SSHP before beginning work. Personnel completed the required pre-screening requirements for the entrance and exit physicals. All work was performed in Level D Personal Protection Equipment (PPE).

This work was performed without any reportable safety incidences.

3.3 Confirmation Sampling Quality Control

Quality control of the off-site laboratory testing of confirmation samples was performed in accordance with the TtFW Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP). Refer to the North Lobe Confirmatory Sampling Report in Appendix L for full report on the laboratory testing of the confirmatory samples.

3.4 Environmental Controls

The Work Plan called for the dredging operations to be enclosed within a turbidity curtain. However, due to favorable water quality monitoring results, the silt curtain and oil boom were not deployed.

3.5 Standards for Water Quality Criteria

During the dredging work activities, downstream turbidity measurements (within 300 feet of the work area) were not to exceed 50 nephelometric turbidity units (NTUs) above background levels. Per the ENSR Water Quality Monitoring Summary Report contained in Appendix E, this limit on turbidity was never exceeded during the dredging operations.

3.6 Cleanup Goals

The performance standards for the cleanup goals were to remove all sediments with PCB concentrations greater than 50 ppm. This goal was obtained. Refer to the North Lobe Dredging Confirmatory Sample Results report in Appendix L.

4.0 CONSTRUCTION ACTIVITIES

4.1 General Sequence of Work

The general sequence of work for dredging the four designated Dredge Areas at the North Lobe was as follows:

1. Perform pre-dredge hydrographic surveys of the areas to be dredged.
2. Mobilize dredge equipment to the North Lobe site.
3. Establish air-sampling stations.
4. Dredge Area B.
5. Dredge Area D.
6. Dredge Area C.
7. Dredge Area A.
8. Dredge Sediment Transportation in the harbor to the DDA.
9. Perform post-dredge hydrographic surveys.
10. Perform confirmatory sampling once it had been confirmed that the excavation depths within a dredge area had been obtained as required by the USACE Dredge Plans.
11. Re-dredge Area C based on confirmatory sample results.
12. Demobilize the dredging equipment from the North Lobe.
13. Dredge sediment processing and placement in DDA.
14. Debris management at the DDA.
15. Demobilization of processing equipment from the DDA.
16. Cut and spread debris at the DDA.
17. Cap and grade DDA.

4.2 Mobilization and Site Setup

Upon Notice to Proceed had been issued, Maxymillian began pre-mobilization and mobilization activities, including:

- Providing the submittals specified in the technical specifications and Statement of Work (SOW);
- Furnish all labor, supervision, materials, and equipment for mobilization and site work activities;
- Install all temporary facilities (sanitation and fencing) and lay down areas at the North Lobe property (302 Herman Melville Boulevard);
- Establish a barge platform along the shoreline of the DDA to dock Maxymillian's mini sediment scow barges and support boats;
- Prepare Dredge Plan in accordance with contract requirements;
- Coordinate with U.S. Coast Guard in accordance with Specification 02325 to issue a "Notice to Mariners" at least two weeks prior to commencing dredging operations;
- Establish employee sign-in/out sheet and submit with Subcontractor Daily Quality Control (QC) Report;
- Mobilize dredge barge and scows along with support boats to the site; and
- Setup screening units, pumps and other equipment at the DDA for the processing of the dredged materials.

4.3 Environmental Protection

As part of mobilization, and prior to any intrusive work within the waterway, Maxymillian procured and delivered environmental controls to the site. Approximately 650 linear feet of 10 to 15 foot deep floating turbidity curtains and oil absorbent booms were delivered to the North Lobe for possible installation around the dredging activities.

The USACE monitored water quality in the harbor while Maxymillian performed dredging. The USACE's monitoring determined that it was not necessary to install the environmental controls, turbidity curtain and oil absorbent booms, around the dredging operations. See Appendix E for ENSR's Water Quality Monitoring Summary Report.

Maxymillian did supply a boat with crew and oil absorbent materials in accordance with the Debris Management Plan to collect and remove any floating debris or oil sheens resulting from dredging activities.

4.4 Hydrographic Survey

Prior to dredging operations, BCE performed a hydrographic survey of the areas to be dredged.

Maxymillian conducted and monitored the work using GPS real-time survey equipment linked to specialized dredging software. Using the initial BCE hydrographic survey, Maxymillian created a surface model of the existing and desired dredge elevations based on the USACE dredge design drawings. These two surfaces were loaded into specialized dredge software. The dredge operator used this information displayed on a screen in the operator's cab to accurately dredge each area to the required depths.

The excavator-mounted GPS method provided three precise coordinate locations of the bucket (x, y, z). Maxymillian integrated the Trimble GPS system with Dredgepack software. This allowed the operator to display color-coded depth information in plan and sectional views to show the "As Surveyed" and the "As Dredged" depths for individual 3.5-feet x 4.5-feet cells. The electronic field data, including the XY coordinates and Z elevation in ASCII format, was submitted on a daily basis with the daily QC reports.

Upon completion of the dredging, BCE performed post-dredge hydrographic surveys to verify that the dredge depths as indicated on the USACE Dredge plans had been obtained. The results of the hydrographic surveys are presented in Appendix C.

4.5 Excavation Work

The dredging was performed with a 100,000-pound hydraulic excavator mounted on barge. Wooden mats were placed on the barge deck to support the excavator. The barge had hoppers for the temporary storage of the dredged materials. A 3-CY environmental clamshell bucket was used to excavate the material in a controlled manner. The bucket was designed with smooth cutting edges and a near horizontal closure to provide clean, level cuts of the harbor bottom. Refer to the photos in Appendix K for photos showing the dredge barge in operation.

A GPS antenna was mounted directly above the center of the environmental bucket to allow for precise positioning. The operator worked from a graphical depiction of the dredge cut lines displayed on a computer screen in the operator's cab. This system allowed for precision dredging with minimum over-excavation.

To maximize reliability and productivity, the various phases of dredging, screening, and sediment transfer were conducted as distinct work activities. The dredged material was placed into hoppers on the dredge barge and then transferred to the scows for transport to the DDA for processing. Refer to the photos in Appendix K for pictures of these operations. The material was unloaded from the scows and then stockpiled in the DDA to allow for batch processing of the dredged sediments. This separation of activities eliminated problems due to different production rates for different operations, and enhanced reliability for each operation.

The dredge barge was secured in location with two steel pipe spuds. The dredged materials were loaded directly into hoppers on the dredge barge. The hoppers were partitioned into two areas: one for sediments, and the other for large debris. Large debris, such as poles or timbers, were picked out and placed directly into the debris pile. Periodically during dredging, sediments and debris from the dredge barge hoppers were segregated and loaded into separate small 30-CY sediment scows for transport to the DDA.

The majority of the areas to be dredged were at the site of the former Herman Melville Shipyard. Numerous abandoned boats and barges were demolished and removed during the summer of 2002. During dredging operations, the Subcontractor did encounter debris, including pieces of wood, metal, and broken concrete. All removed debris was barged to the Sawyer Street Facilities. At the DDA, the debris was removed from the sediments prior to processing the sediments through the screening unit, and were then placed into the DDA.

Once the excavation in a dredge area was completed, BCE performed post-dredging hydrographic surveys to ensure that target elevations had been attained. Then TtFW collected and tested confirmatory samples to ensure that the clean-up goals for PCB contamination had been obtained. In an attempt to minimize standby time, Maxymillian did commence dredging in the next dredge area before receiving the results from TtFW's confirmatory sampling. This was done for all the areas except the final dredging which was the re-dredging of Area C.

4.6 Water Quality Monitoring

Maxymillian implemented work practices to control water quality throughout the project. Controls were designed to minimize re-suspension, siltation, and turbidity.

USACE, through its subcontractor ENSR Corporation (ENSR), performed real-time water column turbidity monitoring down stream of the work area using a Nephlometer measuring device in accordance with Specification Section 01454. Turbidity measurements were taken on a daily basis for the first three weeks, and then only once a week after the initial period (pending turbidity values). In the event of an exceedance, Maxymillian was to stop work, evaluate work methods with USACE, and adjust the work methodology or install the turbidity curtains as required by USACE. However, there was no reported exceedance of the turbidity limits.

If the turbidity curtain had been required by USACE, Maxymillian would have installed a floating, full-height silt barrier consisting of a turbidity curtain, a floating boom at the top, and an anchoring system with posts, to maintain the curtain's horizontal location. The barrier would have prevented turbidity and sediments from migrating from the work area.

During the dredging work activities, downstream turbidity measurements (within 300 feet of the work area) rarely exceeded 5 or 6 nephelometric turbidity units (NTUs), which was well within the 10 NTU specified limit. See Appendix E for ENSR's Water Quality Monitoring Summary Report.

4.7 Dredged Sediment Transportation

Dredged sediments were transported from the dredge areas to the DDA located at Sawyer Street. Maxymillian handled this operation with two small scows transporting sediments up the river to the DDA.

The small scows were capable of transporting approximately 30 CY per trip. The 30-CY scow consisted of a proprietary design of three 10-CY floating sections. The sectional barge was designed for low water draft and low overhead clearance. This also allowed Maxymillian to load each section with different types of materials for more efficient processing/placement at the DDA.

Maxymillian performed a preliminary study of clearances under Coggeshall Bridge and Route 195 Bridge at high tide and the required draft at low tide, and found that the low profile design of the scows allowed for passage under the Coggeshall Bridge and Route 195 Bridge. The scows were cycled from the dredge barge where they were loaded and the Sawyer Street Facilities where the dredged materials were offloaded to the DDA. At the excavation area, Maxymillian loaded the scows with sediments from the excavation that have been previously placed in the hoppers on the dredge barge. The 30-CY scows had three individual 10-CY hoppers.

4.8 Debris Disposal Area (DDA) Operations

At the DDA, concurrent with dredging and transport operations, Maxymillian processed the sediments into a 2-inch minus slurry for placement in Cell No. 1. All oversized materials (2-inch plus) were stockpiled for further processing and placement into the DDA. Refer to photos in Appendix K for DDA operations.

An excavator tended the stockpile of sediment at the DDA and loaded the sediment into an Extec screening plant to process the sediment to a 2-inch minus material. Any obviously large pieces of debris were picked out and set aside for subsequent disposal in the DDA.

The sediments were loaded into the feed hopper and initially screened through the bar grizzly to eliminate debris larger than 6 inches. The remaining materials were run over a vibrating 2-inch screen with water jets to remove sediments from the material greater than 2-inches. The wetted 2-inch minus material was then transferred into the slurry tank where more water was added to create a slurry for hydraulically pumping the sediments into Cell No. 1. Required make-up water was pumped from Cell No. 2. All material greater than 2-inches including large pieces of debris was stockpiled for placement in the DDA at job completion.

Excess water from Cell No. 1 flowed into Cell No. 2. TtFW pumped, treated and discharged into the city sewer approximately one million gallons of wastewater. The wastewater treatment was done with a series of sand filters and carbon cells. Three water samples were taken to verify that the discharged water did meet the requirements of the discharge permit. The excess water from Cell No. 2 was treated and discharged to the city sewer system in two batch operations.

4.9 Sampling

Sampling was performed in accordance with the New Bedford Project Field Sampling Plan (FSP), Revision 6.1 dated August 2003 (Transmittal No. W1.01.03-01-002), and analysis of the sample was performed in accordance with the New Bedford Project Quality Assurance Project Plan (QAPP), Revision 3 dated January 2003 (Transmittal No. 17.01.03-03-005).

4.9.1 Air Sampling

Air sampling was conducted at one location at the North Lobe and at three locations around the Sawyer Street Confined Disposal Facility (CDF). See Figure 4-1 for the location of these sampling stations.

For the North Lobe area, one station was placed on the northern side of the North Lobe (#38). The location at the North Lobe was sampled during dredging and material handling activities. Sampling was also conducted around the Sawyer Street CDF at existing Sites 2, 3, and 6. See Appendix D for summary of the collected air sampling data.

The air sampling frequency for the North Lobe was conducted in accordance with the North Lobe Dredging Work Plan and the North Lobe modification to the FSP (Revision 6.1 dated August 2003).

4.9.2 Confirmatory Sampling

The 50-foot grid spacing was selected as suitable for meeting post-removal sampling purposes. A 50-foot reference grid was placed over Areas A , B, C and D to determine proposed sample collection locations. During field implementation, actual sample locations were altered slightly so that sample locations were not biased toward the perimeter of the removal area. See Figure 4-2 for the location of the final confirmatory samples.

The actual number of post-removal sampling locations in each dredge area are summarized in Table 4-1.

Table 4-1
Confirmatory Sampling

North Lobe Dredge Area	No. of Sample Locations
A	5
B	6
C	9 with 2 additional locations after additional dredging
D	18

A total of 32 sample locations were included in Dredge Areas A through D. Samples were collected and tested in accordance with the Project FSP (Revision 6.1 dated August 2003) (Transmittal No. N1.01.03-01-0002) and analyzed in accordance with the Project QAPP (Revision 3.0 dated January 2003) (Transmittal No. 17.01.03-03-0005). See Appendix L.1 for North Lobe Dredging Confirmatory Sample Results Report. See Appendix L.2 for a Graphical Depiction of Confirmatory Sampling Results.

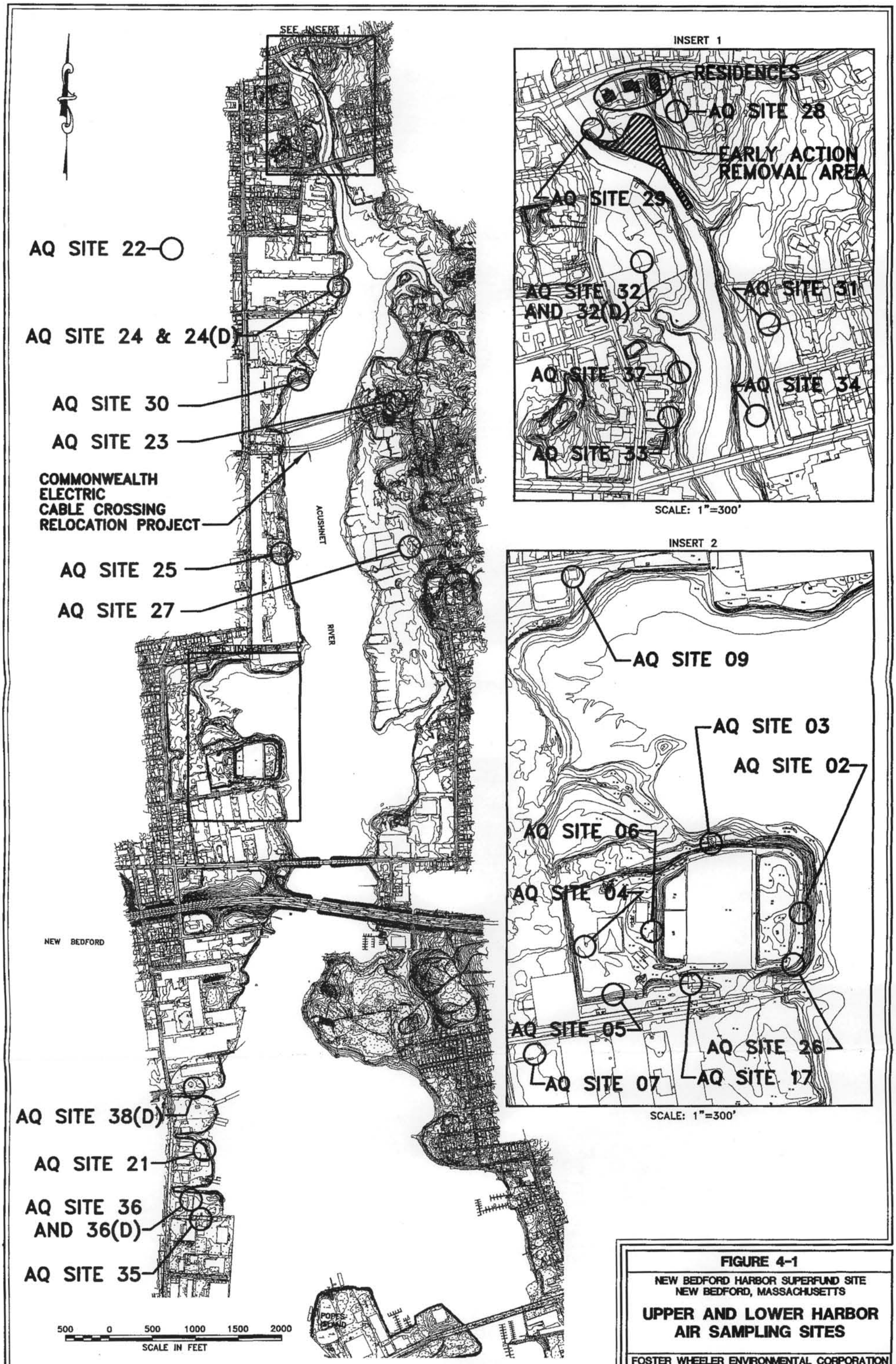

FIGURE 4-1

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS

UPPER AND LOWER HARBOR AIR SAMPLING SITES

FOSTER WHEELER ENVIRONMENTAL CORPORATION
TERC PROGRAM

814000 814100 814200 814300 814400 814500

2698000 2697900 2697800 2697700 2697600 2697500 2697400 2697300 2697200

C007-001
C007-002
C007-003
C007-004
C007-005
C007-008
C007-010
C007-006
C007-007
C007-011
C007-009

Dredge Area C

C008-001-A
C008-002-A
C008-003-A
C008-004
C008-001
C008-002
C008-003
C008-004-A
C008-005-A
C008-006
C008-007-A
C008-008-A
C008-006-A
C008-005
C008-007
C008-008
C008-009-A
C008-009

Dredge Area D

a b c d e
Composite
C009-001
(a,b,c,d,e)

a b c d e
Composite
C010-001
(a,b,c,d,e)

Dredge Area A

Dredge Area B

814000 814100 814200 814300 814400 814500

Confirmatory Sample Locations
Topographic and Bathymetric Contours
North Lobe Dredge Areas
Buildings

N

0 50 100 Feet

TETRA TECH FW, INC

NEW BEDFORD HARBOR SUPERFUND SITE
BRISTOL COUNTY, MASSACHUSETTS

Figure 4-2
North Lobe Dredging
Proposed Dredge Areas and
Actual Confirmatory Sampling Locations

DRAFT: DECEMBER 31, 2003

MA STATE PLANE
NAD 83 FEET
NGVD 29
1 FOOT CONTOUR INTERVAL

P:\Terc-5197\NBH\GIS\WORKDIR\03-n1220407-001.apr
North Lobe Sampling Layout

4.10 Demobilization

Dredge Area C was the last area to be dredged. Prior to completion of the dredging at Dredge Area C, the post-dredge bathymetric surveys for Dredge Areas A, B, and D verified that the material had been removed to depths as required on the Dredge Plans. Also the confirmation samples from those areas had been analyzed to verify that the remaining surface material within those areas had PCB concentrations less than the 50-ppm limit.

Once the base subcontract scope of dredging was complete at Dredge Area C, Maxymillian was placed on standby until confirmation samples were collected and analyzed. Due to two confirmation samples having PCB concentrations above the 50-ppm limit, Maxymillian was directed to perform additional dredging at Dredge Area C. Maxymillian was on standby from the time the subcontract dredging scope was completed until direction was given to perform additional dredging at Dredge Area C. This was a period of about two weeks.

Once the additional dredging at Area C was completed as directed, the dredge barge and associated equipment were demobilized from the North Lobe.

Prior to demobilization of the equipment from the Site, the Subcontractor decontaminated equipment that had contact with harbor sediment during dredging and sediment transfer activities per Toxic Substances Control Act (TSCA) requirements. The equipment that was decontaminated included the hoppers on the barges, dredge bucket, pumps, and water storage tanks. The decontamination fluids generated were collected in a scow and barged to the Sawyer Street Facilities where the decontamination water was pumped into Cell No. 1. All spent solvents and solvent-soaked pads used in the double wash/rinse decontamination procedure were disposed off-site by TtFW.

Refer to Appendix I for a list of equipment that was used on the project and copies of decontamination certificates that all equipment was decontaminated.

Once all material had been processed at the DDA, that equipment was decontaminated and demobilized from the Sawyer Street Site.

5.0 FINAL GOVERNMENT ACCEPTANCE INSPECTION

During the performance of the work, both USACE and TtFW representatives conducted inspection of the work. They jointly reviewed the post dredge bathymetric surveys to verify that sediments had been removed from the area to the depths as indicated on the Dredge Plans for Dredge Areas A, B, C, and D and that the additional dredging at Dredge Area C had been performed as directed. Refer to the final survey data of the dredged areas provided in Appendix C.

Results of the post-dredge confirmation samples are presented in the North Lobe Dredging Confirmatory Sample Results that was transmitted to the USACE in January 2004 (Transmittal No. N1.02.06-01).

See Appendix J for Pre-Final and Final Government Acceptance Inspection dated December 17, 2003.

6.0 OPERATION AND MAINTENANCE PLAN

No operation and maintenance plan was required for the remediation work performed at the North Lobe.

7.0 SUMMARY OF PROJECT COSTS AND SCHEDULE

7.1 Summary of Project Costs

Appendix F contains the North Lobe Dredging Cost Report dated June 3, 2005 (Final Updated Cost Report). The project costs are summarized in the following table.

Job Code	Job Description	Budget Cost	Actual Cost	Cost Variance
N1	TtFW Support Services	$522,380	$491,935	$27,453
N2	Dredging Subcontractor	$1,132,772	$1,482,575	($349,803)
	Total Project	$1,655,152	$1,974,510	($322,350)

These costs do not include the design, water quality monitoring, and site inspections performed by the USACE; nor are the costs of TtFW management that were included in the Task Order No. 24 GM account. Actual dredged volume was 3,952 CY, therefore, the average cost per cubic yard of material excavated was $524/CY.

Summary of variances by job and subtask level follow.

7.2 Job N1 – FWENC H. O. Support – North Lobe Dredging

Job N1 had a cost underrun of $27,453 (5.26%).

7.2.1 Task N1.01 – Mobilization and Preparatory Work

Subtask N1.01.03 – Submittals/Implementation Plans

A number of project plans and documents required amendments to cover the type of activities to take place under this scope of work. These amendments, as well as the Work Plan, are described below.

Activity N1.01.03.01 – Field Sampling Plan (FSP)

The efforts to prepare an amendment to the Project FSP were included under this activity. This document did include procedures for the collection of air and sediment samples. The plan did briefly discuss the objectives for sampling, the analyses required, and relevant decision levels for evaluating results. Summaries of the frequency of sampling and associated QA/QC samples were also discussed. This effort had a cost underrun of $1,080 (16.6%).

Activity N1.01.03.08 – Site Safety and Health Plan (SSHP)

TtFW worked with the Dredging Subcontractor to update the existing SSHP to address this work. No direct charges were made to this account, hence a cost underrun of $1,117.

Activity N1.01.03.13 – Work Plan

This activity included the preparation of both the draft Work Plan modification, including meetings, conference calls, information gathering, negotiations, and the final Work Plan modification. The purpose of the Work Plan was to define the work activities and tasks in sufficient detail to aid the negotiation process and properly define the work to be conducted.

The Work Plan served as the basis for the referenced Cost Estimate and Project Schedule. Additional efforts for internal review and comments were included. This had a cost overrun of $3,451 (7.6%).

Activity N1.01.03.15 – Transportation and Temporary Storage Plan (TTSP)

The existing site TTSP did not require amendment. Hence this activity had a cost underrun of $2,243.

7.2.2 Task N1.02 – Monitoring, Sampling, Testing, and Analysis

Subtask N1.02.03 – Ambient Air Sampling and Analysis

Activity N1.02.03.02 – Non-real Time

This account includes the costs for Kevric to perform the sampling, evaluation, and reporting of air samples. Due to EPA reduction of air sampling requirements, this activity had a cost underrun of $7,465 (18.30%).

Subtask N1.02.06 – Sampling Soil and Sediment

Activity N1.02.06.03 – Sediment/Sludge

This account was for TtFW labor and CR Environmental to provide a boat with sample collection equipment for obtaining the confirmation samples. This activity had a cost underrun of $21,701 (51.08%) due to the elimination of the F Areas by the USACE in August 2003.

Subtask N1.02.09 – Laboratory Chemical Analysis

Activity N1.02.09.07 – Sediment Analysis

This activity had a cost underrun of $6,893 (21.62%).

Subtask N1.13.90 – North Lobe Water Treatment/Testing

This subtask was for the treatment and testing of wastewater that was discharged into the city sewer. There was a $10,897 (47.05%) underrun on this subtask.

7.2.3 Task N1.21 – Demobilization

Subtask N1.21.06 – Submittals

Activity N1.21.06.91 –After Action Report

This account contains the costs for the preparation of this report. This activity had a $28,930 (135.08%) cost overrun from what was originally estimated due to the report being more detailed in terms of sediment sampling mapping and data presentation than originally anticipated in the original cost estimate and due to additional review cycles because of missing or incomplete data in original drafts.

7.2.4 Task N1.22 – General Requirements (Optional Breakout)

Subtask N1.22.03 – Warehousing, Materials Handling, and Purchasing

Activity N1.22.03.02 – Purchasing Agent

The "Procurement Activities" included Acquisition Planning, Pre-qualification, Request for Proposal (RFP), Proposal Evaluation, Request for Consent, Award and Subcontract Management. The major procurement presently was for the Dredging Subcontractor. Costs were included for other procurements such as laboratory services and other required services.

Acquisition planning established objectives and tactics that obtain the best value for a specific procurement to accomplish the USACE's needs. Acquisition planning focused on combining the purchase process with the objectives of project design and schedule while addressing all specific contract requirements.

This activity included the mailing and reproduction costs associated with procurement services.

This account had a $1,922 (6.06%) underrun.

Subtask N1.22.04 – Engineering, Surveying, and Quality Control

Activity N1.22.04.07 – Sciences

Included under this activity were the efforts to manage the technical components of work that pertain to sampling, analysis, data review and validation, and data evaluation. These included air sampling and analysis, confirmatory sediment sampling and analysis, wastewater treatment plant analyses, and material disposal sampling and analysis. Specific tasks included input/preparation of appropriate subcontractor SOWs, technical evaluation of bidder's proposal, management of sampling and laboratory subcontracts, data review, evaluation, and reporting. This activity had a cost underrun of $5,712 (15.52%), due to expanded number of confirmatory sampling that was required by USACE and EPA.

Activity N1.22.04.11 – Home Office Engineers

This activity also includes costs for preparing the SOW for the Dredging Subcontract and review of subcontractor submittals. This activity had a cost overrun of $1,291 (4.69%).

Activity N1.22.04.14 – Estimate Preparation

This activity included the time and expenses for a cost estimator to prepare the Cost Estimate. This activity also included costs for internal peer review of the Cost Estimate. This activity had a cost overrun of $3,484 (14.39%).

Activity N1.22.04.24 – Quality Control Engineer

This activity included the cost of a TtFW construction engineer to supervisor the work and to monitor the quality control of all subcontractors and the costs of a vehicle. This activity had a cost overrun of $2,327 (3.27%).

Subtask N1.22.04 had a net cost underrun of $1,192 (0.75%)

Subtask N1.22.07 – Health and Safety

This Subtask has a net cost underrun of $14,070 (98.92%) since the TtFW-dedicated Safety and Health Office was not required for this work.

Subtask N1.22.11 – Miscellaneous Project Expenses

This subtask had an estimated cost of $1,000 for miscellaneous project costs. No charges were made to this account; hence this subtask had a cost underrun of $1,000.

7.2.5 Task N1.98 – Indirect Rate Adjustment – Est.

Subtask N1.98.01 – Indirect Rate Adjustment – Estimate

There is a forecast cost of $1,989 government approved DCAA for a potential indirect rate adjustment to the FY05 indirect rates.

7.2.6 Task N1.99 – Fee

This is the TtFW fixed fee for the work as required by USACE RFP 95, including all direct costs in Jobs N1 and N2.

7.3 Job N2 – North Lobe Dredging Subcontractor

Estimated costs are based on the Cost Estimate submitted with the North Lobe Dredging Work Plan while the actual costs are obtained from the Dredging Subcontract pricing form.

This job had net cost overrun of $349,803 (30.88%), which was due mostly to subcontractor bid prices being higher than estimated. This also takes into consideration that the subcontract bid prices were based on the 4,510 CY of material as defined in Table 1-1 and that the subcontract was adjusted after subcontract award to reflect the 4,090 CY as defined in Table 1-2.

7.3.1 Task N2.01 – Mobilization

This task included the costs for the Dredging Subcontractor to mobilize all of its equipment and personnel to the site. This included setting up of temporary facilities at the North Lobe and DDA, and the preparation of submittals.

This task had a cost overrun of $381,518 (289.26%). Part of the reason for this increase in cost was due to the difference in the way the work was estimated and how it was actually performed. The Cost Estimate was based on the materials being trucked from the North Lobe to the DDA, while the actual work was performed with small scows. The water transportation method had a higher setup cost than the trucking option.

7.3.2 Task N2.02 – Supply of Turbidity Curtain

Subtask 10 – Supply of Turbidity Curtain

This is the cost for the Dredging Subcontractor to supply and delivery turbidity curtain and oil boom to the North Lobe Site.

This subtask had a cost overrun of $6,762 (20.98%), which was due to actual cost being higher than the estimated costs.

Subtask 20 – Install Turbidity Curtain

Due to favorable results from the water quality monitoring of the dredging activities, the Subcontractor did not have to install the turbidity curtain and oil boom around the dredging work areas.

7.3.3 Task N2.03 – Dredging/Transportation/Processing

The Subtasks under Task N2.03 included the cost for dredging, transporting the dredged materials from the North Lobe to the DDA, processing materials at the DDA, and bathymetric surveys.

Subtask - N2.03.10 – Dredging/Transportation/Processing Area A

This subtask had a cost underrun of $23,328 (34.63%). This area was estimated to have 470 iscy excavated, but due to the USACE August 2003 revision, this volume was reduced to 280 iscy. This cost underrun was due to the reduced volume being lower than the estimated.

Subtask - N2.03.20 – Dredging/Transportation/Processing Area B

This subtask had a cost overrun of $1,002 (3.55%), which was due to variation of subcontract price from estimated cost. August 2003 volume was 180 CY, while estimated volume was 190 CY. This minor change in estimated volume did not effect the cost of the work.

Subtask - N2.03.30 – Dredging/Transportation/Processing Area C

This subtask had a cost overrun of $130,643 (217.64%), which was mostly due to the estimated volume of 400 iscy revised by the USACE to 1,330 iscy.

Subtask - N2.03.40 – Dredging/Transportation/Processing Area D

This subtask had a cost overrun of $70,864 (21.04%), which was due to the subcontract price being higher than the estimated cost.

Subtask - N2.03.50 – Dredging/Transportation/Processing Area F-1

Dredging of Area F-1 was deleted by the USACE, hence an underrun of $27,505.

Subtask - N2.03.60 – Dredging/Transportation/Processing Area F-3

Dredging of Area F-3 was deleted by the USACE hence an underrun of $28,856.

Subtask - N2.03.70 – Dredging/Transportation/Processing Area F-4

Dredging of Area F-4 was deleted by the USACE, hence an underrun of $60,705.

Subtask - N2.03.80 – Dredging/Transportation/Processing Area F-6

Dredging of Area F-6 was deleted by the USACE, hence an underrun of $27,505.

7.3.4 Task N2.04 – Grading of the DDA

This was the cost for the final grading of the DDA after all the dredged materials were processed. This work was transferred from the North of Wood Street cost budget and was not included the North Lobe Dredging cost estimate, hence the cost overrun of $9,649 (71.02%).

7.3.5 Task N2.05 – Demobilization

This task had a cost underrun of $89,806 (57.83%), which was due to the difference of the subcontract bid price from the Cost Estimate.

7.3.6 Task N2.06 – Survey Quantities

This is the cost for performing the bathymetric survey of the additional dredging performed at Area C that was not in the Cost Estimate, hence the cost overrun of $2,200.

7.3.7 Task N2.07 – Additional Dredging/Post Survey

This task included the dredging, transporting and processing of an additional 255 CY of sediments from Area C. This additional dredging was due to the results of confirmation sampling in Area C. Total cost of this work was $38,476 that was not in the Cost Estimate.

7.3.8 Task N2.08 – Steel Debris (Cutting)

This was an additional cost of $22,971 for cutting of steel debris into smaller pieces for placement into the DDA.

7.3.9 Task N2.09 – Standby Rate

This was an additional cost of $97,845 for equipment and labor standby from the Subcontractor completing the base scope of excavation work unit it was given direction to perform additional dredging at Dredge Area C. This included standby of dredge equipment and personnel at the North Lobe, scows and support boats, and equipment and personnel at the DDA.

7.3.10 Task N2.10 – Survey Quantity Calculations

This was an additional cost of $3,476 for having BCE perform volume calculations of actually excavated from the four dredge areas.

7.3.11 Task N2.12 – Screen Material From Area D

This was an additional cost of $2,500 for screening and placing contaminated materials from Area D into the DDA.

7.3.12 Task N2.14 – Gravel Fill in DDA

This was an additional cost of $2,370 for placing gravel fill in the DDA.

7.4 Field Change Notifications

A log of Field Change Notifications (FCNs) for this work is presented in Appendix H.

7.4.1 FCNs for Job N1 – TtFW Support

The following FCNs pertained to Job N1 for changes to the scope of TtFW support services.

FCN 24-071 N1 Procurements

This FCN was for the authorization to commence pre-dredge survey prior to the USACE issuing the Modification for this work. Cost of this FCN was included in the Job N2 costs for performing the work.

FCN 24-092 NL Water Treatment/Testing

This FCN was for the treatment and testing of water that TtFW pumped from Cell No. 2 and discharged to the city sanitary sewer. The costs for this FCN were not included in the cost report, but were funded under Modification 2418.

FCN 24-101 Additional Analysis

This FCN was for the additional testing of 46 confirmation samples for National Oceanographic and Atmospheric Administration (NOAA) PCB congeners, due to sloughing of sediments into the dredged areas. The costs for this FCN were not included in the cost report, but were funded under Modification 2418.

FCN 24-120 Compressed Gas Cylinders

There was an additional cost of $750 for handling and disposing of five compressed air cylinders, which were found in the scows at the DD during off loading operations.

7.4.2 FCNs for Job N2 – Dredging Subcontractor

The following FCNs pertained directly to the Dredging Subcontract.

FCN 24-085 North Lobe Quantity Changes and Area F Deletion

This FCN was only issued to document the changes due to the USACE revised drawings issued in August 2003. These changes have been addressed in the comments to the subtasks under Task N2.02 of the cost report.

FCN 24-102 Additional Dredging/Confirmation Sampling

This FCN was for the additional dredging and sampling that was performed in Area C due to the results of the first confirmation samples in that area. The costs for the additional dredging are included as Task N2.06 in the cost report. Costs of the additional sampling are included in Job N1 costs in the cost report.

FCN 24-109 Standby Time

The additional cost of $97,845 for this FCN was included in the cost report under Task N2.09. This cost was for the standby of dredging subcontractor's equipment and personnel from the time that the subcontract scope of dredging work was completed unit USACE determined that additional dredging was required at Dredge Area C.

FCN 24-114 Steel Debris Removal

This FCN is for the cutting of large steel debris removed from the North Lobe Dredge Areas for placement into the DDA. The additional cost of $22,971 for this FCN was included in the cost report under Task N2.08. During the preparation of the North Lobe Dredging Work Plan and Cost Estimate it was not anticipated that steel debris removed from the North Lobe Dredge Area would require down sizing for placement into the DDA.

FCN 24-116 Quantity Calculations

The USACE requested that Maxymillian's Hydrographic Survey Subcontractor perform volume calculations of the material excavated from the North Lobe Dredge Areas. Per the contract specifications this was work that was to be performed by the USACE. The cost of $5,676 was included in the cost report under Task N2.07.

8.0 OBSERVATIONS AND LESSONS LEARNED

8.1 Water Transport of Dredged Materials

The original Work Plan was based on the dredged sediment being offloaded onto the North Lobe and then trucked on city streets from the North Lobe Site to the Sawyer Street Facilities. The selected subcontractor proposed the alternate method of barging the materials from the dredge at the North Lobe to the DDA at the Sawyer Street Facilities.

The Subcontractor's use of small scows to transport dredged materials from the North Lobe to the DDA at Sawyer Street proved beneficial. The small scows were able to travel under the low clearance of the Coggeshall Street Bridge and maneuver in the shallow water at the DDA. Keeping the materials on the water eliminated the need for manifesting the material from the North Lobe to the Sawyer Street Facilities since the water is considered part of the Superfund Site. This eliminated the handling of materials at the North Lobe Site and the trucking of materials on the busy city streets. The on water transport of the dredged materials proved to be a safe and cost-effective method of transporting contaminated materials.

The lessons learned are that it is beneficial to utilize water transport whenever possible and limit the trucking of materials on city streets.

8.2 Verification of Dredged Depths Prior to Confirmation Sampling

The Dredging Subcontract was written for the Dredging Subcontractor to remove sediments to depths as indicated on the USACE design drawings. The Dredging Subcontractor was to perform pre-dredge bathymetric surveys prior to commencing the dredging work to determine the existing mud line elevations. Based on the pre-dredge elevations, the Dredging Subcontractor would then determine excavation elevations by subtracting the specified dredge depths from the pre-dredge elevations. Once the dredging in an area was completed, the Dredging Subcontractor was to perform a post-dredge bathymetric survey to verify that the material had been removed to the required depths. Verification that dredging was performed to the required depths was to be done prior to collecting the confirmation samples.

Since Maxymillian was using a GPS kinematic positioning system to control and record the excavation depths of the dredge bucket, the USACE decided to use this information as verification that the required dredge depth had been met. Based on review of the data indicating the locations and depths where dredge bucket had excavated, the USACE directed that the confirmation samples be taken once dredging within a dredge area had been completed. Hence, the post-dredge bathymetric survey was actually performed after the confirmation samples had been collected.

Upon the review of the post-dredge bathymetric surveys, it was discovered that there was sloughing along the sides of the dredge areas. It was determined that some of the samples had been obtained in areas where the post bathymetric survey showed that the material had not been dredged to the depths shown on the design drawings. The data from the dredge bucket positioning system recorded where the bucket excavated while the post-dredge bathymetric surveys show the actual post-dredge bottom conditions.

The confirmation sampling results from Dredge Areas A and B clearly indicated that the goal of removing sediments with PCB concentration above 50 ppm had been met. However, the confirmation results for Dredge Area D taken on October 7, 2003 had to be supplemented with additional samples taken ten days later on October 17, 2003. Dredge Area D required careful review of the post-dredge bathymetric surveys showing sloughing with the details of the confirmation sample results for the USACE to declare that the dredging objective for Dredge Area D had been met.

In the future, post-dredge bathymetric surveys should be used to verify that the design excavation depths have been obtained prior to performing confirmation sampling. The Dredging Subcontractor is contractually responsible for the dredging designated areas to specified depths. The only method of verifying that the Dredging Subcontractor has meet its contractual obligation is post dredging bathymetric surveys. Based on confirmation sample results, requirements for removal of additional materials can then be determined. It is also important that the same survey equipment and methods are used for both the pre- and post-dredge surveys.

8.3 Cross-Sections to Document Dredging

The specifications did not provide clear instruction on what was required for the as-built drawings to verify that the dredging had been performed. There were several iterations before the final format of cross-sections, as shown on the as-built drawings in Appendix C, was agreed upon. It was these cross-sections, which eventually showed sloughing of the side slopes, and areas where material had not been removed to the required depth.

The dredging contract documents should clearly define that the bathymetric surveys be verified by cross-sections showing the existing bottom, designed depths with over dredge limits and final excavated depths. If additional dredging is required due to the results of the confirmation sampling, then that additional dredging should also be shown on the cross-sections. The spacing of the cross-sections should not be greater than 20-foot spacing. For small areas, the bathymetric surveys should be performed in two directions.

8.4 Dredge Cut Side Slopes

The as-built cross-sections in Appendix C show as-dredged side slopes ranging from 1 vertical to 5 or 6 horizontal. The dredge design drawings indicated side slopes of 1 vertical to 1 horizontal. This sloughing of the side slope would have increased the total volume of material to be removed had all the dredge areas had sediments removed as indicated on the design drawings. However, based on detailed review of the bathymetric survey results and the results from the confirmation sampling, the USACE representative determined that the material that had sloughed into the dredged areas had PCB concentrations above the target level of 50 ppm.

In future dredging design, the design side slopes of the dredging limits should be based on geotechnical data of the material to be dredged. Softer material will require greater design side slope than stiffer material. Variation in side slope angles will affect the quantity of materials to be removed. This is especially applicable when dredging small areas, as was the case in the North Lobe Dredging.

8.5 Standby Time

When the Dredging Subcontractor completed the contractual scope of dredging, the dredging equipment and DDA operations were put on standby while the final confirmation samples were collected and analyzed. The dredging equipment could not be demobilized from the site until the confirmation sample results were reviewed to determine if additional dredging would be required. The last of the contractual dredging was completed in Dredge Area C on October 14, 2003 and the post-dredge bathymetric survey was performed on October 16, 2003. Based on the results of the confirmation samples, on about November 2, 2003, direction was given to perform additional dredging in Dredge Area C. This was about two weeks of standby time.

The Dredging Subcontract did have a unit day rate for standby, but when the standby rate would be applied was not defined. This resulted in confusion of what standby cost the subcontractor was entitled to be reimbursed. This resulted in a negotiated change order taking into account standby cost for the dredging equipment and the processing equipment at the DDA.

Future dredging subcontracts should include a unit rate price for standby charges associated with each distinct operation and clear definition of when those rates are to be applied. Then the only issue to be resolved in the field would be the amount of standby time, and the requirement for a either a change order or claim would be avoided.

The following are suggested recommendations for future dredging contracts:

1. Define the completion of the dredging work as being after the post dredge bathymetric surveys have been completed and verify that the dredging has been performed to the depths and limits as shown on the contract drawings. The contractor had an obligation to remove all material to the minimum depths as indicated on the contract drawings.

2. Clearly define the time for confirmatory sampling and whether the period waiting for the confirmation sampling results is part of the overall dredge unit rate or standby costs.

3. Request pricing for various standby situations, such as standby costs for equipment and personnel on an hourly and daily basis; and standby cost for equipment only on a daily, weekly, monthly basis.

4. Clearly define under what circumstances standby charges will be allowed and more importantly will not be allowed. In general, with the exception of weather delays, standby charges should be allowable for anything that is not directly under the subcontractor's control, such as delays in sampling/analysis/evaluation of confirmatory sampling results. Conversely, it should not be allowable for having to stop dredging because the contractor is not taking the proper controls to minimize turbidity, which is work under its direct control.

These recommendations will help to achieve clearer definition of applicable standby charges in the dredging contract, but that is only one aspect of controlling standby cost during construction. The other aspect is to minimize the amount of standby time that is incurred from the time the dredging contractor has completed the contractual scope of work until the owner makes the final decision if additional dredging will be required based on confirmatory sample results. This requires up front planning and subsequent implementation of the final confirmation sampling, so that construction and supporting activities proceed in a manner that minimizes the amount of incurred standby time. Efforts should be taken to expedite the determination of the need for additional material removal.

8.6 Debris in Dredged Sediments

There was a large amount of debris from this dredging operation including wood, steel, and steel cylinders that were not fully realized when writing the Work Plan for this work. The debris not only had direct costs for handling and processing the debris, but the large amount of debris also had a negative effect on dredging production rates. In some cases, the debris would prevent the hydraulic bucket from closing, allowing sediments to flow out from the bucket possibly contributing to the sloughed material in the dredged area which was indicated on some of the post-dredge bathymetric surveys.

Future Work Plans should address how debris should be handled and disposed. Future contract documents should have provisions to pay the dredging contractor for handling and disposal of debris that

could be encountered in the dredged sediments. In cases where large pieces of debris are known to exist, an effort should be made to remove those large pieces of debris prior to dredging the sediments. Ways to identify pieces of debris is to conduct side scan sonar and magnetic surveys in the areas to be dredged.

8.7 Hydraulic Transport of Dredged Materials

Consideration was given to pumping materials from the North Lobe to the DDA, thus eliminating the trucking or barging of the dredged sediments. The unit costs for the hydraulic transport of the dredged sediments are less than either trucking or barging of the materials. But the costs for setting up pumping operations, such as pumps, pipelines and transfer operations, were more costly than the setup costs required for either trucking or barging of the dredged sediments. Due to the small volume of materials involved in the North Lobe Dredging, the barging of the dredged sediments was more economical than pumping.

To hydraulically transport the dredged sediments, debris has to be removed prior to the material being pumped. In the case of the North Lobe material with the high amount of debris, this would have been a significant effort.

The lesson learned is that the cost-effective method of transporting and processing of materials is dependent on a number of factors, which include the following.

- Type of material to be dredged – silt, high organic content, sandy, etc.
- Method of dredging materials – mechanical or hydraulic.
- Volume of materials to be excavated – lower processing costs on large volumes can justify higher setup cost.
- Amount of debris expected – large volumes of debris could eliminate the possibility of hydraulic dredging and transport of materials.
- Distance that material are to be transported – cost of transport pipelines over long distances can eliminate the cost effectiveness of hydraulic transport of dredged sediments.
- Method of processing and disposal of materials.

8.8 Water Quality Monitoring

In navigational dredging contracts, it is common for the requirement of water quality monitoring to be performed by the dredging contractor. For the North Lobe Dredging, the USACE performed the water quality monitoring which worked well. This allowed the USACE to adjust the water quality monitoring efforts as the dredging work progressed.

For future environmental dredging efforts, it is recommended that the owner perform the water quality monitoring. In the case of the North Lobe Dredging the USACE was the owner. This allows for the dredging contractor to concentrate on performing the work rather than performing regulatory functions and allows the owner to have more control over the monitoring functions.

8.9 Over-Dredge Penalty

Due to limited capacity of Cell No. 1 to receive dredged materials, there was a penalty for over dredging. The payment for the dredging of the four areas was set up to be a lump sum for the dredging of each area. It was the Dredging Subcontractor's responsibility to dredge to the required depths and the over-dredge penalty was added to ensure that the storage capacity of Cell No. 1 was not exceeded and the amount of excess sediments to be processed and disposed would be limited. This turned out not to be an issue for the North Lobe Dredging because dredging for the F areas was eliminated. However, this consideration

should be given to future dredging and excavation contracts to protect increased cost of processing and disposal of excess dredged sediments.

8.10 Use of Lump Sum Payment

Since the scope of dredging work was defined to specific small areas, the payment for the dredging of each area was on a lump sum basis rather than a unit rate for measured volume of sediments removed. This allowed the Dredging Subcontractor to price out the work for each area and provided an incentive to not remove more material than was required. This also made the measurement and payment for the work more straightforward.

It is recommended that this approach of lump sum payment be utilized as much as possible on future dredging and excavation contracts.

8.11 Bathymetric Surveys Done by Dredging Contractor

In normal USACE dredging contracts, the owner is performing the pre and post bathymetric surveys to determine payment quantities. In the case of the North Lobe Dredging, the pre and post bathymetric surveys were only performed by the Dredging Subcontractor and were monitored by the USACE and TtFW field personnel. The Dredging Subcontractor was able to effectively schedule the bathymetric surveys with the ongoing dredging production work. This also eliminated possible delay claims of not having owner surveys supplied in a timely manner.

The specifications should clearly define the requirements for contractor surveys and when these surveys are to be performed. There should be methods to verify the contractor supplied survey information.

8.12 Confirmation Sample Elevations

The northing and easting coordinates were recorded for each confirmation sample taken; the surface elevation of the samples was not obtained. The elevation of the samples is important when evaluating the confirmation sampling results. Not having the sample elevations made it impossible to determine if the samples are taken from sloughed material or actual bottom of the dredged profile.

The elevation of the samples should be determined by use of lead lines and tide gauge readings when the samples are collected. The soundings should take into consideration the soft mud bottom. The other option is to obtain the sample elevation based on the most recent bathymetric survey of the area. It is realized that the elevation of the samples will not exactly match what is shown on a bathymetric survey for two reasons: One is the difference in survey methods, and the second is due to variations in bottom contours. The sample has high probability of being taken at a location that was not sounded, since the bathymetric surveys are performed on transects spaced 10 to 25 feet apart.

The surface elevation of the confirmation samples should be recorded along with the northing and easting grid coordinates. This is particularly important when confirmation samples are in areas that required additional dredging. The results of the confirmation samples should be shown on the final cross-sections of the dredged areas as verification that the final surface materials in a dredged area have been remediated to the specified cleanup goals.

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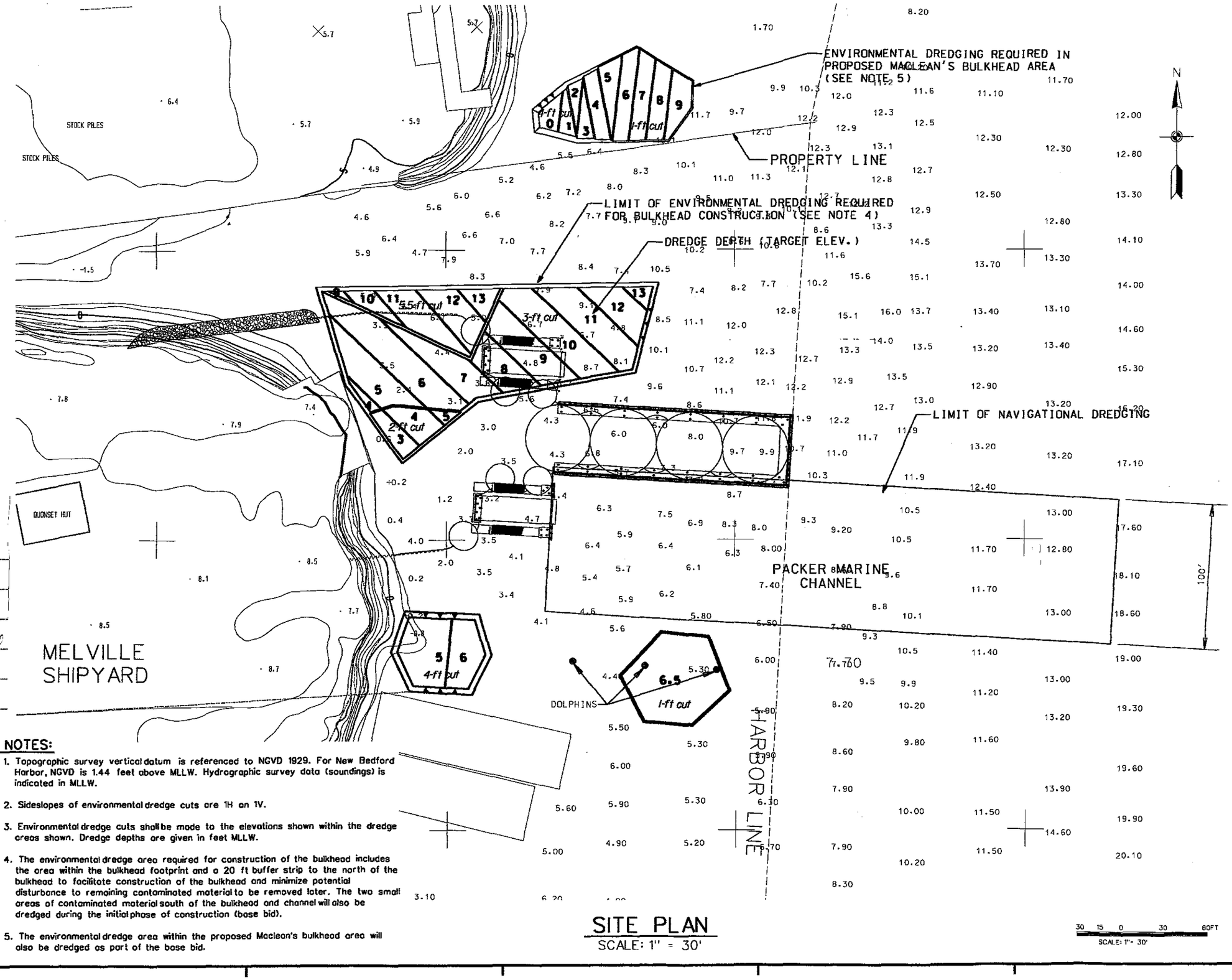
APPENDICES

A

Appendix A

USACE May 2003 Drawings

Note full size drawing in distributed copy App A + App B



NOTES:

1. Topographic survey vertical datum is referenced to NGVD 1929. For New Bedford Harbor, NGVD is 1.44 feet above MLLW. Hydrographic survey data (soundings) is indicated in MLLW.
2. Sideslopes of environmental dredge cuts are 1H on 1V.
3. Environmental dredge cuts shall be made to the elevations shown within the dredge areas shown. Dredge depths are given in feet MLLW.
4. The environmental dredge area required for construction of the bulkhead includes the area within the bulkhead footprint and a 20 ft buffer strip to the north of the bulkhead to facilitate construction of the bulkhead and minimize potential disturbance to remaining contaminated material to be removed later. The two small areas of contaminated material south of the bulkhead and channel will also be dredged during the initial phase of construction (base bid).
5. The environmental dredge area within the proposed Maclean's bulkhead area will also be dredged as part of the base bid.

SITE PLAN
SCALE: 1" = 30'

30 15 0 30 60FT
SCALE: 1"= 30'

NEW BEDFORD HARBOR

US Army Corps of Engineers
New England District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
UPPER AND LOWER HARBOR (OU-1)
NEW BEDFORD, MASSACHUSETTS

MELVILLE SHIPYARD DREDGING
ENVIRONMENTAL DREDGING PLAN - 1

Reference number:
C-1
Sheet 2 of 5

NOTES:

1. Topographic survey vertical datum is referenced to NGVD 1929. For New Bedford Harbor, NGVD is 1.44 feet above MLLW. Hydrographic survey data (soundings) is indicated in MLLW.
2. Sideslopes of environmental dredge cuts are 1H on 1V.
3. Environmental dredge cuts shall be made to the elevations shown within the dredge areas shown. Dredge depths are given in feet MLLW.

MACLEAN'S SEAFOODS

NEW BEDFORD HARBOR

RAMP

OVERHEAD STRUCTURE

PILES

STOCK PILES

3-ft cut

1.5-ft cut

2-ft cut

SITE PLAN

SCALE: 1" = 30'

SCALE: 1"= 30'

US Army Corps of Engineers
New England District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

Designed by: M. DeSouza
Drawn by: M. DeSouza
Reviewed by:
Submitted by: Chief, Civil Engrg. Sect.

Date: May, 2003
Design file no.: CDMAC01s02
Drawing code:
File name:
Plot scale:
Plot date:

NEW BEDFORD HARBOR SUPERFUND SITE
UPPER HARBOR, OPERABLE UNIT 1
NEW BEDFORD, MASSACHUSETTS

MELVILLE SHIPYARD DREDGING
ENVIRONMENTAL DREDGING PLAN - 2

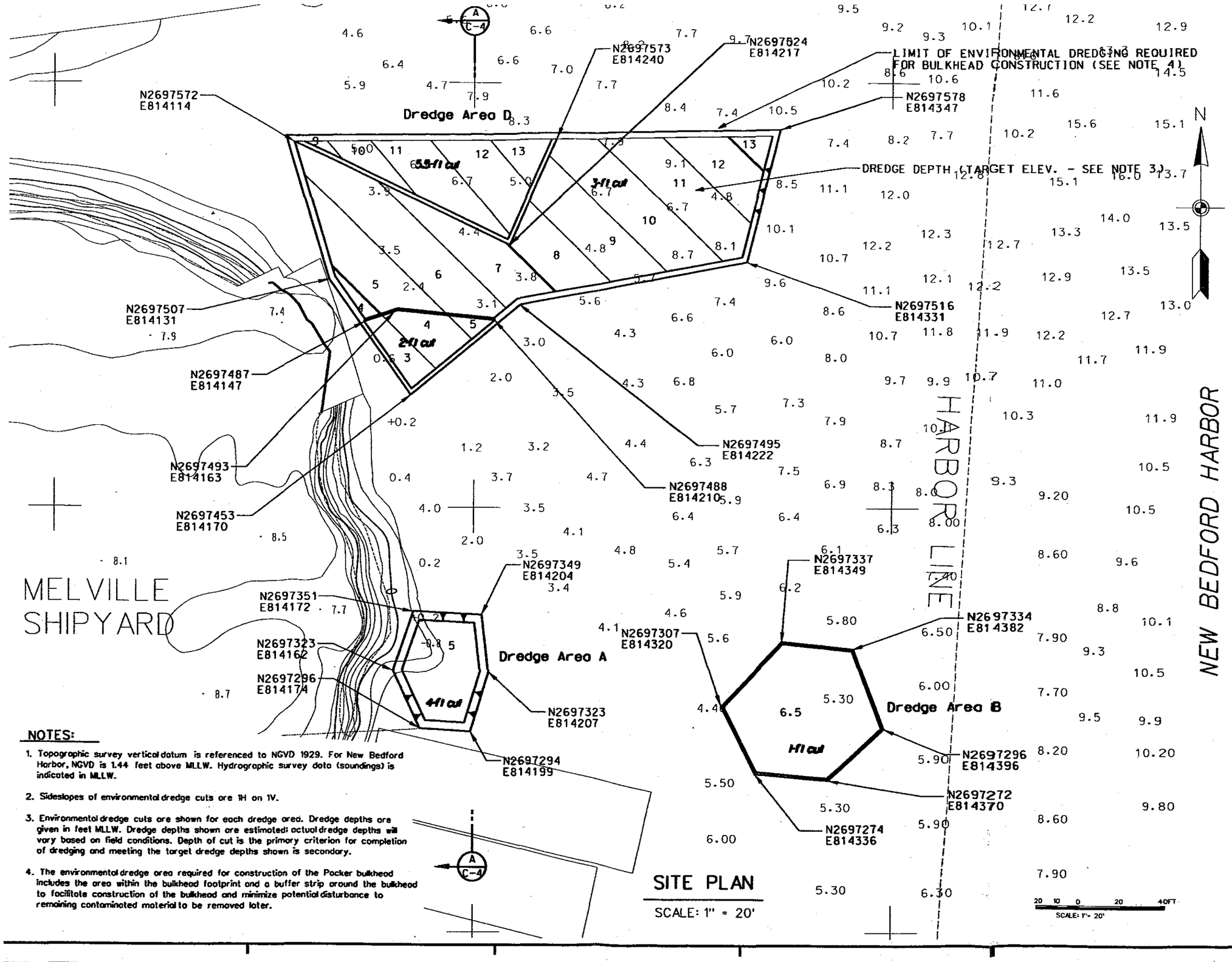
Reference number: C-2

Sheet 3 of 5

B

Appendix B

USACE August 2003 Drawings



NOTES:

1. Topographic survey vertical datum is referenced to NGVD 1929. For New Bedford Harbor, NGVD is 1.44 feet above MLLW. Hydrographic survey data (soundings) is indicated in MLLW.
2. Sideslopes of environmental dredge cuts are 1H on 1V.
3. Environmental dredge cuts are shown for each dredge area. Dredge depths are given in feet MLLW. Dredge depths shown are estimated; actual dredge depths will vary based on field conditions. Depth of cut is the primary criterion for completion of dredging and meeting the target dredge depths shown is secondary.
4. The environmental dredge area required for construction of the Packer bulkhead includes the area within the bulkhead footprint and a buffer strip around the bulkhead to facilitate construction of the bulkhead and minimize potential disturbance to remaining contaminated material to be removed later.

SITE PLAN

SCALE: 1" = 20'

SCALE: 1"= 20'

US Army Corps of Engineers
New England District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

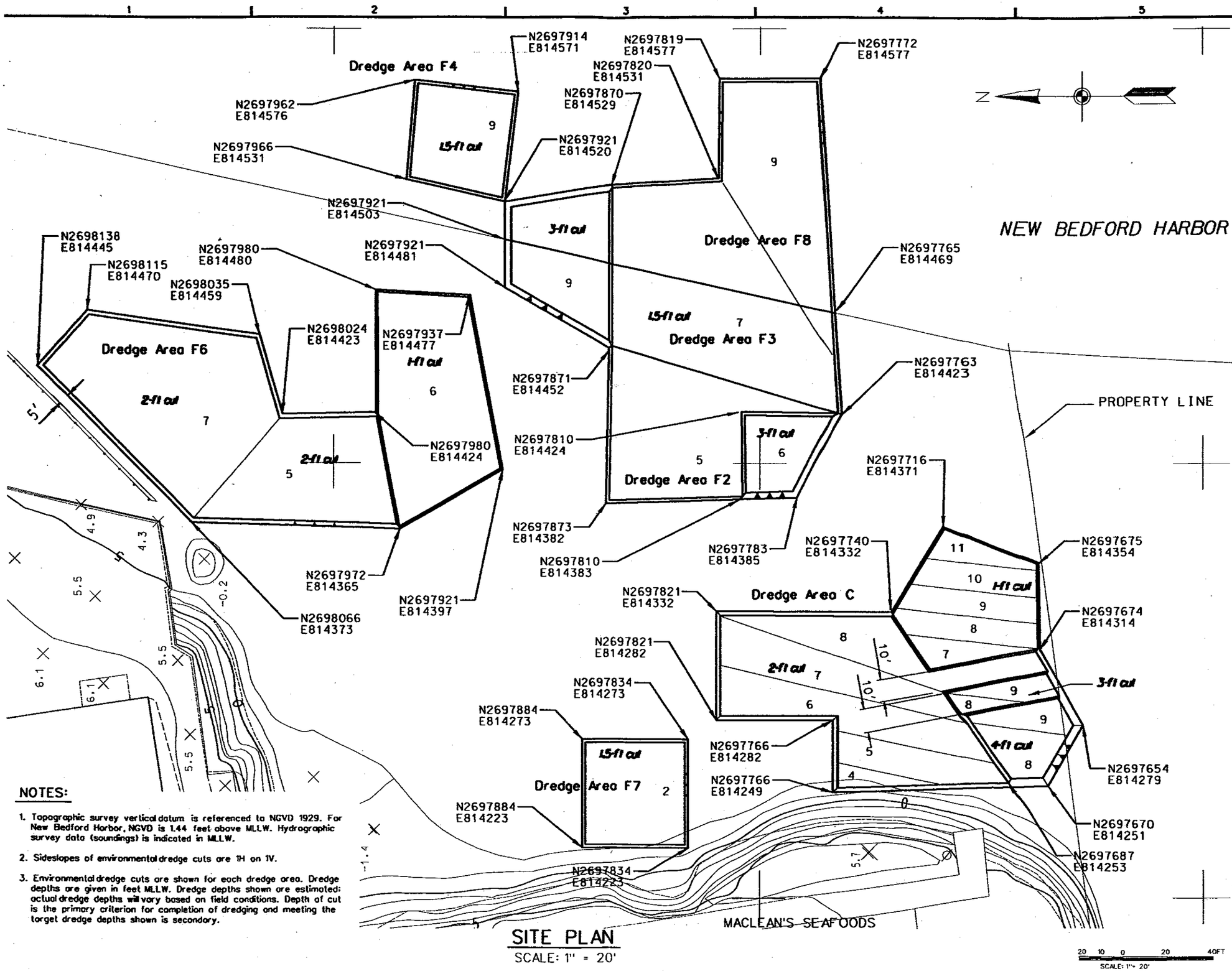
Designed by: M. DeSousa
Drawn by: M. DeSousa
Reviewed by:
Submitted by: Chief, Civil Engrg Sect

Date: May 2003
Design file no. CONWO21.dgn
Drawing scale
File name
Plot date
Plot scale

NEW BEDFORD HARBOR SUPERFUND SITE
UPPER AND LOWER HARBOR (OU#1)
NEW BEDFORD, MASSACHUSETTS

MELVILLE SHIPYARD DREDGING
ENVIRONMENTAL DREDGING PLAN - 1

Reference number:
C-1
Sheet 2 of 5



NOTES:

1. Topographic survey vertical datum is referenced to NGVD 1929. For New Bedford Harbor, NGVD is 1.44 feet above MLLW. Hydrographic survey data (soundings) is indicated in MLLW.
2. Sideslopes of environmental dredge cuts are 1H on 1V.
3. Environmental dredge cuts are shown for each dredge area. Dredge depths are given in feet MLLW. Dredge depths shown are estimated; actual dredge depths will vary based on field conditions. Depth of cut is the primary criterion for completion of dredging and meeting the target dredge depths shown is secondary.

SITE PLAN

SCALE: 1" = 20'

US Army Corps of Engineers
New England District

Rev.	Date	Description
	May 2003	
	Design file no. CONC122.dd3	
	Drawing code	
	File name	
	Plot date	
	Plot scale	

Designed by: M. DeRosa
Drawn by: M. DeRosa
Reviewed by:
Submitted by:
Chief, Civil Engrg. Sect.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

NEW BEDFORD HARBOR SUPERFUND SITE
UPPER AND LOWER HARBOR (OU-1)
NEW BEDFORD, MASSACHUSETTS

MELVILLE SHIPYARD DREDGING
ENVIRONMENTAL DREDGING PLAN - 2

Reference number:
C-2

c

Appendix C

BCE's As-Built Surveys

Appendix C.1	**Area A As-Built Cross Sections**
Appendix C.2	**Area B As-Built Cross Sections**
Appendix C.3	**Area C As-Built Cross Sections**
Appendix C.4	**Area C Additional Dredging As-Built Cross Sections**
Appendix C.5	**Area D As-Built Cross Sections**
Appendix C.6	**Post Dredge Survey Plan**

Appendix C.1

Area A As-Built Cross Sections

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on reverse side prior to initiating this form)*	DATE 12/11/2003	TRANSMITTAL NO: 01722-007

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by the Contractor)

TO:	FROM:	CONTRACT NO:	CHECK ONE:
Foster Wheeler Environmental Corporation New Bedford Harbor Superfund Site Project Office 103 Sawyer Street New Bedford, MA 02746	Maxymillian Technologies, Inc. Environmental Contractor 1801 East Street Pittsfield MA 01201	DACW33-94-D-0002	☑ THIS IS A NEW TRANSMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITTAL _____

SPECIFICATION SECTION NO: (Cover only one section with each transmittal)	PROJECT TITLE AND LOCATION:
01722 - Field Engineering	New Bedford Harbor Superfund Site; North Lobe

ITEM NO. a.	DESCRIPTION OF ITEM SUBMITTED (Type, size, model number, etc.) b.	MFG. OR CONTR. CAT. CURVE DRAWING OR BROCHURE NO. (See Instruction No. 8) c.	NO. OF COPIES d.	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE g.	VARIATION (See Instruction No. 6) h.	FOR CE USE CODE i.
				SPEC. PARA. NO. e.	DRAWING SHEET NO. f.			
	SD-05 - Design Data - Field Survey Data							
1	Post Dredge Survey Profiles, Areas A, B, C & D FIO		5	1.4				
	NBH SITE							
	DEC 15 2003							
	RECEIVED							

REMARKS

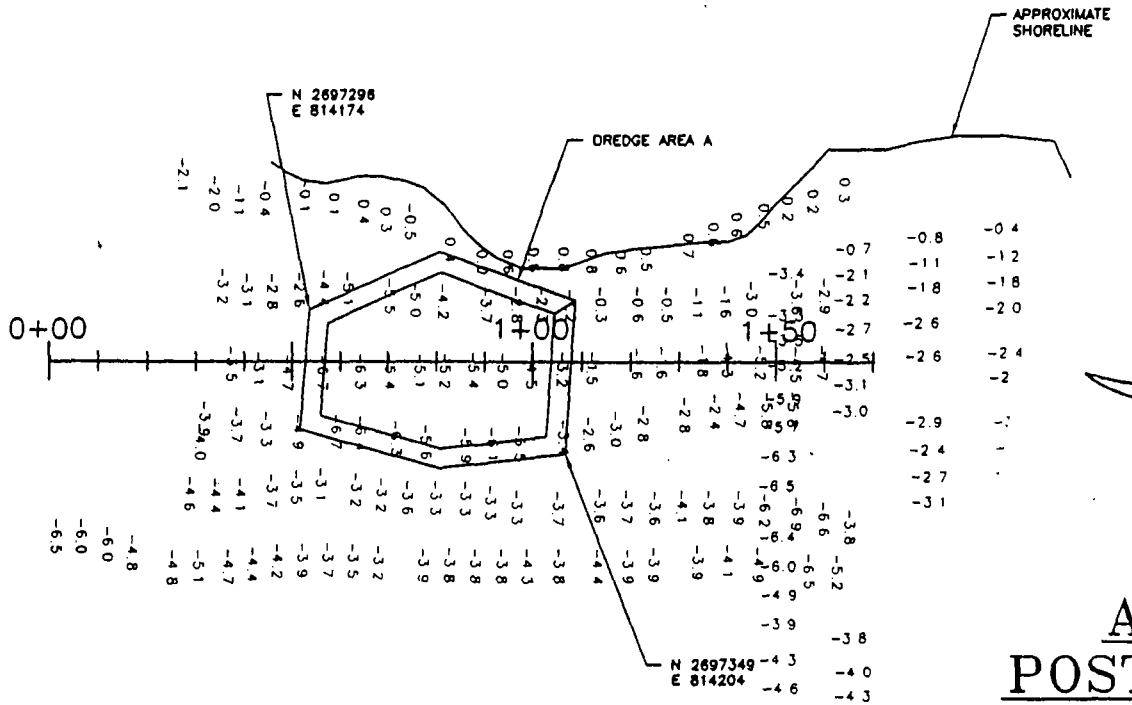
I certify that the above submitted items have been reviewed in detail and correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

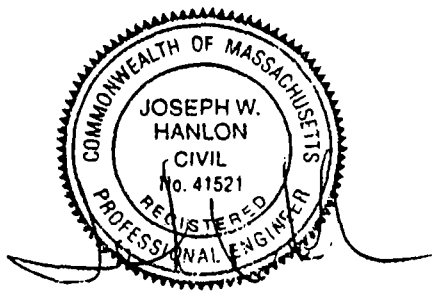
Joseph Aberdale, Chief Engineer; Maxymillian Technologies, Inc.

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

03075 MT 14





BCE

DEC 08 2003

BOURNE CONSULTING ENGINEERING

AREA A
POST-DREDGE
SITE PLAN

NEW BEDFORD SUPERFUND SITE
MELVILLE SHIPYARD DREDGING
USACE CONTRACT# DACW 33-94-D-002
NEW BEDFORD, MA
DECEMBER 5, 2003

0 40

SCALE: 1" = 40'

REVISIONS	

BCE **Bourne Consulting Engineering**
104 East Central Street
Franklin, MA 02038
PH. (508) 528-4133 FAX (508) 528-4771

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-05-01

SHEET 1 OF 11

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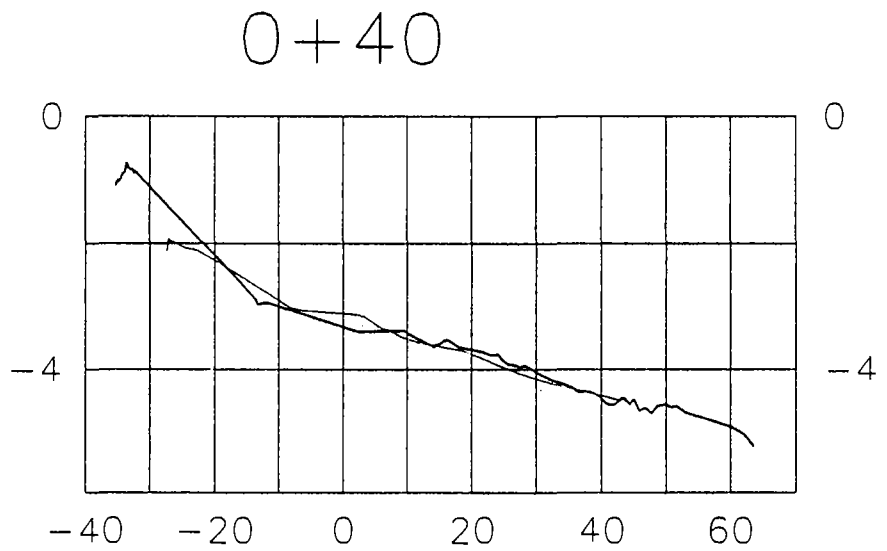


LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA A
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

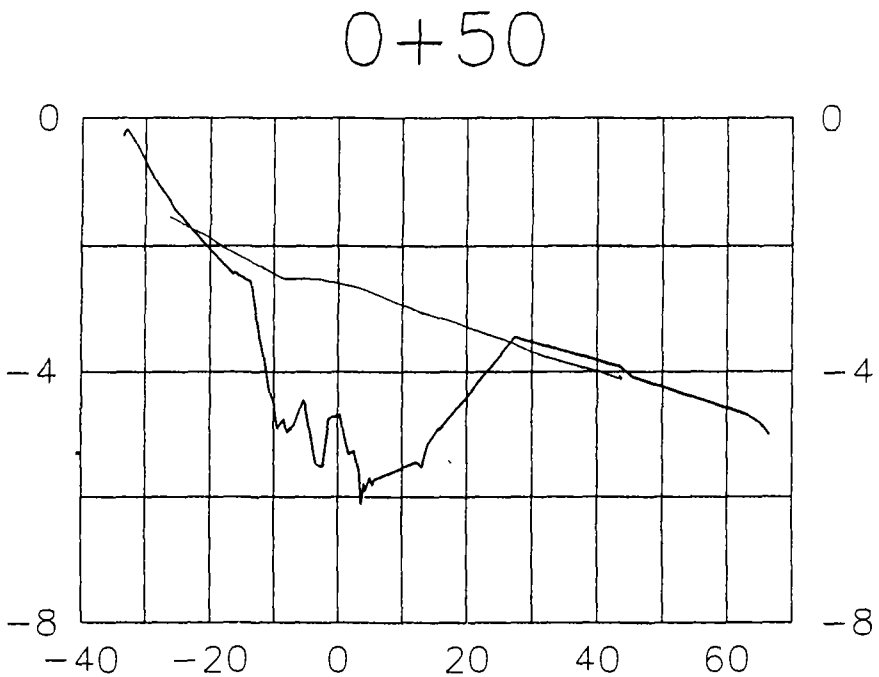
Bourne Consulting Engineering
BCE
[illegible] Franklin, MA [illegible]
PH. (508) 520-4158 FAX (508) 520-4171

REVISIONS

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-05-02

SHEET 2 OF 11



LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA A
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering
BCE
JW West Central Street
Franklin, MA 02038
PH. (508) 528-6133 FAX (508) 528-6171

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-05-03

SHEET ( ) OF 11

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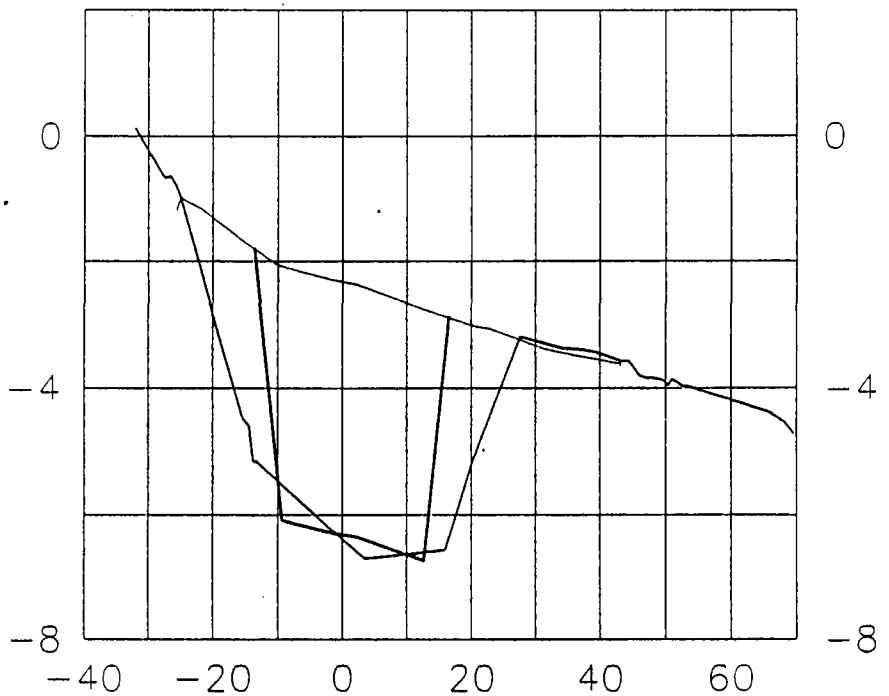

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA A
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

BCE Bourne Consulting Engineering
104 West Central Street
Franklin, MA 02038
TEL (508) 528-4133 FAX (508) 528-4477

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-05-04

SHEET 4 OF 11

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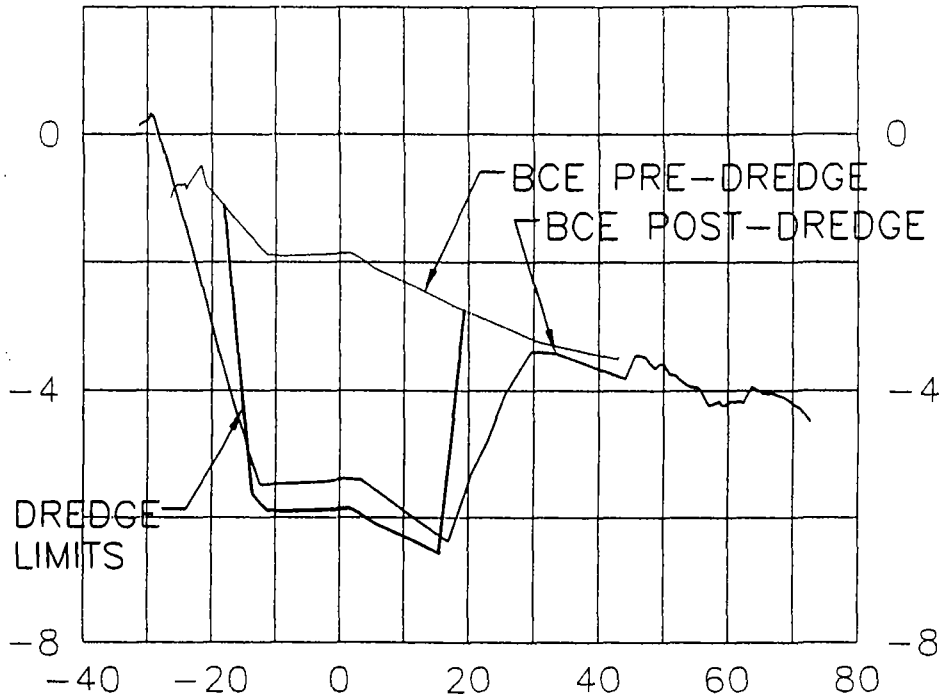

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA A
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-05-03

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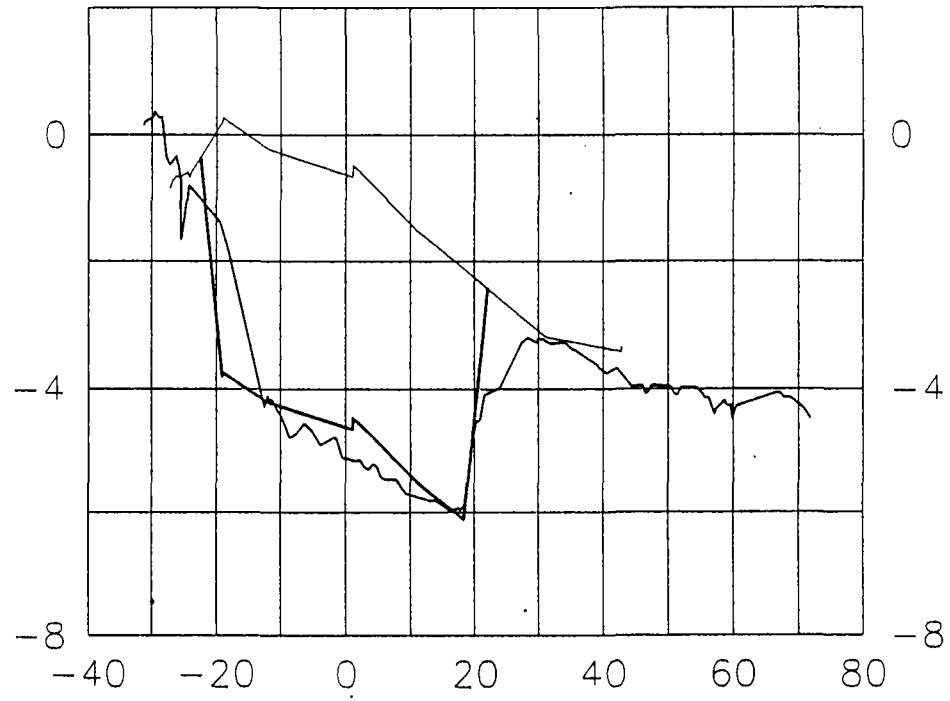

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA A
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering
104 West Central Street
Franklin, MA 02038
PH. (508) 528-4132 FAX (508) 528-0971

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-05-06

SHEET 6 OF 11

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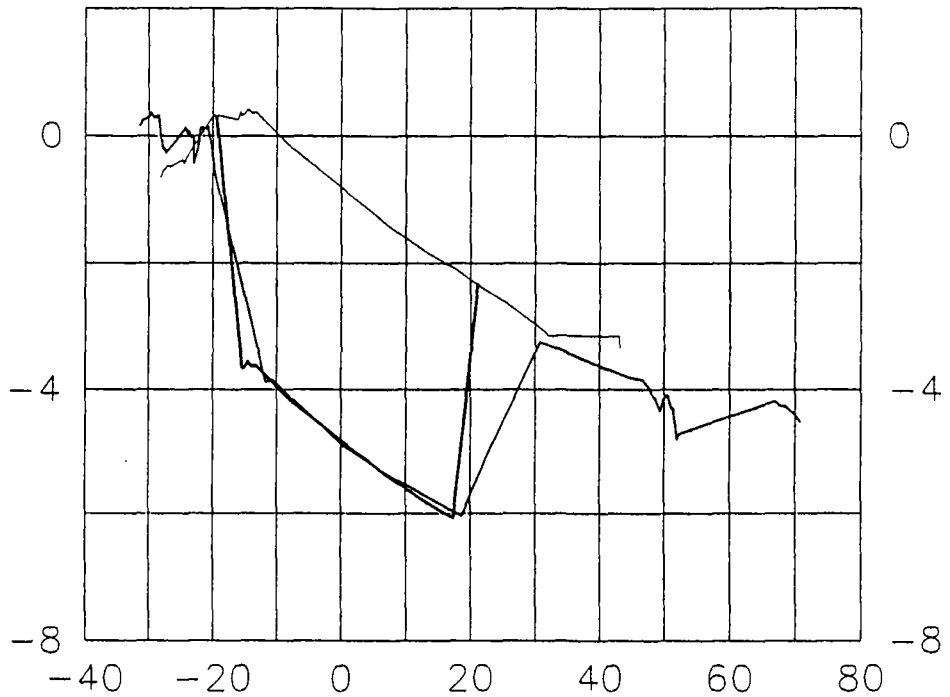

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA A
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering
104 Port Central Street
Franklin, MA 02038
PH. (508) 528-4132 FAX (508) 528-4071

REVISIONS	DRAWN: RBH	DRAWING NO. 23468-05-07
	CHECKED: JWH	
	APPROVED: JWH	
	DATE: 12/05/03	SHEET 11 OF 11

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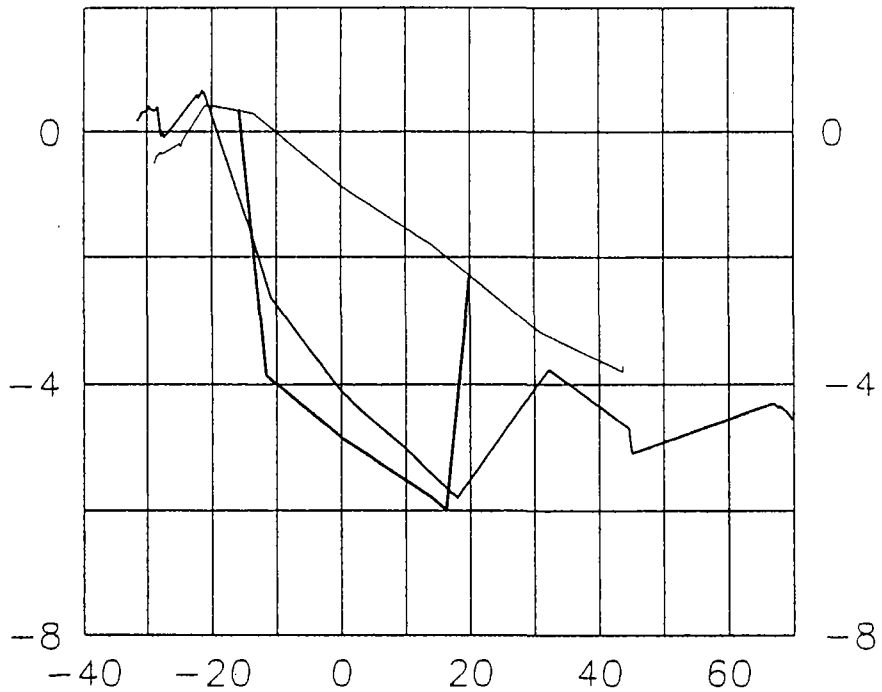

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA A
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering
184 West Central Street
Franklin, MA 02038
TEL (508) 528-8135 FAX (508) 528-3971

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

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SHEET 8 OF 11

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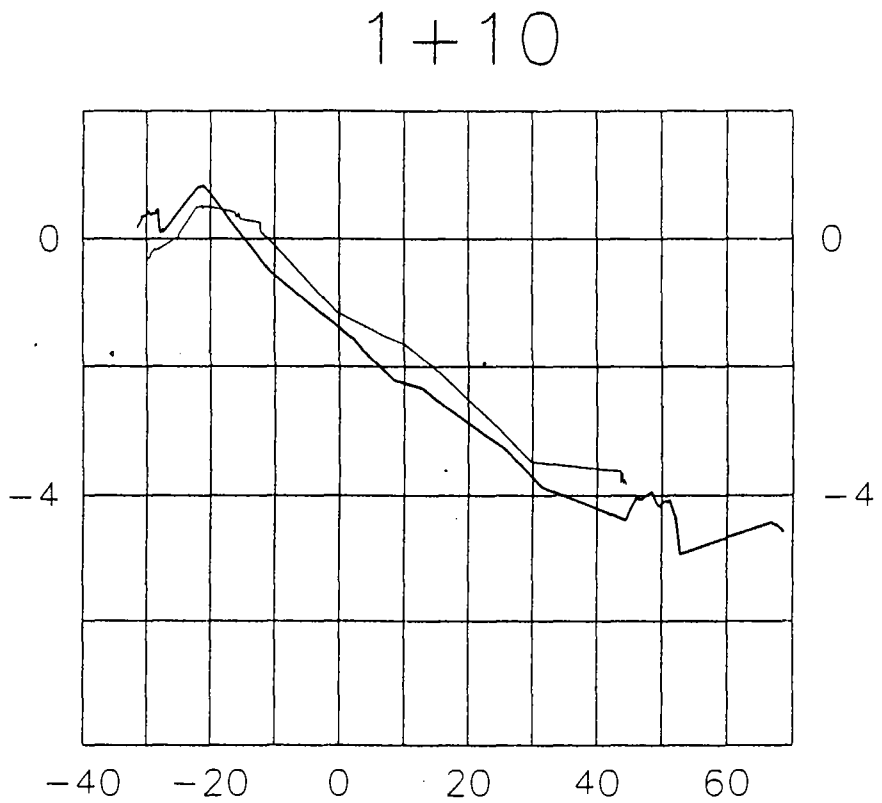

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA A
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering
101 West Central Street
Franklin, MA 02038
PH. (508) 528-4133 FAX (508) 520-0071

REVISIONS

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CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

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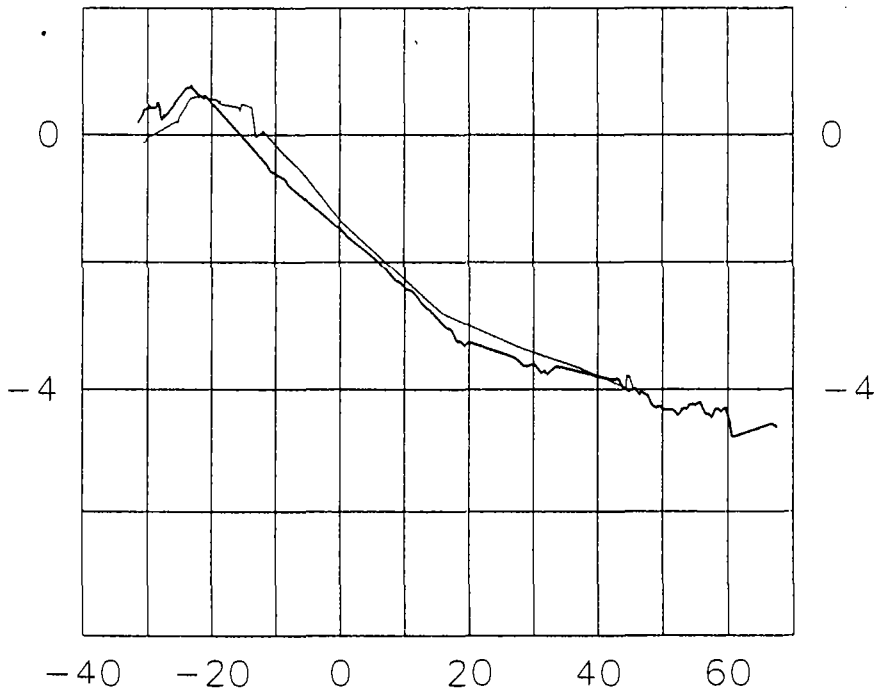

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA A
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-05-10

SHEET 10 OF 11

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NOTES:

1. CROSS SECTIONS BASED ON A PLAN BY BOURNE CONSULTING ENGINEERING ENTITLED "POST DREDGE AREA A, POST DREDGE AREA C NEW BEDFORD SUPERFUND SITE MELVILLE SHIPYARD DREDGING USACE CONTRACT# DACW 33-94-D-002" DATED 10/17/03

2. ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON A MEAN LOWER LOW WATER DATUM. POSITIVE VALUES REPRESENT DEPTH ABOVE THAT SAME PLANE.

3. THE INFORMATION PRESENTED ON THIS CHART REPRESENTS THE RESULTS OF SURVEYS PERFORMED BY BOURNE CONSULTING ENGINEERING ON 8/12/03 AND 10/16/03 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO BCE.

4. HORIZONTAL AND VERTICAL CONTROL FOR THIS SURVEY WAS PROVIDED BY MAXYMILLIAN TECHNOLOGIES INC.

5. BENCH MARK IS A POINT SET IN THE NORTHEAST CORNER OF A CONCRETE PAD (DECON PAD) ELEV=8.14 NGVD
=9.58 MLLW

6. DREDGE AREAS TAKEN FROM A PLAN ENTITLED "NEW BEDFORD HARBOR SUPER FUND SITE (OU#1) NEW BEDFORD, MA. MELVILLE SHIPYARD DREDGING ENVIRONMENTAL DREDGING PLAN -1&2" PREPARED BY USACE MAY, 2003

7. DREDGE DEPTHS WITHIN THE DREDGE AREA WERE ADJUSTED BY -0.2 TO COMPENSATE FOR FLUFFING MEASUREMENTS TAKEN WITHIN THE DREDGE AREA ON NOVEMBER 18, 2003.

8. DREDGE VOLUME BASED ON PRE AND POST DREDGE HYDROGRAPHIC SURVEYS IS AS FOLLOWS:

AREA DESIGNATION	DREDGE VOLUME
DREDGING AREA A	331 CUBIC YARDS

AREA A POST-DREDGE NOTES

NEW BEDFORD SUPERFUND SITE

MELVILLE SHIPYARD DREDGING
USACE CONTRACT# DACW 33-94-D-002
NEW BEDFORD, MA
DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering
BCE
184 West Central Street
Franklin, MA 02038
PH. (508) 528-4133 FAX (508) 528-4077

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

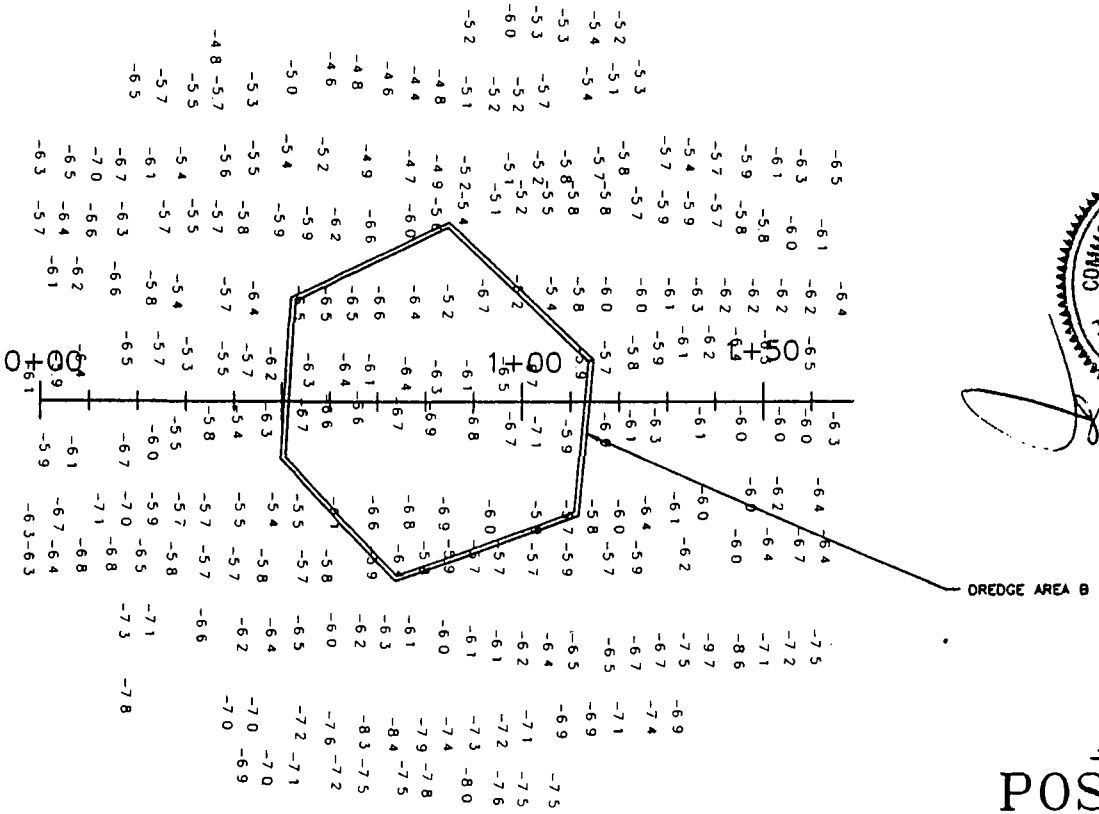
DRAWING NO. 23468-05-11

SHEET 1 OF 11

File: X:\23468\Maxy. Unsorted Files\dwg\AREA A 8x11 120503.dwg

Appendix C.2

Area B As-Built Cross Sections



COMMONWEALTH OF MASSACHUSETTS
JOSEPH W. HANLON
CIVIL
No. 41521
REGISTERED PROFESSIONAL ENGINEER

AREA B
POST-DREDGE
SITE PLAN

NEW BEDFORD SUPERFUND SITE
MELVILLE SHIPYARD DREDGING
USACE CONTRACT# DACW 33-94-D-002
NEW BEDFORD, MA
DECEMBER 5, 2003

BCE

DEC 08 2003

BOURNE CONSULTING ENGINEERING

0 40
SCALE: 1" = 40'

REVISIONS	

Bourne Consulting Engineering
141 West Central Street
Franklin, MA 02038
PH. (508) 528-4139 FAX (508) 528-4771

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-04-01

SHEET 1 OF 11

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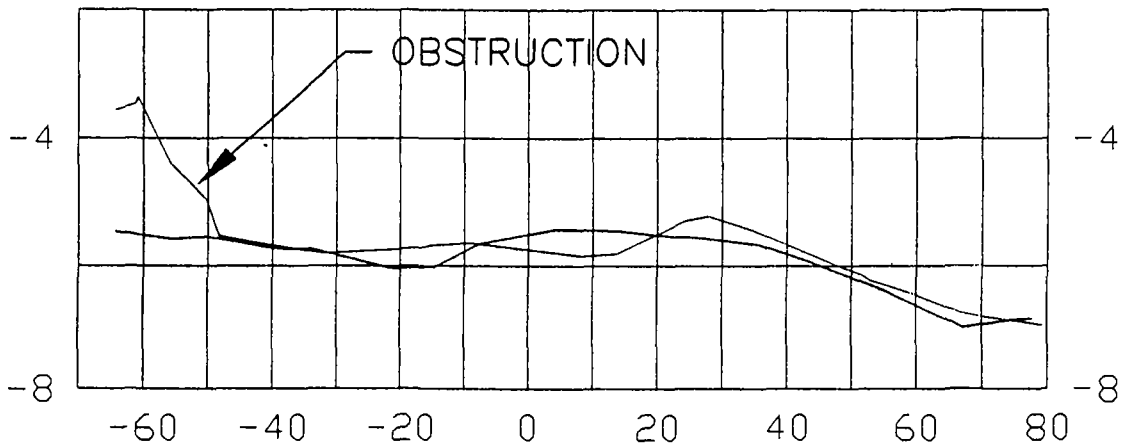

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA B
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-04-02

SHEET 2 OF 11

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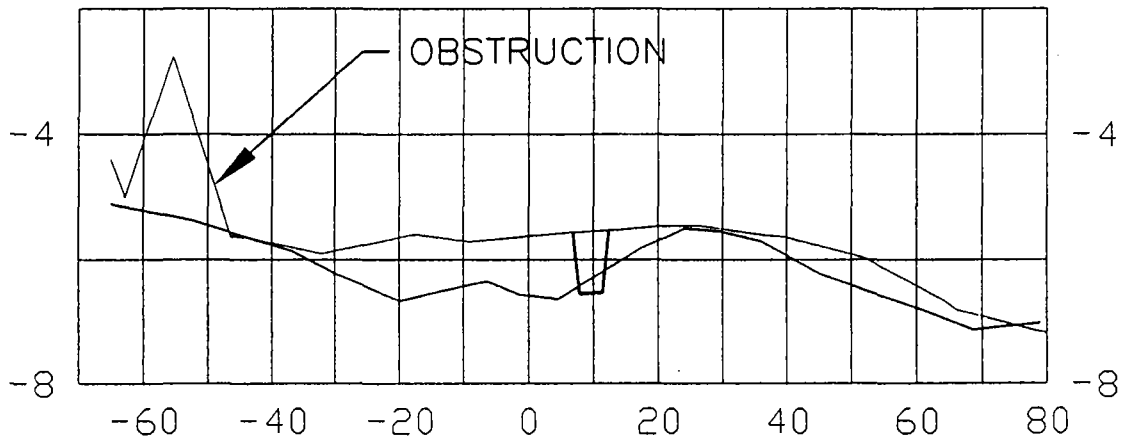

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA B
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering

REVISIONS

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-04-03

SHEET 3 OF 11

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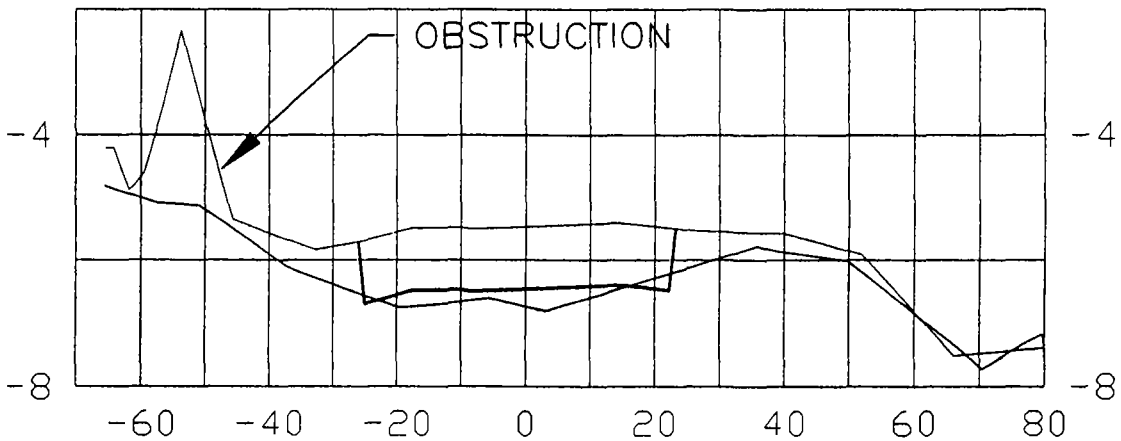

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA B
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering
BCE

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-04-04

SHEET 4 of 11

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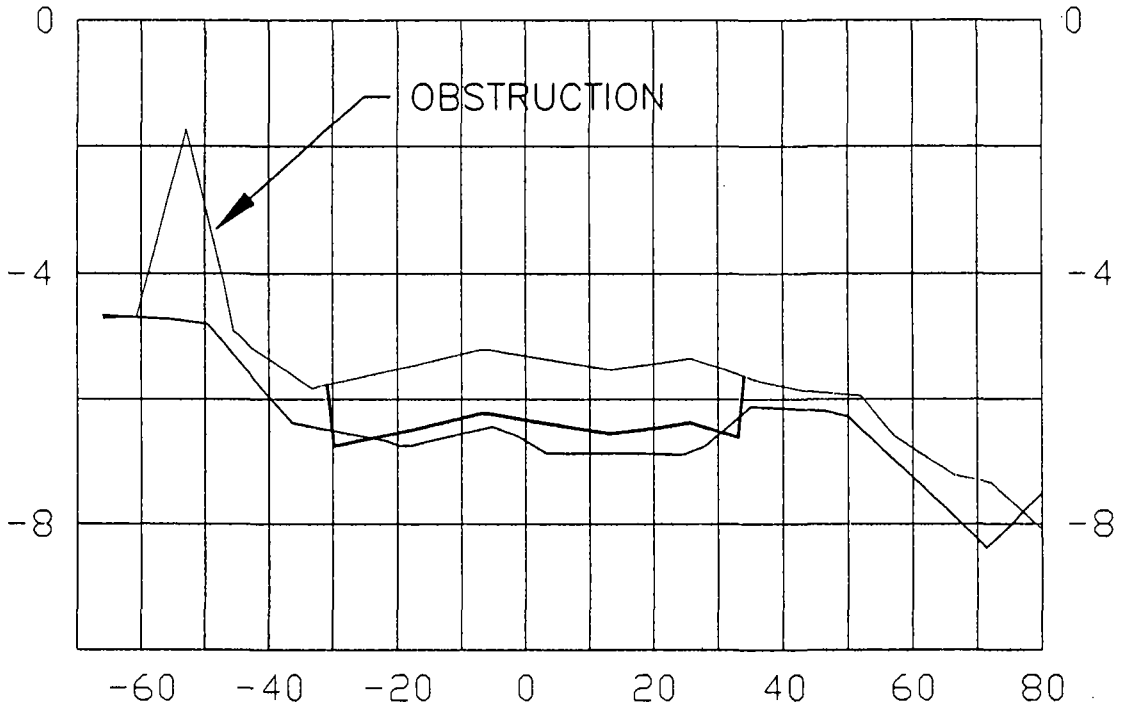

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA B
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

BCE Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

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SHEET 5 OF 11

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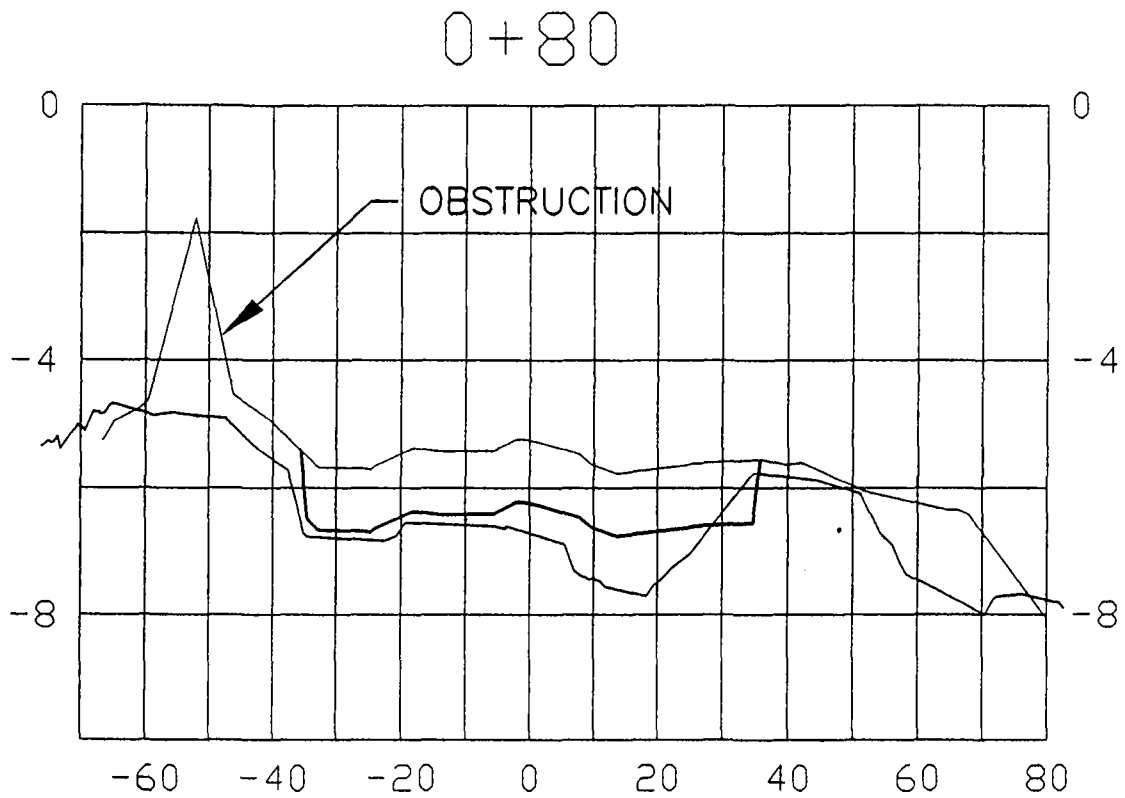

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA B
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering
141 Third Central Street
Franklin, MA 02038
PH. (508) 528-4138 FAX (508) 528-3921

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-04-06

SHEET 6 of 11

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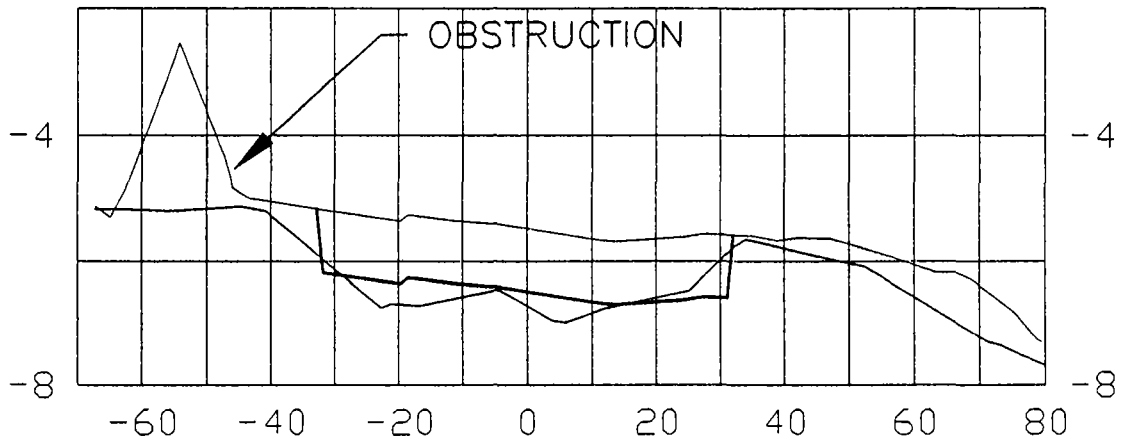

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA B
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

BCE Bourne Consulting Engineering

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CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-04-07

SHEET 7 OF 11

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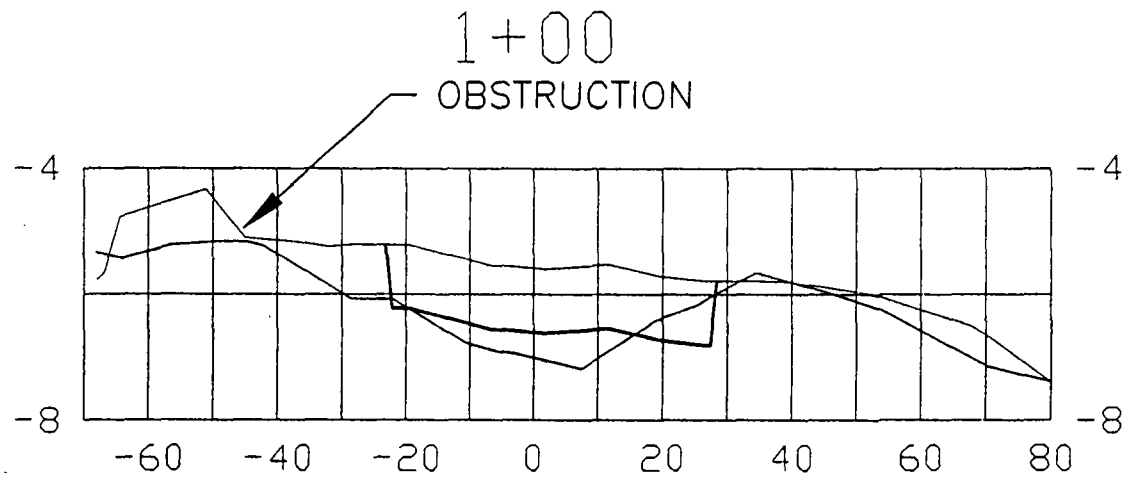

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA B
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering
141 West Central Street
Franklin, MA 02038
PH. (508) 528-6130 FAX (508) 528-7911

REVISIONS

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-04-08

SHEET 8 of 11

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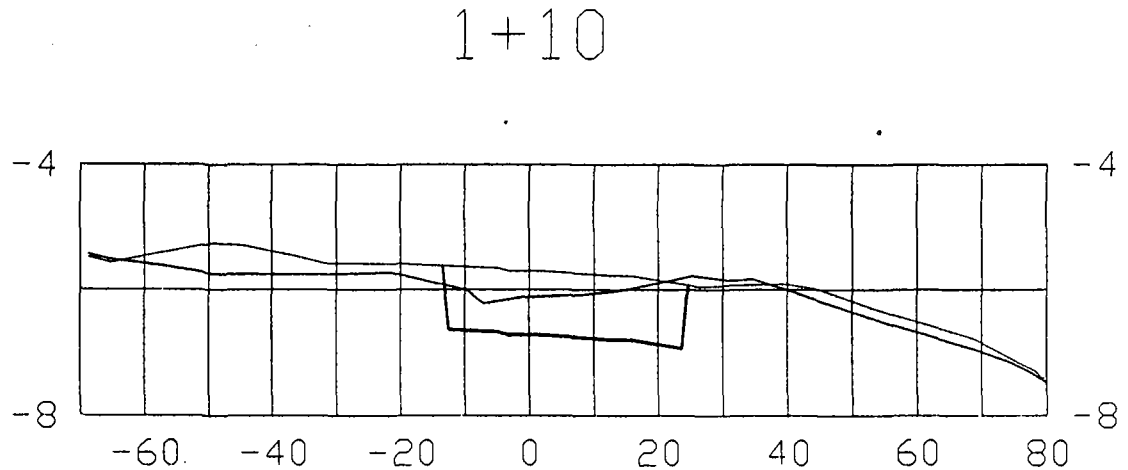

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA B
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

BCE Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-04-09

SHEET 9 OF 11

File: X:\23468\Maxy, Unsorted Files\dwg\AREA B 8x11 120503.dwg

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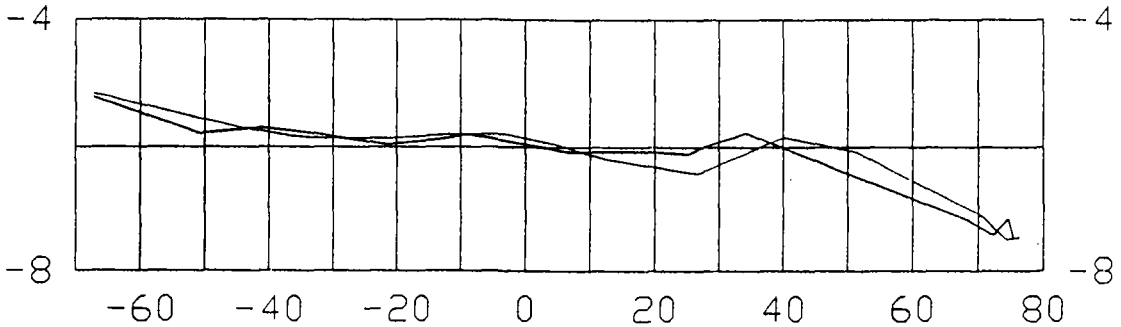


LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA B
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

BCE Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-04-10

SHEET 10 of 11

File: X:\23468\Maxy, Unsorted Files\dwg\AREA B 8x11 120503.dwg

File: X:\23468\Maxy, Unsorted Files\dwg\AREA B 8x11 120503.dwg

NOTES:

1. CROSS SECTIONS BASED ON A PLAN BY BOURNE CONSULTING ENGINEERING ENTITLED "POST DREDGE AREA B, NEW BEDFORD SUPERFUND SITE MELVILLE SHIPYARD DREDGING USACE CONTRACT# DACW 33-94-D-002" DATED 10/06/03

2. ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON A MEAN LOWER LOW WATER DATUM. POSITIVE VALUES REPRESENT DEPTH ABOVE THAT SAME PLANE.

3. THE INFORMATION PRESENTED ON THIS CHART REPRESENTS THE RESULTS OF SURVEYS PERFORMED BY BOURNE CONSULTING ENGINEERING ON 8/12/03 AND 9/8/03 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO BCE.

4. HORIZONTAL AND VERTICAL CONTROL FOR THIS SURVEY WAS PROVIDED BY MAXYMILLIAN TECHNOLOGIES INC.

5. BENCH MARK IS A POINT SET IN THE NORTHEAST CORNER OF A CONCRETE PAD (DECON PAD) ELEV=8.14 NGVD
=9.58 MLLW

6. DREDGE AREAS TAKEN FROM A PLAN ENTITLED "NEW BEDFORD HARBOR SUPER FUND SITE (OU#1) NEW BEDFORD, MA. MELVILLE SHIPYARD DREDGING ENVIRONMENTAL DREDGING PLAN -1&2" PREPARED BY USACE MAY, 2003

7. DREDGE DEPTHS WITHIN THE DREDGE AREA WERE ADJUSTED BY -0.2 TO COMPENSATE FOR FLUFFING MEASUREMENTS TAKEN WITHIN THE DREDGE AREA ON NOVEMBER 18, 2003.

8. DREDGE VOLUME BASED ON PRE AND POST DREDGE HYDROGRAPHIC SURVEYS IS AS FOLLOWS:

AREA DESIGNATION	DREDGE VOLUME
DREDGING AREA B	173 CUBIC YARDS

AREA B POST-DREDGE CROSS-SECTIONS

NEW BEDFORD SUPERFUND SITE
MELVILLE SHIPYARD DREDGING
USACE CONTRACT# DACW 33-94-D-002
NEW BEDFORD, MA
DECEMBER 5, 2003

REVISIONS

BCE Bourne Consulting Engineering
104 East Central Street
Franklin, MA 02038
PH. (508) 533-6133 FAX (508) 533-6071

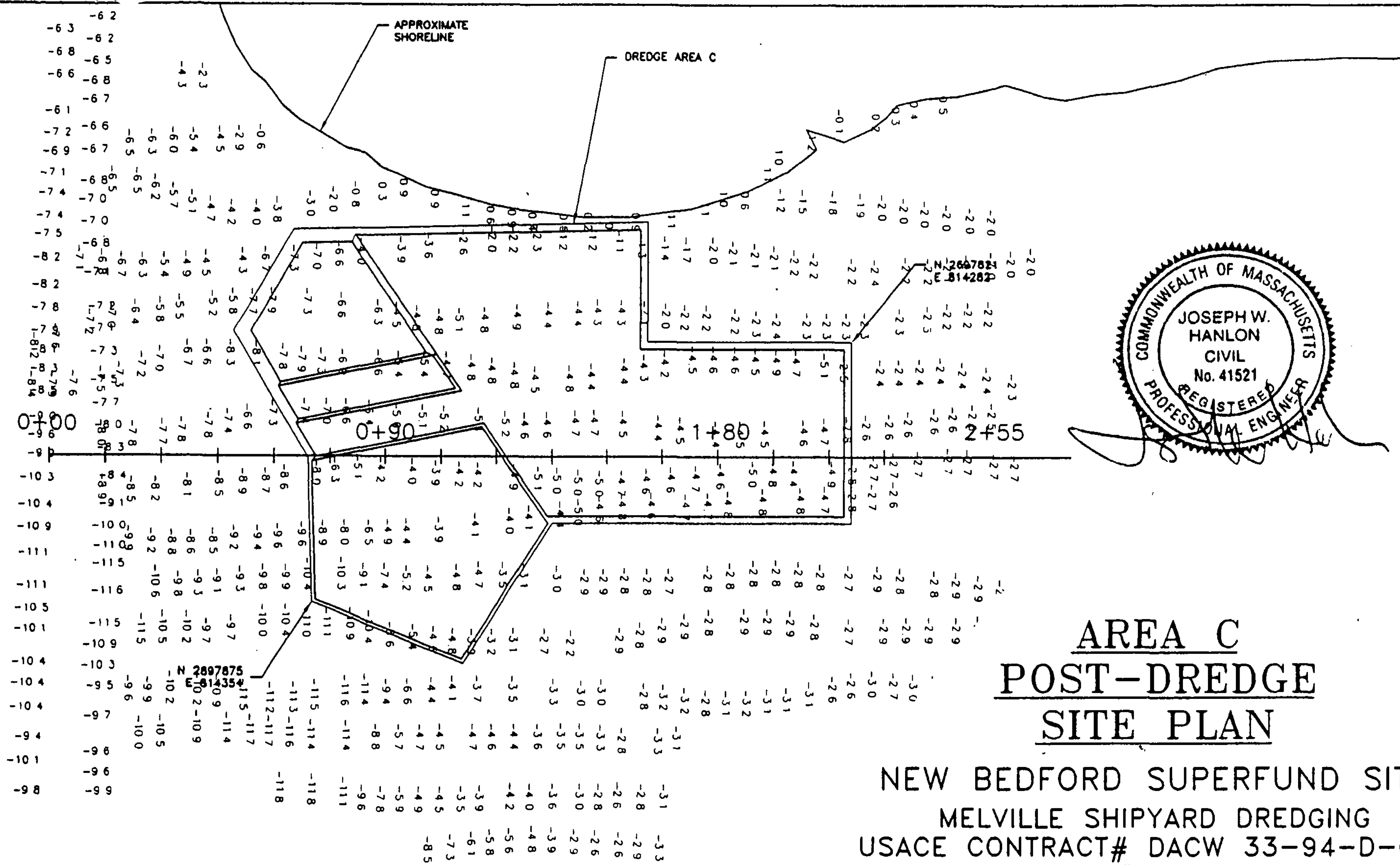
DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-04-11

SHEET 11 OF 11

Appendix C.3

Area C As-Built Cross Sections



AREA C POST-DREDGE SITE PLAN

NEW BEDFORD SUPERFUND SITE

MELVILLE SHIPYARD DREDGING
USACE CONTRACT# DACW 33-94-D-002
NEW BEDFORD, MA
DECEMBER 5, 2003

BCE

BOURNE CONSULTING ENGINEERING

0 40

SCALE: 1" = 40'

REVISIONS	

BCE Bourne Consulting Engineering

104 West Central Street
Franklin, MA 02038
PH. (508) 533-6133 FAX (508) 533-6771

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APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-06-01

SHEET 1 OF 15

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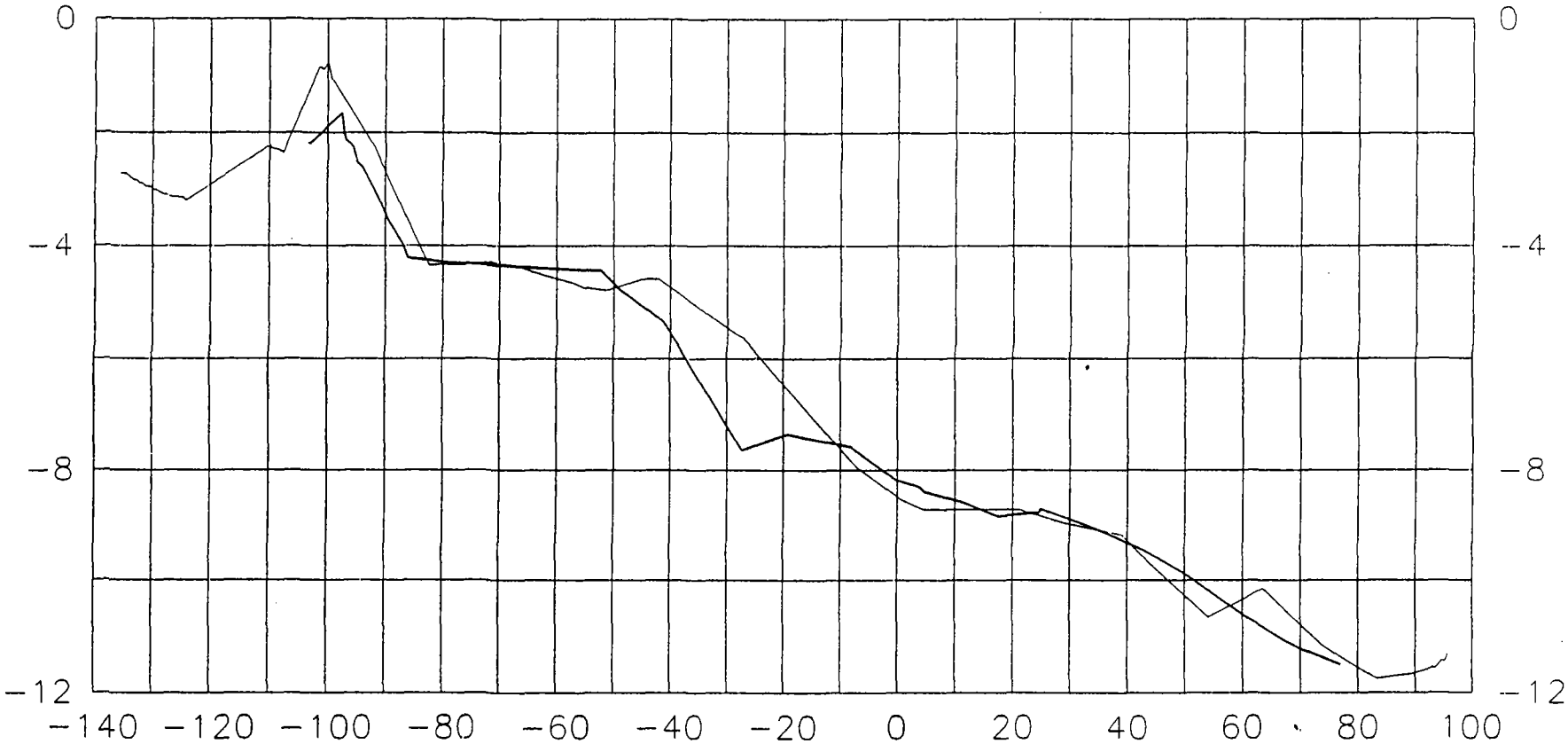

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-06-02

SHEET 2 OF 15

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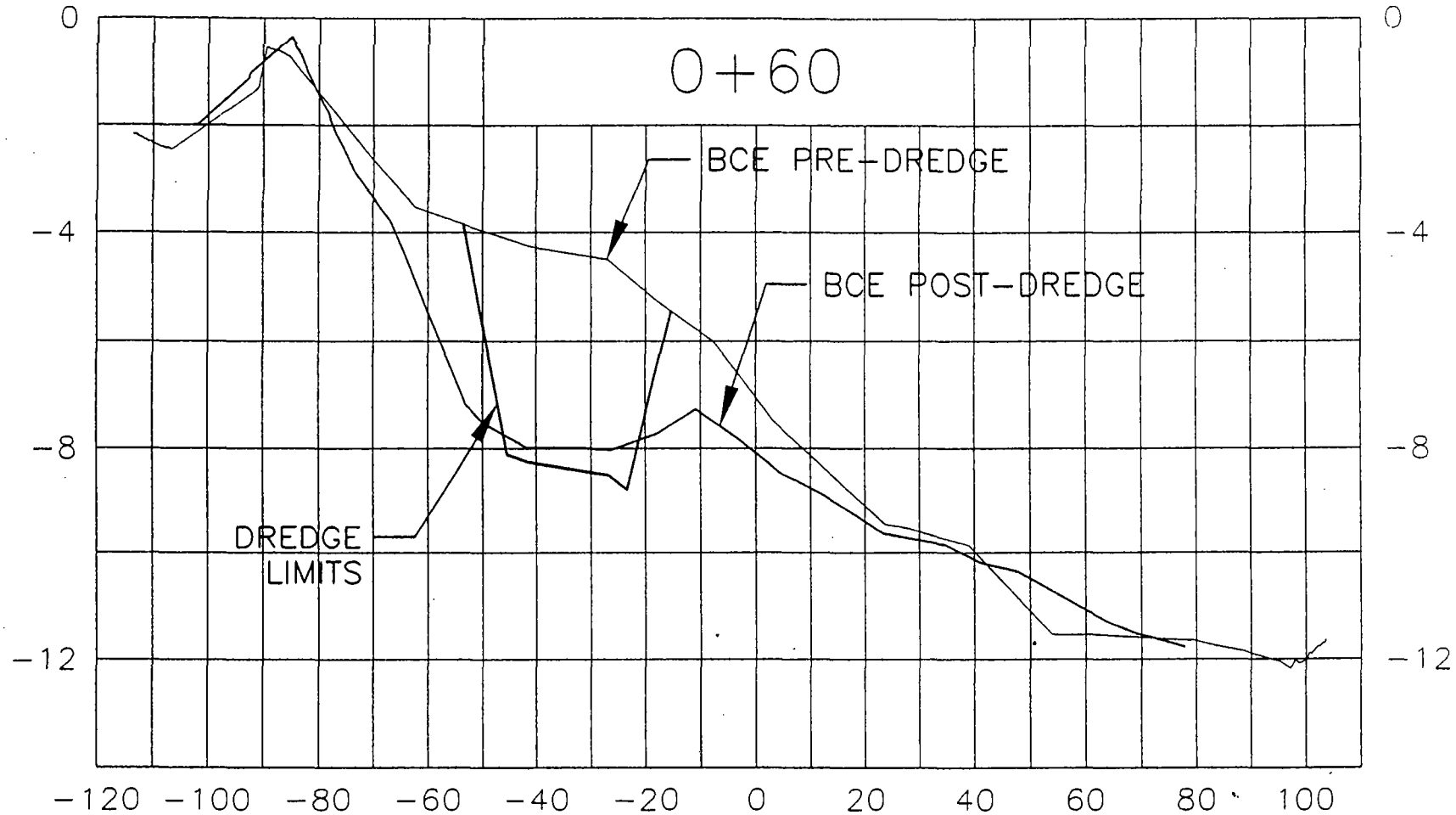

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-06-03

SHEET 3 OF 15

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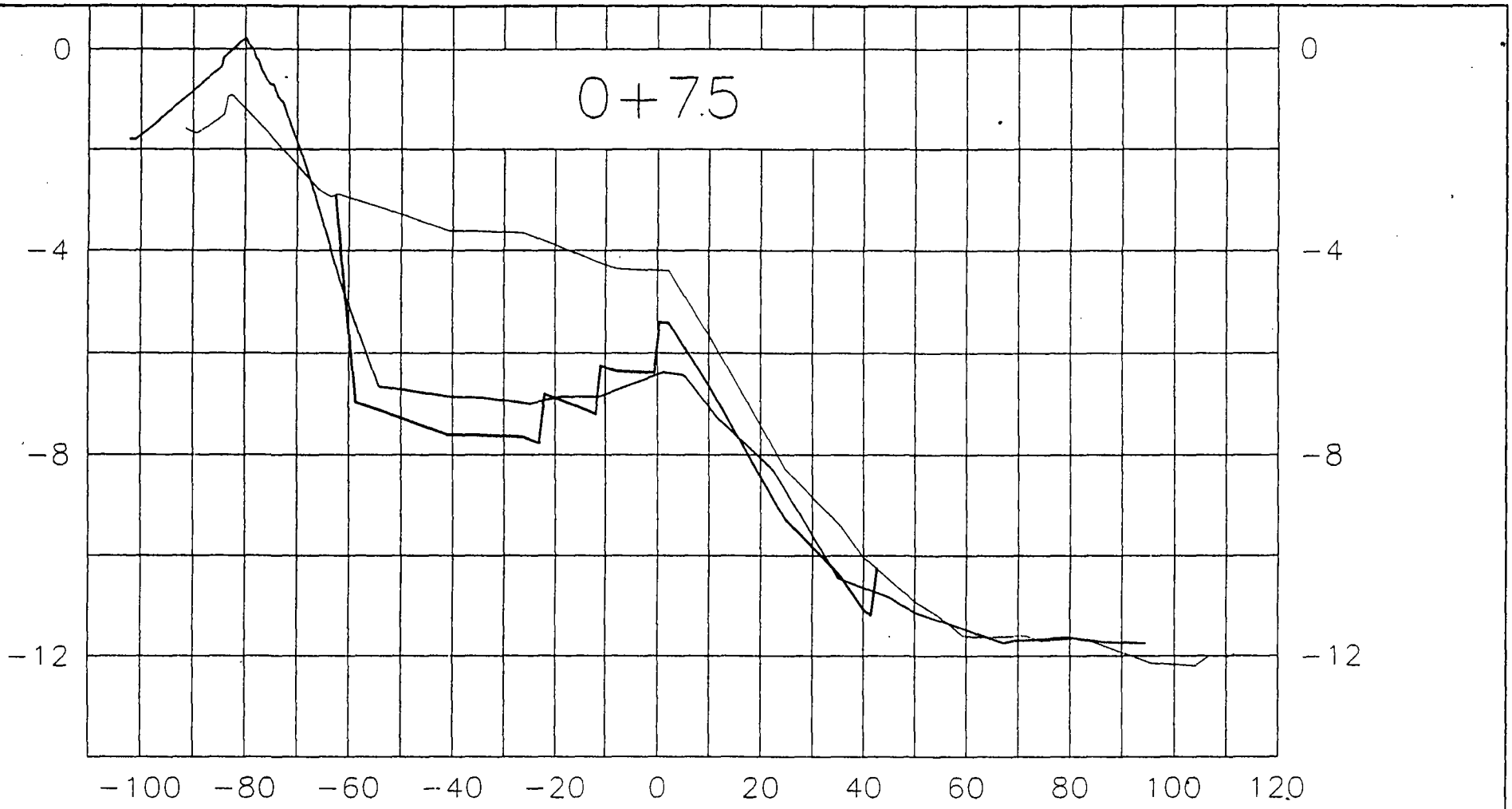

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

BCE Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-06-04

SHEET 4 OF 15

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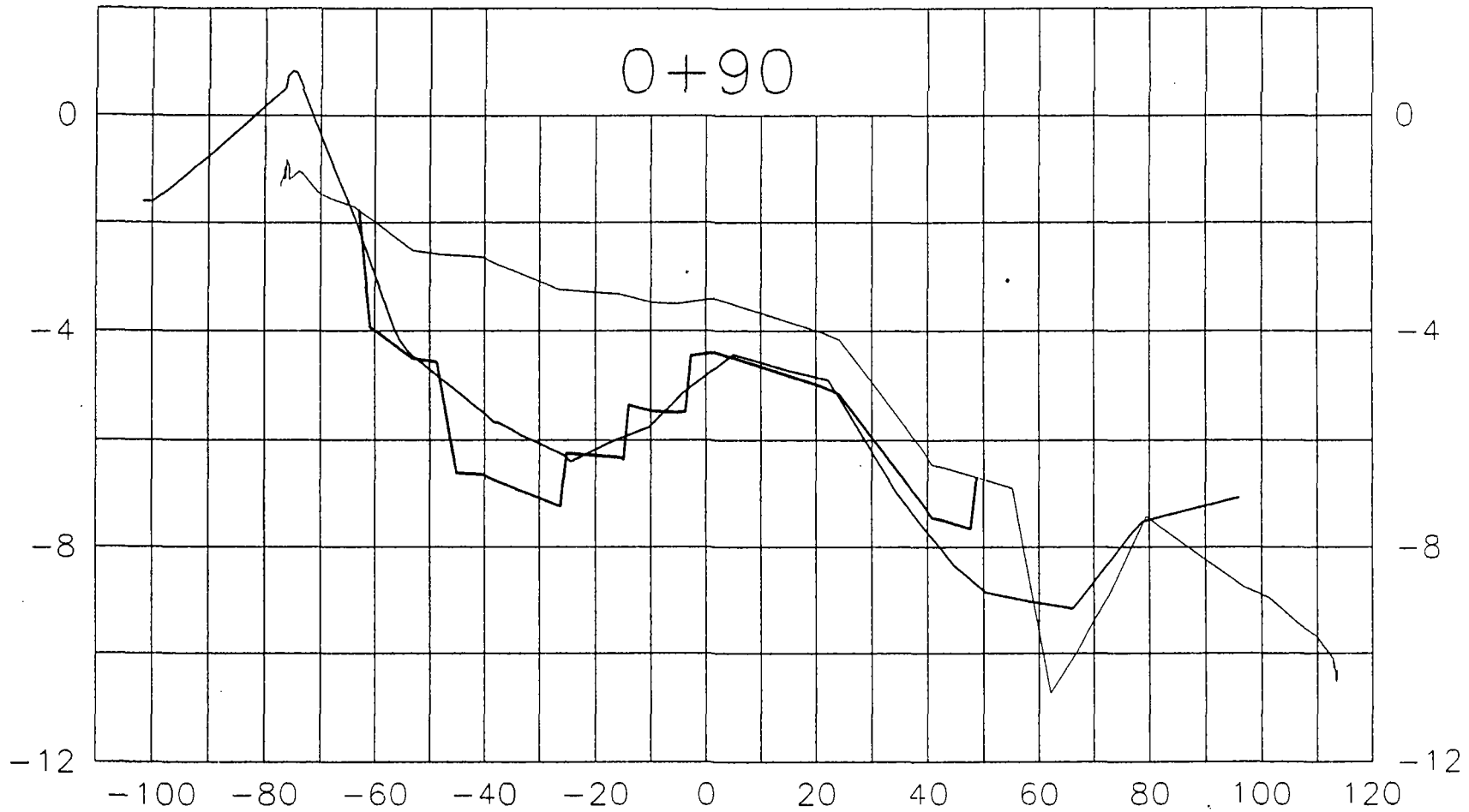

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-06-05

SHEET 5 OF 15

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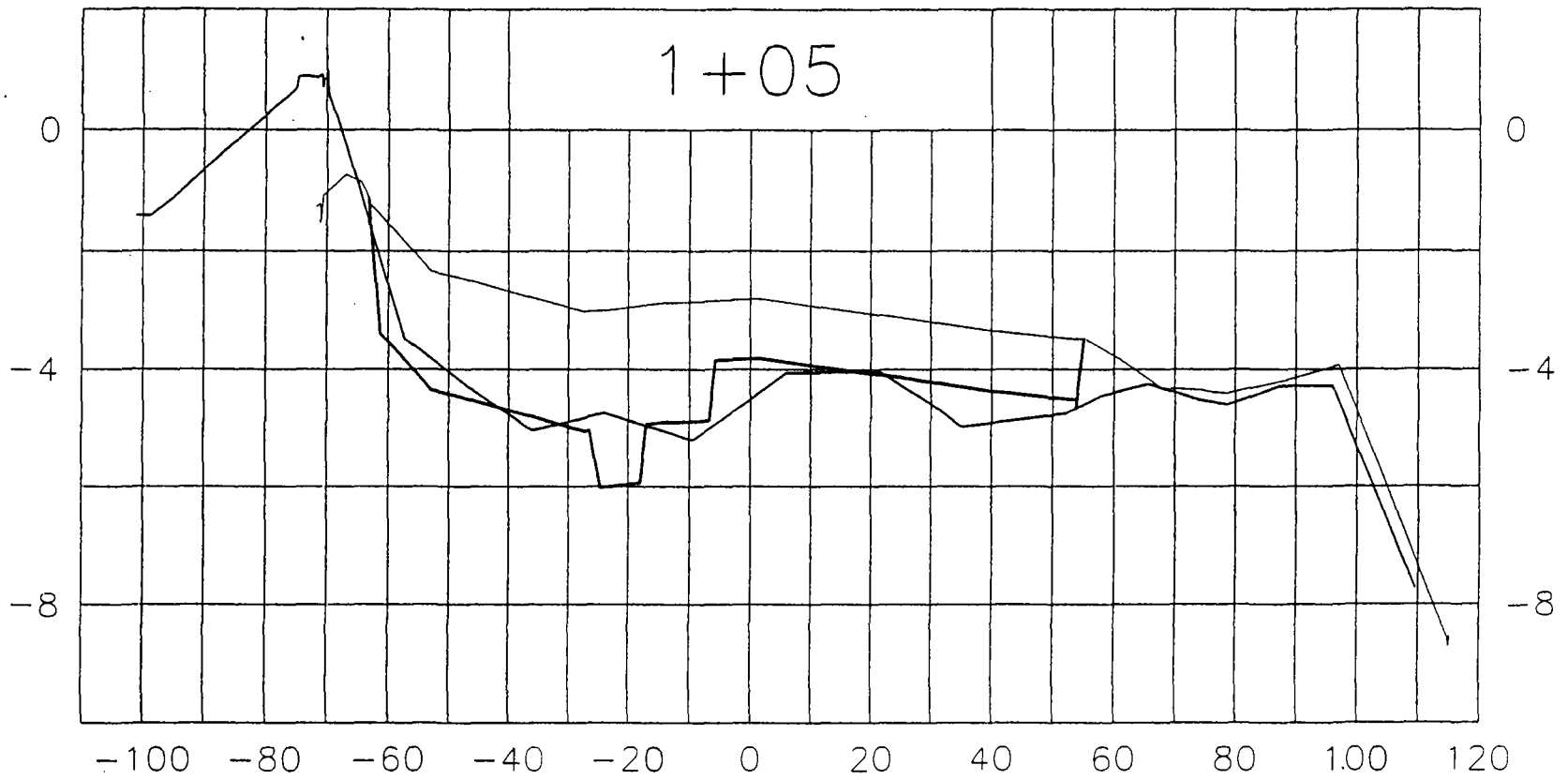

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS	

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-06-06

SHEET 6 OF 15

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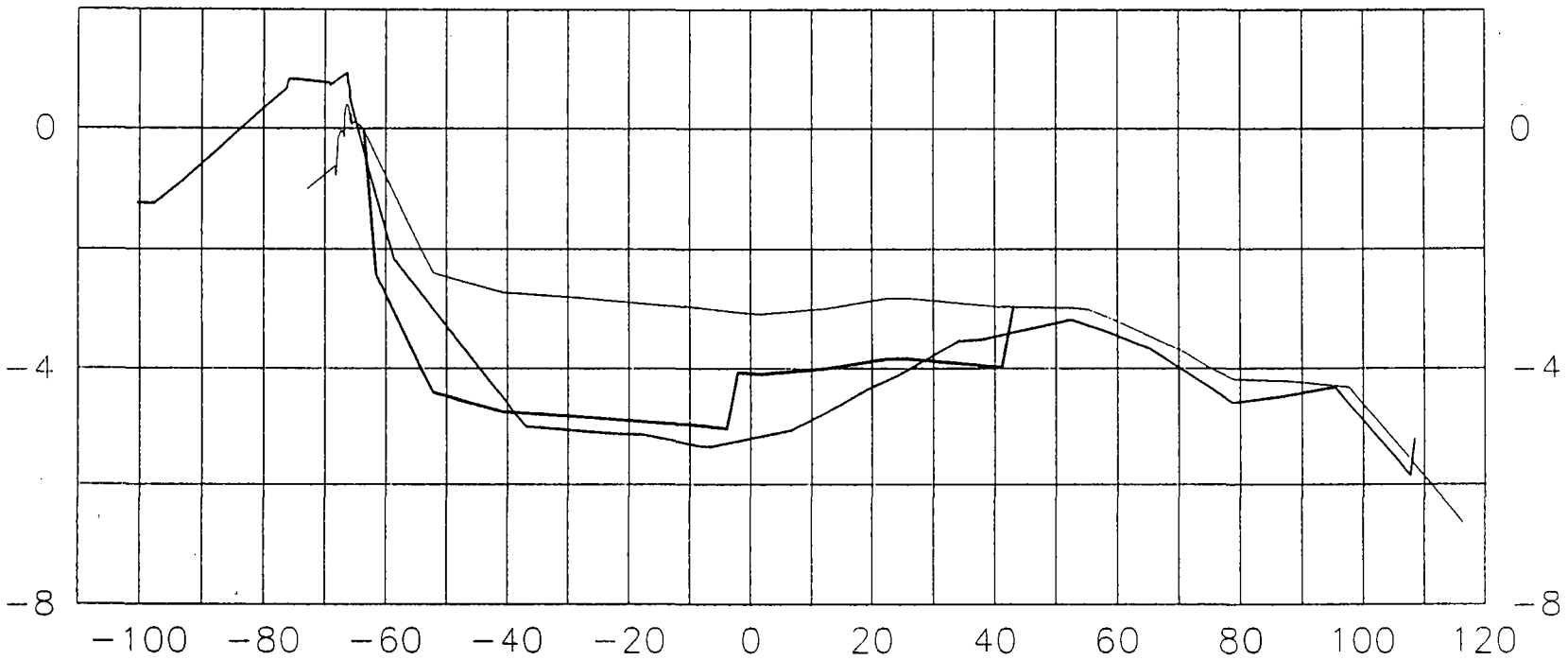

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-06-07

SHEET 7 OF 15

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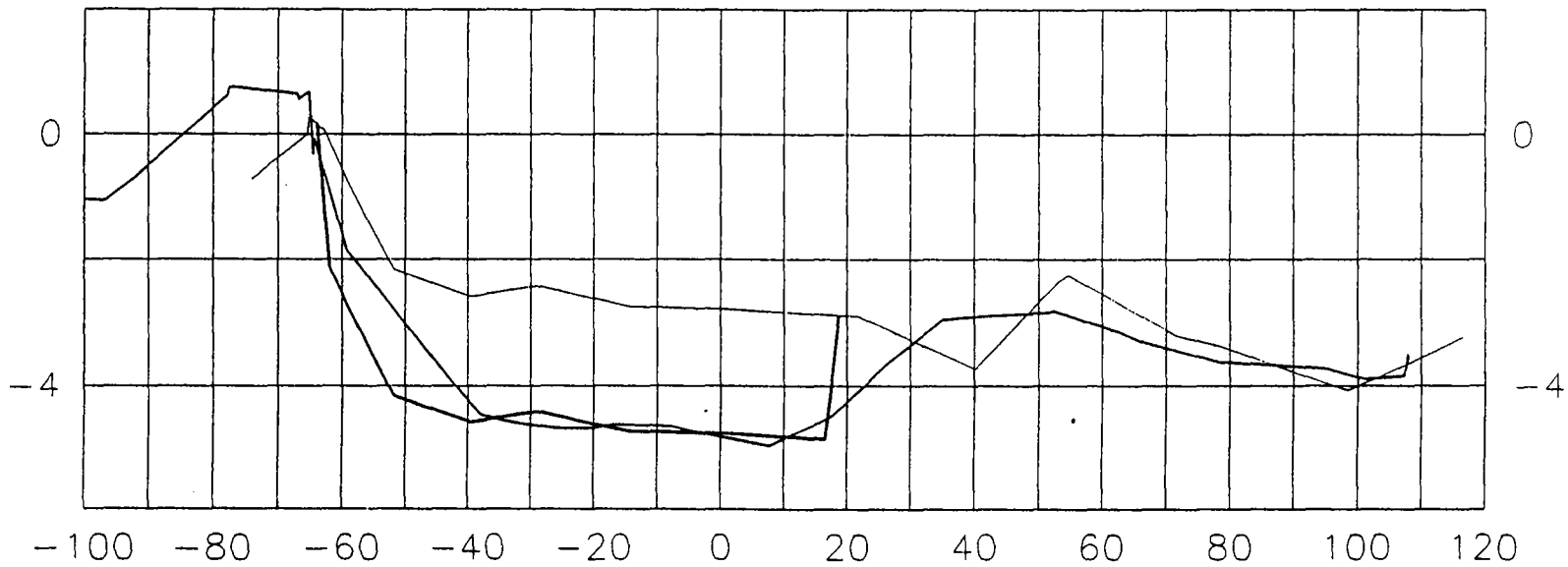

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

BCE Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-06-08

SHEET 8 OF 15

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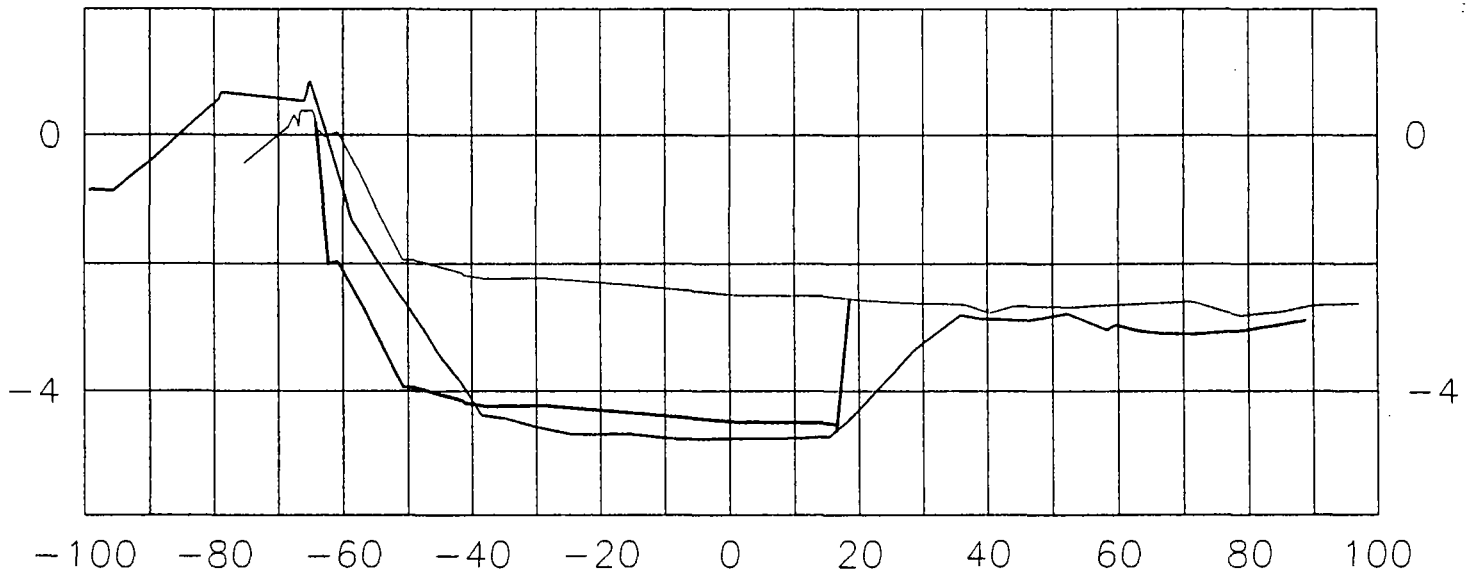

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-08-09

SHEET 9 OF 15

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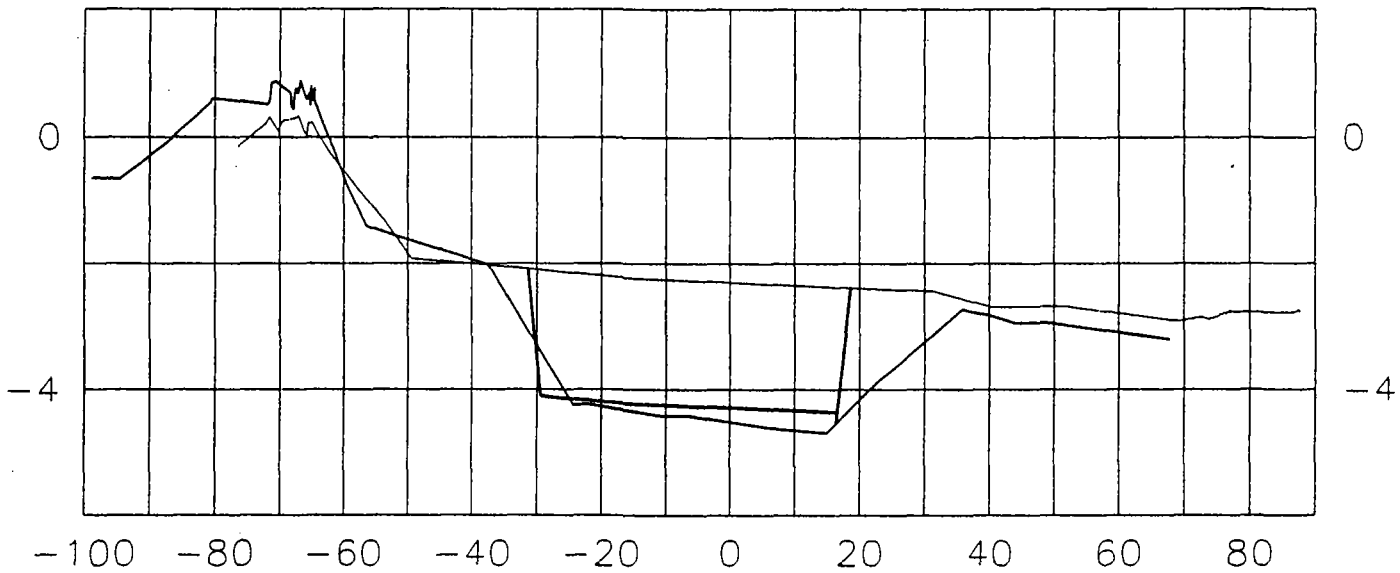

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-06-10

SHEET 10 OF 15

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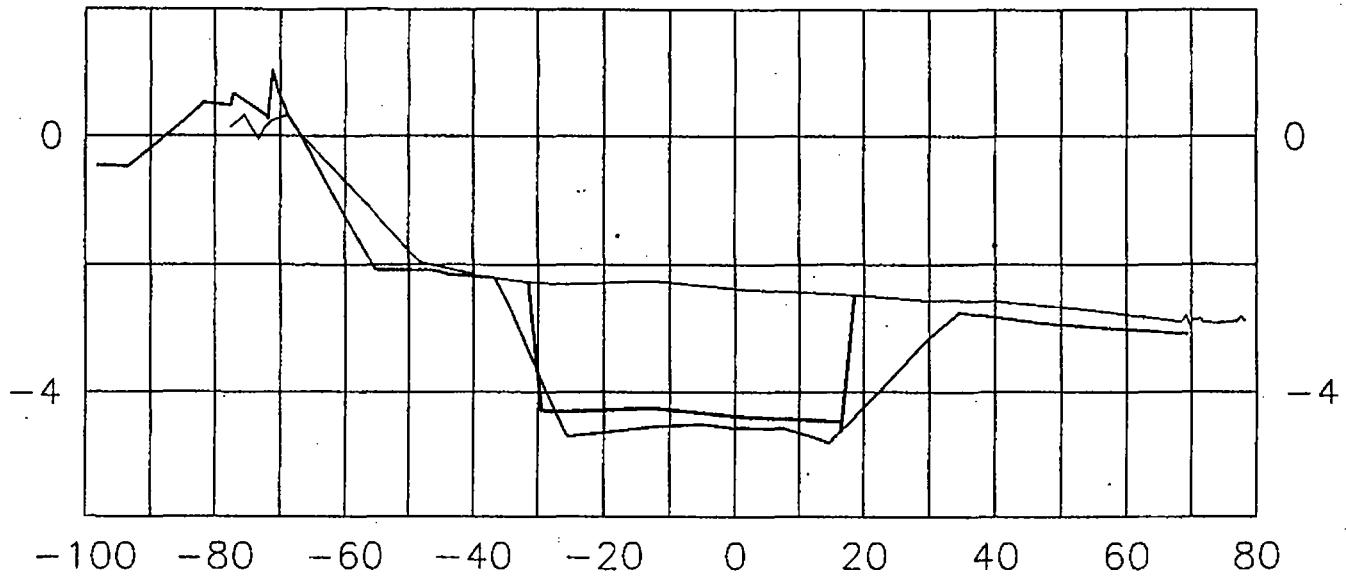
1+80



LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-08-11

SHEET 11 OF 15

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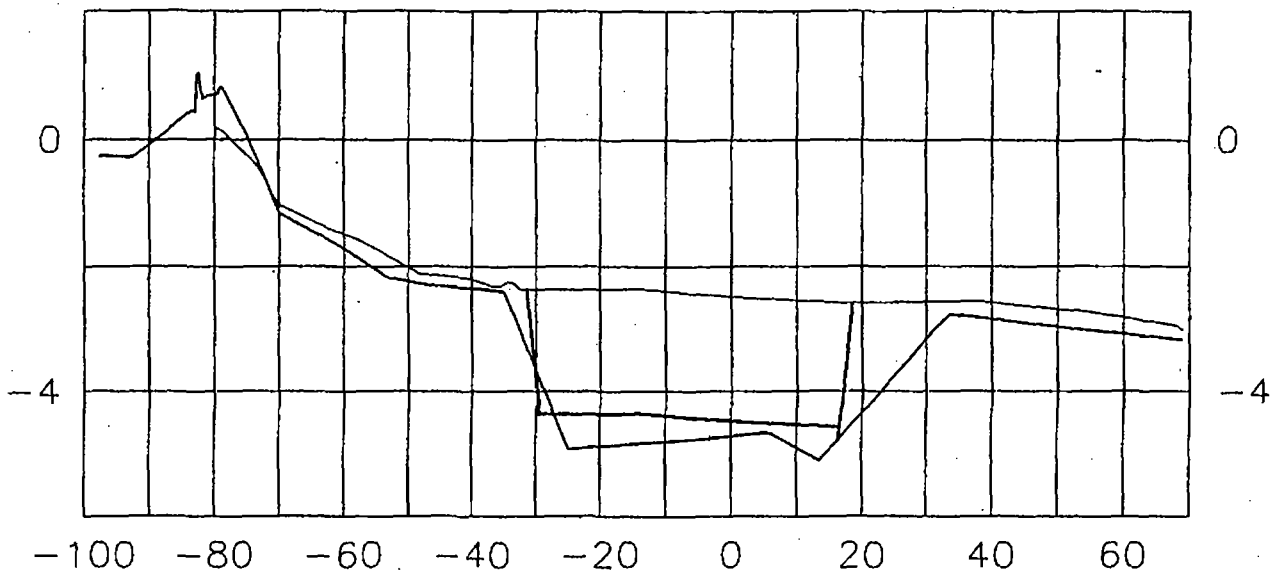

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

BCE Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-06-12

SHEET 12 OF 15

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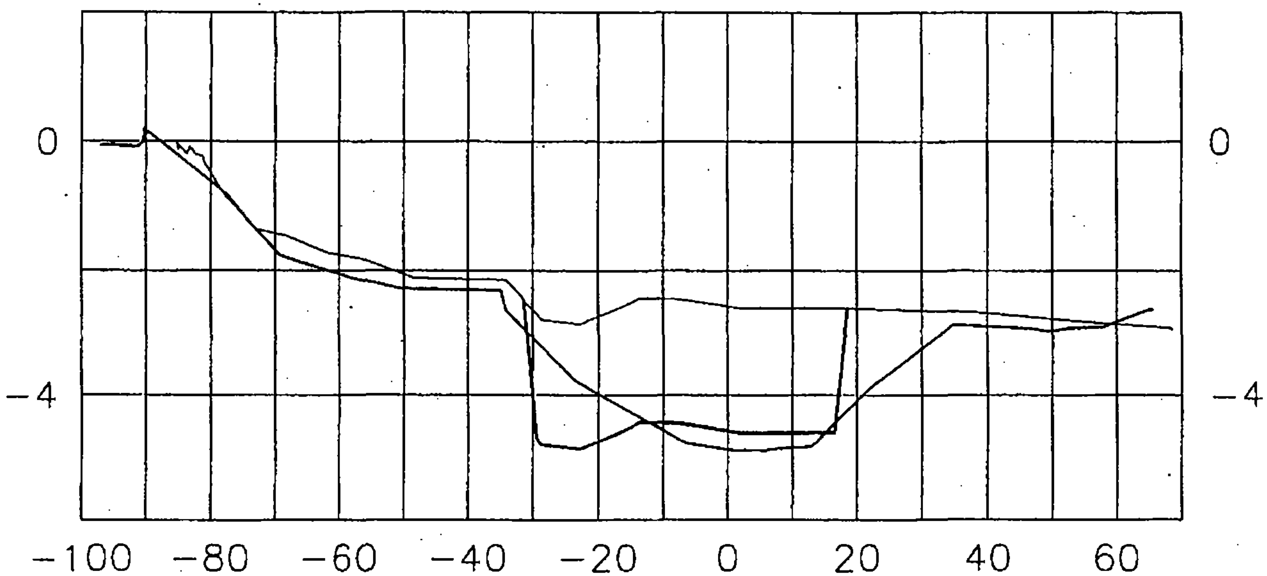


LEGEND:

———	BCE PRE-DREDGE
———	BCE POST-DREDGE
———	PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30' 0 30 60

VERTICAL SCALE: 1" = 3' 0 3 6

AREA C
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

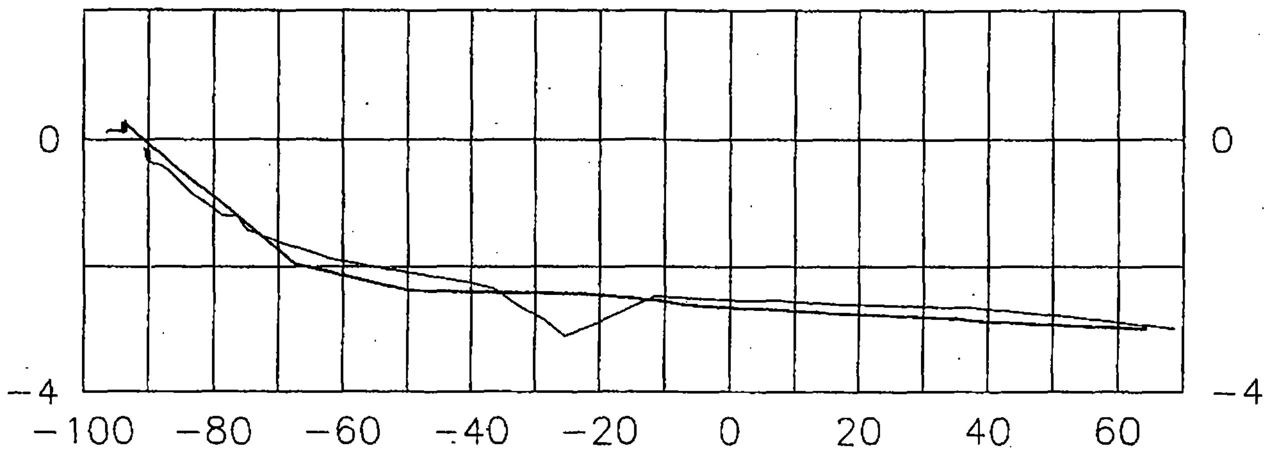
BCE Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-06-13

SHEET 13 OF 15

2+25



LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'   0   30   60

VERTICAL SCALE: 1" = 3'   0   3   6

AREA C POST-DREDGE CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS	BCE Bourne Consulting Engineering	
	DRAWN: RBH CHECKED: JWH APPROVED: JWH DATE: 12/05/03	DRAWING NO. 23468-05-14 SHEET 14 OF 15

NOTES:

1. CROSS SECTIONS BASED ON A PLAN BY BOURNE CONSULTING ENGINEERING ENTITLED "POST DREDGE AREA A, POST DREDGE AREA C, NEW BEDFORD SUPERFUND SITE MELVILLE SHIPYARD DREDGING USACE CONTRACT# DACW 33-94-D-002" DATED 10/17/03

2. ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON A MEAN LOWER LOW WATER DATUM. POSITIVE VALUES REPRESENT DEPTH ABOVE THAT SAME PLANE.

3. THE INFORMATION PRESENTED ON THIS CHART REPRESENTS THE RESULTS OF SURVEYS PERFORMED BY BOURNE CONSULTING ENGINEERING ON 8/12/03 AND 10/16/03 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO BCE.

4. HORIZONTAL AND VERTICAL CONTROL FOR THIS SURVEY WAS PROVIDED BY MAXYMILLIAN TECHNOLOGIES INC.

5. BENCH MARK IS A POINT SET IN THE NORTHEAST CORNER OF A CONCRETE PAD (DECON PAD) ELEV=8.14 NGVD
=9.58 MLLW

6. DREDGE AREAS TAKEN FROM A PLAN ENTITLED "NEW BEDFORD HARBOR SUPER FUND SITE (OU#1) NEW BEDFORD, MA. MELVILLE SHIPYARD DREDGING ENVIRONMENTAL DREDGING PLAN -1&2" PREPARED BY USACE MAY, 2003

7. DREDGE DEPTHS WITHIN THE DREDGE AREA WERE ADJUSTED BY -0.2 TO COMPENSATE FOR FLUFFING MEASUREMENTS TAKEN WITHIN THE DREDGE AREA ON NOVEMBER 18, 2003.

8. DREDGE VOLUME BASED ON PRE AND POST DREDGE HYDROGRAPHIC SURVEYS IS AS FOLLOWS:

AREA DESIGNATION	DREDGE VOLUME
DREDGING AREA C	1052 CUBIC YARDS

AREA C
POST-DREDGE
NOTES

NEW BEDFORD SUPERFUND SITE

MELVILLE SHIPYARD DREDGING
USACE CONTRACT# DACW 33-94-D-002
NEW BEDFORD, MA
DECEMBER 5, 2003

REVISIONS

BCE Bourne Consulting Engineering
104 West Central Street
Franklin, MA 02038
PH. (508) 528-4133 FAX (508) 528-4077

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

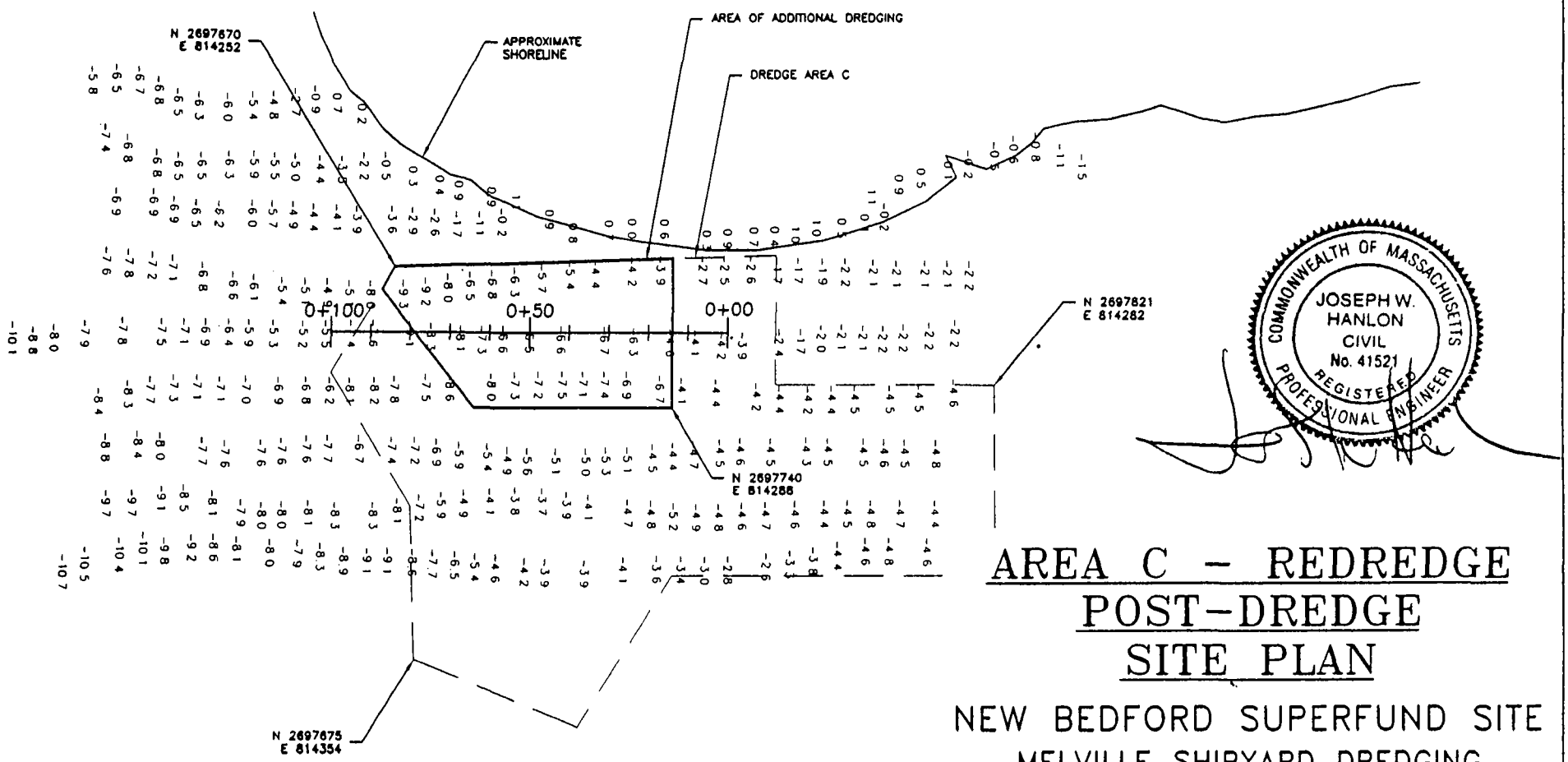
DRAWING NO. 23468-06-15

SHEET 15 OF 15

File: X:\23468\Maxy_Unsorted Files\dwg\AREA C 8x11 120503.dwg

Appendix C.4

Area C Additional Dredging As-Built Cross Sections



COMMONWEALTH OF MASSACHUSETTS
JOSEPH W. HANLON
CIVIL
No. 41521
REGISTERED PROFESSIONAL ENGINEER

AREA C – REDREDGE POST-DREDGE SITE PLAN

NEW BEDFORD SUPERFUND SITE

MELVILLE SHIPYARD DREDGING
USACE CONTRACT# DACW 33-94-D-002
NEW BEDFORD, MA
DECEMBER 5, 2003

BCE
BOURNE CONSULTING ENGINEERING

0 40
SCALE: 1" = 40'

REVISIONS

BCE Bourne Consulting Engineering
184 West Central Street
Franklin, MA 02038
PH. (508) 528-4138 FAX (508) 528-4271

DRAWN: RBH
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APPROVED: JWH
DATE: 12/05/03

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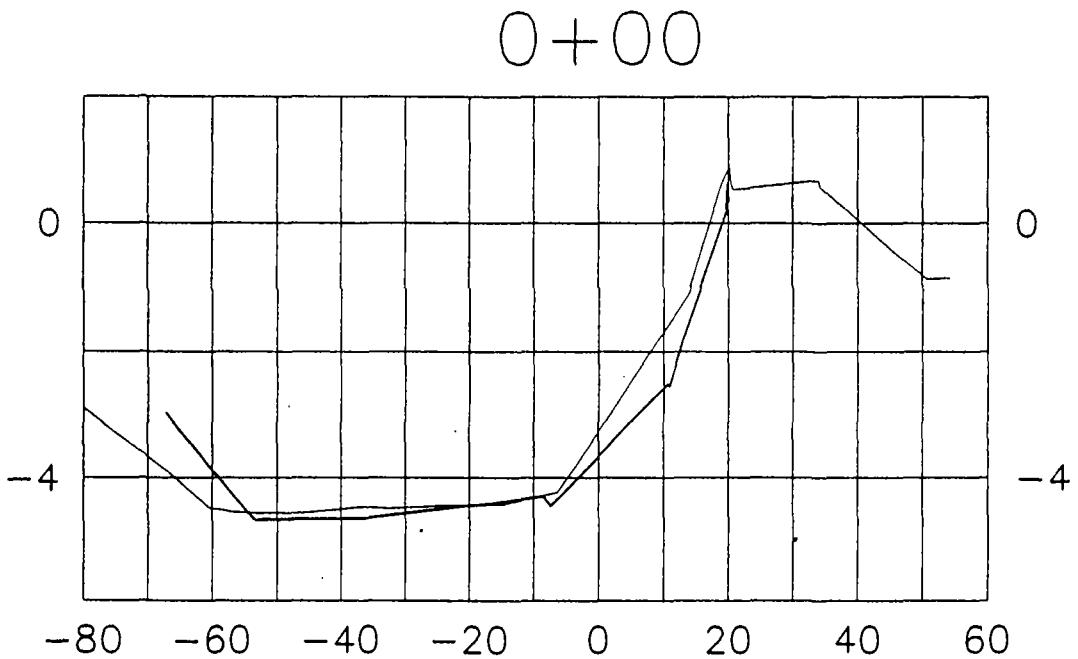
SHEET 1 OF 11

File: X:\23468\Maxymillian, NEW SORTED\dwg\BCE HYDRO 112003.dwg

File: X:\23468\Maxy, Unsorted Files\dwg\AREA C additional 8x11 120503.dwg



LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C - REDREDGE POST-DREDGE CROSS-SECTIONS

DECEMBER 5, 2003

BCE Bourne Consulting Engineering
184 East Central Street
Franklin, MA 02038
PH. (508) 528-4133 FAX (508) 528-8271

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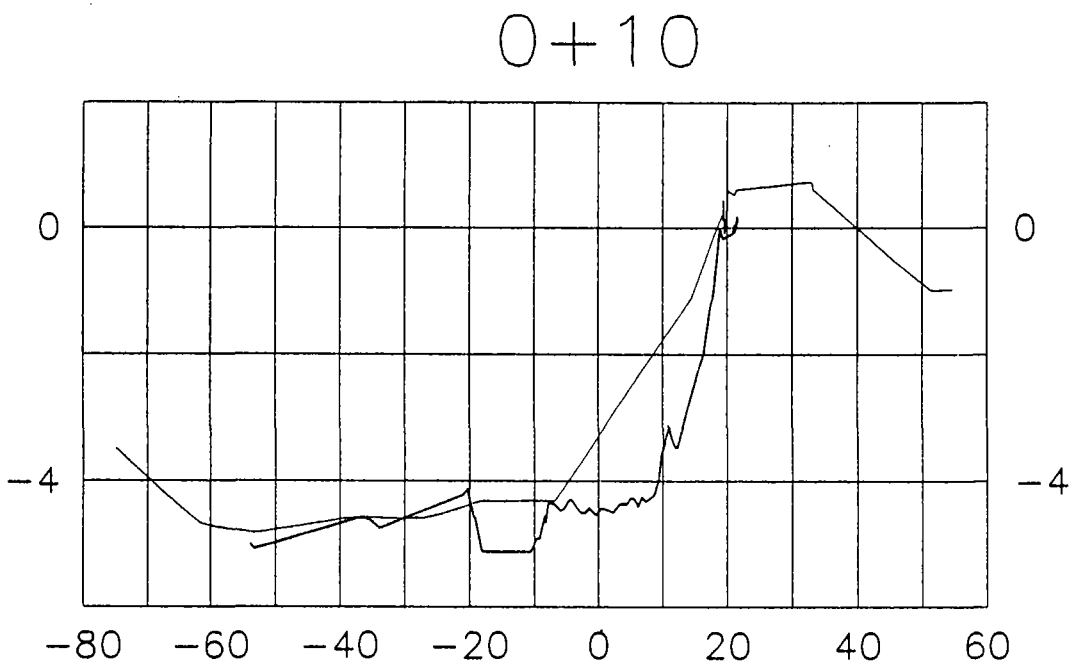
SHEET 2 OF 11

File: X:\23468\Moxy_Unsorted_Files\dwg\AREA C additional 8x11 120503.dwg



LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C - REDREDGE POST-DREDGE CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering
BCE
144 Main Central Street
Franklin, MA 02038
PH. (508) 528-4133 FAX (508) 528-0771

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CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

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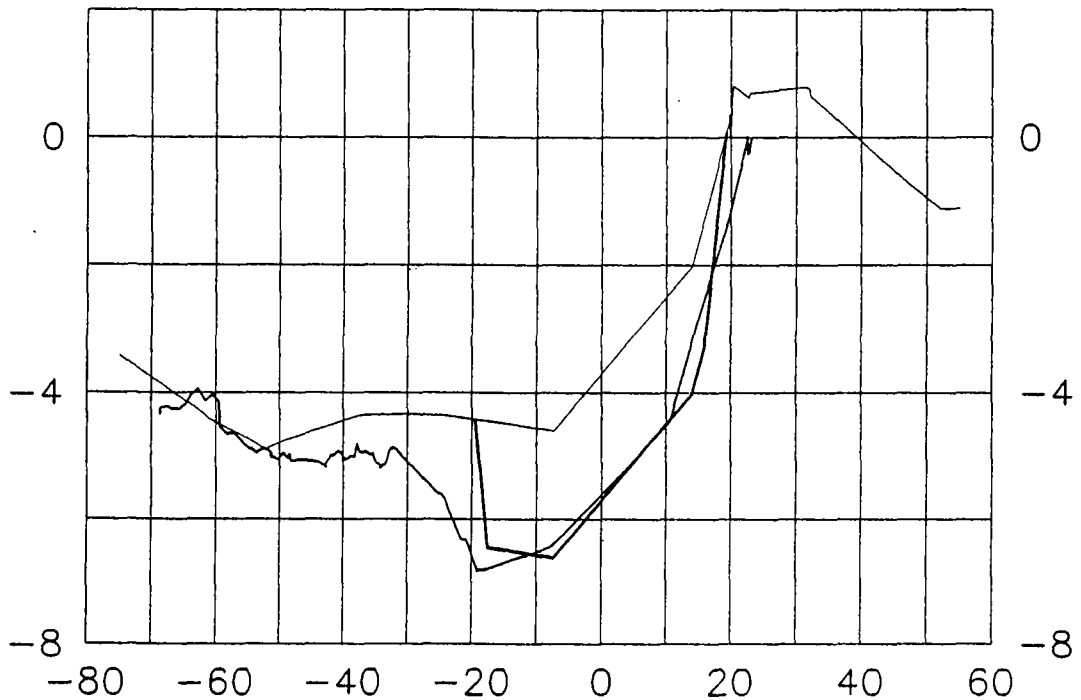
SHEET 3 OF 11

File: X:\23468\Moxy, Unsorted Files\dwg\AREA C additional 8x11 120503.dwg

0+20



LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C - REDREDGE POST-DREDGE CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering
101 Post Office Street
Franklin, MA 02038
PH (508) 528-4130 FAX (508) 528-4171

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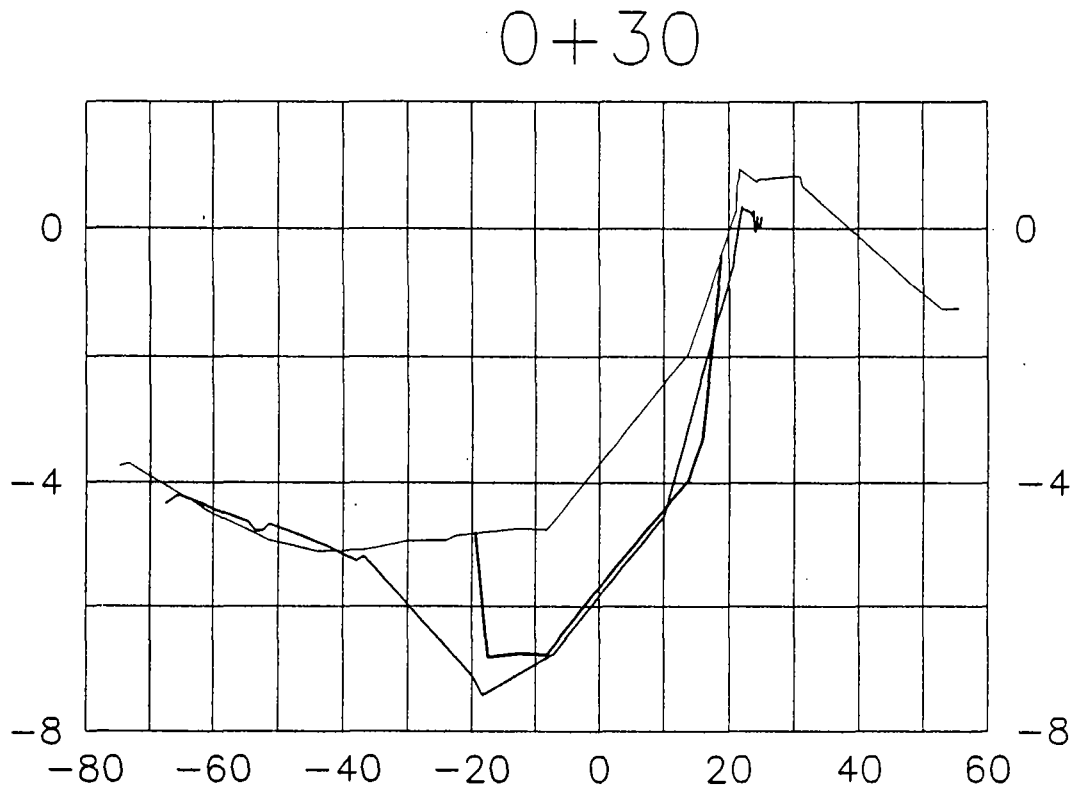
DRAWING NO. 23468-07-04

SHEET 4 OF 11

File: X:\23468\Maxy, Unsorted Files\dwg\AREA C additional 8x11 120503.dwg



LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

AREA C - REDREDGE POST-DREDGE CROSS-SECTIONS

DECEMBER 5, 2003

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

Bourne Consulting Engineering
104 West Central Street
Franklin, IN 46131
PH. (317) 738-4138 FAX (317) 738-4171

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SHEET 5 OF 11

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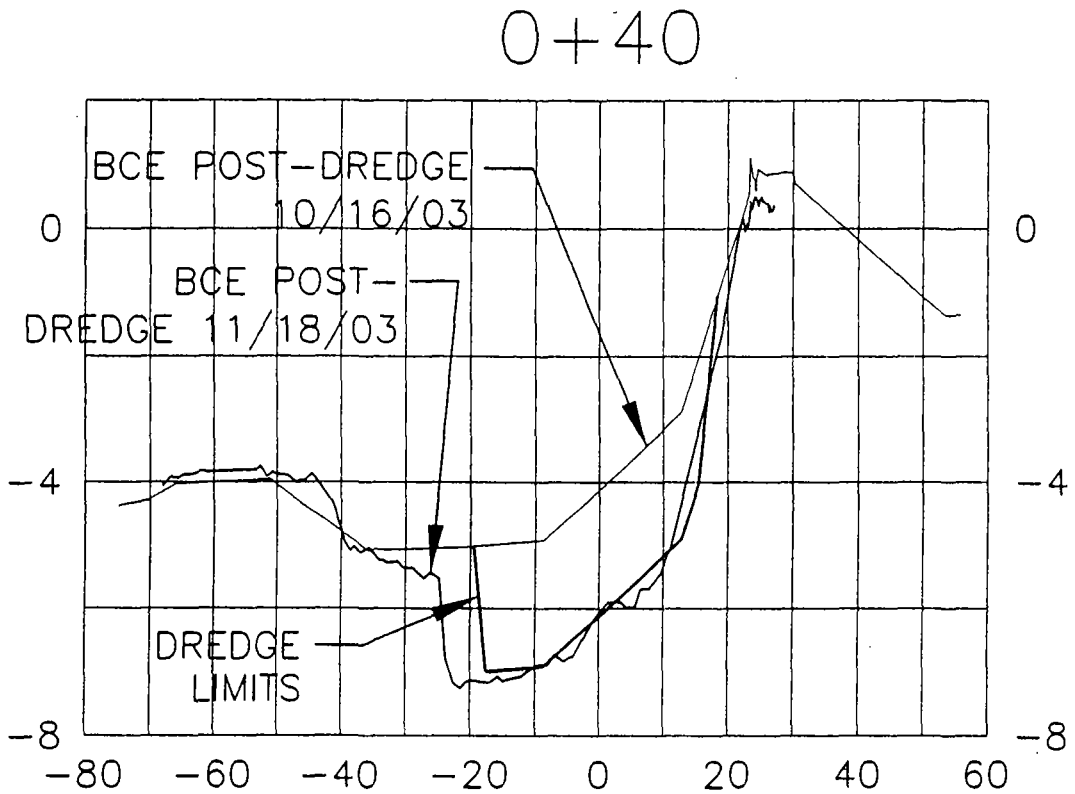


LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

AREA C - REDREDGE POST-DREDGE CROSS-SECTIONS

DECEMBER 5, 2003

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

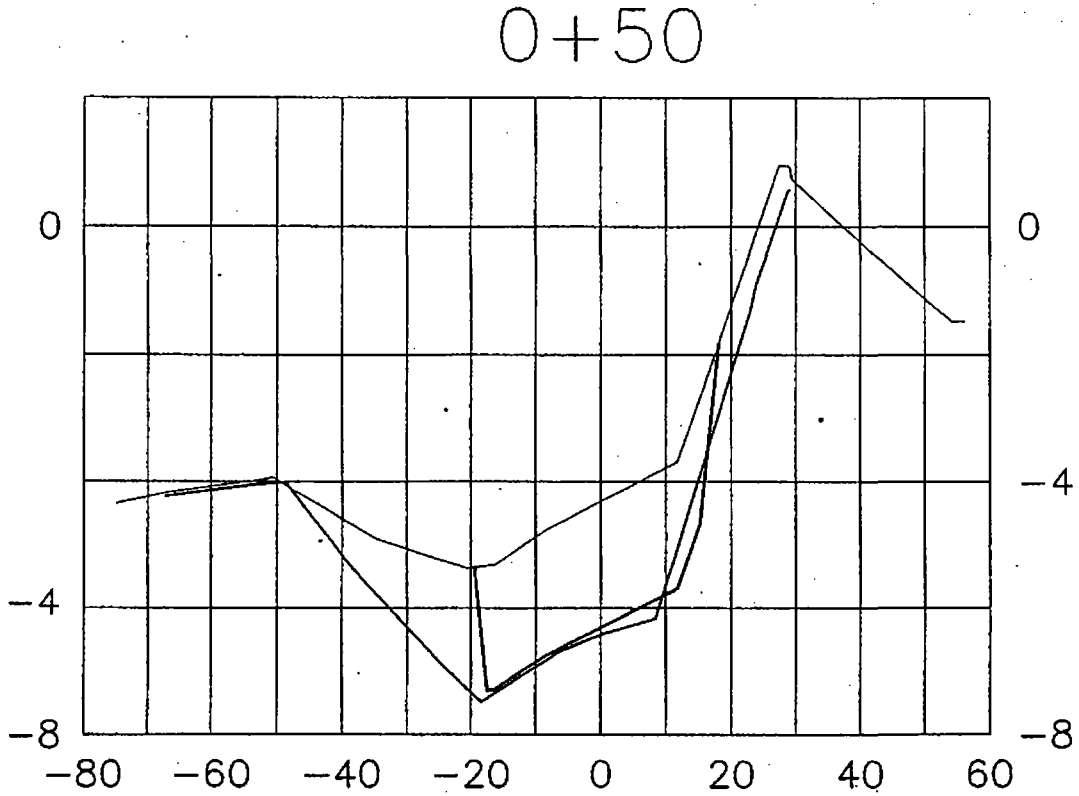
Bourne Consulting Engineering
BCE
101 West Central Street
Franklin, MA 02038
PH. (508) 528-4130 FAX (508) 528-4171

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-07-06

SHEET 6 OF 11



LEGEND:

BCE PRE-DREDGE 10/16/03

BCE POST-DREDGE 11/18/03

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C REDREDGE POST-DREDGE CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

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CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-07-07

SHEET 7 OF 11

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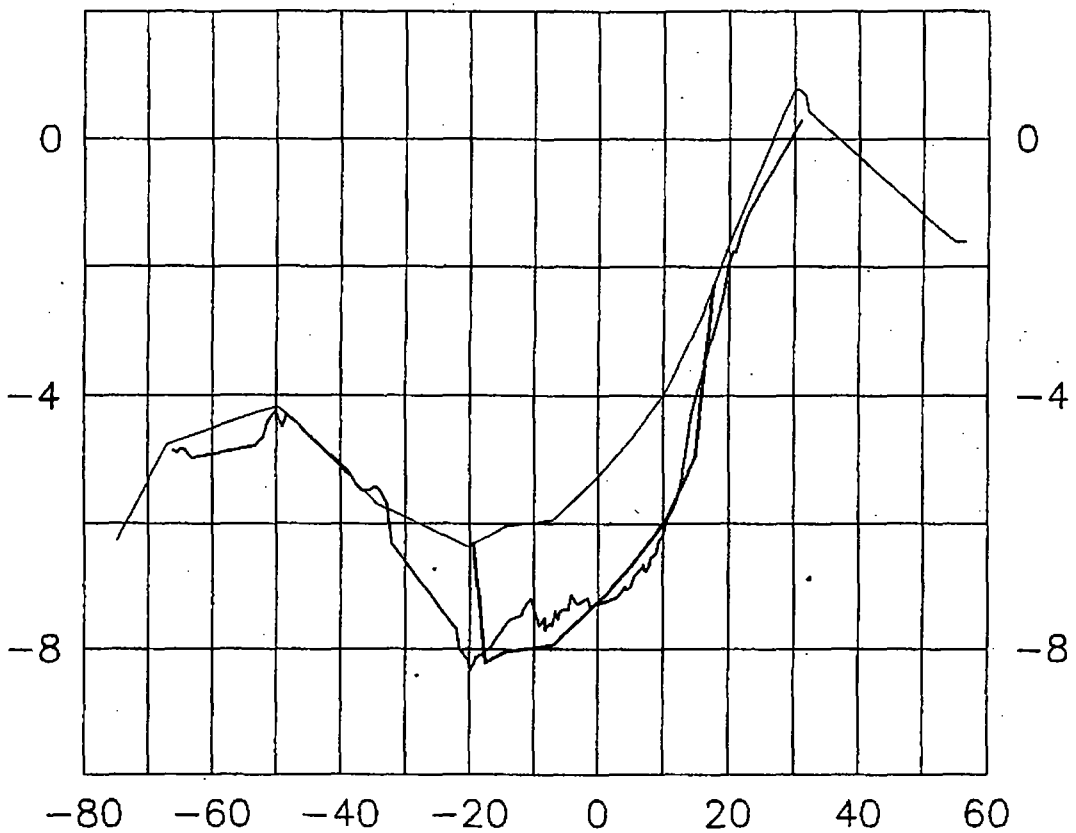

LEGEND:

BCE PRE-DREDGE 10/16/03

BCE POST-DREDGE 11/18/03

PROPOSED DREDGE

AREA C - REDREDGE
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

REVISIONS

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APPROVED: JWH
DATE: 12/05/03

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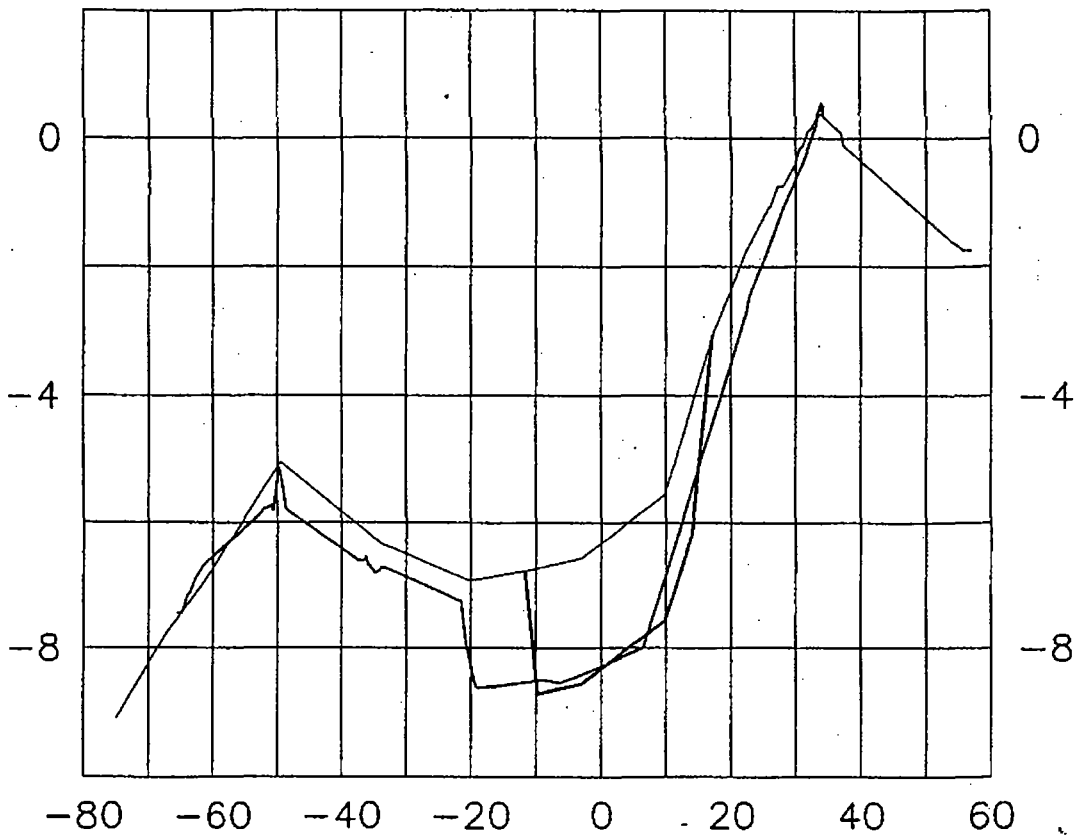
SHEET 8 OF 11

0+70



LEGEND:

BCE PRE-DREDGE 10/16/03

BCE POST-DREDGE 11/18/03

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C - REDREDGE POST-DREDGE CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

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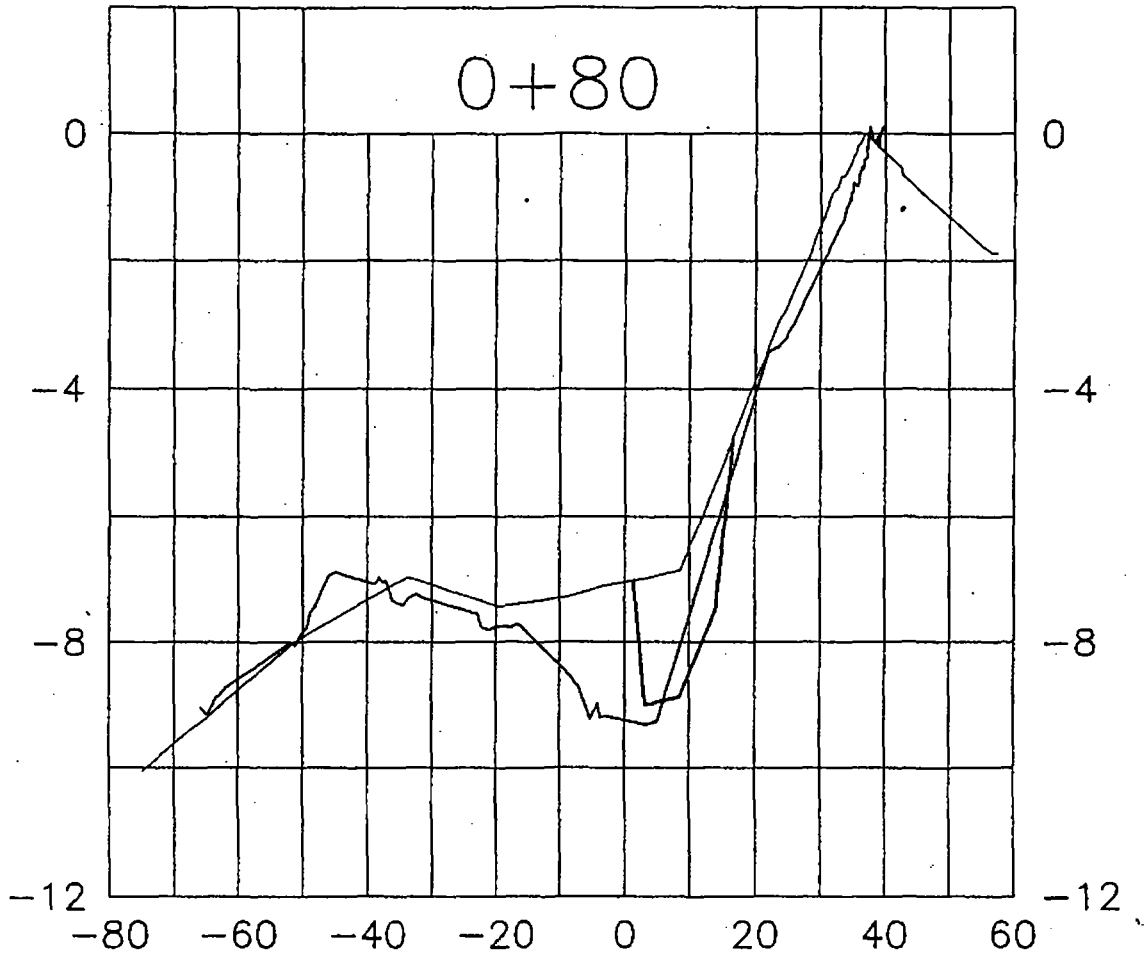
DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-07-09

SHEET 9 OF 11



LEGEND:

BCE PRE-DREDGE 10/16/03

BCE POST-DREDGE 11/18/03

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA C - REDREDGE POST-DREDGE CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering
BCE

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APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-07-10

SHEET 10 OF 11

File: X:\23468\Moxy, Unsorted Files\dwg\AREA C additional 8x11 120503.dwg

NOTES:

1. CROSS SECTIONS BASED ON A PLAN BY BOURNE CONSULTING ENGINEERING ENTITLED "POST DREDGE ADDITIONAL AREA C, NEW BEDFORD SUPERFUND SITE MELVILLE SHIPYARD DREDGING USACE CONTRACT# DACW 33-94-D-002" DATED 11/26/03

2. ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON A MEAN LOWER LOW WATER DATUM. POSITIVE VALUES REPRESENT DEPTH ABOVE THAT SAME PLANE.

3. THE INFORMATION PRESENTED ON THIS CHART REPRESENTS THE RESULTS OF SURVEYS PERFORMED BY BOURNE CONSULTING ENGINEERING ON 8/12/03 AND 11/18/03 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO BCE.

4. HORIZONTAL AND VERTICAL CONTROL FOR THIS SURVEY WAS PROVIDED BY MAXYMILLIAN TECHNOLOGIES INC.

5. BENCH MARK IS A POINT SET IN THE NORTHEAST CORNER OF A CONCRETE PAD (DECON PAD) ELEV=8.14 NGVD
=9.58 MLLW

6. DREDGE AREAS TAKEN FROM A PLAN ENTITLED "NEW BEDFORD HARBOR SUPER FUND SITE (OU#1) NEW BEDFORD, MA. MELVILLE SHIPYARD DREDGING ENVIRONMENTAL DREDGING PLAN -1&2" PREPARED BY USACE MAY, 2003

7. DREDGE DEPTHS WITHIN THE DREDGE AREA WERE ADJUSTED BY -0.2 TO COMPENSATE FOR FLUFFING MEASUREMENTS TAKEN WITHIN THE DREDGE AREA ON NOVEMBER 18, 2003.

8. DREDGE VOLUME BASED ON PRE AND POST DREDGE HYDROGRAPHIC SURVEYS IS AS FOLLOWS:

AREA DESIGNATION	DREDGE VOLUME
DREDGING ADDITIONAL AREA C	255 CUBIC YARDS

AREA C - REDREDGE POST-DREDGE NOTES

NEW BEDFORD SUPERFUND SITE

MELVILLE SHIPYARD DREDGING
USACE CONTRACT# DACW 33-94-D-002
NEW BEDFORD, MA
DECEMBER 5, 2003

REVISIONS	

BCE Bourne Consulting Engineering
104 West Central Street
Franklin, MA 02038
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CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

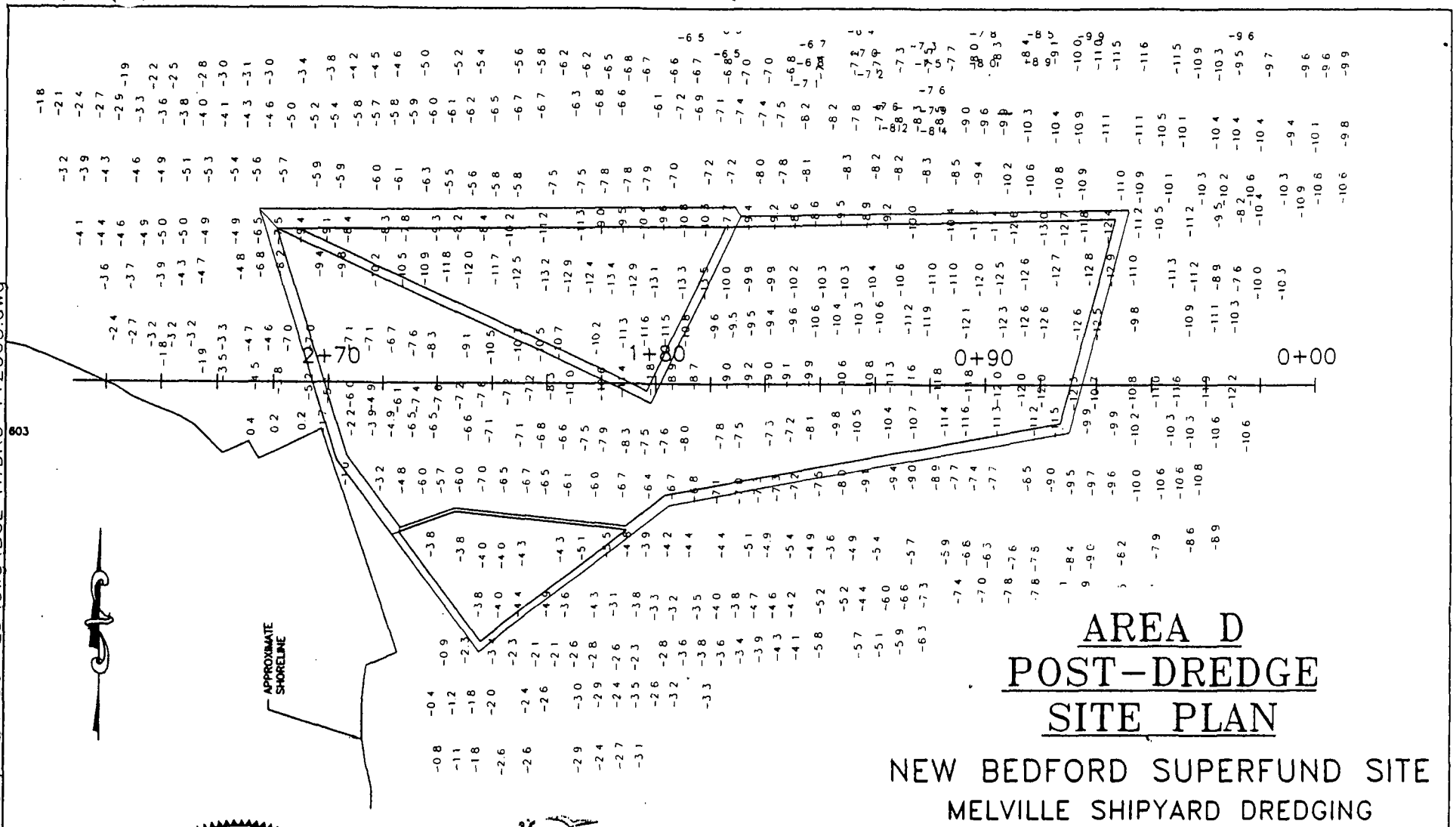
DRAWING NO. 23468-07-11

SHEET 11 OF 11

File: X:\23468\Moxy, Unsorted Files\dwg\AREA C additional 8x11 120503.dwg

Appendix C.5

Area D As-Built Cross Sections



AREA D
POST-DREDGE
SITE PLAN

NEW BEDFORD SUPERFUND SITE

MELVILLE SHIPYARD DREDGING
USACE CONTRACT# DACW 33-94-D-002
NEW BEDFORD, MA
DECEMBER 5, 2003

COMMONWEALTH OF MASSACHUSETTS
JOSEPH W. HANLON
CIVIL
No. 41521
REGISTERED PROFESSIONAL ENGINEER

BOURNE CONSULTING ENGINEERING

0 40
SCALE: 1" = 40'

REVISIONS

Bourne Consulting Engineering
184 West Central Street
Franklin, MA 02038
PH (508) 528-0130 FAX (508) 520-0171

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-08-01

SHEET 1 OF 18

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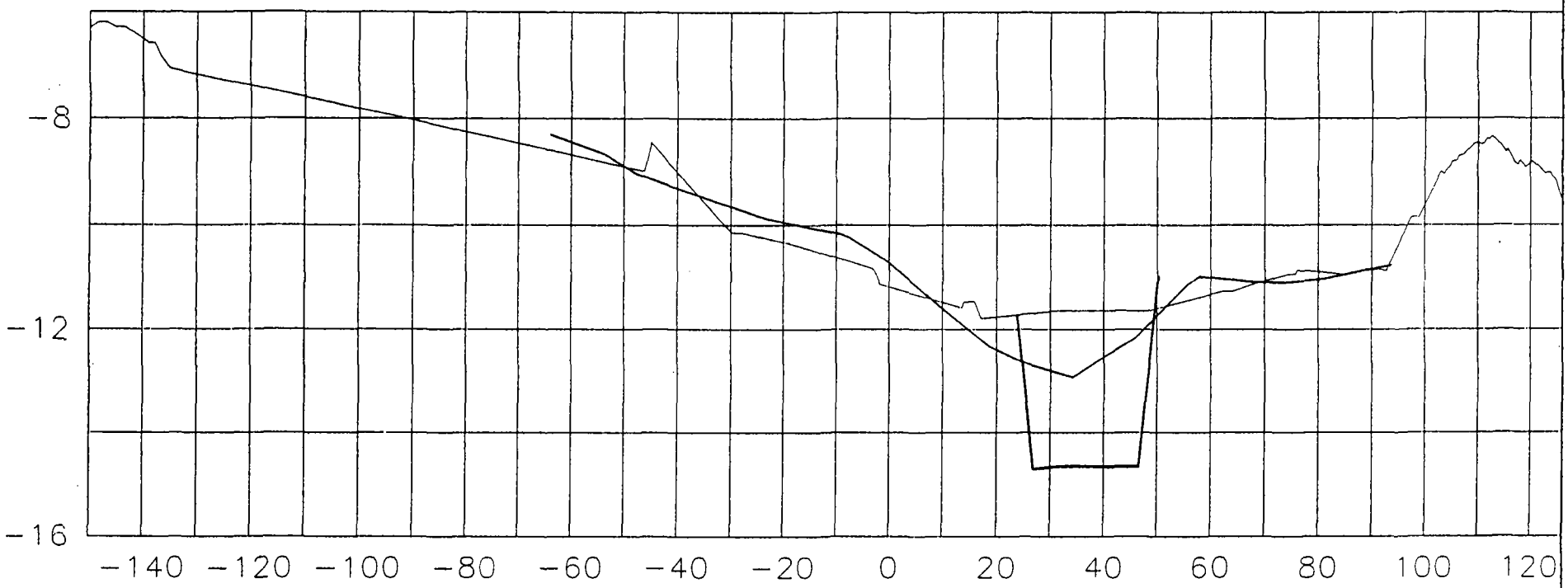

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

BCE Bourne Consulting Engineering

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CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-08-02

SHEET 2 OF 18

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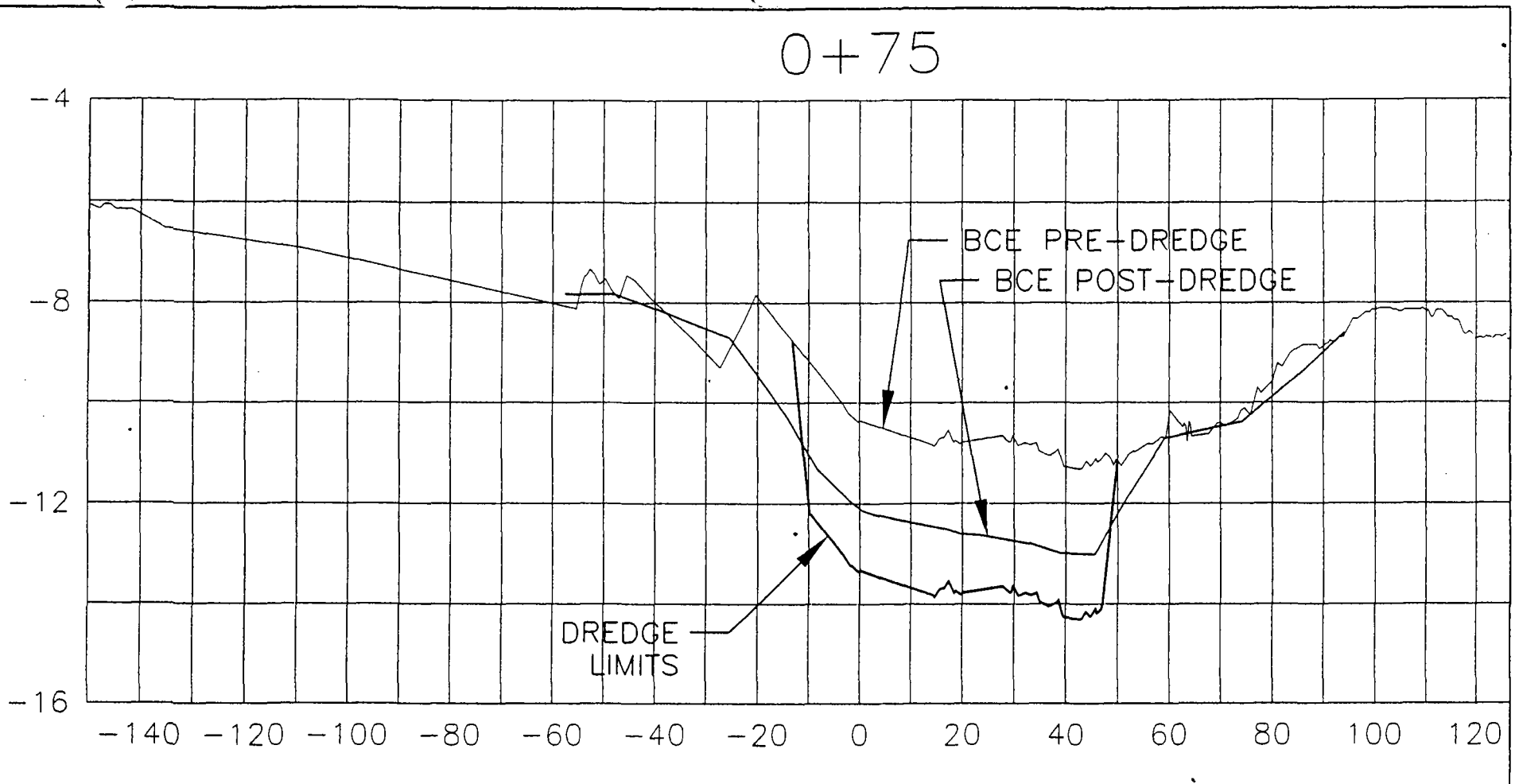

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

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CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-08-03

SHEET 3 OF 18

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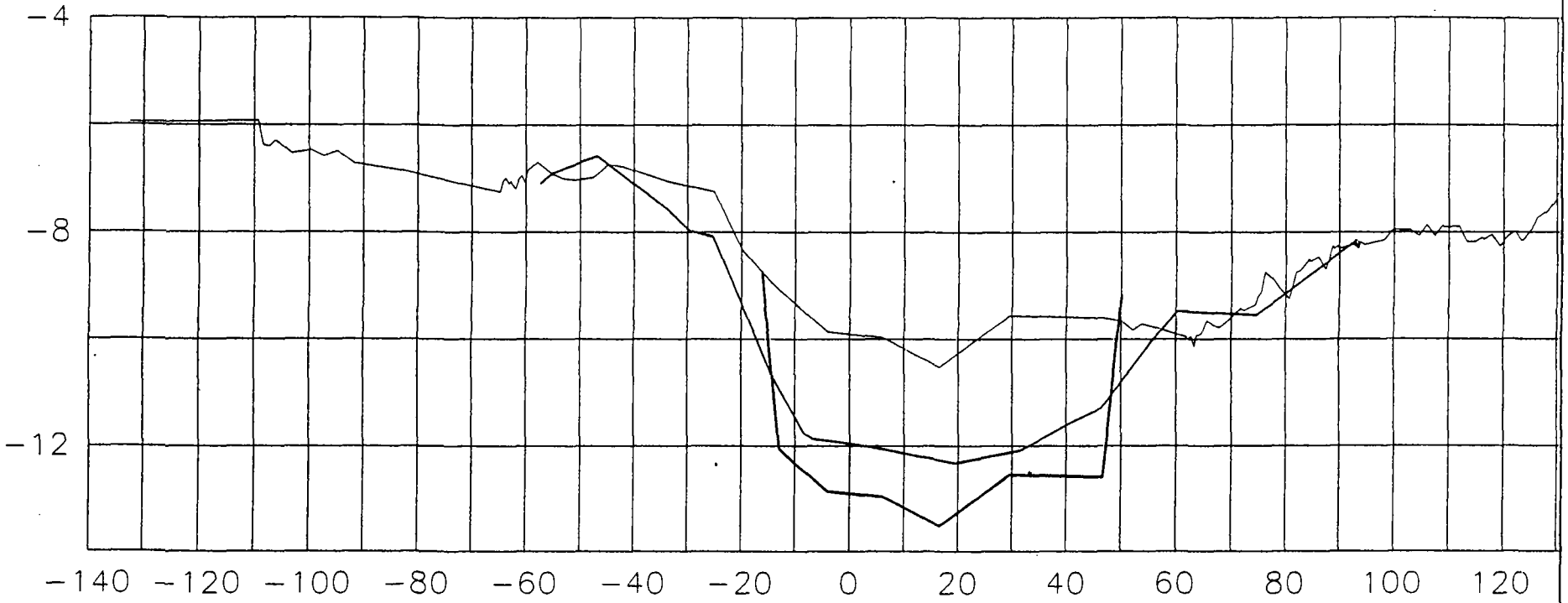

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

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APPROVED: JWH
DATE: 12/05/03

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SHEET 4 OF 18

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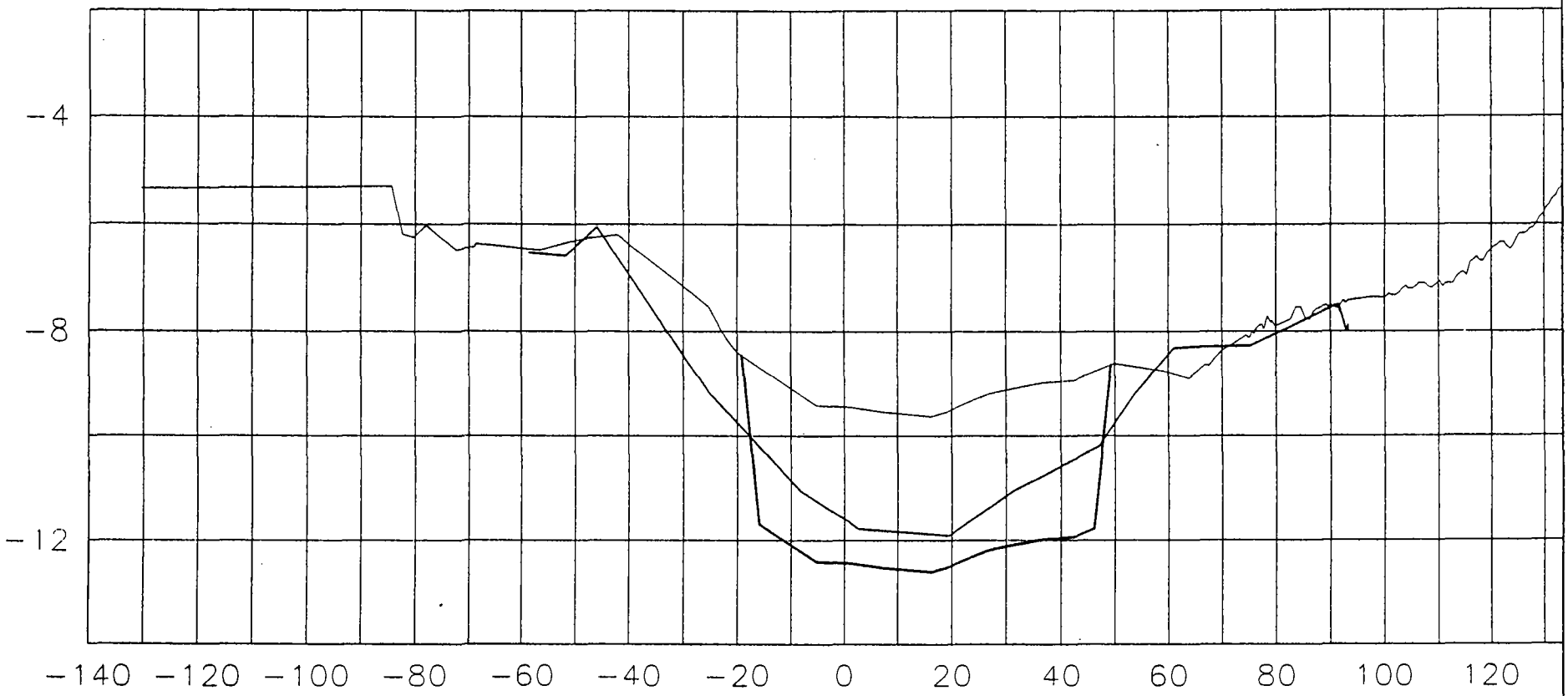

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering

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CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-08-05

SHEET 5 OF 18

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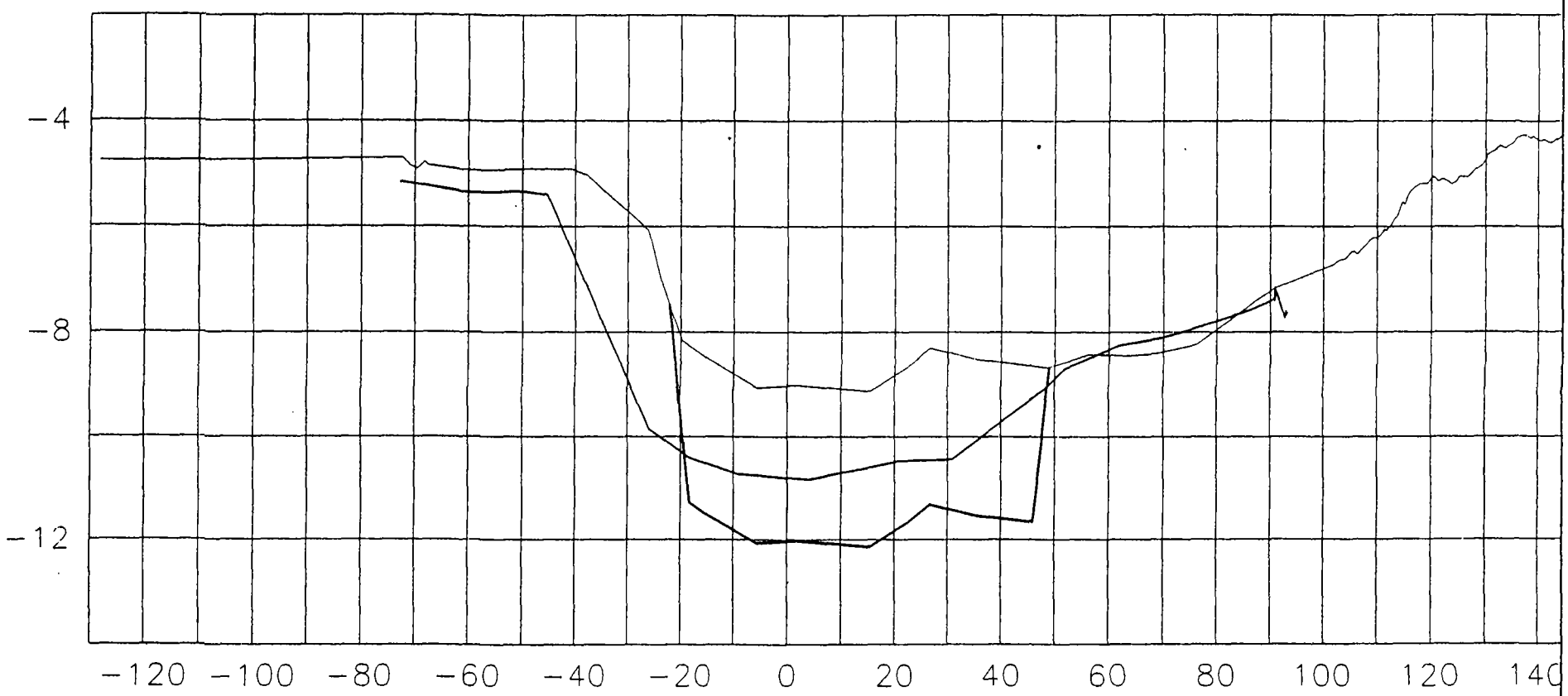

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering
104 West Central Street
Franklin, MA 02038
PH. (508) 528-6130 FAX (508) 520-0971

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CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-08-06

SHEET 6 OF 18

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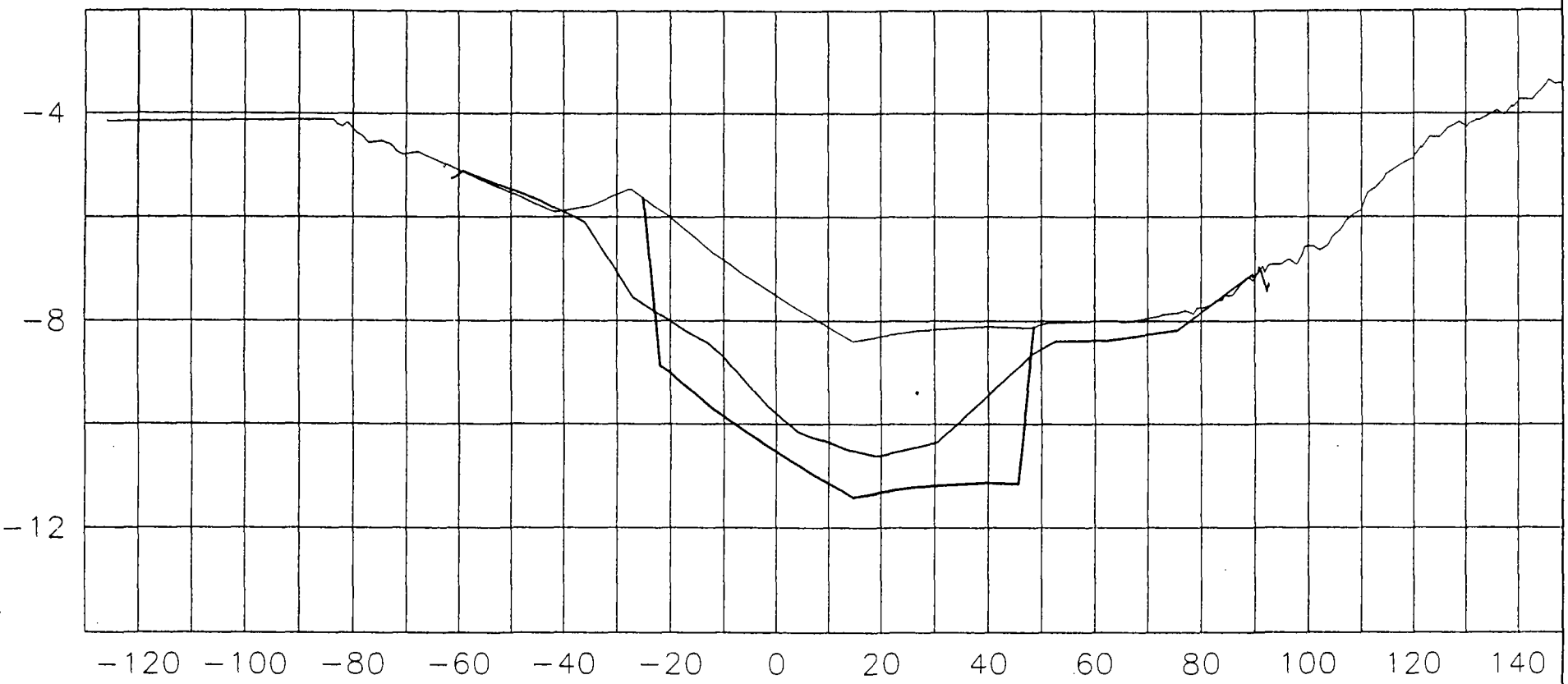

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering
104 West Central Street
Franklin, MA 02038
PH. (508) 528-6132 FAX. (508) 528-6071

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-08-07

SHEET 7 OF 18

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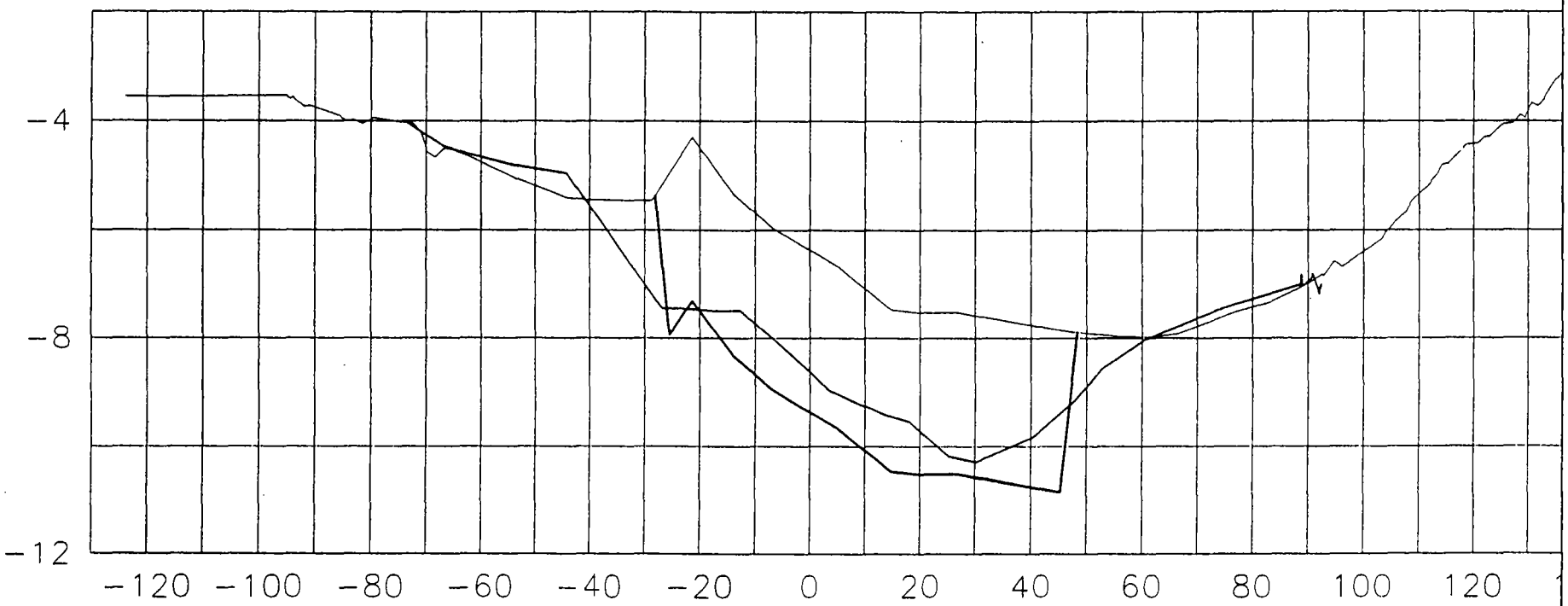

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

BCE Bourne Consulting Engineering
181 West Central Street
Franklin, MA 02038
PH. (508) 528-4130 FAX. (508) 528-3971

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-08-08

SHEET 8 OF 18

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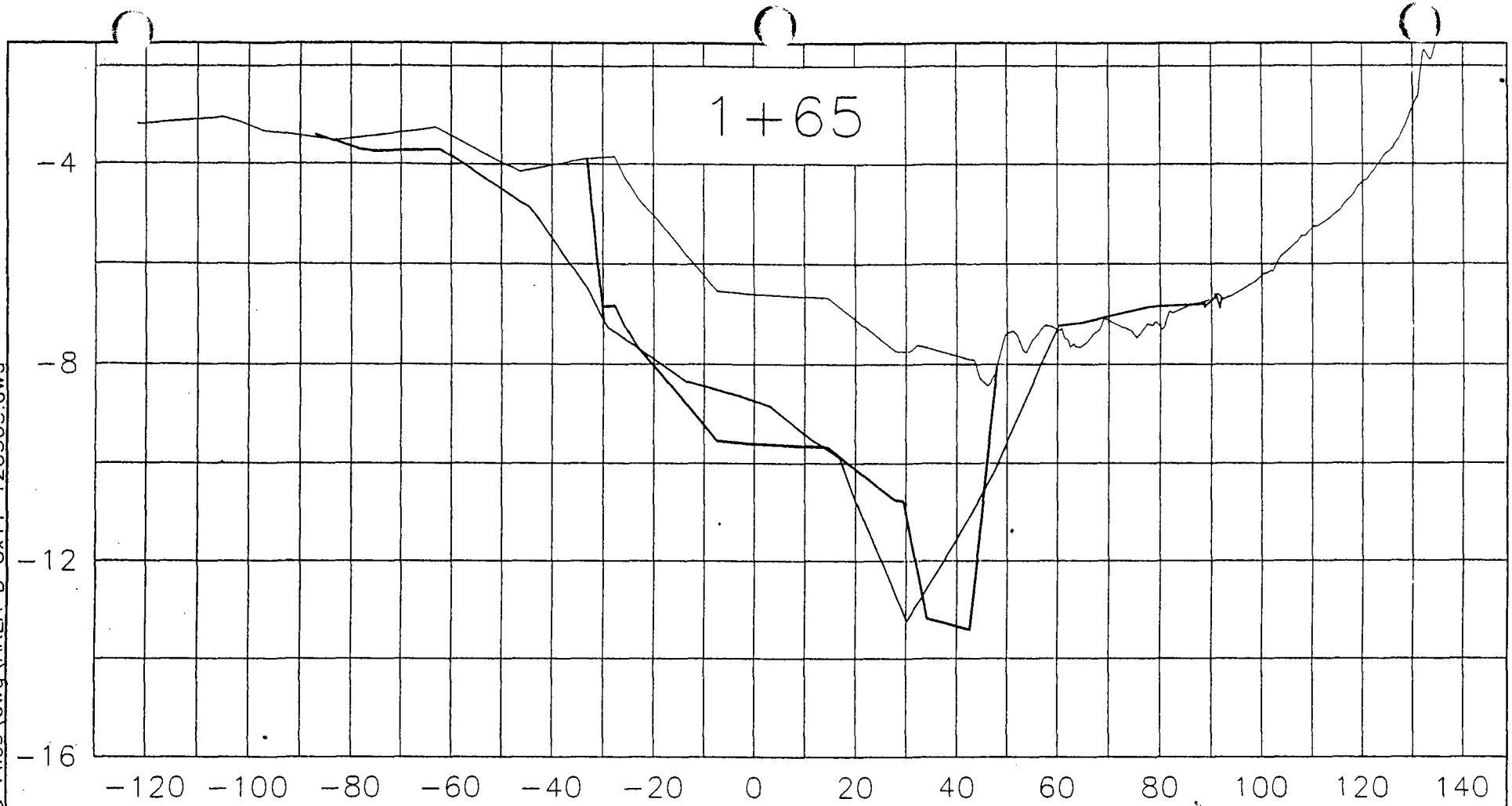


LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

Bourne Consulting Engineering

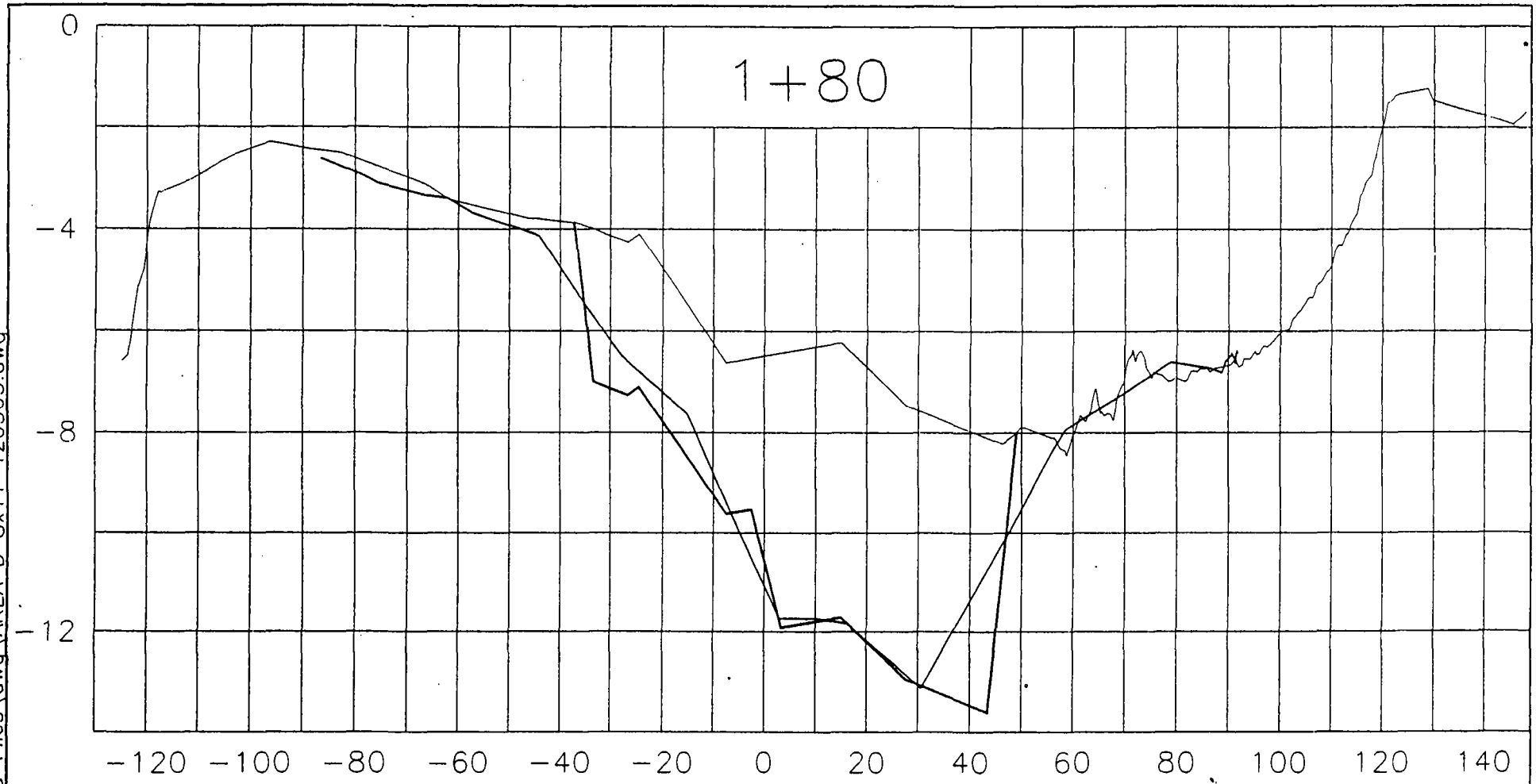
DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

REVISIONS

DRAWING NO. 23468-08-09

SHEET 9 OF 18

File: X:\23468\Maxy, Unsorted Files\dwg\AREA D 8x11 120503.dwg



LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering

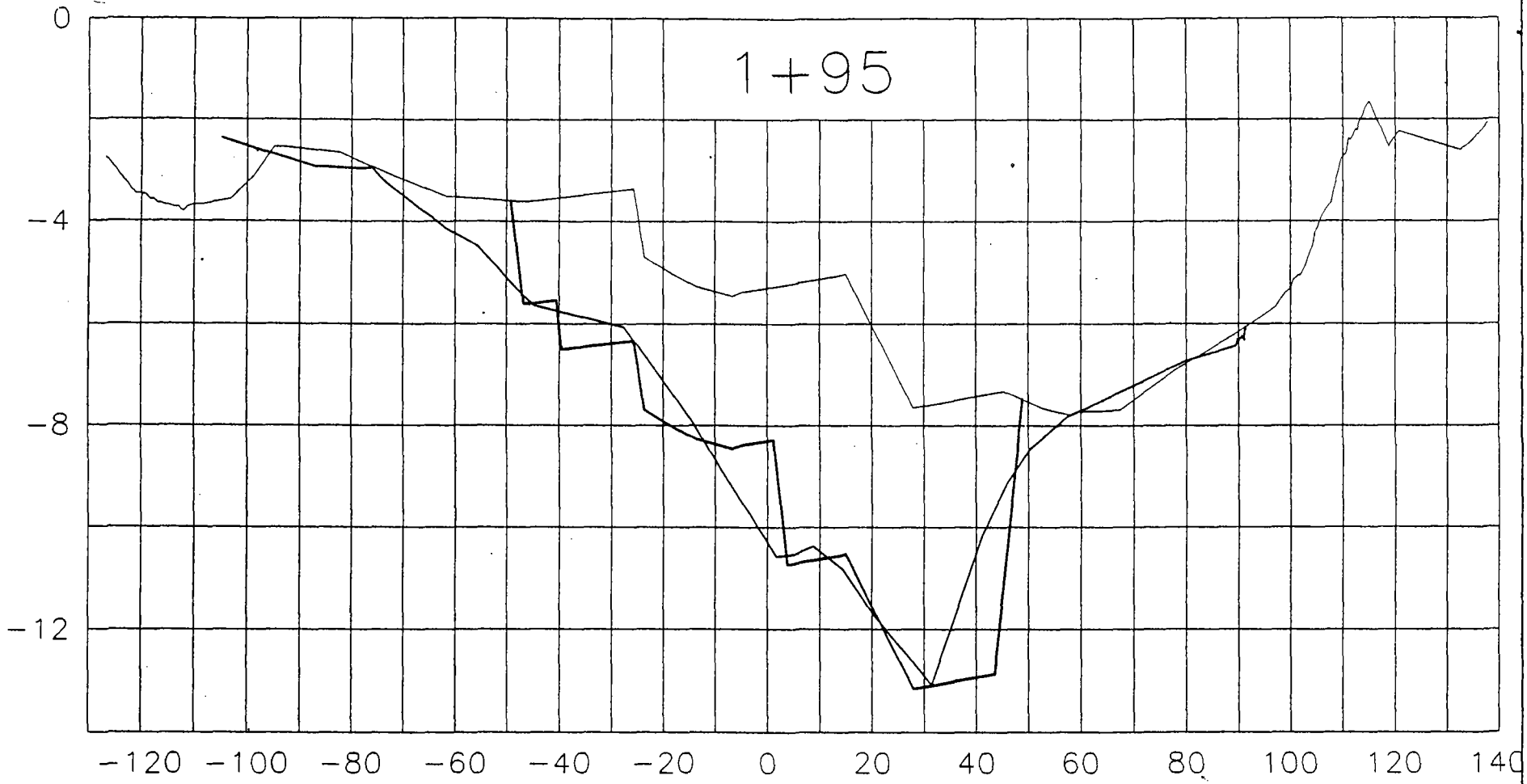
BCE

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-08-10

SHEET 10 OF 18

File: X:\23468\Maxy, Unsorted Files\dwg\AREA D 8x11 120503.dwg



LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

REVISIONS

Bourne Consulting Engineering

DRAWN: RBH
CHECKED: JWH
APPROVED: JWH
DATE: 12/05/03

DRAWING NO. 23468-08-11

SHEET 11 OF 18

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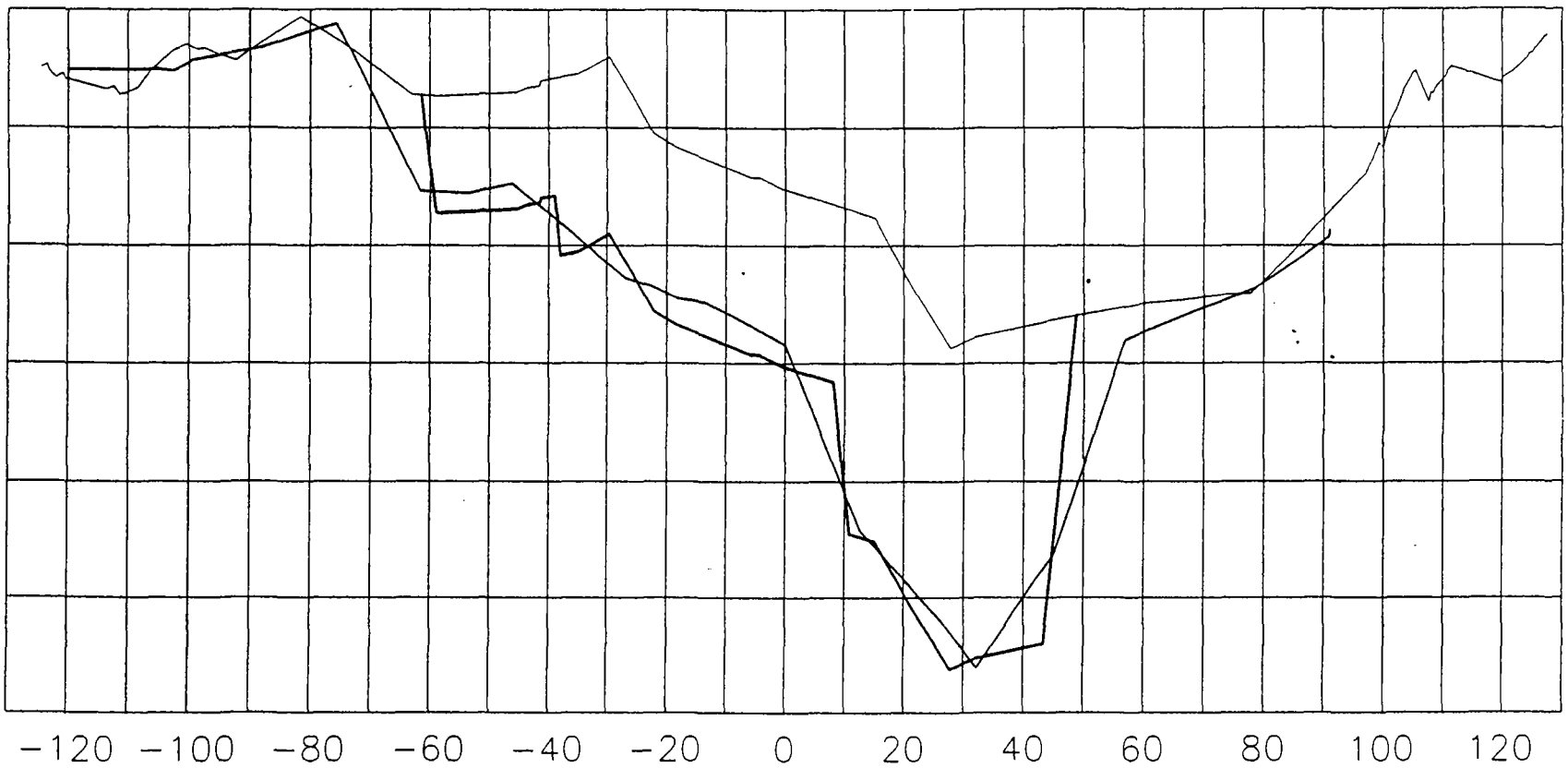
2+10



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BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

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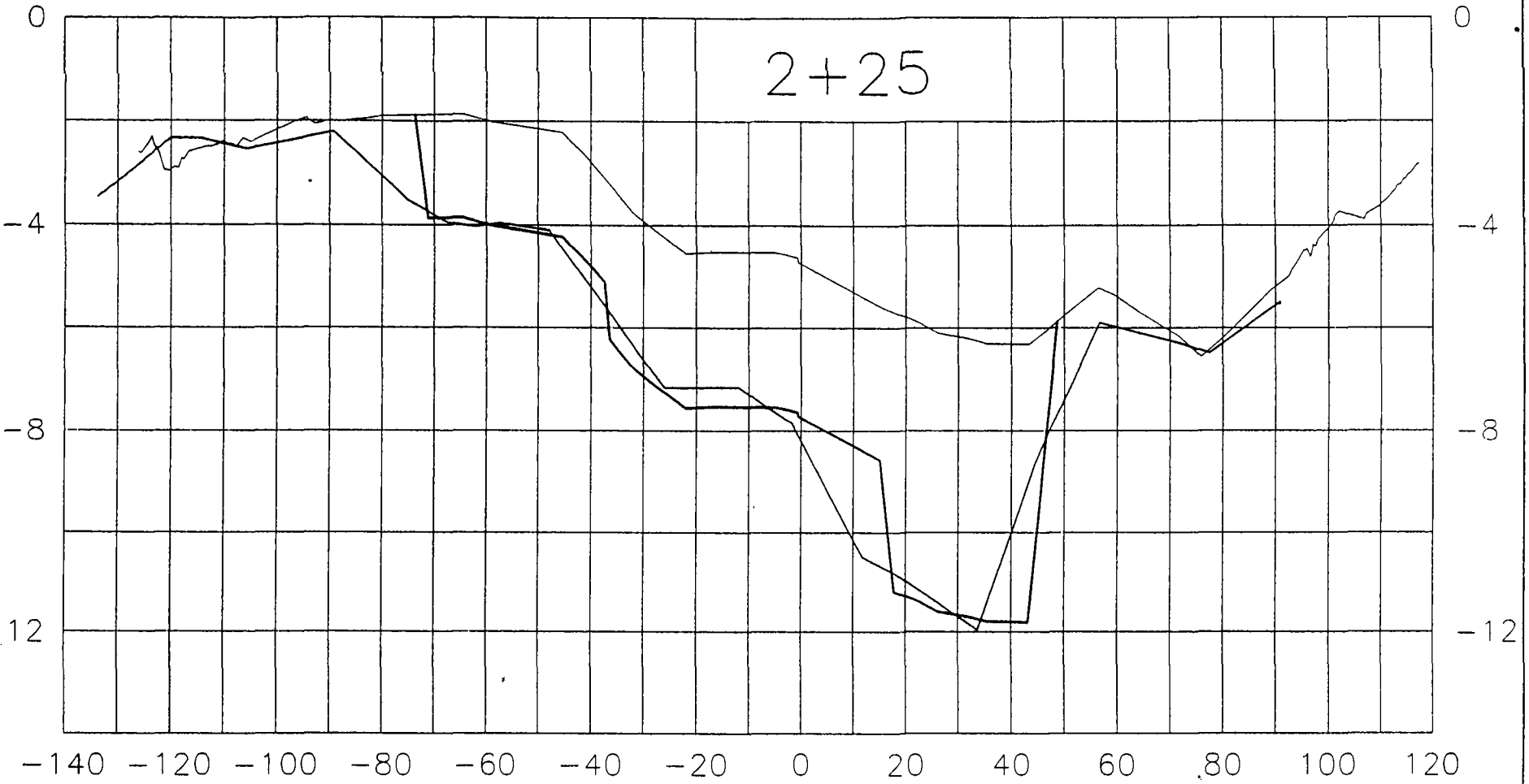

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

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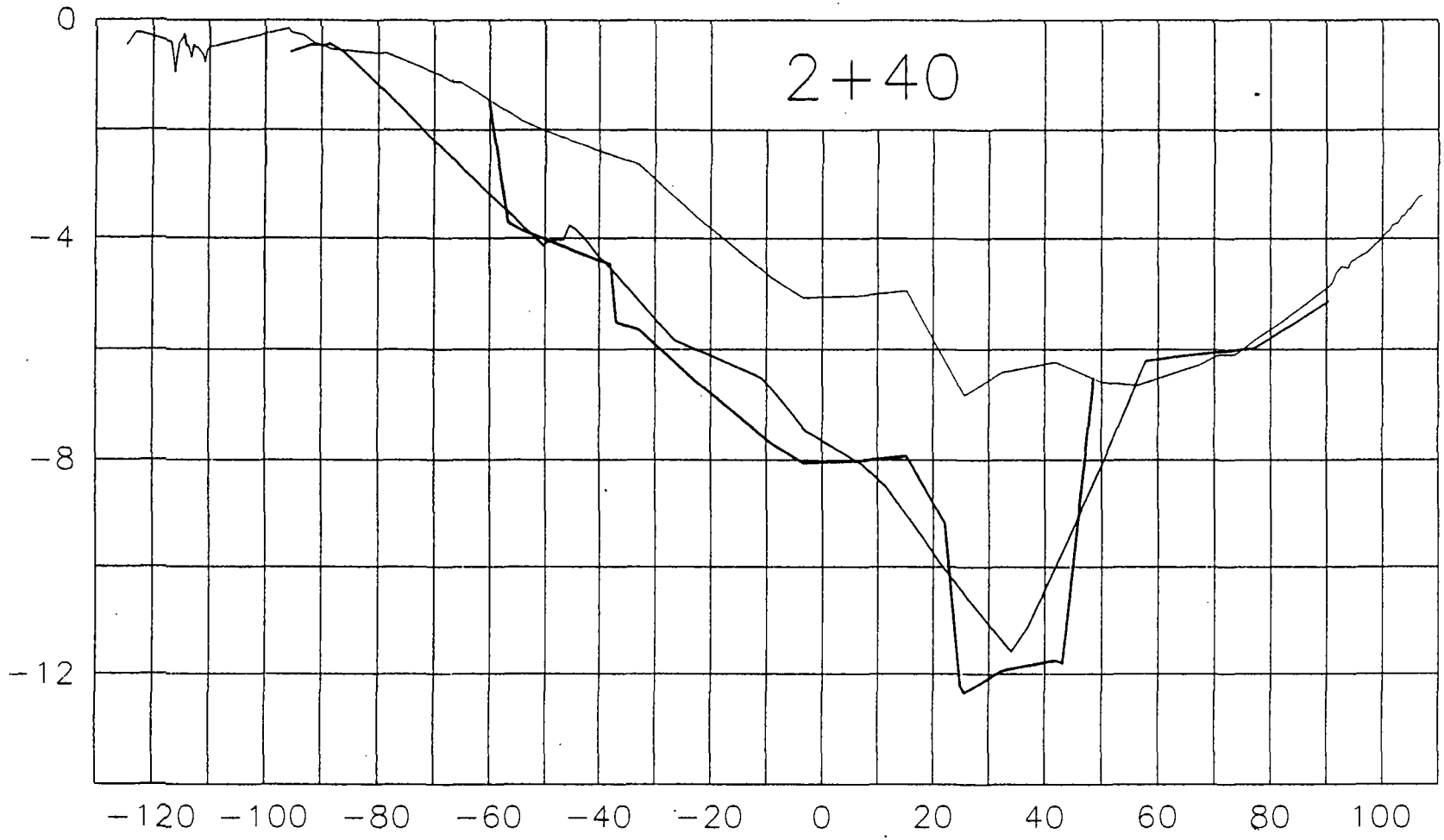

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BCE POST-DREDGE

PROPOSED DREDGE

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VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

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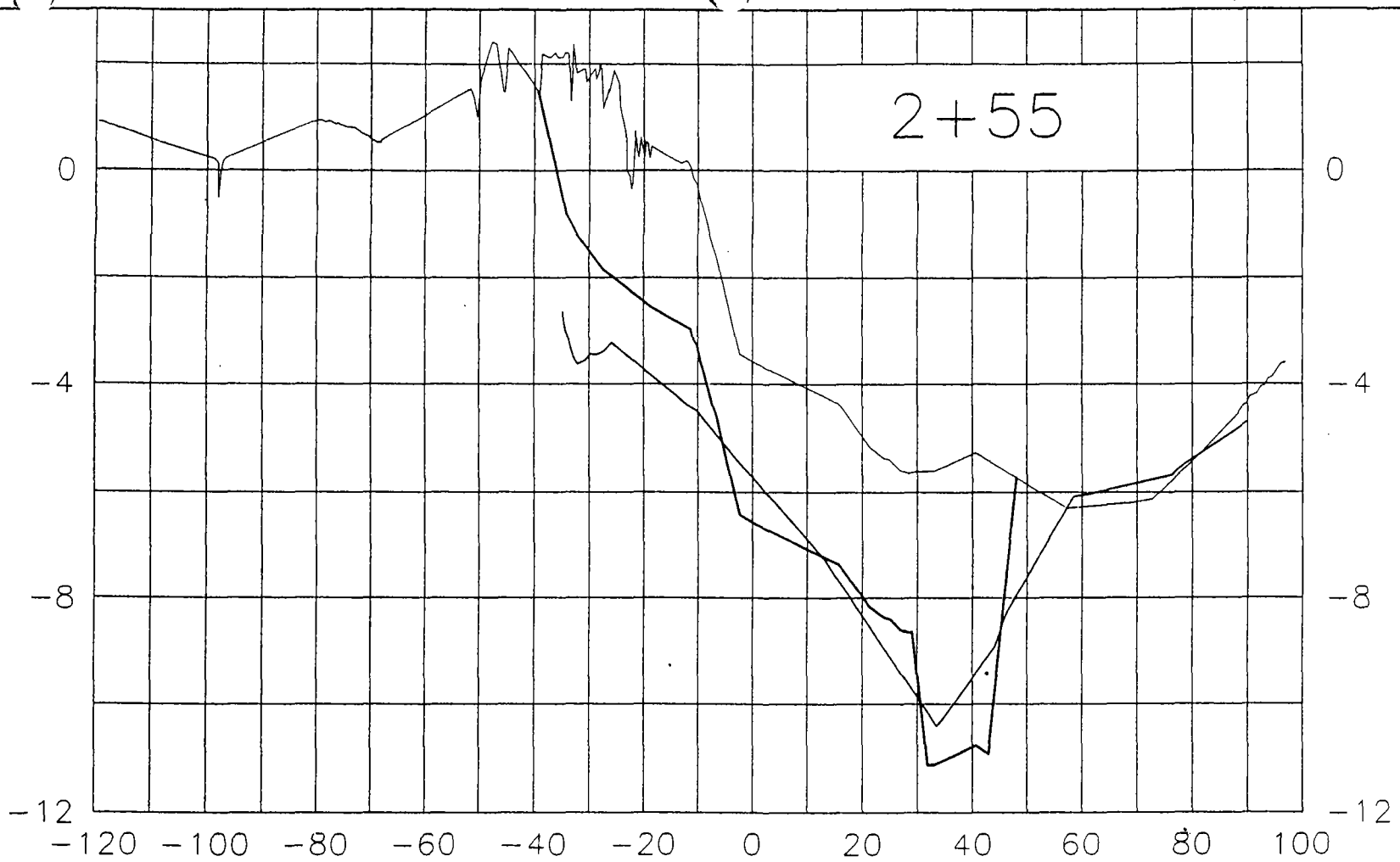

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

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VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

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SHEET 15 OF 18

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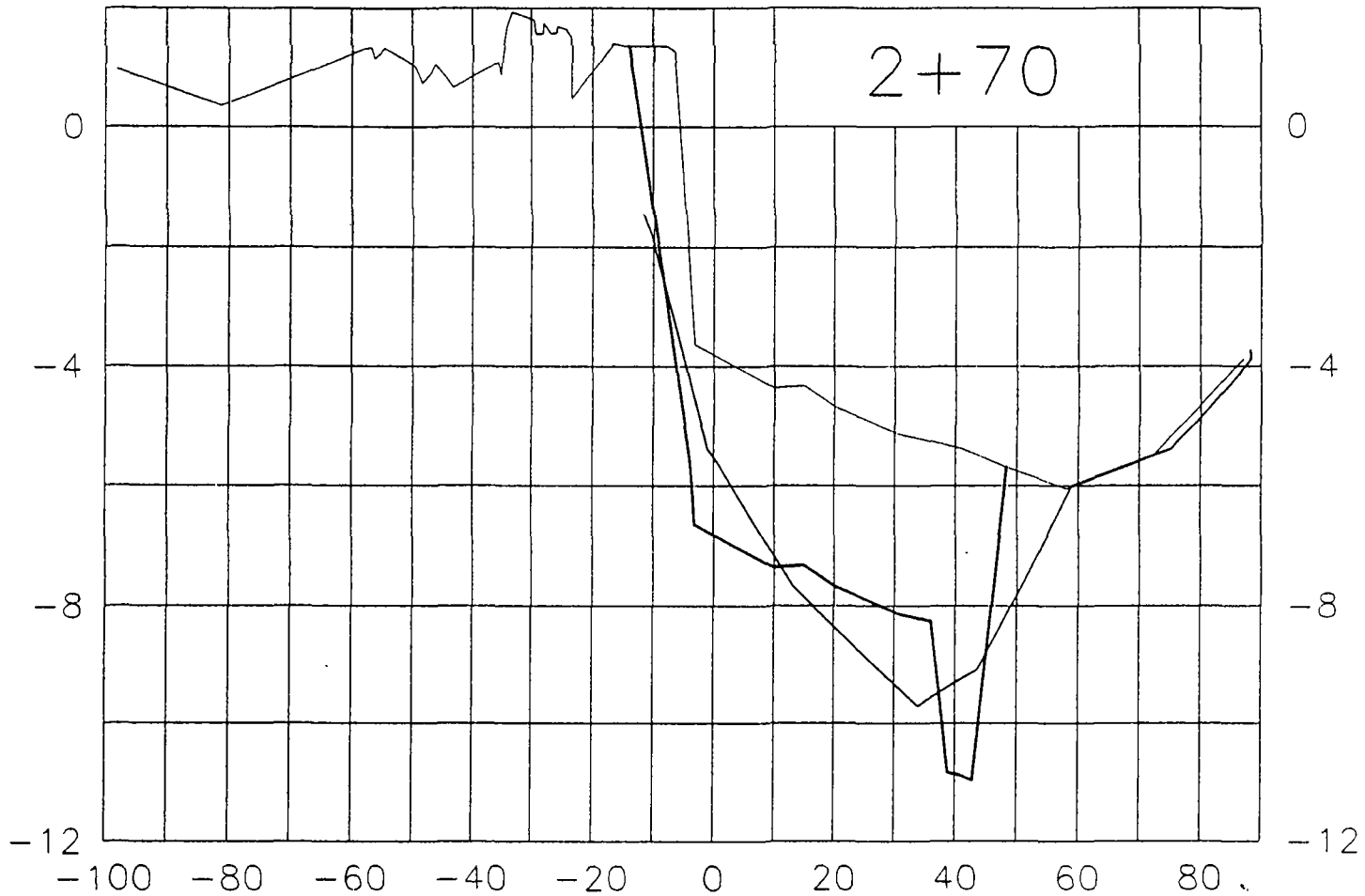

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

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VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

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APPROVED: JWH
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SHEET 16 OF 18

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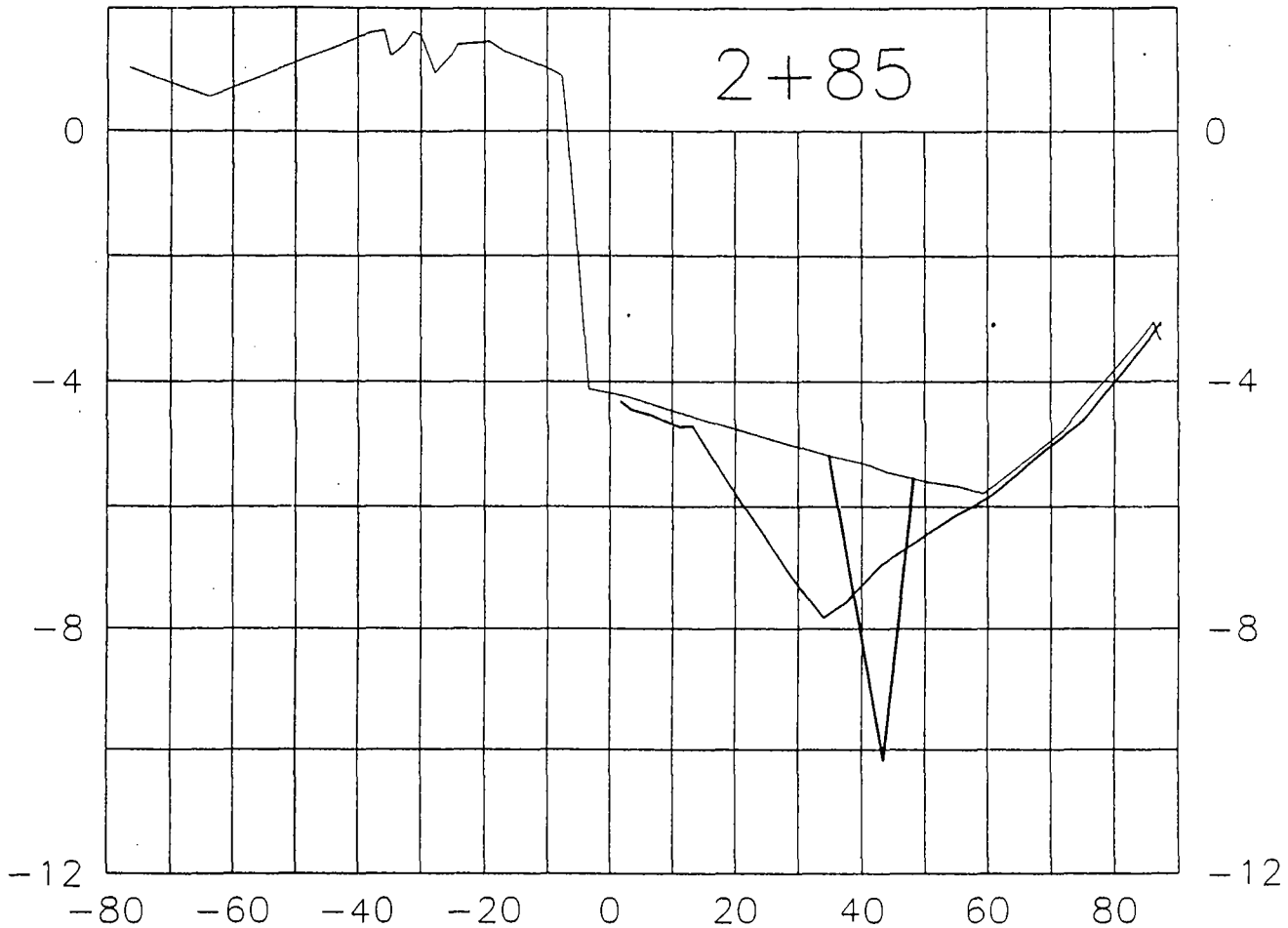

LEGEND:

BCE PRE-DREDGE

BCE POST-DREDGE

PROPOSED DREDGE

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VERTICAL SCALE: 1" = 3'

0 30 60

0 3 6

AREA D
POST-DREDGE
CROSS-SECTIONS

DECEMBER 5, 2003

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DATE: 12/05/03

DRAWING NO. 23468-08-17

SHEET 17 OF 18

File: X:\23468\Maxy, Unsorted Files\dwg\AREA D 8x11 120503.dwg

NOTES:

1. CROSS SECTIONS BASED ON A PLAN BY BOURNE CONSULTING ENGINEERING ENTITLED "PRE DREDGE AREA A, POST DREDGE AREA D, NEW BEDFORD SUPERFUND SITE MELVILLE SHIPYARD DREDGING USACE CONTRACT# DACW 33-94-D-002" DATED 10/17/03

2. ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON A MEAN LOWER LOW WATER DATUM. POSITIVE VALUES REPRESENT DEPTH ABOVE THAT SAME PLANE.

3. THE INFORMATION PRESENTED ON THIS CHART REPRESENTS THE RESULTS OF SURVEYS PERFORMED BY BOURNE CONSULTING ENGINEERING ON 8/12/03 AND 10/02/03 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO BCE.

4. HORIZONTAL AND VERTICAL CONTROL FOR THIS SURVEY WAS PROVIDED BY MAXYMILLIAN TECHNOLOGIES INC.

5. BENCH MARK IS A POINT SET IN THE NORTHEAST CORNER OF A CONCRETE PAD (DECON PAD) ELEV=8.14 NGVD
=9.58 MLLW

6. DREDGE AREAS TAKEN FROM A PLAN ENTITLED "NEW BEDFORD HARBOR SUPER FUND SITE (OU#1) NEW BEDFORD, MA. MELVILLE SHIPYARD DREDGING ENVIRONMENTAL DREDGING PLAN -1&2" PREPARED BY USACE MAY, 2003

7. DREDGE DEPTHS WITHIN THE DREDGE AREA WERE ADJUSTED BY -0.2 TO COMPENSATE FOR FLUFFING MEASUREMENTS TAKEN WITHIN THE DREDGE AREA ON NOVEMBER 18, 2003.

8. DREDGE VOLUME BASED ON PRE AND POST DREDGE HYDROGRAPHIC SURVEYS IS AS FOLLOWS:

AREA DESIGNATION	DREDGE VOLUME
DREDGING AREA D	2134 CUBIC YARDS

AREA D POST-DREDGE NOTES

NEW BEDFORD SUPERFUND SITE

MELVILLE SHIPYARD DREDGING
USACE CONTRACT# DACW 33-94-D-002
NEW BEDFORD, MA
DECEMBER 5, 2003

REVISIONS

BCE Bourne Consulting Engineering
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SHEET 18 OF 18

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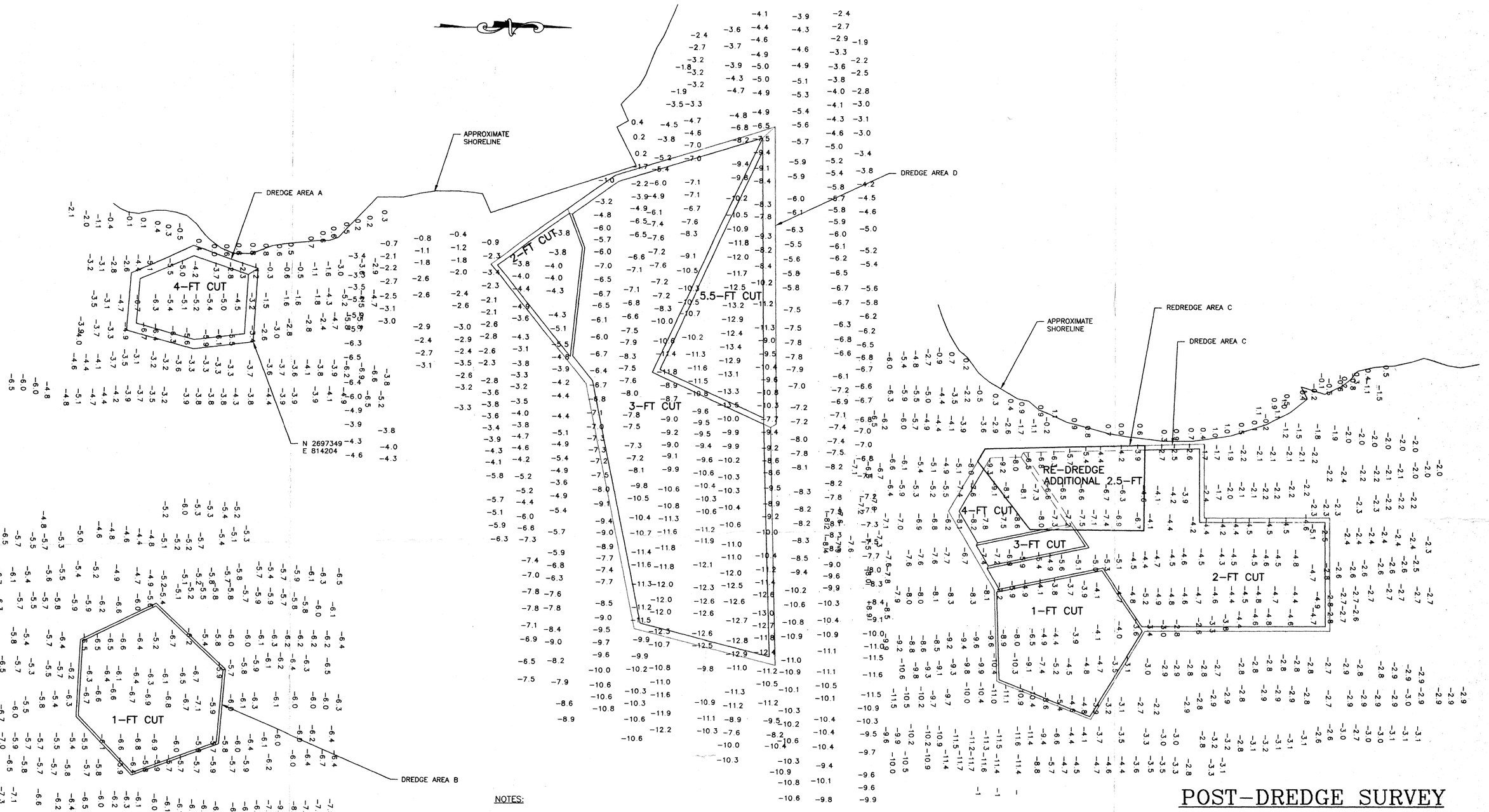
Appendix C.6

Post Dredge Survey Plan

Note
Large size fig
in distribution

Appendix C.6

Post Dredge Survey Plan



NOTES:

1. COORDINATES ARE BASED ON NAD 83 MASSACHUSETTS STATE PLANE COORDINATE SYSTEM AND ARE EXPRESSED IN FEET.

2. SOUNDINGS AND ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON A MEAN LOWER LOW WATER DATUM. POSITIVE VALUES REPRESENT DEPTH ABOVE THAT SAME PLANE.

3. THE INFORMATION PRESENTED ON THIS CHART REPRESENTS THE RESULTS OF SURVEYS PERFORMED BY BOURNE CONSULTING ENGINEERING ON 8/1203, 9/8/03, 11/2/03, 11/16/03 & 11/18/03 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO BCE.

4. HORIZONTAL AND VERTICAL CONTROL FOR THIS SURVEY WAS PROVIDED BY MAXYMILLIAN TECHNOLOGIES INC.

5. BENCH MARK IS A POINT SET IN THE NORTHEAST CORNER OF A CONCRETE PAD (DECON PAD) ELEV=8.14 NGVD
=9.58 MLLW

6. DREDGE AREAS TAKEN FROM A PLAN ENTITLED "NEW BEDFORD HARBOR SUPER FUND SITE (OU#1) NEW BEDFORD, MA. MELVILLE SHIPYARD DREDGING ENVIRONMENTAL DREDGING PLAN -1&2" PREPARED BY USACE MAY, 2003

7. DREDGE DEPTHS WITHIN THE DREDGE AREAS WERE ADJUSTED BY -0.2 TO COMPENSATE FOR FLUFFING MEASUREMENTS TAKEN WITHIN THE DREDGE AREAS ON NOVEMBER 18, 2003.

8. DREDGE VOLUMES BASED ON PRE AND POST DREDGE HYDROGRAPHIC SURVEYS ARE AS FOLLOWS:

AREA DESIGNATION	DREDGE VOLUMES
AREA A	331 CUBIC YARDS
AREA B	173 CUBIC YARDS
AREA C	1052 CUBIC YARDS
AREA C REDREDGE	255 CUBIC YARDS
AREA D	2134 CUBIC YARDS

COMMONWEALTH OF MASSACHUSETTS JOSEPH W. HARLOW CIVIL No. 47178 REGISTERED PROFESSIONAL ENGINEER 10/27/03

0 20 40
SCALE: 1" = 20'-0"

POST-DREDGE SURVEY

NEW BEDFORD SUPER FUND SITE

MELVILLE SHIPYARD DREDGING

USACE CONTRACT# DACW 33-94-D-002

NEW BEDFORD, MA

NOVEMBER, 2003

12/31/03	CUT DEPTHS
12/17/03	AREA C REDREDGE
REVISIONS	

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APPROVED: JWH
DATE: 11/26/03

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D

Appendix D

Air Sampling Data

Summary of Air Sample Results
North Lobe Dredging Remediation

Sampling Location	Sawyer Street				Transmittal No.
	AQ Site 2	AQ Site 3	AQ Site 6	AQ Site 38	
Sampling Date [month/day/year]	Total PCBs* [ng/m^3]	Total PCBs* [ng/m^3]	Total PCBs* [ng/m^3]	Total PCBs* [ng/m^3]	
09/03/03				28	N1.02.03.01
09/10/03	95	79			N1.02.03.02
09/18/03				23	N1.02.03.03
09/30/03	74		36	17	N1.02.03.04
Station Average	85	79	36	23	
Station Maximum	95	79	36	28	
Baseline Annual Average**	49	49	49	9.4	
Baseline Annual Maximum**	160	160	160	20	

Samples were collected and analyzed in accordance with the project Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP).

* Reported as the sum of the detected total homologue groups.

** Baseline data for AQ Site 2, AQ Site 3, and AQ Site 6 are based on results for AQ Site 26 (103 Sawyer Street) from the Apr. 1999- Apr. 2000 Annual Baseline Sampling. Baseline data for AQ Site 38 are based on results for AQ Site 21 (New Bedford Welding) from the Apr. 1999 – Apr. 2000 Annual Baseline Sampling.

Appendix E

ENSR's Water Quality Monitoring Summary Report

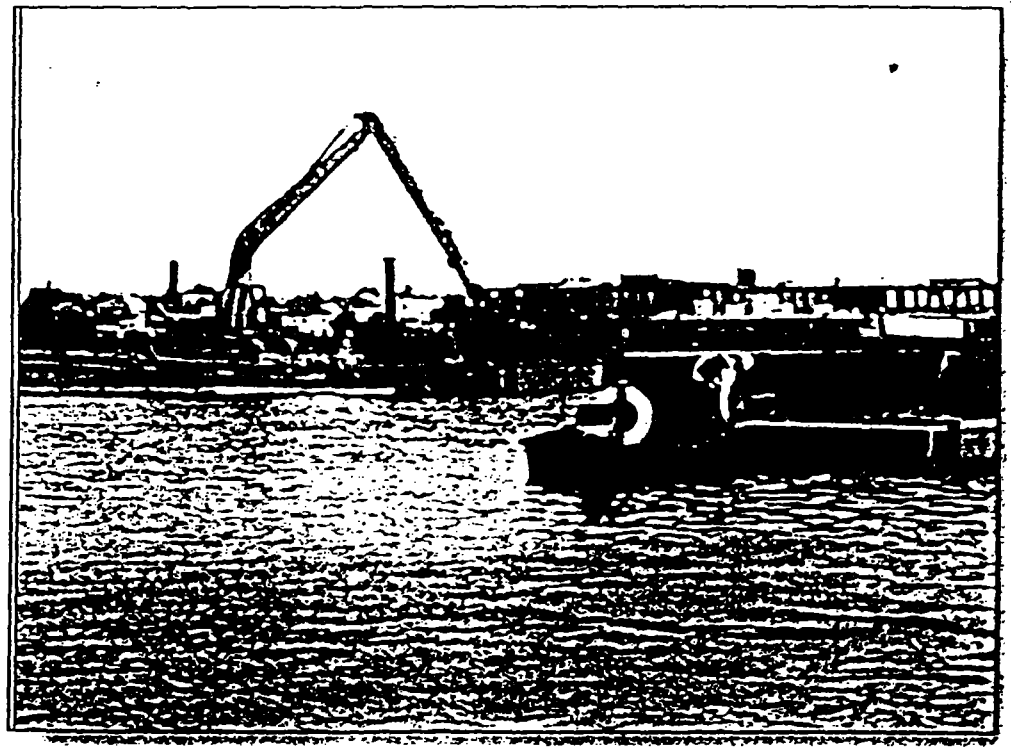
U.S. Army Corps of Engineers
New England District

U.S. Environmental Protection Agency

Water Quality Monitoring Summary Report

III. North Lobe Dredging (August - October 2003)

New Bedford Harbor Superfund Site -
New Bedford, Massachusetts



Prepared by:

Woods Hole Group
Environmental Laboratories

ENSR Corporation

CR Environmental

Contract:
DACW33-02-D-0006
Task Order 0001
ENSR Document No.
10310-003-1300

CV04003c

Draft Final
February 2004

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2.0 DREDGING SUMMARY 3

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Figure 6. Water Quality Monitoring Decision Sequence

Figure 7. Analytical Protocol Decision Sequence

EXECUTIVE SUMMARY

As part of the remediation of the New Bedford Harbor Superfund Site, approximately 3945 cubic yards of contaminated sediments were removed from four specific locations in the North Lobe area of the Lower Harbor. The sediments were removed to allow for construction of a bulkhead and shore side facility to accommodate relocation of the Tisbury Towing and Transportation Company. The sediments to be dredged contained elevated concentrations of PCBs and some metals. As a result, the USEPA and USACE required that the dredging be performed using a closed environmental dredge bucket, with a contingency for deployment of a full-depth silt curtain and transport of the dredged material to the USACE's Sawyer Street Facility for storage and later off-site disposal.

In addition to the turbidity controls, a water quality monitoring program was developed by the USEPA and USACE to ensure that the dredging was carried out in a manner that did not result in acute impacts to organisms within the waters adjacent to the work zones or result in significant transport of suspended material and associated contaminants away from these areas. The monitoring program included real-time measurement of turbidity down current of the dredging area for comparison against an upper level project specific turbidity criterion (set at 50 NTU above background 300 ft down current of the work zone). The monitoring specified contingent sampling, analyses, and construction work modification in the event of a turbidity criterion exceedence. The monitoring also included sampling immediately adjacent to the dredge to assess the protectiveness of the 50 NTU criterion and to determine if the use of silt curtain(s) was required.

The dredging of the North Lobe areas was completed between August and October 2003. The water quality monitoring revealed that the dredging caused minimal elevation of suspend solids outside of the immediate dredge area. Turbidity levels at 300 ft down current of the dredging did not exceed (or approach) the 50 NTU above background criterion, and there were no acute toxicity effects for water samples collected in the higher turbidity zone adjacent to the dredge. This allowed the dredging operation to be completed without the deployment of silt curtains. Similar to the monitoring performed during other construction and dredging projects in New Bedford Harbor, vessel operations and repositioning of equipment were found to have the potential to suspend as much sediment as the dredging operation. However, for the transport of the North Lobe material, sediment suspension was only apparent in limited shallow water areas at the lower stages of the tide and, as such, the impacts were considered minimal.

1.0 INTRODUCTION

New Bedford Harbor is located approximately 50 miles south of Boston on the waters of Buzzards Bay in Bristol County, Massachusetts. The sediments in many areas of the Harbor are contaminated with polychlorinated biphenyl's (PCB's) and metals, primarily from the manufacture of electrical components which occurred in the area between 1940 and the mid-1970's. Based on human health concerns and ecological risk assessments, the U.S. Environmental Protection Agency (USEPA) added New Bedford Harbor to the National Priorities List in 1982 as a designated Superfund Site, and stipulated that remedial measures were required to remove PCB-contaminated sediments from the Harbor. Through an Interagency Agreement between the USEPA and the U.S. Army Corps of Engineers, New England District (USACE), the USACE is responsible for carrying out the design and implementation of the remedial measures.

The New Bedford Harbor Superfund Site extends from the shallow northern reaches of the Acushnet River estuary, south through the commercial harbor of New Bedford and out beyond the City's hurricane barrier into 17,000 adjacent acres of Buzzards Bay. The Superfund Site is divided into three areas: the Upper, Lower and Outer Harbors (Figure 1) defined by geographical features of the Harbor and gradients of sediment contamination. The industrial discharge of PCB contaminated waste, either directly into the Harbor or indirectly through the City's sewer system, was most significant in the Upper Harbor. The location of the associated discharge and the hydrodynamics of the Harbor contributed to the deposition of significant levels of PCB contamination in the Upper Harbor. The highest PCB concentrations or "hot-spots", which contained PCB concentrations in excess of 100,000 ppm, resided in the sediments located in the immediate area of the discharge. These "hot-spot" sediments were removed between 1994 and 1995 as part of the USEPA's first cleanup phase (USEPA, 1997). The remaining sediments in the Upper Harbor, an area of approximately 190 acres, are still heavily contaminated, with PCB concentrations as high as 4,000 ppm.

Future remedial dredging efforts are planned for the Upper Harbor and portions of the Lower and Outer Harbors. Until the remedial action has been completed, any in-water construction activities that disturb the contaminated sediments require that a water quality monitoring program be developed to ensure that the construction operation is carried out in a manner such that:

- The disturbance of the contaminated sediments does not result in any acute impact to organisms within the water column outside of the construction area.

- There is not significant transport and deposition of sediments and their associated contaminants outside the construction zone to uncontaminated areas or areas that have already been remediated.

As part of the progression of the overall New Bedford Harbor Superfund Remediation effort, construction of a Sediment Dewatering, Material Transfer & Receiving Facility began in 2002 at the southern lobe of the former CDF D in the Lower Harbor, now referred to as Area D (Figure 1). The dewatering plant will accept dredge material from the Harbor for processing during full scale dredging operations. As part of the construction of this facility, the Tisbury Towing and Transportation Company that was located at Area D is being relocated a short distance to the north at the area referred to as the North Lobe (Figure 1). The relocation of this facility required site and shoreline development of the North Lobe area, including construction of a shoreline bulkhead and dredging of an approach channel.

Previous sampling and analysis of sediments in the North Lobe area had detected elevated levels of PCBs and metals, most notably copper. As a result, the USEPA and USACE had identified specific areas in the vicinity of the planned construction at the North Lobe where special handling of sediments was required because of the contamination levels (Figure 2). A follow up sediment characterization investigation was performed on the sediments in this area, including analysis of sediment and elutriate samples for metals from each area labeled in Figure 2 as well as toxicity bioassays on the suspended particulate phase generated from Areas A and F6 (ENSR 2003). The analyses confirmed the elevated metals concentrations and revealed the potential for acute suspended phase toxicity, particularly for the sediments from Area F6 (ENSR 2003). Based on these results, the USEPA and USACE limited the dredging for preparation of the North Lobe area for construction to Areas A, B, C, and D and required that the dredging be performed with a closed environmental bucket with a contingency for deployment of silt curtains.

In addition to the specialized dredging technique, the USEPA and USACE developed a water quality monitoring program to ensure that the project water quality goals were being met. The monitoring focused on real-time turbidity monitoring adjacent to the dredging and at specified distances from the operation (Figure 3). Dredging operations were completed between August and October 2003. This work was performed by Maximillian Corp. under contract to Tetra Tech Environmental (formerly Foster Wheeler Environmental). The USACE water quality monitoring was performed by Woods Hole Group Environmental Laboratories (WHG) with team members ENSR Consulting, CR Environmental, and Aquatec Biological Sciences. The monitoring revealed that the site controls were successful in meeting the goals defined above and limiting overall impacts to water quality. This report provides a summary of the water quality monitoring program and results.

2.0 DREDGING SUMMARY

The dredging of North Lobe area consisted of the removal of approximately 3945 cubic yards of contaminated sediments from Areas A, B, C, and D (Figure 2). The dredging was performed using an excavator outfitted with a closed environmental bucket (Figure 4). Dredged sediments were initially placed into a partitioned holding bay on the dredge barge. Debris imbedded within the sediment was sorted within the holding bay, and excess water was discharged into the Harbor. Material in the holding bay was then transferred into small scows (Figure 4). The scows were then pushed up the Harbor to the USACE Sawyer St. facility, and material was removed from the scow using a long reach excavator (Figure 5). The material was processed to further remove debris and stones and pumped into the holding cell located at the Sawyer St. facility.

An oil-absorbent boom was maintained around the dredging operation. Due to the limited duration of dredging in each dredge area and the use of the enclosed environmental bucket, silt curtains were not initially placed around the dredge. The deployment of silt curtains was contingent upon the results of water quality monitoring activities, i.e., if the monitoring indicated that the use of the environmental bucket alone was not sufficient to limit water column impacts, then silt curtains would be deployed. Dredge activities began in August 2003 and were completed in October 2003, and the use of the silt curtains was not required.

3.0 WATER QUALITY MONITORING DURING DREDGING

As described in Section 2, specialized dredging equipment was required to ensure that the removal of the sediments was performed in a manner that limited the potential release of suspended material and their associated contaminants to the water column. The USEPA and USACE developed a water quality monitoring program to ensure that the dredging equipment was effective at meeting the environmental goals outlined in Section 1. The program was based on the measurement of turbidity as a surrogate for contaminant release and transport and included a project-specific turbidity criterion and boat-based monitoring. A brief summary of the monitoring is presented below, and further information may be found in the Scope of Work (SOW) for the Water Quality Monitoring during Construction Activities at the North Lobe, New Bedford Harbor Superfund Site (Appendix A).

The project-specific turbidity criterion was defined as 50 NTU above background at the edge of a 300 ft mixing zone around the dredging area (Figure 3). This criterion was developed based on a review of previous dredging and monitoring activities at the New Bedford Harbor Superfund Site and an understanding of sediment contamination and current patterns in the vicinity of the construction. The water quality monitoring program focused on boat-based measurement of turbidity in the near field adjacent to the dredging and along transects at specified distances from the operation. In the event of a turbidity exceedence at the 300 ft down-current mixing zone, samples were collected at this location for toxicity testing, and additional monitoring and sampling was detailed as outlined in Figure 6. An analytical test protocol was developed to determine when collected water samples would be submitted for biological (toxicity) testing and chemical analysis following an exceedence of the turbidity criterion (Figure 7). The Sampling and Analysis Plan and Quality Assurance Project Plan – New Bedford Harbor Water Quality Monitoring for Area D Construction Activities and Sediment Characterization Studies (SAP/QAPP) (WHG, 2002) provided specific detail on sample handling and laboratory methodology.

The monitoring also included periodic sample collection within the near field area immediately adjacent to the dredging for toxicity testing to determine if the 50 NTU criterion was ecologically protective or if there was a need to deploy silt curtains to meet project environmental goals. Sample collection was targeted at the area with the highest turbidity levels with the 24-hour sea urchin (*Arbacia* sp) fertilization test used to assess ecological impact.

4.0 RESULTS OF WATER QUALITY MONITORING

Boat-based monitoring was performed on 13 days and shore-side oversight on two days during the eight-week dredging project. A summary of the daily monitoring is provided in Table 1,and the two monitoring updates prepared over the course of the project are included in Appendix B. There were no exceedences of the 50 NTU turbidity criterion.

Background turbidity levels generally ranged from 4 to 6 NTU over the course of the project. In the near field area within 100 ft of the dredge, the water was often visibly turbid. Turbidity levels were commonly 20-30 NTU above background in this area and ranged as high as 70 NTU above background. Turbidity decreased with distance from the dredge and was generally within 10 NTU of background at 300 ft down current of the dredge. Debris (in the form of scrap metal, wire, and wood) were removed by the dredge on multiple occasions while monitoring was being performed, but did not appear to significantly affect turbidity.

Turbidity associated with other related operations was also monitored. Water from holding bay on the dredge barge was periodically discharged as was ballast water from the dredge's internal chambers. Visibly turbid water was sometimes observed in the immediate vicinity of the discharge, especially when it occurred directly at the surface. At these times turbidity as high as 60 NTU above background was measured within approximately 50 ft of the discharge. However, the elevated turbidity was generally localized and often difficult to document separately from the actual dredging. Turbidity was also monitored as the scows containing the dredged material were pushed approximately 0.75 miles north for offloading at the USACE Sawyer Street facility in the Upper Harbor. Turbidity elevation along this transit was only noted in the shallow water where the dredging operation was performed and in the approach to the Sawyer Street facility. Turbidity values as high as 200 NTU were recorded within the propeller wash approximately 100 ft from the pushboat during those occasions when the scow was temporarily grounded in the shallow water. These turbidity elevations were short in duration (minutes) and dropped off quickly with distance from the pushboat.

A large oil slick was observed on the water early in the project, but this slick was determined to be associated with a fishing vessel that sank at its mooring near the dredge site. A localized oil sheen was observed on several occasions in the vicinity of the dredging, but dissipated within several hundred feet of the operation.

Water samples were collected within the identified turbidity plume in the near field area of the dredge on four occasions during the project (Table 2). These samples were submitted for the 24-hour sea urchin (*Arbacia* sp) fertilization test. The test results revealed no apparent acute effects for any of the samples (Table 2; Appendix C).

5.0 DISCUSSION

The water quality monitoring revealed that the dredging of North Lobe Areas A, B, C, and D caused minimal elevation of suspend solids outside of the immediate dredge area. Turbidity levels at 300 ft down current of the dredging did not exceed (or approach) the 50 NTU above background criterion, and there were no acute toxicity effects for water samples collected in the higher turbidity area adjacent to the dredge. This allowed the dredging operation to be completed without the deployment of silt curtains. The limited turbidity associated with the dredging is attributed to the dredging technique as well as the location. The dredging was performed using a fully enclosed bucket mounted on an excavator. This allowed precise placement of the dredge bucket and limited loss during retrieval. In addition, because the dredge areas were located in shallow water close to shore, they were outside of the zone of higher tidal currents, and the potential for sediment transport was minimized.

Similar to the monitoring performed during other construction and dredging projects in New Bedford Harbor, vessel operations and repositioning of equipment were found to have the potential to suspend as much sediment as the dredging operation (ENSR 2003, 2001). For the North Lobe dredging project, these vessel effects were only apparent in limited shallow water areas at the lower stages of the tide as loaded scows were transferred from the dredging area to the offloading area at the Sawyer Street Facility and, as such, the impacts were considered minimal.

6.0 REFERENCES

ENSR. 2001. Water Quality Monitoring Summary Report, Construction of the Commonwealth Electric Cable Crossing, New Bedford Harbor Superfund Site - New Bedford, MA. Contract: DACW33-96-D-004, Task Order 49. 9000-275-000. February 2001.

ENSR. 2003. North Lobe Dredging Area Characterization Report, New Bedford Harbor Superfund Site - New Bedford, MA. 10310-004-0637. August 2003.

ENSR, 2001. Water Quality Monitoring Summary, Appendix K, Pre-Design Field Test Dredge Technology Evaluation Report, New Bedford Harbor Superfund Site. August 2001.

USEPA. 1997. Report on the Effects of the Hot Spot Dredging Operations - New Bedford Harbor Superfund Site, New Bedford, MA. October, 1997.

Woods Hole Group. 2002. Sampling and Analysis Plan & Quality Assurance Project Plan for New Bedford Harbor, Water Quality Monitoring for Area D Construction Activities and Sediment Characterization Studies (Revision 4.0).

Table 1. Monitoring Activities during North Lobe Dredging

Date (2003)	Activity	Samples Collected	Turbidity Down-Current (NTU)	Turbidity at Up-Current Reference Site (NTU)	Notes
25 August	Site Preparation	No		5-6	WQ mob
02 September	Dredging in Area B begins	No	3-43	4-6	Highest turbidity measured along transect 50 ft down current of dredging. Turbidity at 300 ft compliance point turbidity ranged from 3-25 NTU. Extensive oil sheen noted on harbor, later determined to be associated with a recently sunken fishing vessel
03 September	Dredging in Area B continues	3	2-16	3-4	Highest turbidity measured along transect 50 ft down current (3-16 NTU). Turbidity at 300 ft compliance point ranged from 3-11 NTU. Oil sheen associated with sunken vessel still visible. Dewatering of dredged material in dredge hopper did not result in elevated turbidity.
04 September	Dredging of Area B completed, Dredging of Area D begins D. Loaded scow pushed to Sawyer St.	No	4-75	4-6	Highest turbidity noted at 50 ft transect (4-75 NTU). Turbidity at 300 ft compliance point was 4-9 NTU. Some localized oil sheen associated with dredging operations noted. Turbidity at dewatering discharge up to 37 NTU, decreased to background levels within 20 ft. Turbidity associated with positioning of scow at Sawyer St up to 218 NTU close to the push boat. Dropped to 5 NTU 100 ft from scow.
08 September	Dredging Area D continued. Loaded scow moved to Sawyer St.	No	3-15	4	Dewatering of dredged material was observed. No turbidity elevations detected.

Table 1. (Continued) - Monitoring Activities during North Lobe Dredging

Date (2003)	Activity	Samples Collected	Turbidity Down-Current (NTU)	Turbidity at Up-Current Reference Site (NTU)	Notes
09 September	Dredging Area D continues. 2 loaded scows moved to Sawyer St.	No	2-13	3-8	Moved dewatering discharge to approx. 3 ft below surface; highest reading was 8 NTU at approx. 4 ft below surface. Discharge from dredge barge bilge up to 21 NTU (likely due to rust in discharge). Turbidity associated with positioning scow at Sawyer St. at low tide was up to 51 NTU, dropped to 5 NTU 150 ft from scow.
11 September	Continued dredging Area D	No	NA	NA	A scow pushed to Sawyer St grounded in shallow water at low tide - cleared itself as the tide rose.
15 September	Dredging Area D	No	NA	NA	Limited dredging occurred in the afternoon.
16 September	Dredging Area D. Loaded scow pushed to Sawyer St.	No	1-21	4	Turbidity 50-100 ft from loaded scow and push boat in shallows near Sawyer St. ranged from 4-20 NTU.
17 September	Dredging Area D	No	NA	NA	Floating wood debris observed in dredging area.
22 September	Dredging in Area D. Several trips of scow to Sawyer St.	Yes	0-92	4-5	Turbidity at 300 ft compliance point ranged from 2-14 NTU. Highest turbidity recorded 10-25 ft from dredge. Sample collected for 1 hour *Arbacia* toxicity. Substantial wire debris in dredged material.

Table 1. (Continued) - Monitoring Activities during North Lobe Dredging

Date (2003)	Activity	Samples Collected	Turbidity Down-Current (NTU)	Turbidity at Up-Current Reference Site (NTU)	Notes
24 September	Dredging in Area D. Several trips of scow to Sawyer St.	No	0-26	4-5	Turbidity during scow transfer activities approx. 1 hr after low tide ranged from 5-134 NTU within 50 ft of scow and push boat. Values decreased to less than 20 NTU within 15 minutes. Turbidity associated with dewatering of sediment ranged from 1-20 NTU. Turbidity associated with barge bilge water discharge ranged from 8-32 NTU and localized oil sheen was observed on near dredge ops.
29 September	Dredging Area D. Several trips of scow to Sawyer St. Shoreline dredge via shore-based excavator occurred for ~1 hr	Yes	2-52	4-7	No turbidity issues associated with shoreline dredging. Localized oil droplets, surface sheen, and floating debris were noted though out the dredge area. Sample collected 50 ft from dredging activities. Elevated turbidity was observed during Sawyer St. transfer activities but was short in duration and in limited area.
01 October	Completed dredging of Area D and began dredging Area C.	No	4-30	3-4	Turbidity increased to 30 NTU near location of dewatering pump discharge. Oil sheen, a brown film and small pieces of absorbent boom material were noted at Area D and Sawyer St sites. Turbidity from 5-36 NTU was observed behind the scow at Sawyer St. Values decreased to 5-14 NTU within one minute.

Table 1. (Continued) - Monitoring Activities during North Lobe Dredging

Date (2003)	Activity	Samples Collected	Turbidity Down-Current (NTU)	Turbidity at Up-Current Reference Site (NTU)	Notes
06 October	Dredging Area C continued and several trips of scow to Sawyer St.	No	4-32	3-5	Oil sheen, small pieces of boom absorbent material, and floating debris were present in the vicinity of the dredging. High levels of turbidity from prop wash of scow pushboat were observed at low tide. Scow became grounded at low tide and was allowed to refloat as tide flooded. Higher levels of turbidity (12-17 NTU) were noted at 300 ft point along the shore, probably due to shoreline sediment resuspension
08 October	Dredging in Area C suspended as dredging began in Area A. Several trips of the scow to Sawyer St.	Yes	4-34	4-5	Sample collected approx. 10 ft from dredge in an area affected by both the dredging and the dewatering discharge pump. Turbidity ranged from 30-63 NTU at this location. Turbidity recorded during scow transfer 2 hrs after low tide ranged from 3-86 NTU, decreasing to 4-29 NTU within 10 minutes. No oil sheen was observed on the Harbor surface.
14 October	Dredging completed in Area A. Dredging in Area C. Initial project dredging completed pending survey.	No	0-40	1-5	Two small surface oil slicks were observed at 150 and 300 ft south of dredging activities. Turbidity related to scow movements near dredging activities up to 29 NTU.

Notes: NA - No turbidity monitoring occurred.

Table 2 - Results of *Arbacia* Fertilization Test

Date	Location of Sample	Dredge Area	Result
3 September 2003	60 ft South of Dredge	Area B	No Effect
22 September 2003	10 ft North of Dredge	Area D	No Effect
29 September 2003	50 ft South of Dredge	Area D	No Effect
8 October 2003	10 ft South of Dredge (sample taken in an area affected by both dredging activities and dewatering of dredge material)	Area C	No Effect

US Army Corps
of Engineers
New England District

New Bedford Harbor Superfund Site

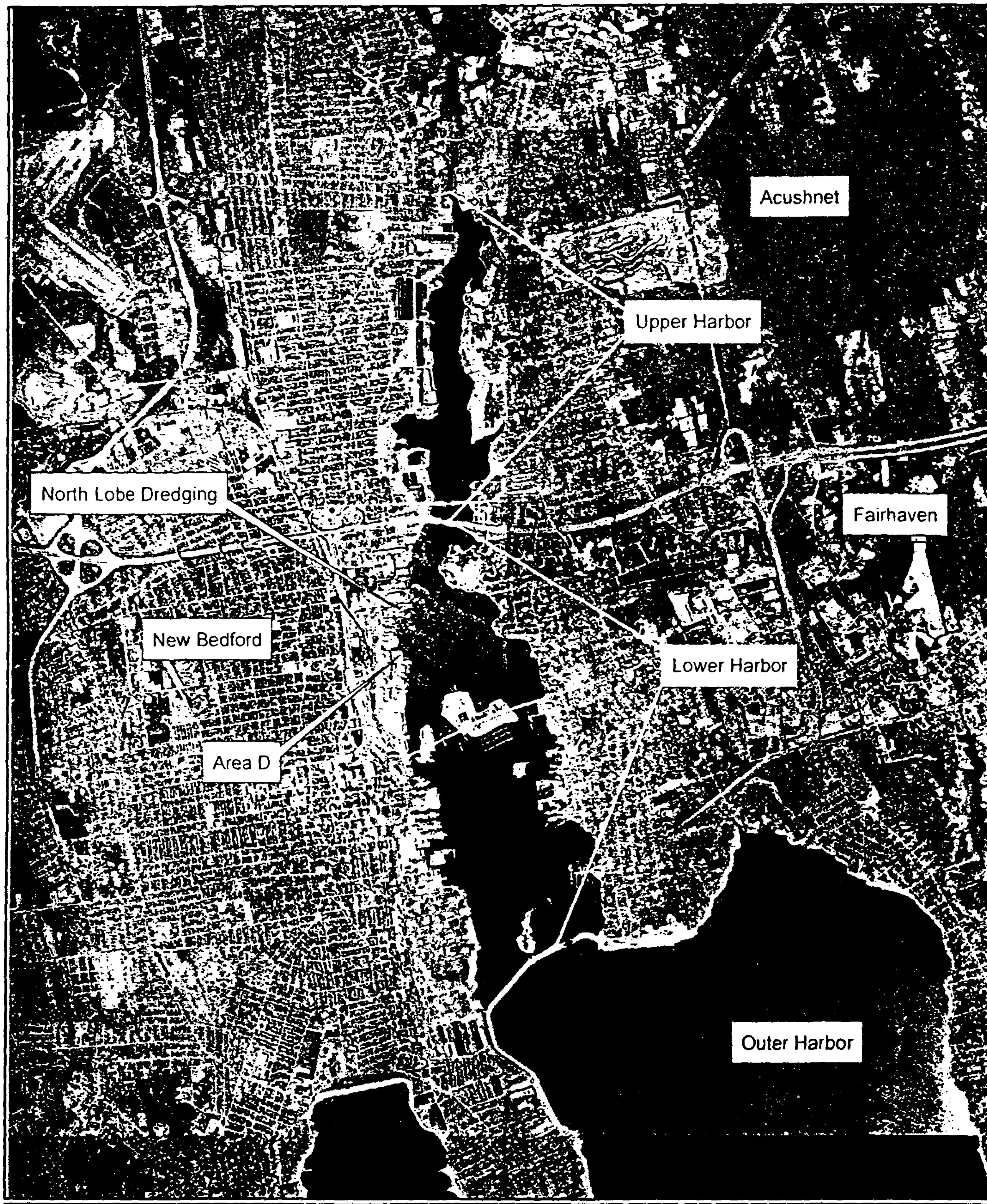


Figure 1. Harbor Overview Showing the Location of the North Lobe Dredging

Sources MassGIS 1/2-m color orthophotos
NAD 83 Mass State Plane m
Date. 24 November 2003
ME

Miles
0 0.25 0 5 1

ENSR

North Lobe GIS HarborOverview.mxd

US Army Corps of Engineers
New England District

New Bedford Harbor Superfund Site

Figure 2. Initial and Revised North Lobe Dredge Areas

Sources: MassGIS 1/2-m color orthophotos
NAD 83 Mass State Plane m
Date: 24 November 2003
ME

ENSR

0 50 100 200 Feet

J:\GovtProjects\10310_WHG\North Lobe\GIS\NorthLobeNewDredgeAreas_photo.mxd

US Army Corps of Engineers
New England District

New Bedford Harbor Superfund Site

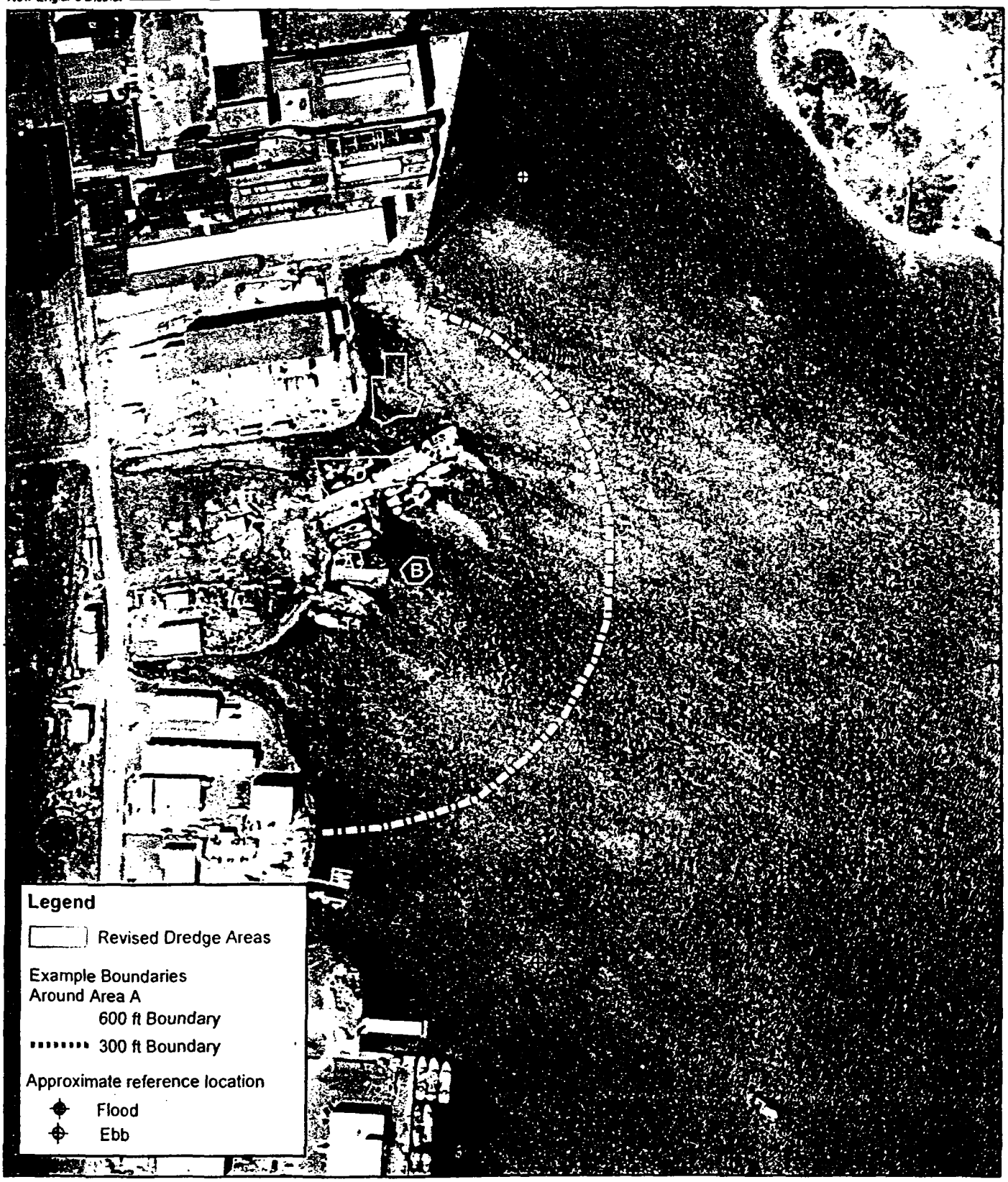


Figure 3. Revised North Lobe Dredge Areas Dredged Fall 2003, with 300 ft and 600 ft Boundaries for Area A

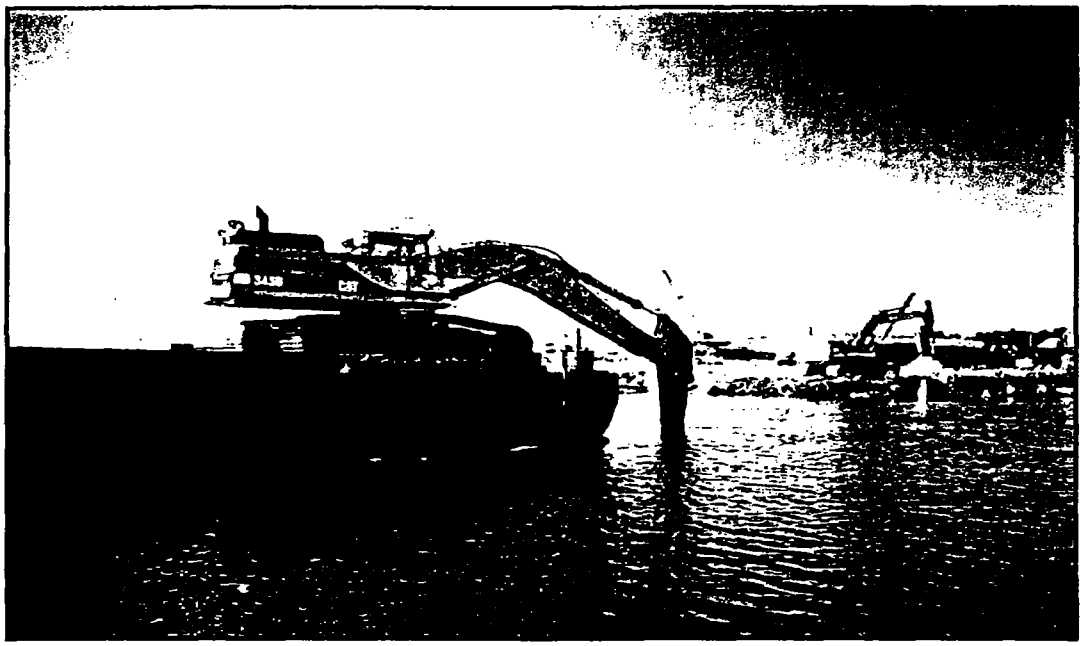
Sources: MassGIS 1/2-m color orthophotos
NAD 83 Mass State Plane m
Date: 24 November 2003
ME

ENSR

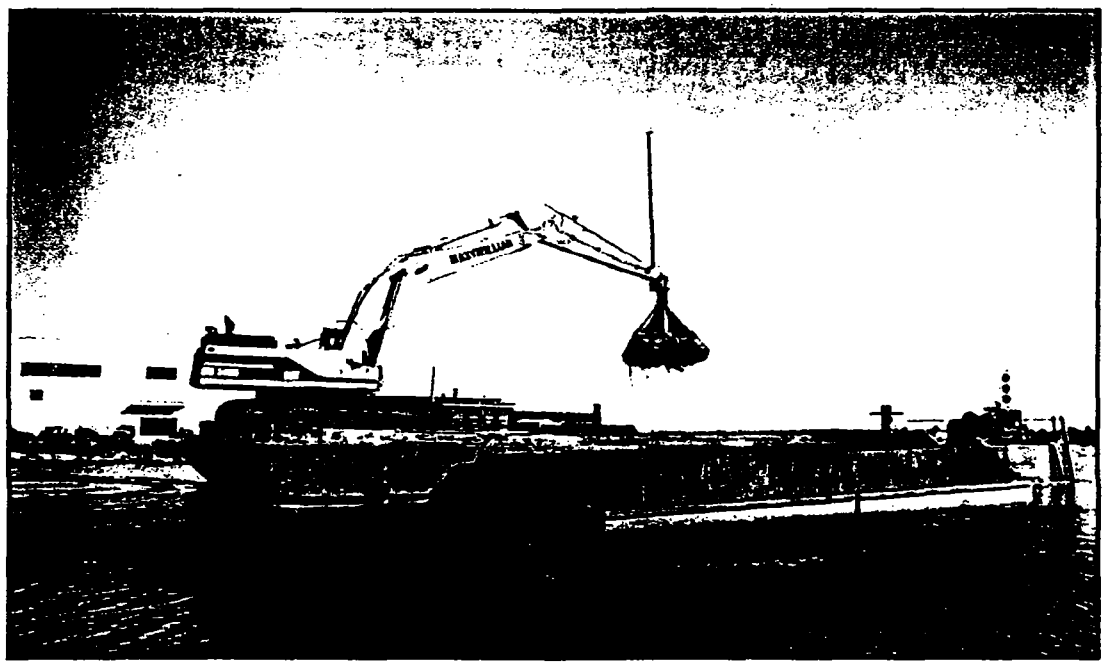
0 250 500 1,000 Feet

J:\Govt\Projects\10310_AHG North Lobe\GIS\NorthLobeDredgeAreas.mxd

Figure 4. Photographs of North Lobe Dredging



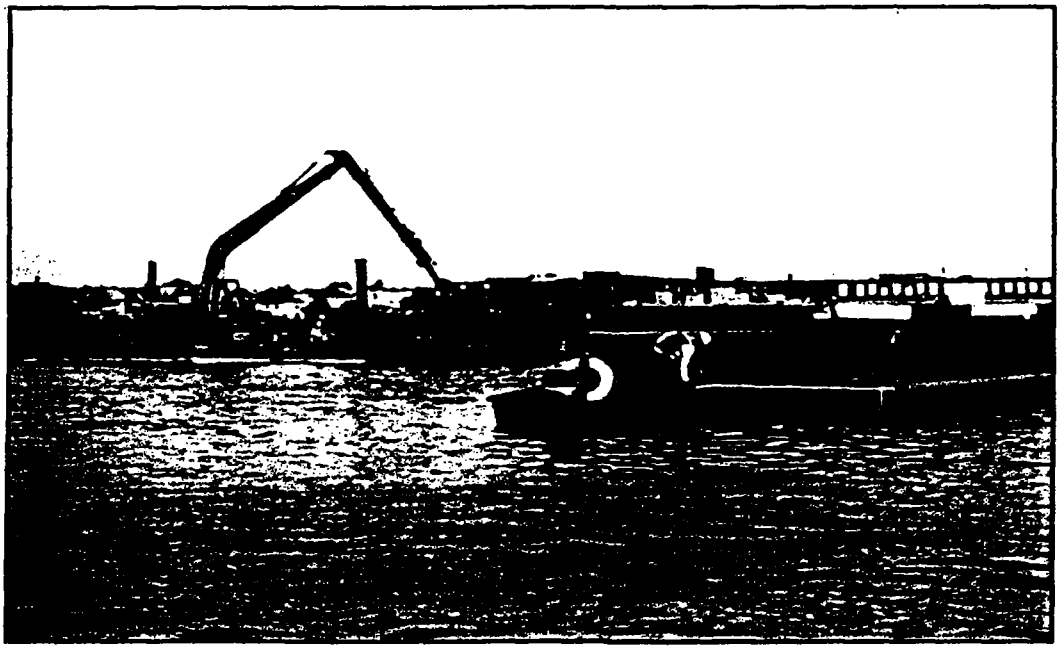
Excavator dredge working at Area D



Dredged material transferred to hopper barge

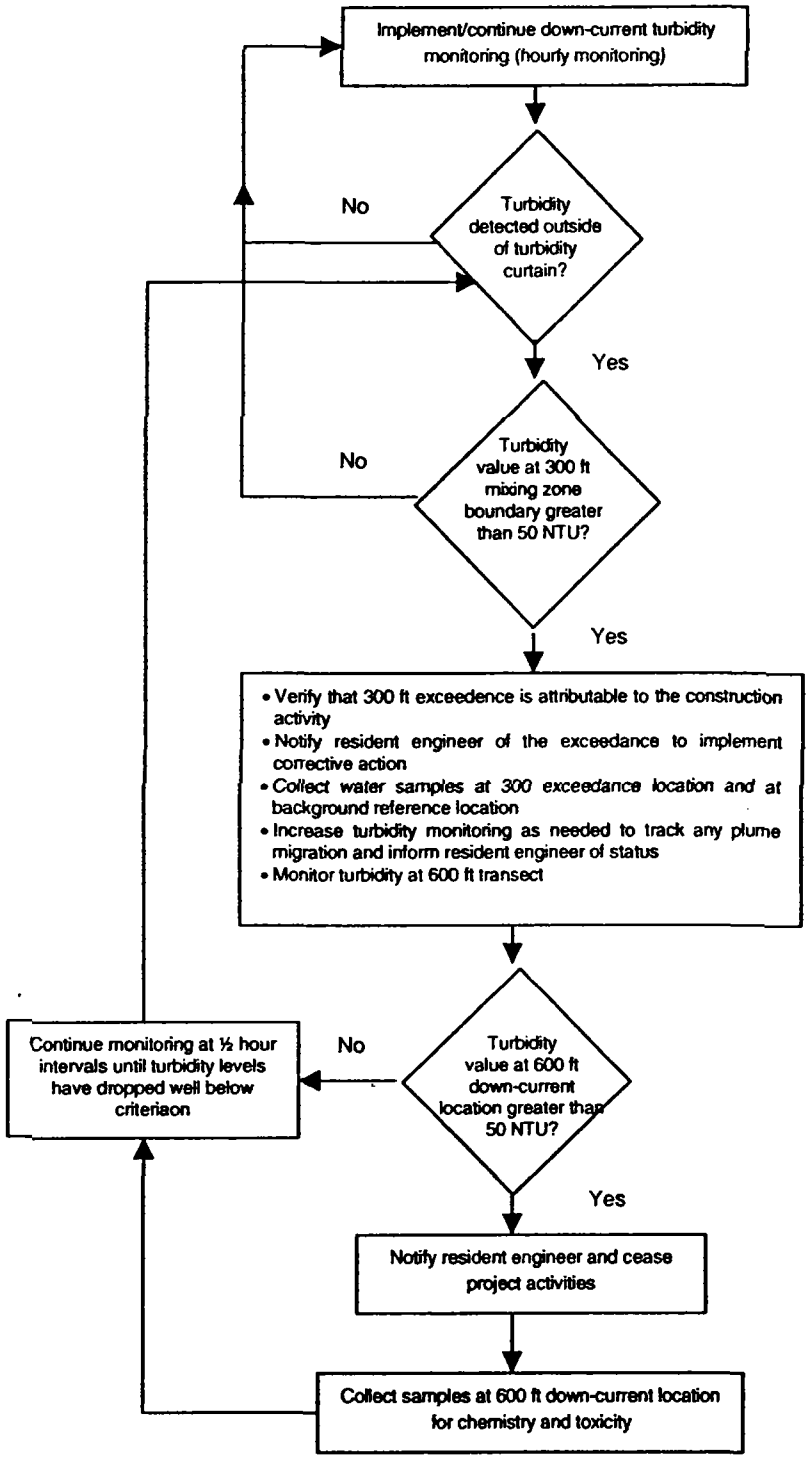
Figure 5. Photographs of Dredging Material Transfer to Sawyer Street Facility

Hopper barge pushed from North Lobe to Upper Harbor



Dredge material offloaded at Sawyer Street Facility

Figure 6. Water Quality Monitoring Decision Sequence

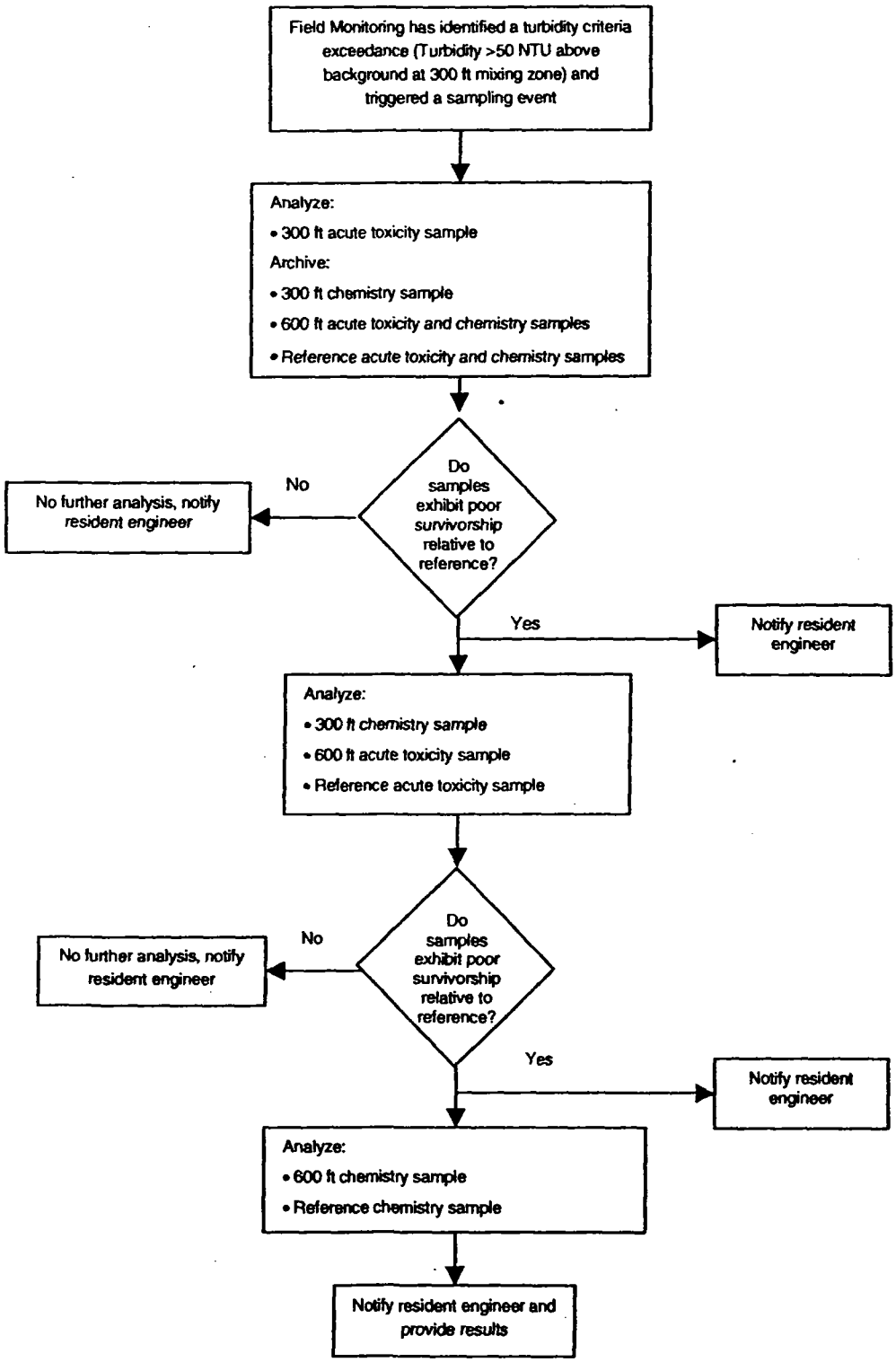


Notes

1: 50 NTU value is defined as 50 NTU above the background turbidity level

2: The presence and extent of any visible oil sheen emanating from project area, even though project turbidity limits have not been exceeded should be brought to the attention of resident engineer, and a surface grab sample shall be collected for potential analysis.

Figure 7. Analytical Protocol Decision Sequence



APPENDIX A

Water Quality Monitoring Scope of Work

Scope of Work Modification
Water Quality Monitoring during Construction Activities at Area D
New Bedford Harbor Superfund Site
24 July 2003

I. Background

This Scope of Work modifies the existing Woods Hole Group Task Order No. 0001-001 (Mod) under contract DACW33-02-D-0006 entitled Water Quality Monitoring during Construction Activities at Area D, New Bedford Harbor Superfund Site dated 30 July 2002. The purpose of this modification is to focus monitoring efforts and redirect residual funding from the Area D effort and apply it to the environmental dredging at the North Lobe (NLD) adjacent to Area D scheduled to occur mid-August of 2003. Although the NLD effort was included in the original SOW, the experience gained during Area D monitoring allows for a refining of this upcoming monitoring effort. These revisions are incorporated into this SOW modification.

Based on historic and current chemical data, the sediments within the North Lobe Area contain elevated levels of PCBs and metals, which can potentially have negative environmental impacts if released to the water column in an uncontrolled manner. As in previous monitoring efforts the water quality monitoring program for the NLD includes comprehensive Contractor-based monitoring on behalf of the Government at varying levels of intensity during the course of the project. This SOW outlines the water quality monitoring approach to be implemented by Water Quality Monitoring Contractor Woods Hole Group and their Sub-Contractors (WHG) on behalf of the Government. The overall goal of the monitoring program is to ensure that the dredging operation is carried out in a manner such that;

- The disturbance of the contaminated sediments does not result in any acute impact to organisms within the water column adjacent to the construction.
- There is not significant transport and deposition of sediments and their associated contaminants outside the project area to uncontaminated areas.

II. Government Monitoring:

This SOW summarizes the Government Water Quality Monitoring Program to be implemented by WHG. This program includes field based monitoring efforts over the duration of the construction consisting of real-time turbidity measurements in and around the dredging areas with the likely potential for water column sampling and analysis including toxicity testing and water column chemistry.

III. Construction Overview of the North Lobe Environmental Dredging

The following summary provides an overview of the dredging and support activities that will take place as part of the NLD that will require monitoring under this SOW. The intensity and duration of the monitoring will be determined based on periodic construction coordination meetings to be held as necessary to ensure adequate planning and scheduling of the monitoring effort.

As part of the Area D site preparation, the Packer lease facilities (bulkhead and dock loading area) will be relocated to the North Lobe property off of Herman Melville Boulevard. Refer to Figure 1-1 for aerial photo showing existing site conditions. As a result of this move, an extension of the existing navigation channel to the North Lobe location and construction of a bulkhead will be required. Prior to performing this work, a dredging contractor will remove approximately 7,000 CY of contaminated materials (Sediments with PCB levels equal to or greater than 50 ppm) from the footprint of these areas, and areas adjacent to the MacLean property immediately north of the North Lobe. Refer to Attachment 1 for the locations of these Areas. The dredging sequence of these areas will be discussed at the pre-construction meeting to be attended by WHG. The water depths range from shoreline to approximately 10 feet Mean Lower Low Water (MLLW), and dredge cut depths range from approximately 1,5 feet to 5.5 feet below the mudline surface. The dredge material will be loaded onto scows and transported to the Sawyer Street Facility north of the Coggeshall Street Bridge for offloading.

For the environmental dredging component there are ten areas to be dredged (Refer to Attachment 1). Dredging will be performed using an environmental bucket unless deemed impractical due to debris or other operational constraints. Due to the limited dredging duration in each area, silt curtains will not be deployed unless the water quality monitoring indicates unacceptable environmental impacts are occurring within the water column during operations. Dredging operations are expected to commence mid-August 2003 and be completed by 30 September 2003.

III. Specifics of the Government Water Quality Monitoring Program

A. Monitoring Approach:

A tiered monitoring approach will be used to identify any water quality impacts resulting from environmental dredging activities. The purpose of this monitoring is to confirm that acute impacts to the water column do not extend beyond the designated mixing zone established for each of the dredge areas of the project and to confirm that contaminants are not transported away from the operations area at unacceptable levels to other portions of the harbor. The overall approach will consist of monitoring water column turbidity along transects at the downstream edge of established mixing zones for each of the individual dredging areas. An upper level turbidity criteria exceedance threshold will require notification of appropriate Government personnel and may trigger additional acute toxicity testing and chemical analysis of the water column to quantify

impacts. Additional toxicity testing may be required at the start of dredging in some areas to identify near-field impacts.

B. Method:

Boat-based monitoring shall be performed at varying time intervals during dredging and the transport of dredged material to the Sawyer Street facility. During the established monitoring days, sampling efforts will focus on the measurement of water column turbidity along the downstream edge of the established mixing zone designated as 300 ft downcurrent of project operations (the area currently being dredged). Turbidity monitoring shall be performed using an optical backscatter (OBS) nephelometer with an underwater sensor and direct surface readout or other instrumentation having similar capabilities. The OBS sensor unit shall be sensitive over an approximate operating range of 0-1000 NTU and factory calibrated. Accurate operation of the unit shall be checked on a daily basis using known standards. Water column sampling equipment shall be capable of retrieving water from a specified depth using techniques that have been demonstrated acceptable for low detection limit analysis.

Additional near field and far field monitoring at varying distances away from the construction activity (in addition to the downfield transect) will be performed on each monitoring day to better characterize the aerial extent of any potential near and far-field water column effects. The USACE Technical Manager and Resident Engineer shall be notified immediately if turbidity measurements indicate exceedance of the set criteria along the established transect at the downstream edge of the mixing zone (see item E below).

For the purposes of cost estimation for this scope of work, it should be assumed that there will be a maximum of 25 boat-based monitoring days over the course of the 7-week project. A schedule of construction activities and associated monitoring will be determined based on periodic pre- and on-going construction coordination meetings to be held as necessary to allow for adequate scheduling and planning of the monitoring effort.

C. Monitoring Coordination

WHG shall ensure that adequate coordination with the on-site USACE Project Engineer or his representative occurs so that boat-based monitoring activities can be scheduled to coincide with weekly construction schedules. The WHG monitoring contractor representative (on-site field coordinator) shall obtain daily verbal briefings from the USACE Project Engineer (or his representative) and update the USACE Technical/Contract Manager, WHG Project Managers and Technical Lead as necessary to determine monitoring requirements for upcoming activities. A regular schedule of weekly update meetings (1 X per week) shall be established by WHG with the USACE Technical Manager, U.S.EPA and WHG personnel including the Sr. Projects Manager and Technical Lead to review the previous weeks activities, monitoring results and to plan for upcoming monitoring efforts.

D. Additional and Contingency Testing

Additional Testing

Water sampling will be performed to characterize certain baseline conditions, to assess near-field conditions and possibly in response to an exceedence of the turbidity criterion or other environmental factor(s). The upper level turbidity criterion, defined as a "reportable event", will be 50 Nephelometric Turbidity Units (NTUs) above background as measured along the down-field edge of the 300-ft mixing zone at each dredge area. Additional monitoring and the sampling required by a criteria exceedance are outlined below.

E. Criteria Exceedances

When the monitoring reveals that the upper-level criterion has been exceeded at the edge of the 300 ft mixing zone, additional background and near field measurements shall be performed as needed to determine if the elevated turbidity is attributed to project activities. Also, an additional transect shall be run 600 feet downstream of the project activity to assess far-field impact. If the turbidity appears to be project-based, WHG on-site field coordinator shall immediately notify the USACE Resident Engineer and the USACE Technical Manager (or their designated representatives) so that corrective actions can be employed to alleviate the condition. If exceedances are noted at both downstream transects (300- and 600-foot), project activities will cease until conditions have abated to acceptable levels at the 300 ft transect. If the criterion has been exceeded at only the downstream edge of the 300-foot mixing zone, corrective actions will be employed as deemed appropriate by the USCAE Construction Engineer. Actions may include either altering or slowing the rate of dredging or ceasing project activities until turbidity levels have fallen to within an acceptable range. These criteria may be altered based upon the results of the toxicity testing outlined below.

In addition, when a criterion is exceeded, WHG shall collect "conditional" water samples along the edge of either one or both of the downstream monitoring transect(s). After consultation with the Government, biological and chemical testing may be performed on a composite water sample collected along the downstream edge of the mixing zone(s) within the boundaries of an observable plume. Toxicity testing and/or chemical analysis shall be initiated immediately upon notification to proceed by the USEPA/USACE project representatives. Monitoring of turbidity shall then proceed continuously to track the return to background conditions. Upon the resumption of project activities, monitoring will continue at an increased frequency (30-minute cycle) until conditions abate and to track turbidity changes and monitor for further exceedances.

Chemical and Biological Testing

Upon notice to proceed with either the biological or chemical testing as a result of a criteria exceedance, water samples shall be transported to the testing facility(s). If

notice to proceed is only given for the biological testing, the water samples collected for the chemical analysis shall be appropriately archived for potential future analysis. Biological testing includes acute toxicity tests using the 1-hour sea urchin sperm fertilization test (*Arbacia* sp.) and the 48-hour Mysid shrimp (*Mysidopsis bahia*) survival test. Biological testing of the associated background sample and chemical analysis of all samples will generally be contingent upon the results of the toxicity testing. Samples, which do not exhibit toxicity, will generally not require further testing/analysis. However, poor survivorship in either toxicity test may require further analytical testing to identify the cause of toxicity. This analysis will include total suspended solids (TSS), total PCBs (based on the 18 NOAA Status and Trends congeners), dissolved Copper and dissolved Zinc.

For this proposal, it should be assumed that there would be 10 samples submitted for biological toxicity testing and 5 samples submitted for chemical analyses (TSS, dissolved PCBs, dissolved Copper and dissolved Zinc). Additional sampling may be performed based on the turbidity monitoring, triggered when turbidity criteria have been approached or exceeded or based on other environmental factors as directed by the USEPA/USACE. Any "conditional samples" collected would potentially undergo the tiered testing/analytical approach outlined above. A schedule of the planned construction sequence and associated monitoring/sampling will be determined prior to the start of the work.

IV. Laboratory Schedule

Any samples submitted for laboratory chemical analysis will require a turnaround time of 72 -hours. Results from toxicity testing shall be made available verbally at the earliest possible time, hard copies within 1 –week, and written reports submitted within two weeks.

V. Reporting

A summary sheet of field operations and turbidity measurements and a list of any samples collected will be provided to the USACE Technical Manager on a daily basis following each monitoring event. The Contractor shall develop a daily reporting sheet for this project. The daily submittal for each day of boat-based monitoring shall provide the following information:

(1) Date, time and location of any dredging activity and the names of sampling team members and team leader.

(2) A plan-view of the harbor and construction site, which allows for the recording of visual events such as plumes or oil sheens. This map will be included with the daily reporting sheet and graphically present the range of turbidity values recorded during each monitoring day along the transect.

(4) A summary of weather conditions, and the timing of the tides.

(5) A comments section to allow field personnel to record visual observations or relevant field activities that may have impacted water quality (i.e. rain events), which may assist in data interpretation.

Update reports summarizing the monitoring that has taken place and any associated issues shall be prepared on a weekly basis. These reports will be distributed by email to U.S.EPA and USACE representatives. An aerial photograph (arc view) of the dredging areas and associated 300 ft downfield transects shall be provided with the reports.

VI. Project Meetings and Coordination

WHG should assume the following meetings as part of the monitoring program:

- Two pre-construction coordination meetings at the onset of the project (in New Bedford) to review construction approaches and schedules and to discuss initial monitoring approaches. This meeting shall be attended by a Sr. Project Manager, Project Manager, Technical Lead and on-site coordinator.

- Eight Construction coordination meetings (in New Bedford) to be attended by the WHG on-site field coordinator. It should be assumed that 5 of these meetings will occur on those days that monitoring will take place and that attendance at these meetings can be assumed to be part of the field based monitoring role described above.

- Two project status meetings (in New Bedford) to be attended by the same personnel as the pre-construction meetings to review data resolve issues and modify monitoring approaches if needed.

VII. Deliverables

WHG shall provide the USACE with a summary report of the monitoring results within two months of completion of the monitoring program. The report shall include an Executive Summary and other sections discussing monitoring methods, field observations during dredging, project photos and associated analytical and toxicity data. A conclusions section shall also be included which discusses the overall impacts of project related operations on the water quality of the harbor and the overall effectiveness of the monitoring approach in limiting operational impacts. The deliverable shall include three hard copies and three CDs.

VIII. Cost Proposal

The Contractor shall submit their cost estimate breaking out "base costs" for the work outlined above. Categories for the base cost should follow the outline of this scope of work and include, (a) Field monitoring, (c) Chemical and biological testing (d) Reporting

and report generation (e) Meetings and Coordination. Also, the following options should be broken out in the event that additional testing will be required. These options will be exercised at the discretion of the Government:

- Option A– Individual biological testing for acute toxicity using the sea urchin sperm fertilization test (*Arbacia* sp.) and the Mysid shrimp (*Mysidopsis* sp.).
- Option B– Individual chemical analysis of water samples for PCB (dissolved), metals (total and dissolved), TSS, and turbidity.
- Boat Based Monitoring Day

IX. Period of Service

The period of service for this Statement of Work shall run through 1 December 2003.

X. Attendance at Meetings

The Contract Manager shall advise the Contractor at least two days prior to each meeting at which the Contractors presence is requested.

XI. Government Points of Contact

Mr. Jay Mackay (978) 318-8142 is the USACE Environmental Contract Manager/Technical Manager and can be contacted to arrange any meetings, teleconferences or answer questions relative to this task order. Mr. Chris Turek is the USACE Construction Engineer. Dr. William Nelson is the USEPA Technical Contact located at the Office of Research and Development, National Health and Ecological Effects Research Laboratory in Narragansett, Rhode Island. Mr. Gary Morin is the USACE Project Manager.

XII. Invoices

The Contractor shall submit monthly invoices that include progress for the billing period, project activity for the next period, outstanding issues, financial status and schedule. Invoices shall reference the Contract Number and Task Order number. The Contractor shall be responsible for the accuracy of the invoices. Incorrect invoices may be returned for correction.

XIII. Proposals

The cost proposal submitted by the Contractor in response to this scope of work shall indicate separately the supplies/services cost estimate for each separate task described in the scope of work including project management.

XIV. Quality Control

The Contractor is responsible for quality control. Quality control must be applied throughout the entire report preparation process. Although the Government technically reviews submissions required by this contract, it is emphasized that the Contractor's work must be prosecuted using proper internal controls and review procedures. The letter of transmittal for each submission shall include a certification that the submission has been subjected to the Contractor's own review and coordination procedures to insure: (a) completeness for each discipline commensurate with the level of effort required for that submission, (b) elimination of conflicts, errors, and omissions, and (c) the overall professional and technical accuracy of the submission. Documents, which are significantly deficient in any of these areas, will be returned for correction and/or upgrading at the Contractors expense prior to Government acceptance. Task Order submission dates will not be extended if a *responsions* of draft material is required for this reason. The Contractor and his associates, if any, shall have the professional competency and technical expertise necessary to accomplish this project in a satisfactory manner.

XV. Conferences

During the progress of the work, the Contractor shall confer with the Contract Manager as necessary to assure timely and accurate reporting and approval of all completed work.

XVI. Release of Data

All data, reports, and materials obtained as a result of this contract shall become the property of the U.S. Government and shall be turned over to the Contracting Officer upon completion of this contract.

XVII. Report Revisions and Corrections

Results of all reviews by NED will be furnished to the Contractor in the form of written comments and marked-up material. The Contractor shall incorporate any written comments into reports or other items within 1 week. Any comments due to errors or inconsistencies in the report on the part of the Contractor shall be made by the Contractor at his own expense. If changes in criteria and/or additions are, in the view of NED, required beyond the original scope of work and services, the Contractor shall be notified in writing by the Contracting Officer and adjustment in the fee will be made to cover the additional work required. Any such additional work executed by the Contractor without the appropriate written notice is undertaken at his own risk.

APPENDIX B

Project Updates

New Bedford Harbor

Water Quality Monitoring
For North Lobe Dredging Activities

Update Report #1
September 2003

Submitted To:
Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

US Army Corps
of Engineers
New England District

Submitted By:

Woods Hole Group Environmental Laboratories
375 Paramount Drive, Suite 2
Raynham, MA 02767-5154

Woods Hole Group

New Bedford Harbor
Water Quality Monitoring
For North Lobe Dredging Activities
Update Report #1

Period of Performance: 25 August – 19 September 2003

Construction Activities: North Lobe Dredging Activities

Construction Summary:

Week of 25 August 2003. Site preparation. No dredging occurred. Please note that the dredge contractor does not work on Fridays.

Week of 1 September 2003. No work was completed on Monday due to the Labor Day holiday. Dredging of area B began on Tuesday, and was completed on Thursday. Dredging of area D began late Thursday.

Week of 8 September 2003. Dredging of Area D continued throughout the week.

Week of 15 September 2003. Dredging of Area D continued throughout the week.

Government Monitoring: Initial pre-dredge mobilization of the water quality monitoring program occurred on 25 August 2003. Water quality monitoring occurred on 2, 3, 4, 8, 9 and 16 September 2003. Shore-side observation/coordination, occurred on 11 and 15 September (Table 1). Water quality samples were collected on 3 September for toxicity testing at 60 ft down current (near-field/south) and 300 ft downcurrent (compliance transect/south), and 100 ft up-current (north/reference) of dredging activities. The near-field (60 ft south) sample was analyzed for the 1-hour Sea Urchin sperm cell fertilization test (acute) and the other two samples were archived pending near-field sample test results. Results indicated no toxicity for the near-field sample relative to the control. Therefore no further analysis of the additional samples were conducted.

Turbidity at the 300 ft compliance transect ranged from 3-11 NTU (not corrected for background), well below the project specific turbidity criteria 50 NTU above background. Turbidity was generally highest within 50 ft. of dredging activities, with values ranging from 3-75 NTU. Values only exceeded 21 NTU on one monitoring day at the 50 ft transect. During the week of 1 September, a large oil sheen was noted on the Harbor. Based on visual observations, it was concluded that this was a result of salvage operations of a fishing vessel which had recently sunk on 2 September adjacent to the project area. It should be noted that some oil was observed to be associated with the North Lobe dredging operation but generally remained in the immediate area adjacent to the dredge barge. Dredging of debris was noted while monitoring on 8 and 9 September but did not appear to significantly affect turbidity readings.

Monitoring during the transit of scows within the Acushnet River to the Sawyer St processing facility resulted in turbidity readings ranging from 4-218 NTU. These readings were taken directly in the push boat prop-wash as it positioned the loaded scows along the off-loading barge. Readings were greater than 51 NTU only once in the five events monitored. The turbidity was confined to the project area with readings dropping to less than 10 NTU approximately 150 ft from the operations.

Turbidity associated with the dewatering of dredge material from the scow was generally higher when the discharge outfall was located at the water surface. Turbidity readings of 37 NTU were noted to a depth of 4 ft within a plume. The signal decreased to background within 20 ft of the discharge. After the discharge pipe was lowered to approximately 4 feet below the surface, little if any turbidity signal was detected. A

turbidity signal was also noted during the barge bilge water pump discharge. Turbidity was elevated to 21 NTU at 20 ft from discharge. This turbidity was likely related to rust in the discharge water.

Schedule: Week of 22 September 2003 – Dredging activities continued in Area D. Dredging at Area D will continue for approximately 2 more weeks. WHG/ENSR will resume monitoring activities on 22 September.

Attachments:

Attachments: Daily log of activities associated with North Lobe Dredging Operations.

Please contact the individuals listed below with any questions or comments.

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Table 1 - Daily Field Sheet North Lobe Dredging, New Bedford Harbor

Date		Construction Activity	Tide (Ebb or Flood)	ENSR Monitoring					Notes:
				Oversight Day	Background Turbidity (NTU)	Turbidity Range (NTU)	Turbidity Exceedance (Yes/No)	Samples collected	
25-Aug-03	Mon	Site Prep.	Ebb		5-6		No	No	Dredging has not begun, WQ mob day
26-Aug-03	Tue	No Dredging, Site Prep.							
27-Aug-03	Wed	No Dredging, Site Prep.							
28-Aug-03	Thu	No Dredging, Site Prep.							Dredge has Issues with navigational software. ENSR on-site but no monitoring conducted
29-Aug-03	Fri	No Work							
1-Sep-03	Mon	Holiday, No Work							
2-Sep-03	Tue	Dredging in cell B begins			4-6	3-43	No	No	Highest turbidity taken during transect 50ft south of dredging. At 300ft compliance point turbidity ranged from 3-25 NTU. Extensive oil sheen noted on harbor, most likely associated with sunken fishing vessel
3-Sep-03	Wed	Dredging in cell B continues			3-4	2-16	No	3	Highest turbidity taken at 50 ft transect (3-16 NTU). Turbidity at 300ft compliance point 3-11 NTU. Oil sheen associated with sunken vessel still visible. Observed dewatering of dredge material but did not detect elevated turbidity during this operation.

Date		Construction Activity	Tide (Ebb or Flood)	ENSR Monitoring					Notes:
				Oversight Day	Background Turbidity (NTU)	Turbidity Range (NTU)	Turbidity Exceedance (Yes/No)	Samples collected	
4-Sep-03	Thu	Completed dredging of area B and moved dredge to area D. Began dredging in area D. Pushed a loaded scow up to Sawyer St.			4-6	4-75	No	No	Highest turbidity noted at 50 ft transect (4-75 NTU). Turbidity at 300 ft compliance point was 4-9 NTU. Some oil sheen associated with dredging operations was noted. Turbidity at dewatering discharge up to 37 NTU, decreased to background levels within 20 ft. Turbidity associated with positioning of scow at Sawyer St up to 218 NTU. Dropped to 5 NTU 100 ft from scow.
5-Sep-03	Fri	No Work							
8-Sep-03	Mon	Dredging of area D continued. A loaded scow was moved to Sawyer St. Dredge bucket cracked during dredging and was repaired in afternoon.			4	3-15	No	No	Dewatering of dredge material was observed. No turbidity elevations detected.
9-Sep-03	Tue	Dredging of area D continued. Two loaded scows were moved to Sawyer St.			3-5	2-13	No	No	Moved dewatering discharge to approx. 3 ft below surface; highest reading was 8 NTU at approx. 4 ft below surface. Discharge from dredge barge bilge up to 21 NTU probably due to rust in discharge. Turbidity associated with positioning scow at Sawyer St. at low tide was up to 51 NTU, dropped to 5 NTU 150 ft from scow.
10-Sep-03	Wed	Continued dredging area D							

Date		Construction Activity	Tide (Ebb or Flood)	ENSR Monitoring					Notes:
				Oversight Day	Background Turbidity (NTU)	Turbidity Range (NTU)	Turbidity Exceedance (Yes/No)	Samples collected	
11-Sep-03	Thu	Continued dredging area D		x					Noted that a scow moved up to Sawyer St at low tide grounded approx. 20 ft from discharge point. Suggested that scow be allowed to clear itself as the tide rose.
12-Sep-03	Fri	No Work							
15-Sep-03	Mon	Continued dredging area D		x					Minimal dredging occurred in the afternoon. Dredge bucket was sent out for repair on Friday and had not arrived on-site until late in the day.
16-Sep-03	Tue	Continued dredging in area D. Loaded scows were pushed to Sawyer St.			4	1-21	No	No	Dredge added a second pump and discharge pipe to dewater dredge material. Turbidity 50-100ft from loaded scow and push boat in shallows near Sawyer St. ranged from 4-20 NTU. Turbidity associated with dredging appears to be highest in areas directly adjacent to waters passed over by excavator arm and bucket. Most likely due to spillage of material from dredge bucket into this area.
17-Sep-03	Wed	Continued dredging area D							Debris appears to be more wood than steel. Prior debris more steel
18-Sep-03	Thu	Continued dredging area D							
19-Sep-03	Fri	No Work							

New Bedford Harbor

Water Quality Monitoring
For North Lobe Dredging Activities

Update Report #2
October 2003

Submitted To:
Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

Submitted By:

Woods Hole Group Environmental Laboratories
375 Paramount Drive, Suite 2
Raynham, MA 02767-5154

New Bedford Harbor
Water Quality Monitoring
For North Lobe Dredging Activities
Update Report #2

Period of Performance: 22 September – 17 October 2003

Construction Activities: North Lobe Dredging Activities

Construction Summary:

Week of 22 September 2003. Dredging of Area D continued throughout the week.

Week of 29 September 2003. Dredging of Area D was completed on Wednesday, and dredging of Area C began. A shore-based excavator completed shoreline dredging associated with Area D on Monday in approximately 1 hour.

Week of 6 October 2003. Dredging of Area C was suspended on Wednesday due to shallow water along northern edge. Dredging of Area A was initiated.

Week of 13 October 2001. Dredging of Area A and C were completed.

Government Monitoring: Water quality monitoring occurred on 22, 24, and 29 September, and 1, 6, 8, and 14 October 2003 (Table 1). Water quality samples were collected on 22 and 29 September, and 8 October.

Water quality samples were collected on 22 September for toxicity testing 10 ft from the dredge bucket (near-field), 300 ft downcurrent (compliance transect/north), and 1,000 ft upcurrent (reference/south). Turbidity recorded during collection of the near-field sample (10 ft) ranged from 20 to 92 NTU. The near-field (10 ft) sample was analyzed for the 1.3-hour Sea Urchin sperm cell fertilization test (acute), and the other two samples were archived pending near-field sample test results. Results indicated no toxicity for the near-field sample relative to the control. Therefore, no further analysis of the additional samples were conducted.

Water quality samples were also collected on 29 September for toxicity testing at 50 ft downcurrent (near-field/south), 300 ft downcurrent (compliance transect/south), and 1,000 ft upcurrent (reference/north). As was conducted on 22 September, the nearfield sample (50 ft downcurrent) was tested using the 1.3-hour Sea Urchin sperm cell fertilization test (acute), and the other two samples were archived pending the results of the near-field sample. Turbidity recorded during collection of the near-field sample (50 ft) ranged from approximately 20 to 29 NTU. Results indicated no toxicity for the near-field sample relative to the control. Therefore, no further analyses of the archived samples were conducted.

On 8 October two water quality samples were collected for toxicity testing at 10 ft downcurrent (near-field/south), and 1,000 ft upcurrent (reference/north). Turbidity recorded during collection of the near-field sample (10 ft) ranged from 30 to 40 NTU. The nearfield sample was analyzed for acute toxicity (Sea Urchin fertilization test), and the reference sample was archived. Results indicated no toxicity for the near-field sample relative to the control. No further analysis of the reference sample was conducted.

Turbidity at the 300 ft compliance transect ranged from 2-17 NTU (not corrected for background) during all monitoring periods except 14 October, 2003, when turbidity ranged from 2-26 NTU at the 300 ft compliance transect. Turbidity extending to the 300 ft south compliance transect was observed for approximately 1 hour as dredging was completed in Area A. Turbidity was generally highest within 100 ft

of dredging activities, with values recorded up to 92 NTU. Turbidity values within 100 ft of dredging activities exceeded 40 NTU on only two of the seven monitoring days.

An oil sheen was observed on the Harbor surface in the vicinity of dredging operations on 24 September and 14 October. On 29 September an oil sheen, oil droplets, and debris consisting of small particles and pieces of the absorbent oil boom were observed throughout the day at distances up to, and beyond the 300 ft compliance transect. Similar material was observed on 1 October both at the North Lobe dredging site, and at Sawyer Street. On 1 October, similar material was observed at the North Lobe dredge site. Shoreline dredging associated with Area D was completed on 29 September by a shore-based excavator. This dredging was completed in approximately 1 hour and was not observed to affect turbidity.

Monitoring the transit of scows from the North Lobe dredge site to the Sawyer Street sediment processing facility resulted in turbidity readings ranging from 3-134 NTU. Highest readings at Sawyer Street were obtained directly in the areas affected by the push boat prop wash as it transited the shallow areas within approximately 1,000 ft of the sediment transfer site at low tide. Elevated turbidity was localized (confined to the project area), and of short duration.

Turbidity near the dredge material dewatering pump outfall at the scow was generally elevated over surrounding areas but localized in extent. Ballast water discharge from the dredge barge on 24 September was observed to be more turbid than previously observed. Turbidity in the discharge plume ranged from 8-32 NTU on 24 September.

Schedule: Week of 20 October 2003 – Initial dredging activities were completed on 14 October with the completion of Areas A and C. Further potential dredging activities are pending the completion of a bathymetric survey, and the results of confirmatory sediment samples taken in the dredged areas. WHG/ENSR will schedule additional monitoring activity should conditions warrant.

Attachments:

Attachments: Daily log of activities associated with North Lobe Dredging Operations.

Please contact the individuals listed below with any questions or comments.

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Table 1 - Daily Field Sheet North Lobe Dredging, New Bedford Harbor

Date		Construction Activity	Tide (Ebb or Flood)	ENSR Monitoring					Notes:
				Oversight Day	Background Turbidity (NTU)	Turbidity Range 50-300 ft from Dredging Activities (NTU)	Turbidity Exceedance (Yes/No)	Samples collected	
22-Sep-03	Mon	Continued dredging in Area D. Several trips of scow to Sawyer St. were completed.			4-5	0-92	No	Yes	Turbidity at 300 ft compliance point from 2-14 NTU. Highest turbidity recorded 10-25 ft from dredge. Sample collected for 1 hour Arbacia toxicity. Substantial wire debris in dredge material.
23-Sep-03	Tue	Continued dredging in Area D.							No Monitoring
24-Sep-03	Wed	Continued dredging in Area D. Several trips of scow to Sawyer St. were completed.			4-5	0-26	No	No	Turbidity during scow transfer activities approx. 1 hr after low tide ranged from 5-134 NTU within 50 ft of scow and push boat. Turbidity probably associated with plume from push boat prop. Values decreased to less than 20 NTU within 15 minutes. Turbidity associated with dewatering of sediment ranged from 1-20 NTU. Turbidity associated with barge ballast water discharged ranged from 8-32 NTU and oil was observed on the Harbor surface near dredge ops.
25-Sep-03	Thu	Continued dredging in Area D.							No Monitoring
26-Sep-03	Fri	No Work							No Monitoring

Date		Construction Activity	Tide (Ebb or Flood)	ENSR Monitoring					Notes:
				Oversight Day	Background Turbidity (NTU)	Turbidity Range 50-300 ft from Dredging Activities (NTU)	Turbidity Exceedance (Yes/No)	Samples collected	
29-Sep-03	Mon	Continued dredging in Area D. Several trips of scow to Sawyer St. were completed. Shoreline dredge by a shore-based excavator occurred for 1 hr in the morning			4-7	2-52	No	Yes	Shoreline dredging was just completed as monitoring was initiated. No turbidity issues associated with shoreline dredging were apparent. Oil droplets, surface sheen and debris were noted thoughout area. Sample collected 50 ft from dredging activities. Elevated turbidity was observed during Sawyer St. transfer activities but was short in duration and in limited area.
30-Sep-03	Tue	Continued dredging in Area D.							No Monitoring
1-Oct-03	Wed	Completed dredging of area D and began dredging in area C			3-4	4-30	No	No	Turbidity was noted to increase up to 30 NTU near location of dewatering pump discharge. Oil sheen, a brown film and small pieces of absorbent boom material were noted at Area D and Sawyer St sites. Turbidity from 5-36 NTU was observed behind the scow at Sawyer St. Values decreased to 5-14 NTU within one minute. Dredge bucket cracked in the afternoon and repairs took the remainder of the day.
2-Oct-03	Thu	Continued dredging in Area C							No Monitoring
3-Oct-03	Fri	No Work							No Monitoring

Date		Construction Activity	Tide (Ebb or Flood)	ENSR Monitoring					Notes:
				Oversight Day	Background Turbidity (NTU)	Turbidity Range 50-300 ft from Dredging Activities (NTU)	Turbidity Exceedance (Yes/No)	Samples collected	
6-Oct-03	Mon	Dredging of Area C continued and several trips of scow to Sawyer St were observed			3-5	4-32	No	No	Oil sheen, boom absorbent material and debris were present on surface of Harbor. High levels of turbidity from prop wash of scow push boat were observed at low tide. Scow became grounded at low tide and was allowed to refloat as tide flooded. Higher levels of turbidity (12-17 NTU) were noted at 300 ft point along the shore, probably due to shoreline sediment resuspension.
7-Oct-03	Tue	Continued dredging in Area C							No Monitoring
8-Oct-03	Wed	Dredging in Area C was suspended and dredging began in Area A. Several trips of the scow to Sawyer St. were observed			4-5	4-34	No	Yes	Sample collected approx. 10 ft from dredge in an area affected by both the dredging and the dewatering discharge pump. Turbidity ranged from 30-63 NTU at this location. Turbidity recorded during scow transfer 2 hrs after low tide ranged from 3-86 NTU, decreasing to 4-29 NTU within 10 minutes. No oil sheen was observed on the Harbor surface.
9-Oct-03	Thu	Dredging continued in Area A							No Monitoring
10-Oct-03	Fri	No Work							No Monitoring
13-Oct-03	Mon	No Work-Columbus Day							No Monitoring

Date		Construction Activity	Tide (Ebb or Flood)	ENSR Monitoring					Notes:
				Oversight Day	Background Turbidity (NTU)	Turbidity Range 50-300 ft from Dredging Activities (NTU)	Turbidity Exceedance (Yes/No)	Samples collected	
14-Oct-03	Tue	Dredging was completed in Area A. A small section of Area C that remained was dredged. Initial project dredging completed pending survey.			1-5	0-40	No	No	Two small surface oil slicks were observed at 150 and 300 ft south of dredging activities. Turbidity related to scow movements near dredging activities up to 29 NTU.
15-Oct-03	Wed	No on-water work							No Monitoring
16-Oct-03	Thu	Survey, No on-water work							No Monitoring
17-Oct-03	Fri	No Work							No Monitoring

APPENDIX C

Water Quality Monitoring Data

Aquatec Biological Sciences

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Toxicity Summary Report

Woods Hole Analytical Laboratory
375 Paramount Drive

Raynham, MA 02767

Date: 9/4/2003
Project: 03040
SDG 7331
Site: North Lobe

Method: 1008.0 Species: *Arbacia punctulata*

Sample ID	Sample Name	Mean Fertilization (%)
025490	NBH-60	99.6
025493	Seawater	100.0

* Indicates a statistically significant reduction ($P<0.05$) in the response relative to the corresponding response in the reference sample.

273 Commerce Street, Williston, VT 05495 Tel: 802.860.1638 Fax: 802.658.3189

Toxicity Summary Report

Woods Hole Analytical Laboratory
375 Paramount Drive

Raynham, MA 02767

Date: 9/4/2003
Project: 03040
SDG 7331
Site: North Lobe

Samples Received

Number	Sample Name	Date Time and Collecte		Type
025490	NBH-60	9/3/2003	3:16:00 PM	Water
025491	NBH-300	9/3/2003	3:37:00 PM	Water
025492	NBH-Ref	9/3/2003	3:52:00 PM	Water
025493	Seawater	8/27/2003		Seawater

Submitted By: _____

Toxicity Summary Report

Woods Hole Analytical Laboratory
375 Paramount Drive

Raynham, MA 02767

Date: 9/4/2003
Project: 03040
SDG 7331
Site: North Lobe

Method: 1008.0 Species: *Arbacia punctulata*
Sample ID: **NBH-60**
Laboratory ID: **25490**

Conc (%)	Endpoint	Replicate Fertilized (%) A	B	C	D	E	Average Fertilized (%)
100	Fertilization	100	99	100	99	100	99.6

Method: 1008.0 Species: *Arbacia punctulata*
Sample ID: **Seawater**
Laboratory ID: **25493**

Conc (%)	Endpoint	Replicate Fertilized (%) A	B	C	D	E	Average Fertilized (%)
100	Fertilization	100	100	100	100	100	100.0

Submitted By: _____

Quality Assurance Report

Woods Hole Analytical Laboratory	Date:	9/4/2003
375 Paramount Drive	Project:	03040
	SDG	7331
Raynham, MA 02767	Site:	North Lobe

Qualifiers and Special Conditions

The Standard Reference Toxicant Test resulted in a response that was slightly higher than the control chart limits.

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Toxicity Summary Report

Woods Hole Analytical Laboratory
375 Paramount Drive

Raynham, MA 02767

Date: 9/25/2003
Project: 03040
SDG: 7398
Site: New Bedford Harbor-N.Lobe Dredging

Method: 1008.0 Species: *Arbacia punctulata*

Sample ID	Sample Name	Mean Fertilization (%)
025980	50 ft. - N	99.6
025984	Seawater	99.8

* Indicates a statistically significant reduction ($P<0.05$) in the response relative to the corresponding response in the reference sample.

273 Commerce Street, Williston, VT 05495 Tel: 802.860.1638 Fax: 802.658.3189

Toxicity Summary Report

Woods Hole Analytical Laboratory	Date:	9/25/2003
375 Paramount Drive	Project:	03040
	SDG:	7398
Raynham, MA 02767	Site:	New Bedford Harbor-N.Lobe Dredging

Samples Received

Number	Sample Name	Date Time and Collecte		Type
025980	50 ft. - N	9/22/2003	2:10:00 PM	Water
025981	300 ft. - N	9/22/2003	2:24:00 PM	Water
025982	Reference	9/22/2003	2:35:00 PM	Water
025984	Seawater	9/22/2003		Seawater

Submitted By: _____

Toxicity Summary Report

Woods Hole Analytical Laboratory
375 Paramount Drive

Raynham, MA 02767

Date: 9/25/2003
Project: 03040
SDG 7398
Site: or-N.Lobe Dredging

Method: 1008.0 Species: *Arbacia punctulata*

Sample ID: **50 ft. - N**

Laboratory ID: **25980**

Conc (%)	Endpoint	Replicate Fertilized (%) A	B	C	D	E	Average Fertilized (%)
100	Fertilization	100	100	100	99	99	99.6

Method: 1008.0 Species: *Arbacia punctulata*

Sample ID: **Seawater**

Laboratory ID: **25984**

Conc (%)	Endpoint	Replicate Fertilized (%) A	B	C	D	E	Average Fertilized (%)
100	Fertilization	100	100	99	100	100	99.8

Submitted By: _____

Quality Assurance Report

Woods Hole Analytical Laboratory	Date:	9/25/2003
375 Paramount Drive	Project:	03040
	SDG	7398
Raynham, MA 02767	Site:	New Bedford Harbor-N.Lobe

Qualifiers and Special Conditions

Test sample fertilization exceeded 99 percent and was deemed not significantly different from the control by visual observation.

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Toxicity Summary Report

Woods Hole Analytical Laboratory
375 Paramount Drive

Raynham, MA 02767

Date: 10/1/2003
Project: 03040
SDG: 7425
Site: New Bedford Harbor Area D

Method: 1008.0 Species: *Arbacia punctulata*

Sample ID	Sample Name	Mean Fertilization (%)
026030	50 ft.	97.8
026033	Seawater	99.2

* Indicates a statistically significant reduction (P<0.05) in the response relative to the corresponding response in the reference sample.

273 Commerce Street, Williston, VT 05495 Tel: 802.860.1638 Fax: 802.658.3189

Toxicity Detail Report

Woods Hole Analytical Laboratory
375 Paramount Drive

Raynham, MA 02767

Date: 10/1/2003
Project: 03040
SDG: 7425
Site: New Bedford Harbor Area D

Method: 1008.0 Species: *Arbacia punctulata*
Sample ID: **50 ft.**

Laboratory ID: **26030**	Conc (%)	Endpoint	Replicate Fertilized (%) A	B	C	D	E	Average Fertilized (%)
	100	Fertilization	98	98	100	96	97	97.8

Method: 1008.0 Species: *Arbacia punctulata*
Sample ID: **Seawater**

Laboratory ID: **26033**	Conc (%)	Endpoint	Replicate Fertilized (%) A	B	C	D	E	Average Fertilized (%)
	100	Fertilization	100	98	100	100	98	99.2

Submitted By: _____

Aquatec Biological Sciences

Ecology | Environmental Toxicology | Natural Resource Assessments | Microbiology

Toxicity Detail Report

Woods Hole Analytical Laboratory
375 Paramount Drive

Raynham, MA 02767

Date: 10/9/2003
Project: 03040
SDG: 7469
Site: North Lobe Monitoring

Method: 1008.0 Species: *Arbacia punctulata*
Sample ID: **10S**

Laboratory ID: **26115**	Conc (%)	Endpoint	Replicate Fertilized (%) A	B	C	D	E	Average Fertilized (%)
	100	Fertilization	99	100	100	100	99	99.6

Method: 1008.0 Species: *Arbacia punctulata*
Sample ID: **Seawater** (control)

Laboratory ID: **26117**	Conc (%)	Endpoint	Replicate Fertilized (%) A	B	C	D	E	Average Fertilized (%)
	100	Fertilization	99	100	100	100	99	99.6

Submitted By: _____

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Aquatec Biological Sciences

Ecology | Environmental Toxicology | Natural Resource Assessments | Microbiology

Toxicity Summary Report

Woods Hole Analytical Laboratory
375 Paramount Drive
Raynham, MA 02767

Date: 10/9/2003
Project: 03040
SDG: 7469
Site: North Lobe Monitoring

Method: 1008.0 Species: *Arbacia punctulata*

Sample ID	Sample Name	Mean Fertilization (%)
026115	10S	99.6
026117	Seawater (Control)	99.6

* Indicates a statistically significant reduction (P<0.05) in the response relative to the corresponding response in the reference sample.

273 Commerce Street, Williston, VT 05495 Tel: 802.860.1638 Fax: 802.658.3189

F

Appendix F

North Lobe Dredging Cost Report

FWENC H.O. Support - North Lobe Dredging	Budget	Actuals	Committed	Forecast	Variance	% Var
TASK 01 Mobilization/Demobilization						
Subtask/Activity 03.01 Field Sampling Plan						
10 **FW Labor**	$6,405	$5,126	$5,126	$5,126	$1,279	
15 **FW Reimbursables**	$111	$309	$309	$309	($199)	
Subtotal 03.01	$6,515	$5,434	$5,434	$5,435	$1,080	
Subtask/Activity 03.08 Site Safety & Health Plan						
10 **FW Labor**	$1,100	$0	$0	$0	$1,100	
15 **FW Reimbursables**	$17	$0	$0	$0	$17	
Subtotal 03.08	$1,117	$0	$0	$0	$1,117	
Subtask/Activity 03.13 Work Plan						
10 **FW Labor**	$44,926	$47,543	$47,543	$47,543	($2,617)	
15 **FW Reimbursables**	$538	$1,259	$1,259	$1,259	($721)	
40 **Other Subs**	$0	$113	$113	$113	($113)	
Subtotal 03.13	$45,464	$48,915	$48,915	$48,915	($3,451)	
Subtask/Activity 03.15 Transportation and Temp Storage						
10 **FW Labor**	$2,200	$0	$0	$0	$2,200	
15 **FW Reimbursables**	$43	$0	$0	$0	$43	
Subtotal 03.15	$2,243	$0	$0	$0	$2,243	
Total for Subtask 03 Submittals/Implementation Plans	**$55,339**	**$54,349**	**$54,349**	**$54,350**	**$989**	**1.79%**
TASK TOTAL 01	$55,339	$54,349	$54,349	$54,350	$989	
TASK 02 Monitoring, Sampling, Testing & Analysis						
Subtask/Activity 03.02 Non Real Time						
30 **Team Subs**	$36,265	$31,520	$31,520	$31,520	$4,745	
40 **Other Subs**	$4,520	$1,800	$1,800	$1,800	$2,720	
Subtotal 03.02	$40,785	$33,320	$33,320	$33,320	$7,465	
Total for Subtask 03 Air Monitoring & Sampling	**$40,785**	**$33,320**	**$33,320**	**$33,320**	**$7,465**	**18.30%**
Subtask/Activity 06.03 Sediment/Sludge						
10 **FW Labor**	$18,058	$2,874	$2,874	$2,874	$15,184	
15 **FW Reimbursables**	$0	$21	$21	$21	($21)	

FWENC H.O. Support - North Lobe Dredging	Budget	Actuals	Committed	Forecast	Variance	% Var
TASK 02 Monitoring, Sampling, Testing & Analysis						
Subtask/Activity 06.03 Sediment/Sludge						
40 **Other Subs**	$24,426	$17,888	$17,888	$17,888	$6,538	
Subtotal 06.03	$42,484	$20,784	$20,784	$20,783	$21,701	
Total for Subtask 06 Sampling Soil/Sediment	**$42,484**	**$20,784**	**$20,784**	**$20,783**	**$21,701**	**51.08%**
Subtask/Activity 09.07 Sediment Analysis						
15 **FW Reimbursables**	$0	$491	$491	$491	($491)	
30 **Team Subs**	$0	$19,946	$19,946	$19,946	($19,946)	
40 **Other Subs**	$31,880	$4,550	$4,550	$4,550	$27,330	
Subtotal 09.07	$31,880	$24,987	$24,987	$24,987	$6,893	
Total for Subtask 09 Laboratory Chemical Analysis	**$31,880**	**$24,987**	**$24,987**	**$24,987**	**$6,893**	**21.62%**
TASK TOTAL 02	$115,149	$79,090	$79,090	$79,090	$36,059	
TASK 13 Physical Treatment						
Subtask/Activity 90.01 NL Water Treatment						
10 **FW Labor**	$0	$5	$5	$5	($5)	
25 **Equipment**	$10,079	$8,005	$8,005	$8,005	$2,074	
30 **Team Subs**	$6,024	$0	$0	$0	$6,024	
Subtotal 90.01	$16,103	$8,010	$8,010	$8,010	$8,093	
Subtask/Activity 90.02 NL Water Treatment						
10 **FW Labor**	$2,070	$1,154	$1,154	$1,154	$916	
15 **FW Reimbursables**	$0	$55	$55	$55	($55)	
40 **Other Subs**	$4,987	$3,044	$3,044	$3,044	$1,943	
Subtotal 90.02	$7,057	$4,254	$4,254	$4,253	$2,804	
Total for Subtask 90 North Lobe Water Testing	**$23,160**	**$12,264**	**$12,264**	**$12,263**	**$10,897**	**47.05%**
TASK TOTAL 13	$23,160	$12,264	$12,264	$12,263	$10,897	
TASK 21 Demobilization						
Subtask/Activity 06.91 Remedial Action Report						
10 **FW Labor**	$20,906	$48,584	$48,584	$48,584	($27,678)	

FWENC H.O. Support - North Lobe Dredging	Budget	Actuals	Committed	Forecast	Variance	% Var
TASK 21 Demobilization						
Subtask/Activity 06.91 Remedial Action Report						
15 **FW Reimbursables**	$511	$1,763	$1,763	$1,763	($1,252)	
Subtotal 06.91	$21,417	$50,347	$50,347	$50,347	($28,930)	
Total for Subtask 06 Submittals	**$21,417**	**$50,347**	**$50,347**	**$50,347**	**($28,930)**	**135.08%**
TASK TOTAL 21	$21,417	$50,347	$50,347	$50,347	($28,930)	
TASK 22 General Requirements						
Subtask/Activity 03.00 Purchasing/Procurement						
10 **FW Labor**	$27,927	$26,761	$26,761	$26,761	$1,166	
15 **FW Reimbursables**	$3,812	$3,056	$3,056	$3,056	$756	
Subtotal 03.00	$31,739	$29,817	$29,817	$29,817	$1,922	
Total for Subtask 03 Procurements	**$31,739**	**$29,817**	**$29,817**	**$29,817**	**$1,922**	**6.06%**
Subtask/Activity 04.07 Sciences						
10 **FW Labor**	$32,022	$29,953	$29,953	$29,953	$2,069	
15 **FW Reimbursables**	$716	$1,141	$1,141	$1,141	($425)	
40 **Other Subs**	$4,068	$0	$0	$0	$4,068	
Subtotal 04.07	$36,806	$31,095	$31,095	$31,094	$5,712	
Subtask/Activity 04.11 Home Office Engineers						
10 **FW Labor**	$27,225	$25,630	$25,630	$25,630	$1,595	
15 **FW Reimbursables**	$307	$611	$611	$611	($304)	
Subtotal 04.11	$27,532	$26,241	$26,241	$26,241	$1,291	
Subtask/Activity 04.14 Cost Engineer/Estimator						
10 **FW Labor**	$23,889	$27,479	$27,479	$27,479	($3,590)	
15 **FW Reimbursables**	$315	$209	$209	$209	$106	
Subtotal 04.14	$24,204	$27,688	$27,688	$27,688	($3,484)	
Subtask/Activity 04.24 Quality Control Engineer						
10 **FW Labor**	$67,272	$64,331	$64,331	$64,331	$2,941	
15 **FW Reimbursables**	$0	$2,221	$2,221	$2,221	($2,221)	

FWENC H.O. Support - North Lobe Dredging	Budget	Actuals	Committed	Forecast	Variance	% Var
TASK 22 General Requirements						
Subtask/Activity 04.24 Quality Control Engineer						
25 **Equipment**	$3,800	$6,847	$6,847	$6,847	($3,047)	
Subtotal 04.24	$71,072	$73,399	$73,399	$73,399	($2,327)	
Total for Subtask 04 Engineering, Surveying & QC	**$159,614**	**$158,423**	**$158,423**	**$158,422**	**$1,192**	**0.75%**
Subtask/Activity 07.00 Site Safety & Health Officer						
10 **FW Labor**	$11,004	$0	$0	$0	$11,004	
Subtotal 07.00	$11,004	$0	$0	$0	$11,004	
Subtask/Activity 07.16 H&S Supplies - PPE						
20 **Site Materials**	$1,200	$0	$0	$0	$1,200	
Subtotal 07.16	$1,200	$0	$0	$0	$1,200	
Subtask/Activity 07.90 Integrated Air Monitoring						
40 **Other Subs**	$1,020	$0	$0	$0	$1,020	
Subtotal 07.90	$1,020	$0	$0	$0	$1,020	
Subtask/Activity 07.91 A/R/P Programs						
40 **Other Subs**	$1,000	$154	$154	$154	$846	
Subtotal 07.91	$1,000	$154	$154	$154	$846	
Total for Subtask 07 Health & Safety	**$14,224**	**$154**	**$154**	**$154**	**$14,070**	**98.92%**
Subtask/Activity 11.00 Misc Project Expenses						
20 **Site Materials**	$1,000	$0	$0	$0	$1,000	
Subtotal 11.00	$1,000	$0	$0	$0	$1,000	
Total for Subtask 11 Misc. Project Expenses	**$1,000**	**$0**	**$0**	**$0**	**$1,000**	**100.00%**
TASK TOTAL 22	$206,577	$188,394	$188,394	$188,393	$18,184	
TASK 98 Indirect Rate Adjustment - Est.						
Subtask/Activity 01.00 Indirect Rate Adjustment-Estimate						
98 **Indirect Rate Adjustment-Estim**	$0	$7,757	$7,757	$9,746	($9,746)	
Subtotal 01.00	$0	$7,757	$7,757	$9,746	($9,746)	
Total for Subtask 01 Indirect Rate Adjustment - Est.	**$0**	**$7,757**	**$7,757**	**$9,746**	**($9,746)**	
TASK TOTAL 98	$0	$7,757	$7,757	$9,746	($9,746)	

FWENC H.O. Support - North Lobe Dredging	Budget	Actuals	Committed	Forecast	Variance	% Var
TASK 99 Fee						
Subtask/Activity 99.98 Funding						
90 **Cost Funding**	$0	$0	$0	$0	$0	
91 **Fee Funding**	$0	$0	$0	$0	$0	
Subtotal 99.98	$0	$0	$0	$0	$0	
Subtask/Activity 99.99 Fee						
99 **Fee**	$100,738	$99,734	$99,734	$100,738	$0	
Subtotal 99.99	$100,738	$99,734	$99,734	$100,738	$0	
Total for Subtask 99 Fee	**$100,738**	**$99,734**	**$99,734**	**$100,738**	**$0**	**0.00%**
TASK TOTAL 99	$100,738	$99,734	$99,734	$100,738	$0	
TOTAL JOB N1 FWENC H.O. Support - NL Dredging	$522,380	$491,935	$491,935	$494,927	$27,453	**5.26%**

North Lobe Dredging Subcontractor	Budget	Actuals	Committed	Forecast	Variance	% Var
TASK 01 Mobilization						
Subtask/Activity 00.00 Mobilization						
40 **Other Subs**	$131,896	$513,414	$513,414	$513,414	($381,518)	
Subtotal 00.00	$131,896	$513,414	$513,414	$513,414	($381,518)	
Total for Subtask 00 Mobilization	**$131,896**	**$513,414**	**$513,414**	**$513,414**	**($381,518)**	**289.26%**
TASK TOTAL 01	$131,896	$513,414	$513,414	$513,414	($381,518)	
TASK 02 Supply of Turbidity Curtain						
Subtask/Activity 10.00 Supply of Turbidity Curtain						
40 **Other Subs**	$32,238	$39,000	$39,000	$39,000	($6,762)	
Subtotal 10.00	$32,238	$39,000	$39,000	$39,000	($6,762)	
Total for Subtask 10 Supply of Turbidity Curtain	**$32,238**	**$39,000**	**$39,000**	**$39,000**	**($6,762)**	**20.98%**
Subtask/Activity 20.00 Install Turbidity Curtain-Optional						
40 **Other Subs**	$0	$0	$0	$0	$0	
Subtotal 20.00	$0	$0	$0	$0	$0	
Total for Subtask 20 Install Turbidity Curtain-Optional	**$0**	**$0**	**$0**	**$0**	**$0**	
TASK TOTAL 02	$32,238	$39,000	$39,000	$39,000	($6,762)	
TASK 03 Dredge/Transp/Process Area A						
Subtask/Activity 10.00 Dredge/Transp/Process Area A						
40 **Other Subs**	$67,366	$44,038	$44,038	$44,038	$23,328	
Subtotal 10.00	$67,366	$44,038	$44,038	$44,038	$23,328	
Total for Subtask 10 Dredge/Transp/Process Area A	**$67,366**	**$44,038**	**$44,038**	**$44,038**	**$23,328**	**34.63%**
Subtask/Activity 20.00 Dredge/Transp/Process Area B						
40 **Other Subs**	$28,180	$29,182	$29,182	$29,182	($1,002)	
Subtotal 20.00	$28,180	$29,182	$29,182	$29,182	($1,002)	
Total for Subtask 20 Dredge/Transp/Process Area B	**$28,180**	**$29,182**	**$29,182**	**$29,182**	**($1,002)**	**3.55%**
Subtask/Activity 30.00 Dredge/Transp/Process Area C						
40 **Other Subs**	$60,028	$190,671	$190,671	$190,671	($130,643)	
Subtotal 30.00	$60,028	$190,671	$190,671	$190,671	($130,643)	
Total for Subtask 30 Dredge/Transp/Process Area C	**$60,028**	**$190,671**	**$190,671**	**$190,671**	**($130,643)**	**217.64%**

North Lobe Dredging Subcontractor	Budget	Actuals	Committed	Forecast	Variance	% Var
TASK 03 Dredge/Transp/Process Area D						
Subtask/Activity 40.00 Dredge/Transp/Process Area D						
40 **Other Subs**	$336,832	$407,696	$407,696	$407,696	($70,864)	
Subtotal 40 .00	$336,832	$407,696	$407,696	$407,696	($70,864)	
Total for Subtask 40 Dredge/Transp/Process Area D	**$336,832**	**$407,696**	**$407,696**	**$407,696**	**($70,864)**	**21.04%**
Subtask/Activity 50.00 Dredge/Transp/Process Area F-1						
40 **Other Subs**	$27,505	$0	$0	$0	$27,505	
Subtotal 50 .00	$27,505	$0	$0	$0	$27,505	
Total for Subtask 50 Dredge/Transp/Process Area F-1	**$27,505**	**$0**	**$0**	**$0**	**$27,505**	**100.00%**
Subtask/Activity 60.00 Dredge/Transp/Process Area F-3						
40 **Other Subs**	$28,856	$0	$0	$0	$28,856	
Subtotal 60 .00	$28,856	$0	$0	$0	$28,856	
Total for Subtask 60 Dredge/Transp/Process Area F-3	**$28,856**	**$0**	**$0**	**$0**	**$28,856**	**100.00%**
Subtask/Activity 70.00 Dredge/Transp/Process Area F-4						
40 **Other Subs**	$60,705	$0	$0	$0	$60,705	
Subtotal 70 .00	$60,705	$0	$0	$0	$60,705	
Total for Subtask 70 Dredge/Transp/Process Area F-4	**$60,705**	**$0**	**$0**	**$0**	**$60,705**	**100.00%**
Subtask/Activity 80.00 Dredge/Transp/Process Area F-6						
40 **Other Subs**	$27,505	$0	$0	$0	$27,505	
Subtotal 80 .00	$27,505	$0	$0	$0	$27,505	
Total for Subtask 80 Dredge/Transp/Process Area F-6	**$27,505**	**$0**	**$0**	**$0**	**$27,505**	**100.00%**
TASK TOTAL 03	$636,977	$671,587	$671,587	$671,587	($34,610)	
TASK 04 Grading of DDA						
Subtask/Activity 00.00 Grading of DDA						
40 **Other Subs**	$13,587	$23,236	$23,236	$23,236	($9,649)	
Subtotal 00 .00	$13,587	$23,236	$23,236	$23,236	($9,649)	
Total for Subtask 00 Grading of DDA	**$13,587**	**$23,236**	**$23,236**	**$23,236**	**($9,649)**	**71.02%**
TASK TOTAL 04	$13,587	$23,236	$23,236	$23,236	($9,649)	

North Lobe Dredging Subcontractor	Budget	Actuals	Committed	Forecast	Variance	% Var
TASK 05 Demobilization						
Subtask/Activity 00.00 Demobilization						
40 **Other Subs**	$155,306	$65,500	$65,500	$65,500	$89,806	
Subtotal 00 .00	$155,306	$65,500	$65,500	$65,500	$89,806	
Total for Subtask 00 Demobilization	**$155,306**	**$65,500**	**$65,500**	**$65,500**	**$89,806**	**57.83%**
TASK TOTAL 05	$155,306	$65,500	$65,500	$65,500	$89,806	
TASK 06 Survey Quantities						
Subtask/Activity 00.00 Survey Quantities						
40 **Other Subs**	$0	$2,200	$2,200	$2,200	($2,200)	
Subtotal 00 .00	$0	$2,200	$2,200	$2,200	($2,200)	
Total for Subtask 00 Survey Quantities	**$0**	**$2,200**	**$2,200**	**$2,200**	**($2,200)**	
TASK TOTAL 06	$0	$2,200	$2,200	$2,200	($2,200)	
TASK 07 Additional Dredging/Post Survey						
Subtask/Activity 00.00 Additional Dredging/Post Survey						
40 **Other Subs**	$38,476	$38,476	$38,476	$38,476	$0	
Subtotal 00 .00	$38,476	$38,476	$38,476	$38,476	$0	
Total for Subtask 00 Additional Dredging/Post Survey	**$38,476**	**$38,476**	**$38,476**	**$38,476**	**$0**	**0.00%**
TASK TOTAL 07	$38,476	$38,476	$38,476	$38,476	$0	
TASK 08 Steel Debris (Cutting)						
Subtask/Activity 00.00 Steel Debris (Cutting)						
40 **Other Subs**	$22,971	$22,971	$22,971	$22,971	$0	
Subtotal 00 .00	$22,971	$22,971	$22,971	$22,971	$0	
Total for Subtask 00 Steel Debris (Cutting)	**$22,971**	**$22,971**	**$22,971**	**$22,971**	**$0**	**0.00%**
TASK TOTAL 08	$22,971	$22,971	$22,971	$22,971	$0	

North Lobe Dredging Subcontractor	Budget	Actuals	Committed	Forecast	Variance	% Var
TASK 09 Standby Rate						
Subtask/Activity 00.00 Standby Rate						
40 **Other Subs**	$97,845	$97,845	$97,845	$97,845	$0	
Subtotal 00.00	$97,845	$97,845	$97,845	$97,845	$0	
Total for Subtask 00 Standby Rate	**$97,845**	**$97,845**	**$97,845**	**$97,845**	**$0**	**0.00%**
TASK TOTAL 09	$97,845	$97,845	$97,845	$97,845	$0	
TASK 10 Survey Quantities Calculations						
Subtask/Activity 00.00 Survey Quantities Calculations						
40 **Other Subs**	$3,476	$3,476	$3,476	$3,476	$0	
Subtotal 00.00	$3,476	$3,476	$3,476	$3,476	$0	
Total for Subtask 00 Survey Quantities Calculations	**$3,476**	**$3,476**	**$3,476**	**$3,476**	**$0**	**0.00%**
TASK TOTAL 10	$3,476	$3,476	$3,476	$3,476	$0	
TASK 12 Screen Fill Materials from Area D						
Subtask/Activity 00.00 Screen Fill Materials from Area D						
40 **Other Subs**	$0	$2,500	$2,500	$2,500	($2,500)	
Subtotal 00.00	$0	$2,500	$2,500	$2,500	($2,500)	
Total for Subtask 00 Screen Fill Materials from Area D	**$0**	**$2,500**	**$2,500**	**$2,500**	**($2,500)**	
TASK TOTAL 12	$0	$2,500	$2,500	$2,500	($2,500)	
TASK 14 Gravel Fill in DDA						
Subtask/Activity 00.00 Gravel Fill in DDA						
40 **Other Subs**	$0	$2,370	$2,370	$2,370	($2,370)	
Subtotal 00.00	$0	$2,370	$2,370	$2,370	($2,370)	
Total for Subtask 00 Gravel Fill in DDA	**$0**	**$2,370**	**$2,370**	**$2,370**	**($2,370)**	
TASK TOTAL 14	$0	$2,370	$2,370	$2,370	($2,370)	

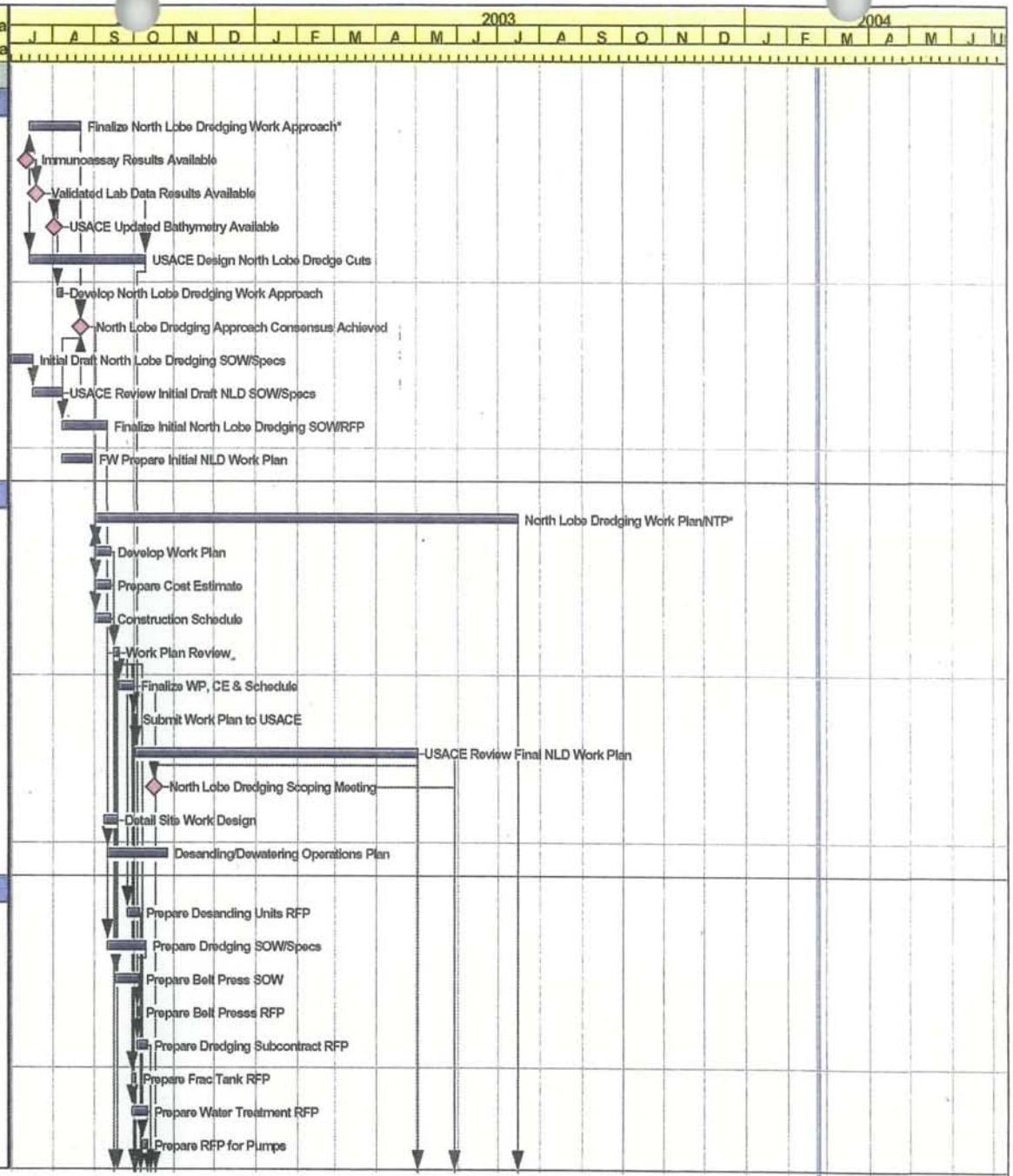
North Lobe Dredging Subcontractor	Budget	Actuals	Committed	Forecast	Variance	% Var
TASK 99 Fee						
Subtask/Activity 99.98 Funding						
90 Cost Funding	$0	$0	$0	$0	$0	
Subtotal 99.98	$0	$0	$0	$0	$0	
Total for Subtask 99 Funding	$0	$0	$0	$0	$0	
TASK TOTAL 99	$0	$0	$0	$0	$0	
TOTAL JOB N2 North Lobe Dredging Subcontractor	$1,132,772	$1,482,575	$1,482,575	$1,482,575	($349,803)	30.88%
PROJECT TOTAL	$1,655,152	$1,974,510	$1,974,510	$1,977,502	($322,350)	19.48%
TOTAL CURRENT PROJECT FUNDING:	$1,655,153					


G

Appendix G

North Lobe Dredging Schedule

Activity ID	Activity Description	Orig Dur	Rem Dur	Total Float	Current Start	Current Finish	Total Float
NL	NORTH LOBE DREDGING						
NL	NLD Initial Work Approach						
C4NL002101	Finalize North Lobe Dredging Work Approach*	29*	0*		15JUL02A	22AUG02A	
C4NL002105	Immunoassay Results Available	0	0			11JUL02A	
C4NL002110	Validated Lab Data Results Available	0	0			19JUL02A	
C4NL002115	USACE Updated Bathymetry Available	0	0			02AUG02A	
C4NL002120	USACE Design North Lobe Dredge Cuts	15	0		15JUL02A	09OCT02A	
C4NL002125	Develop North Lobe Dredging Work Approach	4	0		05AUG02A	08AUG02A	
C4NL002130	North Lobe Dredging Approach Consensus Achieved	0	0			22AUG02A	
C4NL002205	Initial Draft North Lobe Dredging SOW/Specs	10	0		01JUL02A	16JUL02A	
C4NL002210	USACE Review Initial Draft NLD SOW/Specs	10	0		17JUL02A	08AUG02A	
C4NL002250	Finalize Initial North Lobe Dredging SOW/RFP	10	0		09AUG02A	10SEP02A	
C4NL002405	FW Prepare Initial NLD Work Plan	1	0		09AUG02A	30AUG02A	
NL1	NLD Design and Work Plan						
C4NL002401	North Lobe Dredging Work Plan/NTP*	219*	0*		03SEP02A	15JUL03A	
C4NL122000	Develop Work Plan	5	0		03SEP02A	13SEP02A	
C4NL123000	Prepare Cost Estimate	5	0		03SEP02A	13SEP02A	
C4NL124000	Construction Schedule	5	0		03SEP02A	13SEP02A	
C4NL125000	Work Plan Review	1	0		16SEP02A	19SEP02A	
C4NL126000	Finalize WP, CE & Schedule	4	0		20SEP02A	01OCT02A	
C4NL127000	Submit Work Plan to USACE	1	0		02OCT02A	02OCT02A	
C4NL134000	USACE Review Final NLD Work Plan	4	0		03OCT02A	01MAY03A	
C4NL134005	North Lobe Dredging Scoping Meeting	0	0			16OCT02A	
C4NL150000	Detail Site Work Design	11	0		09SEP02A	18SEP02A	
C4NL165000	Desanding/Dewatering Operations Plan	18	0		11SEP02A	25OCT02A	
NL2	NLD Procurements						
C4NL213140	Prepare Desanding Units RFP	2	0		26SEP02A	04OCT02A	
C4NL213200	Prepare Dredging SOW/Specs	7	0		11SEP02A	09OCT02A	
C4NL213320	Prepare Belt Press SOW	5	0		18SEP02A	04OCT02A	
C4NL213340	Prepare Belt Presss RFP	2	0		04OCT02A	04OCT02A	
C4NL213400	Prepare Dredging Subcontract RFP	2	0		04OCT02A	11OCT02A	
C4NL213500	Prepare Frac Tank RFP	3	0		30SEP02A	02OCT02A	
C4NL213600	Prepare Water Treatment RFP	3	0		30SEP02A	11OCT02A	
C4NL213700	Prepare RFP for Pumps	3	0		08OCT02A	10OCT02A	



Start Date	01MAR94
Finish Date	21FEB05
Data Date	23FEB04
Run Date	27FEB04 14:12

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TR4C

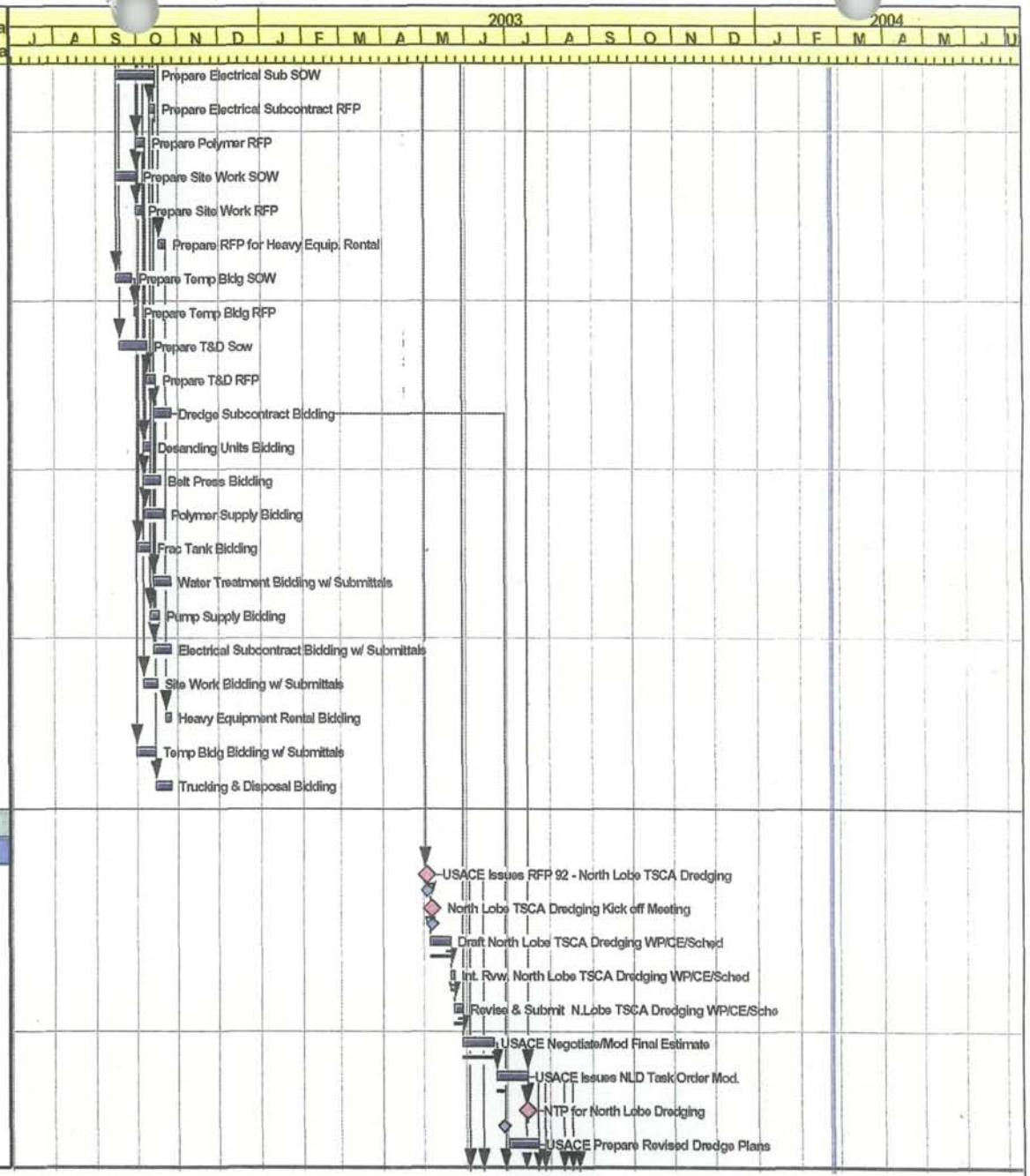
North Lobe Dredging
Final Schedule

Sheet 1 of 4

NORTH LOBE DREDGING
FL-North Lobe Dredging

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Rem Dur	Total Float	Current Start	Current Finish	Total Float
C4NL214020	Prepare Electrical Sub SOW	10	0		16SEP02A	14OCT02A	
C4NL214040	Prepare Electrical Subcontract RFP	2	0		11OCT02A	14OCT02A	
C4NL214400	Prepare Polymer RFP	3	0		02OCT02A	07OCT02A	
C4NL215020	Prepare Site Work SOW	3	0		16SEP02A	30SEP02A	
C4NL215040	Prepare Site Work RFP	2	0		01OCT02A	04OCT02A	
C4NL215900	Prepare RFP for Heavy Equip. Rental	3	0		18OCT02A	22OCT02A	
C4NL216020	Prepare Temp Bldg SOW	5	0		16SEP02A	27SEP02A	
C4NL216040	Prepare Temp Bldg RFP	2	0		30SEP02A	01OCT02A	
C4NL217020	Prepare T&D Sow	10	0		19SEP02A	08OCT02A	
C4NL217040	Prepare T&D RFP	3	0		09OCT02A	14OCT02A	
C4NL223000	Dredge Subcontract Bidding	10	0		14OCT02A	25OCT02A	
C4NL223100	Desanding Units Bidding	5	0		07OCT02A	10OCT02A	
C4NL223300	Belt Press Bidding	5	0		07OCT02A	18OCT02A	
C4NL223400	Polymer Supply Bidding	5	0		08OCT02A	21OCT02A	
C4NL223500	Frac Tank Bidding	2	0		03OCT02A	11OCT02A	
C4NL223600	Water Treatment Bidding w/ Submittals	10	0		14OCT02A	25OCT02A	
C4NL223700	Pump Supply Bidding	5	0		11OCT02A	17OCT02A	
C4NL224000	Electrical Subcontract Bidding w/ Submittals	10	0		14OCT02A	25OCT02A	
C4NL225000	Site Work Bidding w/ Submittals	7	0		07OCT02A	16OCT02A	
C4NL225900	Heavy Equipment Rental Bidding	5	0		23OCT02A	25OCT02A	
C4NL226000	Temp Bldg Bidding w/ Submittals	9	0		02OCT02A	14OCT02A	
C4NL227000	Trucking & Disposal Bidding	13	0		15OCT02A	25OCT02A	
N1	NORTH LOBE TSCA DREDGING						
N1.1	N.L.D Design and Work Plan						
C4N1013005	USACE Issues RFP 92 - North Lobe TSCA Dredging	0	0			02MAY03A	
C4N1013009	North Lobe TSCA Dredging Kick off Meeting	0	0			06MAY03A	
C4N1013010	Draft North Lobe TSCA Dredging WP/CE/Sched	10	0		06MAY03A	20MAY03A	
C4N1013015	Int. Rvw. North Lobe TSCA Dredging WP/CE/Sched	2	0		21MAY03A	22MAY03A	
C4N1013020	Revise & Submit N.Lobe TSCA Dredging WP/CE/Sche	4	0		23MAY03A	29MAY03A	
C4N1134400	USACE Negotiate/Mod Final Estimate	8	0		30MAY03A	20JUN03A	
C4N1135000	USACE Issues NLD Task Order Mod.	5	0		23JUN03A	15JUL03A	
C4N1135010	NTP for North Lobe Dredging	0	0			15JUL03A	
C4N1135015	USACE Prepare Revised Dredge Plans	10	0		02JUL03A	22JUL03A	



Start Date	01MAR94
Finish Date	21FEB05
Data Date	23FEB04
Run Date	27FEB04 14:12

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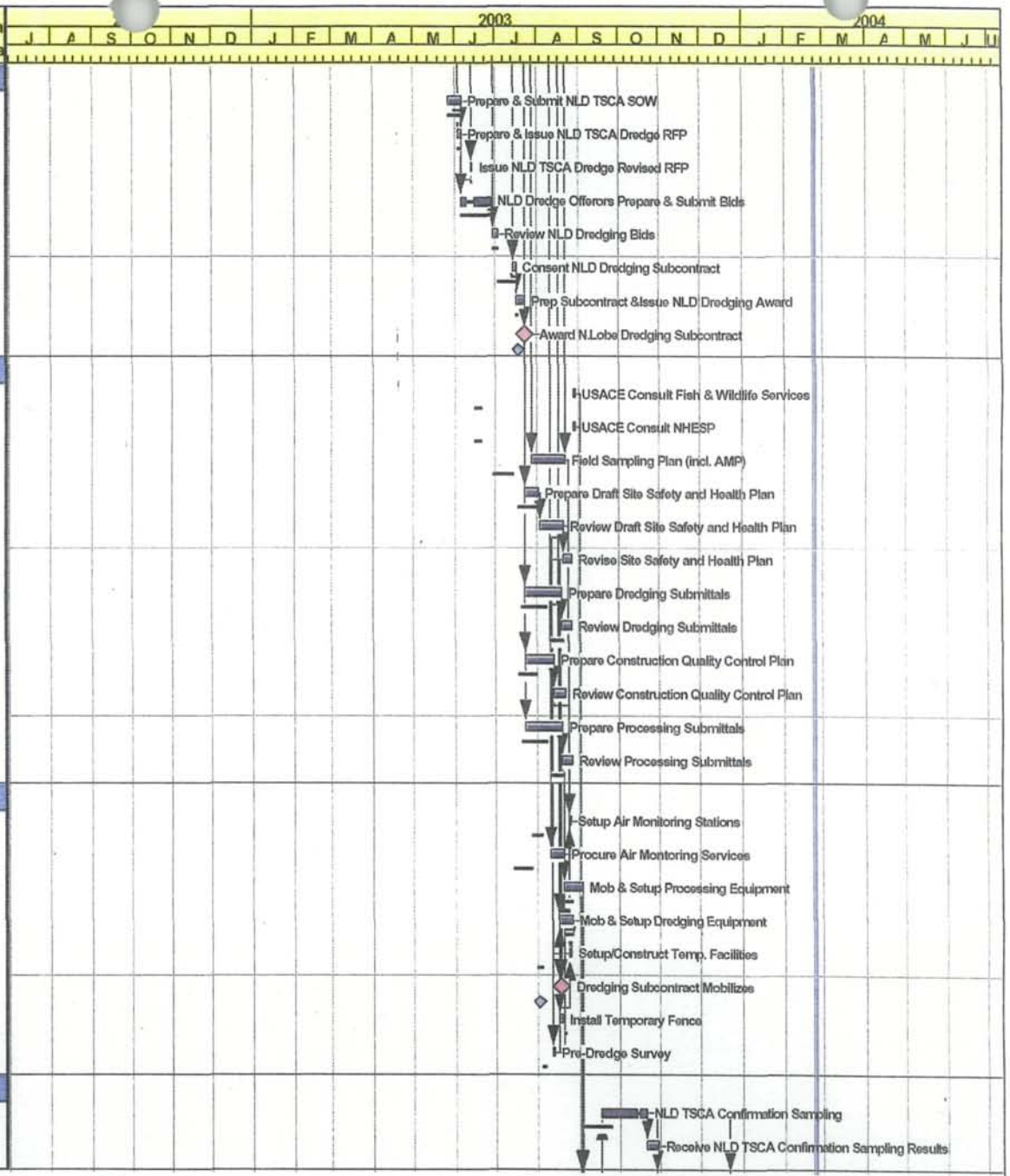
Sheet 2 of 4

North Lobe Dredging
Final Schedule

NORTH LOBE DREDGING
FL-North Lobe Dredging

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Rem Dur	Total Float	Current Start	Current Finish	Total Float
NL2 NLD Procurements							
C4N1224103	Prepare & Submit NLD TSCA SOW	6	0		27MAY03A	05JUN03A	
C4N1233003	Prepare & Issue NLD TSCA Dredge RFP	3	0		03JUN03A	05JUN03A	
C4N1233004	Issue NLD TSCA Dredge Revised RFP	1	0		13JUN03A	13JUN03A	
C4N1233005	NLD Dredge Offerors Prepare & Submit Bids	10	0		06JUN03A	27JUN03A	
C4N1233007	Review NLD Dredging Bids	3	0		30JUN03A	02JUL03A	
C4N1233010	Consent NLD Dredging Subcontract	9	0		15JUL03A	16JUL03A	
C4N1233015	Prep Subcontract &Issue NLD Dredging Award	2	0		17JUL03A	23JUL03A	
C4N1233020	Award N.Lobe Dredging Subcontract	0	0			23JUL03A	
NL3 NLD Submittals							
C4N1013011	USACE Consult Fish & Wildlife Services	5	0		29AUG03A	29AUG03A	
C4N1013021	USACE Consult NHESP	5	0		29AUG03A	29AUG03A	
C4N1013101	Field Sampling Plan (incl. AMP)	10	0		28JUL03A	21AUG03A	
C4N2013081	Prepare Draft Site Safety and Health Plan	10	0		23JUL03A	01AUG03A	
C4N2013082	Review Draft Site Safety and Health Plan	5	0		04AUG03A	20AUG03A	
C4N2013083	Revise Site Safety and Health Plan	5	0		21AUG03A	27AUG03A	
C4N2013131	Prepare Dredging Submittals	15	0		23JUL03A	19AUG03A	
C4N2013132	Review Dredging Submittals	8	0		20AUG03A	26AUG03A	
C4N2013141	Prepare Construction Quality Control Plan	10	0		23JUL03A	13AUG03A	
C4N2013142	Review Construction Quality Control Plan	5	0		14AUG03A	21AUG03A	
C4N2013911	Prepare Processing Submittals	15	0		23JUL03A	19AUG03A	
C4N2013912	Review Processing Submittals	8	0		20AUG03A	26AUG03A	
NL4 NLD Mob & Setup							
C4N1023201	Setup Air Monitoring Stations	5	0		25AUG03A	25AUG03A	
C4N1223401	Procure Air Montoring Services	10	0		11AUG03A	20AUG03A	
C4N2011901	Mob & Setup Processing Equipment	5	0		21AUG03A	03SEP03A	
C4N2011911	Mob & Setup Dredging Equipment	4	0		18AUG03A	26AUG03A	
C4N2014010	Setup/Construct Temp. Facilities	2	0		25AUG03A	25AUG03A	
C4N2035009	Dredging Subcontract Mobilizes	0	0			18AUG03A	
C4N2035010	Install Temporary Fence	2	0		18AUG03A	19AUG03A	
C4N2099001	Pre-Dredge Survey	2	0		12AUG03A	13AUG03A	
NL5 NLD Dredging and Dewatering							
C4N1019701	NLD TSCA Confirmation Sampling	15	0		18SEP03A	21OCT03A	
C4N1019702	Receive NLD TSCA Confirmation Sampling Results	3	0		22OCT03A	29OCT03A	



Start Date	01MAR94
Finish Date	21FEB05
Data Date	23FEB04
Run Date	27FEB04 14:12

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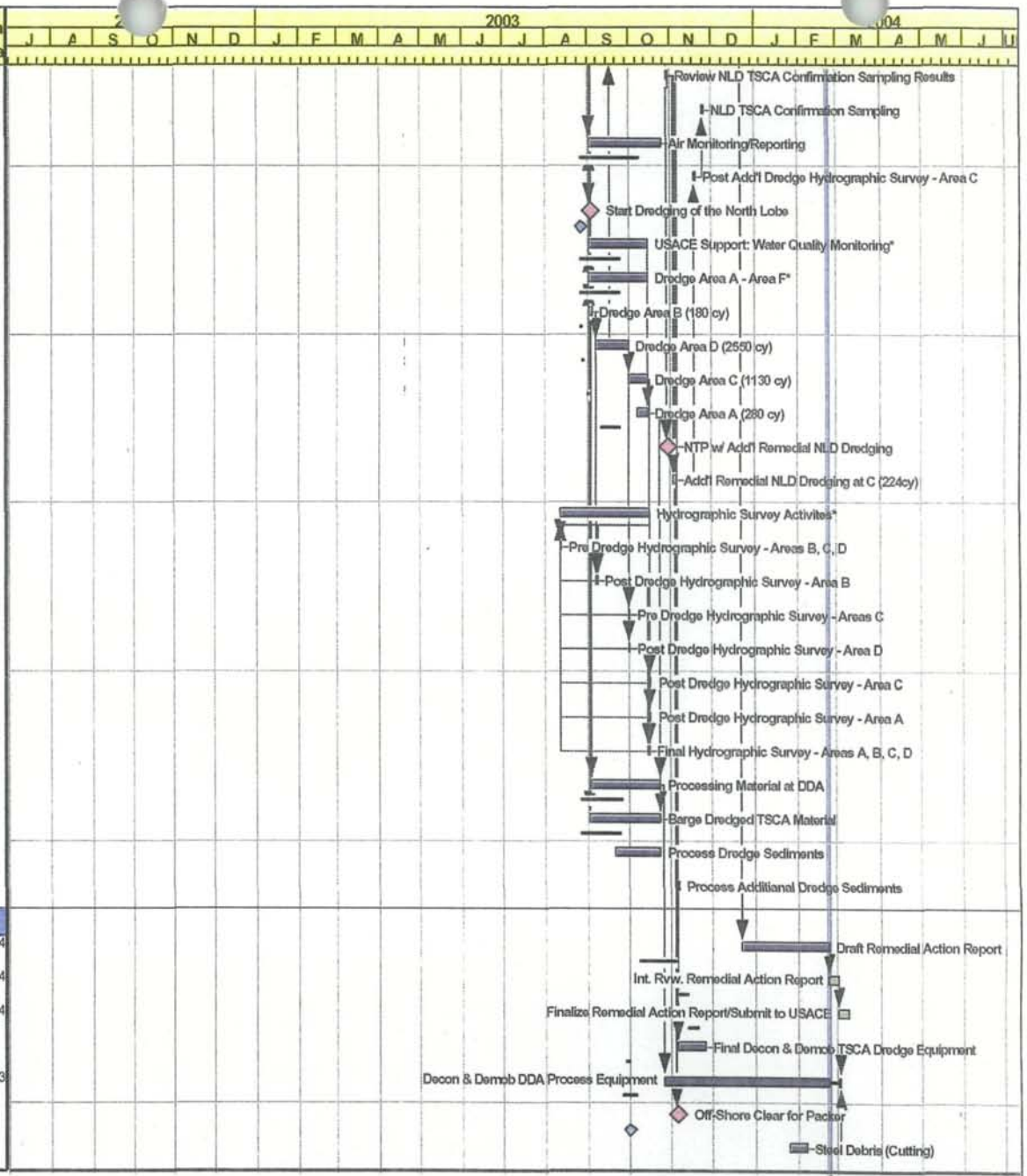
North Lobe Dredging
Final Schedule

NORTH LOBE DREDGING
FL-North Lobe Dredging

Date	Revision	Checked	Approved

Activity ID	Activity Description	Orig Dur	Rem Dur	Total Float	Current Start	Current Finish	Total Float
C4N1019703	Review NLD TSCA Confirmation Sampling Results	3	0		29OCT03A	29OCT03A	
C4N1019901	NLD TSCA Confirmation Sampling	1	0		24NOV03A	24NOV03A	
C4N1023202	Air Monitoring/Reporting	30	0		03SEP03A	24OCT03A	
C4N1030900	Post Addl Dredge Hydrographic Survey - Area C	1	0		18NOV03A	18NOV03A	
C4N1509900	Start Dredging of the North Lobe	0	0			03SEP03A	
C4N1509908	USACE Support: Water Quality Monitoring*	30*	0*		03SEP03A	14OCT03A	
C4N1509909	Dredge Area A - Area F*	23*	0*		03SEP03A	14OCT03A	
C4N1509910	Dredge Area B (180 cy)	2	0		03SEP03A	04SEP03A	
C4N1509920	Dredge Area D (2550 cy)	12	0		08SEP03A	30SEP03A	
C4N1509930	Dredge Area C (1130 cy)	4	0		01OCT03A	14OCT03A	
C4N1509950	Dredge Area A (280 cy)	2	0		09OCT03A	14OCT03A	
C4N1509990	NTP w/ Addl Remedial NLD Dredging	0	0			29OCT03A	
C4N1509991	Addl Remedial NLD Dredging at C (224cy)	2	0		03NOV03A	04NOV03A	
C4N2030100	Hydrographic Survey Activites*	47*	0*		12AUG03A	16OCT03A	
C4N2030200	Pre Dredge Hydrographic Survey - Areas B, C, D	1	0		12AUG03A	12AUG03A	
C4N2030300	Post Dredge Hydrographic Survey - Area B	1	0		08SEP03A	08SEP03A	
C4N2030400	Pre Dredge Hydrographic Survey - Areas C	1	0		01OCT03A	01OCT03A	
C4N2030500	Post Dredge Hydrographic Survey - Area D	1	0		01OCT03A	01OCT03A	
C4N2030600	Post Dredge Hydrographic Survey - Area C	1	0		16OCT03A	16OCT03A	
C4N2030700	Post Dredge Hydrographic Survey - Area A	1	0		16OCT03A	16OCT03A	
C4N2030800	Final Hydrographic Survey - Areas A, B, C, D	1	0		15OCT03A	15OCT03A	
C4N2099102	Processing Material at DDA	21	0		04SEP03A	23OCT03A	
C4N2139010	Barge Dredged TSCA Material	20	0		03SEP03A	23OCT03A	
C4N2400012	Process Dredge Sediments	1	0		22SEP03A	23OCT03A	
C4N2400022	Process Additianal Dredge Sediments	2	0		05NOV03A	06NOV03A	
NL6	NLD Project Completion						
C4N1216101	Draft Remedial Action Report	20	1	134	22DEC03A	23FEB04	134
C4N1216103	Int. Rvw. Remedial Action Report	5	5	134	24FEB04	01MAR04	134
C4N1216105	Finalize Remedial Action Report/Submit to USACE	5	5	134	02MAR04	08MAR04	134
C4N2213011	Final Decon & Demob TSCA Dredge Equipment	12	0		05NOV03A	25NOV03A	
C4N2213021	Decon & Demob DDA Process Equipment	7	1	113	27OCT03A	02MAR04	113
C4N2214900	Off-Shore Clear for Packer	0	0			04NOV03A	
C4N2422000	Steel Debris (Cutting)	3	0		26JAN04A	06FEB04A	



Start Date	01MAR94
Finish Date	21FEB05
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Run Date	27FEB04 14:12

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North Lobe Dredging
Final Schedule

NORTH LOBE DREDGING
FL-North Lobe Dredging

Date	Revision	Checked	Approved

H

Appendix H

Field Change Notification Log

TETRA TECH FW, INC.

Field Change Notification Log
for a specific job number

10/14/2004

NBH T.O.#24 - Construction

FCN No.	FCN Description	Status Code	Date	FCN Value	Remarks
N1	**North Lobe Dredging H.O. Support**				
FCN24071	NL Procurements	CLO	5/30/2003	$6,000	Closed. Funded in MOD 2415. Request authorization to begin procurements for the North lobe Dredging Subcontractor and Bathymetric survey of the North Lobe Dredge Area.
FCN24092	NL Water Treatment/Testing	CLO	9/25/2003	$21,809	North Lobe Temp. Water Treatment Testing. 11/24/03 - This FCN will be closed when RFP#95 is fully funded. 12/17/03 Closed - Rec'd Funding Mod 2418.
FCN24101	Additional Analysis	CLO	10/23/2003	$16,000	Additional 46 samples to be analyzed for NOAA PCB congeners, due to sloughing of sediments into the dredge area. 11/24/03 - This FCN will be closed when RFP#95 is fully funded. 12/17/03 Closed - Rec'd Funding Mod 2418.
FCN24120	Compressed gas cylinders	CLO	2/24/2004	$750	Closed. Gas cylinders were found in the scows at the DDA during off loading operations. We have been able to identify five of the cylinders. It appears that there are two completely 'unknown' cylinders. Need to identify and profile for disposal.
		Job Subtotal:		$44,559	
N2					
FCN24085	NLD Qty. Change and Area F Opt Del.	CLO	8/21/2003		Dredging quantities have increased and Area F optional items have been deleted. CLOSED 11/24/03 - This FCN was issued for documentation purposes only - no further action is required.
FCN24102	Additional Dredging/Conf. Sampling	CLO	10/30/2003	$38,477	Confirmatory sampling shows sample points C007-4, and C007-6 with readings above the cleanup goals. 11/24/03 - This FCN will be closed when RFP#95 is fully funded. 12/17/03 Closed - Rec'd Funding Mod 2418.
FCN24109	Standby Time	APP	12/19/2003	$97,845	Standby rate for North Lobe dredging
FCN24114	Steel Debris Removal	APP	1/21/2004	$22,971	During the preparation of the North Lobe Dredging work plan and estimate, it was not anticipated that the steel debris removed from the North Lobe Drege area would need to be sized down in order to leave in the DDA. It was decided during the negotiations of the North Lobe work plan and estimate that the capping of the DDA would be left out of the budget and addressed in a separate mod once the dreding was completed and the scope was better identified
FCN24116	Quantity Calculations	APP	1/29/2004	$5,676	USACE requests we have Maxymillian's Hydrographic Survey Subcontractor perform quantity take off's that the specs call for as the government's responsibility.
		Job Subtotal:		$164,969	
		Total of FCNs Submitted		$209,528	

Status Code Legend OPN = FCN Opened But Not Yet Submitted NEW = New FCN Submittal-Approval Pending APP = FCN Submittal Approved (Not Negotiated/Funded) CLO = FCN Negotiated ,Funded E = Disapproved

Appendix I

List of Equipment with Decontamination Certificates

NORTH LOBE EQUIPMENT LOG

Equipment	Serial #	Machine ID #	Mobilized	Demobilized	Decon Cert
Krupps Crane KMK 5110 (CRS)	51100904	#125	08/18/03	08/18/03	NA-Clean
(5) Shugart Sectional Barges			08/18/03	12/22/03	12/18.03
(6) Micro-Scows			08/18/03	12/23/03	12/17/03
CAT 416 Back-Hoe (TtFW)		# 58	08/20/03	01/22/04	NA-Clean
Kobelco 912 Long Arm Excavator		MT # 66	08/21/03		02/12/04
CAT 345 Excavator w/ Clamshell		MT # 68	08/26/03	11/11/03	11/10/03
Dredge Barge Diesel Powered Spud Winch			08/26/03	11/11/03 (w/barge)	11/11/03 (w/barge)
Crest 20' Pontoon Boat			08/26/03	12/23/03	NA-Clean
CAT 980 Loader	A003912	MT #35	08/28/03	11/20/03	11/19/03
Red Work Boat - Scow Barge Tug (Roy)			08/28/03	12/22/03	NA-Clean
Dredge Barge w/ Hopper (X ASR 1) (Roy)			08/28/03	11/11/03	11/11/03
Offloading Barge (Will S.) (Sterling Equip.)			08/28/03	11/23/03	11/18/03
DynaPrime 3494 6" Diesel Pump			09/08/03	10/15/03	10/08/03
CAT 235 Excavator	K5AF013634*	MT # 69	09/17/03	12/02/03	11/21/03
Extech Screener & Conveyor			09/17/03	1/19/2004	01/15/04
Extech Slurry Tank			09/17/03	02/03/04	01/21/04
CAT XQ 350 KW Generator			09/17/03	11/25/03	11/21/03
10" Hydraulic Slurry Pump			09/17/03	12/18/03	11/21/03
Miller 251 Welder			09/23/03	11/06/03	NA-Clean
Godwin 6" Diesel Pump		# 4	09/24/03	11/25/03	11/24/03
Gorman Rupp 6" Diesel Pump		# 3	09/24/03	12/18/03	11/24/03
Daewoo Solar 220 Series II Excavator		# 57	09/29/03	10/29/03	10/27/03
Iszley H-1500C Excavator (Roy)	H78400		11/11/03	11/11/03	NA-Clean
CAT 235 Excavator w/ shear attachment			01/26/04	02/10/04	02/09/04
Steel Plates from barges			NA	12/29/03	11/18/03
Extech Magnet			NA	12/29/2003	12/19/03
Environmental clamshell Bucket - (Spare)			NA	10/15/03	09/11/03
Rake Attachment for Kobelco 912			NA		12/19/03
Honda 5.5 - 3" Trash Pump		# 430	NA	10/15/03	10/15/03
Honda 4.0 - 2" Trash Pump			NA	10/15/03	10/15/03
(2) Honda 3" Trash Pumps			NA	01/12/04	11/21/03
(1) Honda 2" Trash Pump			NA	01/12/04	11/21/03
(3) secs. of 6" pipe for 6" DynaPrime pump			NA	10/15/03	10/15/03
3" pipe & fire hose for 3" Honda pump			NA	10/15/03	10/15/03
2" pipe & fire hose for 2" Honda pump			NA	10/15/03	10/15/03
Skid Pan			NA	12/23/03	12/19/03
Concrete Blocks from Dredge Barge			NA		
All HDPE pipe & other misc. piping			NA	01/08/04	01/08/04

Appendix J

Final Government Acceptance Inspections

October 29, 2004

Final-Final Government Acceptance Inspection
New Bedford Harbor Superfund Site
North Lobe Dredging Project

A Final-Final Government Acceptance Inspection was completed for the North Lobe Dredging Project based on the submittal of As-Built Conditions of the Debris Disposal Area on October 29, 2004.

It was determined that the North Lobe Dredging Project would be considered complete and work satisfactorily accepted by TtFW and USACE.

Signatures indicate concurrence that the above verbiage is true and accurate.

George M. Willant (TtFW Project Manager) 10/29/04

Chris Turek (USACE Project Engineer): Christopher J Turek

December 15, 2003

FINAL GOVERNMENT ACCEPTANCE INSPECTION
New Bedford Harbor Superfund Site
North Lobe Dredging Project

A Final Government Acceptance Inspection was completed for the Dredging portion of the North Lobe Dredging Project based on the information of the Batheymetric Survey submitted to TtFWI and USACE on December 10, 2003 for all the Dredge areas at the North Lobe Project.

It was determined that the North Lobe Dredging Project would be considered complete and work satisfactorily accepted by TtFWI and USACE when the following tasks are completed:

1. Final As-Built drawing of the DDA.
2. All equipment and miscellaneous materials around the Sawyer Street complex are demobed from the site.
3. All former work areas at the Sawyer Street Site are completely cleaned and returned to the same condition which they were prior to any of the work for the North Lobe Dredging Project.

Signatures indicate that the first paragraph is completed and the itemized will be completed later.

John Fusegni (TtFWI CQSM) Sgt M Miller for John Fusegni

Chris Turek (USACE Construction Rep) Christopher J Turek 12/17/03

K

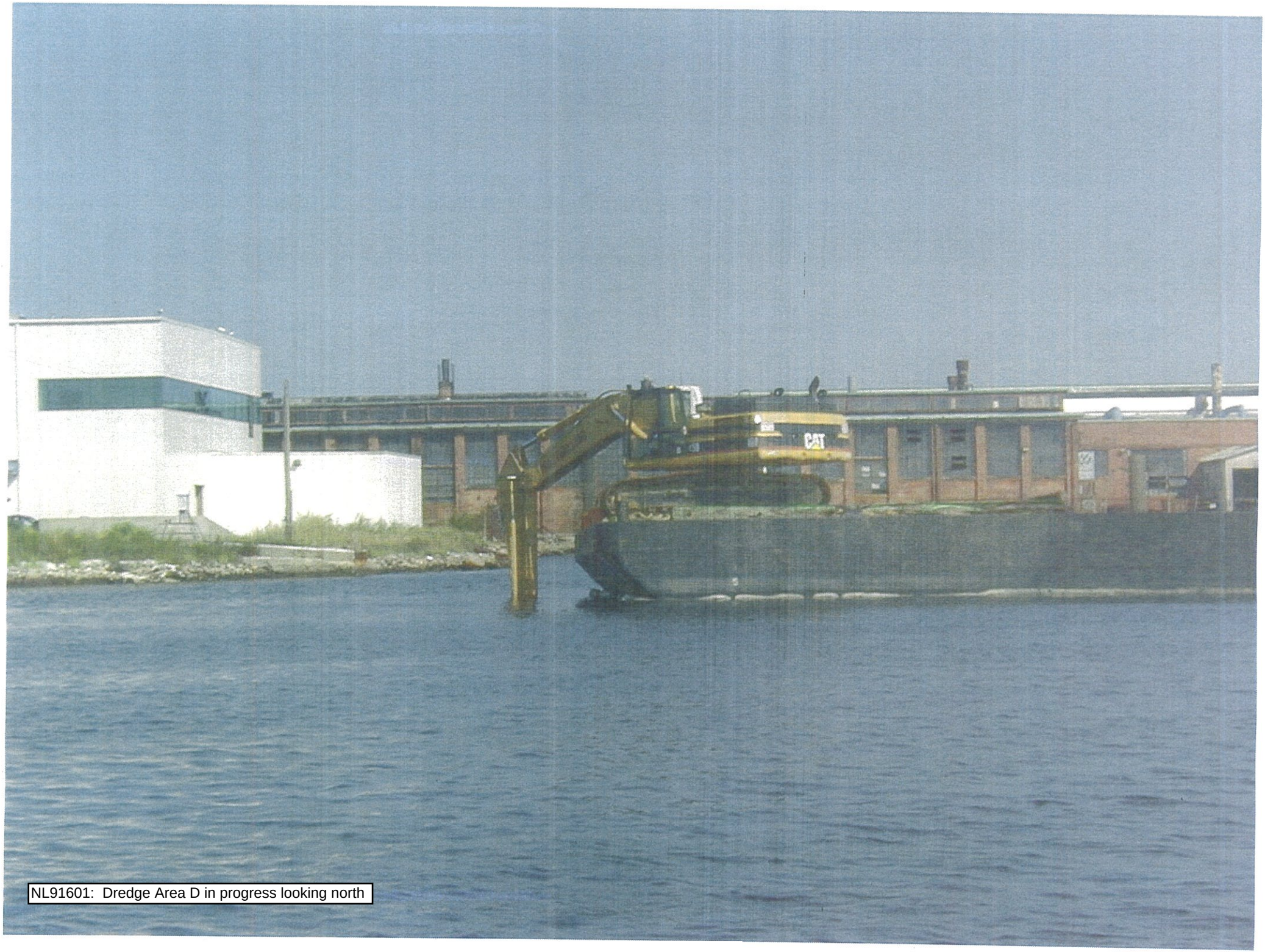
Appendix K

Project Photographs

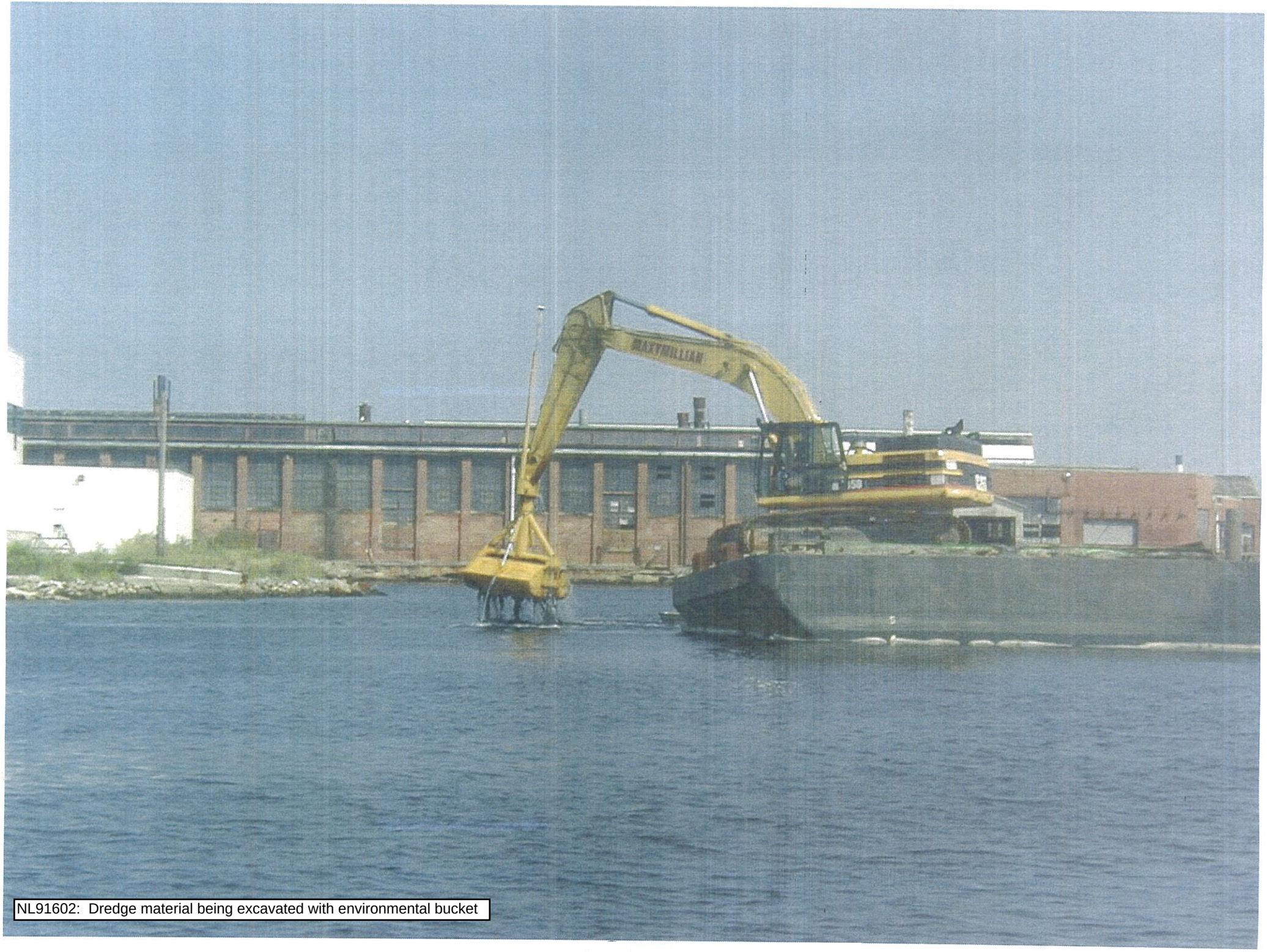
NEW BEDFORD HARBOR PHOTOGRAPHIC LOG

PROJECT: North Lobe Dredging

PHOTO #	DATE	TAKEN BY	PHOTO DESCRIPTION
6-9sept03-sawyerst.jpg	9/6/2003		Barge unloading at Sawyer Street
7-9sept09-sawyerst.jpg	9/7/2003		Closeup of barge unloading
8-9903-sawyerst.jpg	9/8/2003		Barge unloading
NL91601	9/16/2003	AC	Dredge Area D in progress looking north
NL91602	9/16/2003	AC	Dredge material excavated with environmental bucket
NL91603	9/16/2003	AC	Placement of dredge material in hopper barge
NL92301	9/23/2003	AC	Dredging Area D
NL92302	9/23/2003	AC	Dredging Area D
NL92303	9/23/2003	AC	Pushing scow to DDA



NL91601: Dredge Area D in progress looking north



NL91602: Dredge material being excavated with environmental bucket

NL91603: Placement of dredge material in hopper barge

NL92301: Dredging Area D

NL92302: Dredging Area D

NL92303: Pushing SCOW to DDA

Appendix L

Confirmatory Sample Results

Appendix L.1

Confirmatory Sampling Results Report

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE (Read instructions on reverse side prior to initiating this form)	DATE	TRANSMITTAL NO:
	1/26/2004	N1.02.06.01

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by the Contractor)

TO:	FROM:	CONTRACT NO:	CHECK ONE:
U.S. Army Corps of Engineers - New Bedford Resident Office 103 Sawyer Street New Bedford, MA 02746 Attention: Mr. Maurice Beaudoin	Tetra Tech, FW New Bedford Harbor Superfund Site Project Office 103 Sawyer Street New Bedford, MA 02746	DACW33-94-D-0002	X THIS IS A NEW TRANSMITTAL __ THIS IS A RESUBMITTAL OF TRANSMITTAL _____

SPECIFICATION SECTION NO: (Cover only one section with each transmittal) NA

PROJECT TITLE AND LOCATION: New Bedford Harbor Superfund Site OU#1 and OU#2 Remedial Design and Remedial Action

ITEM NO. a.	DESCRIPTION OF ITEM SUBMITTED (Type, size, model number, etc.) b.	MFG. OR CONTR. CAT. CURVE DRAWING OR BROCHURE NO. (See instruction No. 8) c.	NO. OF COPIES d.	CONTRACT REFERENCE DOCUMENT SPEC. PARA. NO. e.	CONTRACT REFERENCE DOCUMENT DRAWING SHEET NO. f.	FOR CONTRACTOR USE CODE g.	VARIATION (See instruction No. 6) h.	FOR CE USE CODE i.
1	North Lobe Confirmatory Sample Results	na	1	na	na	GA	na	A

CF: FWEC
D. DICKERSON
J. BROWN
G. MORIN
B. SIMEONE
M. KOENIG
NBRO

REMARKS

TtFW Document #:

Distribution:

D. Dickerson	M. Beaudoin
J. Brown	C. Turek
G. Morin	R. Francisco
R. Simeone	Boston File
M. Koenig	NBH File

14.4.3

I certify that the above submitted items have been reviewed in detail and correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

JOHN FUSEGNI

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE
	Maurice Beaudoin P.E. COR RESIDENT ENGINEER, NBRO CONTRACTING OFFICER'S REPRESENTATIVE	3/1/04

FORM 4025, MAY 91 (ER 415-1-10) EDITION OF AUG 89 IS OBSOLETE (Proponent: CEMP-CE)

USACE CONTRACT NO. DACW33-94-D-0002
TASK ORDER NO. 024
TOTAL ENVIRONMENTAL RESTORATION CONTRACT

NORTH LOBE DREDGING
CONFIRMATORY SAMPLE RESULTS
NEW BEDFORD HARBOR SUPERFUND SITE
New Bedford, Massachusetts

January 2004

Prepared by

Tetra Tech FW, Inc.
133 Federal Street
Boston, Massachusetts 02110

2003-024-0494
1/16/04

USACE CONTRACT NO. DACW33-94-D-0002
TASK ORDER NO. 0247
TOTAL ENVIRONMENTAL RESTORATION CONTRACT

NORTH LOBE DREDGING
CONFIRMATORY SAMPLE RESULTS
NEW BEDFORD HARBOR SUPERFUND SITE
New Bedford, Massachusetts

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Prepared for

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1.0 INTRODUCTION

Tetra Tech FW, Inc. (TtFW) prepared this report to summarize results of the confirmatory sediment samples collected from the four dredge areas during the North Lobe Dredging Program. Dredging and removal of contaminated sediments in the harbor near the north lobe was intended to achieve the ROD cleanup goal of PCB concentrations of 50 ppm or less in the remaining sediments. Confirmatory sampling was conducted by TtFW to assist USACE in determining whether or not the dredging of sediments in the four dredge areas located at the north lobe achieved the required goals.

2.0 RESULTS AND DOCUMENT ORGANIZATION

This report provides sediment sample results from the North Lobe Dredging Program in usable formats for the various data users on this project. During the remediation program, the results were provided to the field construction team periodically as available. Based on these results, USACE proceeded with evaluation tasks including determining whether supplemental dredging in a specific area was needed to meet the clean-up target. A summary of the organization of this document is given below.

A brief introduction to this document is included in Section 1.0. Section 2.0 (this Section) discusses the overall format of the report and identifies the contents of the various appendices. Section 3.0 summarizes the sample collection procedures for the confirmatory samples as well as the associated split samples. Section 4.0 discusses the extraction and analytical methods employed by the laboratories. Section 5.0 summarizes the quality control (QC) measurements applied to the PCB analytical results, and provides comparisons of split sample results from different laboratories and analytical methods. The total PCB results for the sediment samples collected during this remediation are presented in Appendix A. Site figures showing the locations sampled are presented in Appendix B. The individual congener and homologue results for the confirmatory samples are presented in Appendix C.

3.0 SAMPLE COLLECTION AND PROCEDURE FOR SPLITTING SAMPLES

During the North Lobe Dredging Program, approximately 130 confirmatory samples were collected at locations as close to the location proposed in the Field Sampling Plan (FSP) as practical. At each sampling location, samples were collected with a pushcore or vibracore at 6-inch intervals to up to a depth of 3.0 feet below the mudline. After collection, samples were homogenized prior to being placed in pre-cleaned sample containers. Depending on field needs, samples were sent off-site to the primary laboratory (Severn Trent Laboratories) for 18 NOAA congener analysis.

The north lobe dredging project was unique in that the dredging was intended to remediate contaminated sediments at depth below a layer of "clean" (<50 ppm) material. Based on characterization sampling it was determined that the contaminated material was sporadically distributed in relatively small areas. The project was also constrained by disposal space limitations (the Sawyer Street CDF and DDA) necessitating the smallest removal volume practical. The resulting plan was to dredge relatively deeply in the small dredge footprints shown on Figure B-1. The sediments in this area are very soft and easily sloughed into the deep dredge areas making selection of samples representative of the post-dredge surface difficult. Sampling locations were identified in the project Field Sampling Plan (FSP), as approved by USACE. The bathymetric survey information along with the GPS data were used to determine whether a sample at a certain depth was analyzed or archived.

Of the approximately 130 samples that were collected, a total of 86 samples were analyzed for congeners. For QA/QC purposes, 6 of the approximately 130 samples were split for total PCB homologue group analysis and 5 split samples were sent to the USACE Quality Assurance (QA) laboratory for 18 NOAA congener analysis.

4.0 ANALYTICAL METHODOLOGY

Analytical methodology was performed according to the project Quality Assurance Project Plan (QAPP) with sample data reported in Appendices A and C. Based on earlier sediment characterization and confirmatory sampling programs documented in the associated reports and technical memoranda regarding correlation studies, NOAA congener analysis (EPA Method 8082) was selected as the primary analysis for PCBs during this program. Earlier studies recommended a linear regression equation (Sum of NOAA Congeners*2.6+0 = total PCBs) to calculate total PCBs equivalent to total homologue groups in harbor sediment. A total of 86 samples were analyzed for congeners by Severn Trent Laboratories (STL). For the purpose of subsequent method comparison and quality control, approximately 7.5% of the samples (6 samples) were split for total homologue group analysis conducted by Axys Analytical Services (Axys). In addition, 5% of the samples (5 samples) were sent to the USACE QA laboratory (Phillips Analytical Services) for NOAA congener analysis. The extraction and analytical methods are discussed in the following subsections. Results for split samples are reported in Table 5-1.

4.1 Extraction Methods

Soxhlet Extraction (for 18 NOAA congener and total homologue group analyses conducted by STL, Phillip, and Axys) (EPA Method 3540) – Samples are extracted using Soxhlet glassware designed to percolate heated solvent through the sample over an 18 hour period. The resulting solvent extract is concentrated, cleaned, and analyzed using the analytical methods described below.

4.2 Analytical Methods

Congener Analysis (for 18 NOAA congener analysis conducted by STL and Phillip) (EPA Method 8082) – Congener analysis uses a gas chromatography/electron capture detector (GC/ECD) that identifies selected individual congeners (18 NOAA congeners) by retention time with second column confirmation for both identification and quantification. Quantification is performed by external standard technique. This method is subject to potential false positives from target and non-target analytes. In general, the effects of potential false positives on the total PCB concentration are minimized by the use of second column confirmation (the lower of the two values is reported). The congener method is more cost effective and easier to implement than the homologue method (see below). Accordingly, this method has been used as the primary analytical method for the NE TERC pre-design and confirmatory sampling efforts conducted to date.

Total Homologue Groups (for total homologue group analysis conducted by Axys) (EPA Method 8270C – SIM) – This method uses gas chromatography (GC) in combination with low-resolution mass spectrometry (LRMS) to selectively identify and quantify PCB groups based on their specific mass. Results are reported for each homologue group (i.e., total mono through deca PCBs). The total homologue group method was expected to provide the most accurate measure of total PCBs as it reports PCBs by mass with minimal potential for falsely high data or missed compounds. The drawbacks to this method are that it requires highly specialized equipment, software, and highly trained analysts. Accordingly, it can be a relatively expensive method and is difficult to obtain rapid turnaround.

5.0 DATA REVIEW AND QC RESULTS

Data collected during this program were used by USACE to evaluate the effectiveness of the remediation with respect to achieving the target ROD clean-up goals. Sampling, analysis, data validation, and split sample QC protocols were applied by TtFW in accordance with the project QAPP to ensure that the data were representative of site conditions, comparable with previous and future data to be generated, and accurate relative to project clean-up goals.

5.1 QC Review Approach

The sediment PCB results from laboratory analyses were reviewed for compliance with analytical QC criteria to determine the acceptability of the overall data set and individual data points for use in achieving project objectives.

Analytical data for the confirmatory samples were given a "checklist" review for compliance with QC criteria. QC exceedances were reported using the validation reports generated by the loading application for the New Bedford Harbor Oracle Database and a brief "spot check" by the reviewer. This review was based on the Region 1, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996 criteria, and was intended to identify QC exceedances that may significantly affect the reported sample results. This limited QC review was intended to provide information on the quality of the data in more detail than an EPA Region I Tier I validation, but was not intended to provide as much detail as a Tier II validation. The database is set up to check holding time dates, spike recoveries, and other criteria that are found on the Tier I checklist. This data review included an evaluation of the following QC measures:

Data Completeness
Sample Preservation and Technical Holding Times
Blank Analysis
Field Duplicates
Matrix Spike/Matrix Spike Duplicate
Surrogate Compounds
Laboratory Control Sample

In addition to the "checklist" review, approximately 10 percent of the data were selected for a more in-depth Tier II data validation. The Tier II data validation was performed on 1 data package randomly selected from the total of 10 packages submitted by the primary laboratory (STL). The following QC criteria were evaluated: data completeness, holding times, initial calibrations, continuing calibrations, method blanks, laboratory control samples, surrogate recoveries, matrix spike/matrix spike duplicates (MS/MSD), field duplicates, dual column confirmation precision, compound identification, and compound quantification.

Memoranda and worksheets from the checklist review and Tier II data validation are kept on file at TtFW.

The "check-list" data review and the Tier II data validation performed during this program indicated that, in general, the data from the primary laboratory (STL) were within the QC acceptance limits specified by the project QAPP and the laboratory SOP. Some exceedances from the QC limits for MS/MSDs were identified in several data packages. These QC exceedances were probably due to sediment matrix complexity and relatively high PCB concentrations in the native samples, and did not appear to be of a magnitude that would affect the usability of the data relative to their intended use.

5.2 Split Sample Results

As part of the QC process, a total of 6 samples were split for total PCB homologue group analysis by Axys Analytical Services during this sampling program. An additional 5 split samples were sent to USACE QA laboratory for 18 NOAA congener analysis. Table 5-1 presents the results for these split samples and the relative percent differences (RPD) between these results and the corresponding sample data from primary laboratory analysis.

Table 5-1
Split Sample Results and Comparison
North Lobe Dredging Confirmatory Sampling

Sample ID	Primary Lab Result[1] (STL) Total PCBs (ppm)	QA Lab Result[1] (Phillip) Total PCBs (ppm)	Total Homologue Group[2] (Axys) Total PCBs (ppm)	RPD[3] (%)
C007-001-0.0-0.5	2.8	2.5		11%
C009-001D-1.0-1.5	0.0047 U	0.044 U		OK
C008-001-0.0-0.5	48	43		11%
C008-003-1.0-1.5	20	29		-37%
C008-008-0.5-1.0	18	18		0%
C008-002-1.0-1.5	0.0044 U		0.011	OK
C008-003-0.5-1.0	60		57	5%
C008-004-0.5-1.0	32		33	-3%
C008-007-0.0-0.5	56		71	-24%
C007-002-1.5-2.0	0.0078		0.015	-63%
C007-006-1.5-2.0	180		270	40%
Total Number of Comparisons		5	6	
Number of Comparisons In Agreement[4]		5	6	
Percentage of Comparisons In Agreement		100%	100%	

Notes:
[1] Analysis for 18 NOAA congeners. Total PCBs = Sum of detected Congeners*2.6 + 0.
[2] Analysis for total PCB homologue groups. Total PCBs = Sum of detected Homologue Groups.
[3] RPD between Primary Lab Result and QA Lab Result:
RPD = (Primary Lab Result - QA Lab Result) / ((Primary Lab Result + QA Lab Result) / 2) * 100
RPD between Primary Lab Result and Total Homologue Group Result:
RPD = (Primary Lab Result - Total Homologue Group) / ((Primary Lab Result + Total Homologue Group) / 2) * 100
If one result = U and the other < 0.5 ppm, the comparison is considered "OK".
[4] The comparison is considered "In Agreement" if RPD < ± 75%, or RPD = OK.

The established acceptance criteria for the split sample results defined in the project Quality Assurance Project Plan (QAPP) is that 75% of the comparisons should meet ± 75% RPD. As shown in Table 5-1, the results from the primary laboratory (STL) for the split samples agree well with the results from the QA laboratory and homologue analysis. Comparisons for the split sample meet the ±75% RPD specified by the QAPP. These results indicate that the data from the primary laboratory are usable for the project.

New Bedford Harbor Superfund Site
New Bedford, Massachusetts
Total Cumulative Sediment Sample Report

This Report includes total PCB results for sediment samples taken during the North Lobe Dredging (NLD) Confirmatory Sampling Program at New Bedford Harbor

Units
Reporting Units for congeners and homologues are in ppm (mg/kg dry weight).

On the Total PCB Results Table, results are reported to two significant figures and then rounded to two decimal places for ease of presentation. Note this conversion reports results less than 0.01 as 0.01. The actual results (sometimes to 4 decimal places) are maintained in the database.

On the Individual PCB Results Table, results are reported to two significant figures.

Total PCB Values are reported as the sum of detected NOAA congeners used in the regression equation (Sum of NOAA Congeners*2.6 +0 = total PCBs) for the North Lobe Dredging Confirmatory samples.

Sample ID Description
Each confirmatory sample collected was assigned a unique sample identification:

CAAA-BBB-D-EE-top depth-bottom depth

Where,

C	=	Confirmatory Sample Prefix
AAA	=	CDA Identifier (007 to 010)
BBB	=	Sample Station Identifier (sequential numbering)
D	=	Additional Sample Station Identifier (optional, alphabets A through E denote grabs within a composite)
EE	=	Dredge Pass Identifier for the Sample Station (sequential two digits numbers. Sample IDs without a Dredge Pass Identifier are assumed with Dredge Pass 01).
top depth	=	numeric top depth of sample in feet (') (to one decimal place)
bottom depth	=	numeric bottom depth of sample in feet (') (to one decimal place)

REP – Field Replicate

Qualifier (Qual) Definitions

U	=	Compound not detected above given reporting limit.
P	=	Greater than 25% difference for detected concentrations between the two GC columns.
ZZ	=	Results for BZ#105 were taken from a specific column only because peaks for the congener from the other column had an "unintegratable shoulder".
D	=	Concentrations identified from analysis of the sample at a secondary dilution.

Remed*	=	Remediated (Y or left blank)
Y	=	Material that the sample represents was subsequently removed during remediation efforts. Sample results no longer reflect actual field conditions.

Samples corresponding to Dredge Areas

Samples with CDA Identifier C007 were collected from NLD Dredge Area C
Samples with CDA Identifier C008 were collected from NLD Dredge Area D
Samples with CDA Identifier C009 were collected from NLD Dredge Area A
Samples with CDA Identifier C010 were collected from NLD Dredge Area B

Appendix A
Total PCB Results for Confirmatory Samples (Cumulative Summary of Available Data)

NEW BEDFORD HARBOR
NORTH LOBE DREDGING CONFIRMATORY SAMPLES
TOTAL PCB RESULTS (MG/KG)

Study ID	Sample ID	Station	Northing	Easting	Start Date	Depth Top	Depth Bot	Total PCB	Qual	Soil Type	Soil Color	Source	Remed*	Comments
NLD	C007-001-0.0-0.5	C007-001	2697794	814320	10/20/2003	0.	0.5	2.80				STL		
NLD	C007-001-0.5-1.0	C007-001	2697794	814320	10/20/2003	0.5	1.	0.73				STL		
NLD	C007-002-0.0-0.5	C007-002	2697756	814262	10/20/2003	0.	0.5	67.00				STL		
NLD	C007-002-0.5-1.0	C007-002	2697756	814262	10/20/2003	0.5	1.	4.20				STL		
NLD	C007-002-1.0-1.5	C007-002	2697756	814262	10/20/2003	1.	1.5	0.12				STL		
NLD	C007-002-1.5-2.0	C007-002	2697756	814262	10/20/2003	1.5	2.	0.01				STL		
NLD	C007-002-2.0-2.5	C007-002	2697756	814262	10/20/2003	2.	2.5	0.01				STL		
NLD	C007-003-0.0-0.5	C007-003	2697752	814305	10/20/2003	0.	0.5	2.80				STL		
NLD	C007-004-0.0-0.5	C007-004	2697726	814261	10/20/2003	0.	0.5	29.00				STL	Y	
NLD	C007-004-0.5-1.0	C007-004	2697726	814261	10/20/2003	0.5	1.	38.00				STL	Y	
NLD	C007-004-1.0-1.5	C007-004	2697726	814261	10/20/2003	1.	1.5	51.00				STL	Y	
NLD	C007-004-1.5-2.0	C007-004	2697726	814261	10/20/2003	1.5	2.	170.00				STL	Y	
NLD	C007-004-1.5-2.0REP	C007-004	2697726	814261	10/20/2003	1.5	2.	160.00				STL	Y	
NLD	C007-005-0.0-0.5	C007-005	2697723	814310	10/20/2003	0.	0.5	0.26				STL		
NLD	C007-006-0.0-0.5	C007-006	2697688	814257	10/20/2003	0.	0.5	60.00				STL	Y	
NLD	C007-006-0.5-1.0	C007-006	2697688	814257	10/20/2003	0.5	1.	240.00				STL	Y	
NLD	C007-006-1.0-1.5	C007-006	2697688	814257	10/20/2003	1.	1.5	330.00				STL	Y	
NLD	C007-006-1.5-2.0	C007-006	2697688	814257	10/20/2003	1.5	2.	180.00				STL	Y	
NLD	C007-006-2.0-2.5	C007-006	2697688	814257	10/20/2003	2.	2.5	24.00				STL	Y	
NLD	C007-007-0.0-0.5	C007-007	2697692	814304	10/20/2003	0.	0.5	0.02	U			STL		
NLD	C007-007-0.5-1.0	C007-007	2697692	814304	10/20/2003	0.5	1.	0.02	U			STL		
NLD	C007-008-0.0-0.5	C007-008	2697711	814358	10/20/2003	0.	0.5	0.06				STL		
NLD	C007-008-0.5-1.0	C007-008	2697711	814358	10/20/2003	0.5	1.	0.016	U			STL		
NLD	C007-009-0.0-0.5	C007-009	2697665	814275	10/20/2003	0.	0.5	16.00				STL		
NLD	C007-009-0.0-0.5REP	C007-009	2697665	814275	10/20/2003	0.	0.5	16.00				STL		
NLD	C007-009-0.5-1.0	C007-009	2697665	814275	10/20/2003	0.5	1.	2.40				STL		
NLD	C007-009-1.0-1.5	C007-009	2697665	814275	10/20/2003	1.	1.5	1.40				STL		
NLD	C007-010-02-0.0-0.5	C007-010	2697716	814266	11/25/2003	0.	0.5	0.05				STL		
NLD	C007-010-02-0.5-1.0	C007-010	2697716	814266	11/25/2003	0.5	1.	0.01	U			STL		
NLD	C007-011-02-0.0-0.5	C007-011	2697680	814265	11/25/2003	0.	0.5	0.5				STL		
NLD	C007-011-02-0.5-1.0	C007-011	2697680	814265	11/25/2003	0.5	1.	0.01				STL		
NLD	C007-011-02-1.0-1.5	C007-011	2697680	814265	11/25/2003	1.	1.5	0.01	U			STL		
NLD	C008-001-0.0-0.5	C008-001	2697554	814163	10/17/2003	0.	0.5	48.00				STL		
NLD	C008-001-0.5-1.0	C008-001	2697554	814163	10/17/2003	0.5	1.	0.11				STL		
NLD	C008-001-1.0-1.5	C008-001	2697554	814163	10/17/2003	1.	1.5	0.01	U			STL		
NLD	C008-001-A-1.5-2.0	C008-001-A	2697571	814163	10/07/2003	1.5	2.	270.00				STL		
NLD	C008-002-0.0-0.5	C008-002	2697559	814212	10/17/2003	0.	0.5	5.40				STL		
NLD	C008-002-0.5-1.0	C008-002	2697559	814212	10/17/2003	0.5	1.	0.13				STL		
NLD	C008-002-1.0-1.5	C008-002	2697559	814212	10/17/2003	1.	1.5	0.01	U			STL		
NLD	C008-002-1.5-2.0	C008-002	2697559	814212	10/17/2003	1.5	2.	0.005				STL		

NEW BEDFORD HARBOR
NORTH LOBE DREDGING CONFIRMATORY SAMPLES
TOTAL PCB RESULTS (MG/KG)

Study ID	Sample ID	Station	Northing	Easting	Start Date	Depth Top	Depth Bot	Total PCB	Qual	Soil Type	Soil Color	Source	Remed*	Comments
NLD	C008-003-0.0-0.5	C008-003	2697560	814260	10/17/2003	0.	0.5	69.00				STL		
NLD	C008-003-0.5-1.0	C008-003	2697560	814260	10/17/2003	0.5	1.	60.00				STL		
NLD	C008-003-1.0-1.5	C008-003	2697560	814260	10/17/2003	1.	1.5	20.00				STL		
NLD	C008-003-1.5-2.0	C008-003	2697560	814260	10/17/2003	1.5	2.	17.00				STL		
NLD	C008-004-0 0-0.5	C008-004	2697561	814310	10/17/2003	0.	0.5	34.00				STL		
NLD	C008-004-0.0-0.5REP	C008-004	2697561	814310	10/17/2003	0.	0.5	36.00				STL		
NLD	C008-004-0.5-1.0	C008-004	2697561	814310	10/17/2003	0.5	1.	32.00				STL		
NLD	C008-004-1.0-1.5	C008-004	2697561	814310	10/17/2003	1.	1.5	2.30				STL		
NLD	C008-004-1.5-2.0	C008-004	2697561	814310	10/17/2003	1.5	2.	0.31				STL		
NLD	C008-004-A-1.0-1.5	C008-004-A	2697560	814317	10/07/2003	1.	1.5	78.00				STL		
NLD	C008-005-1.0-1.5	C008-005	2697514	814142	10/17/2003	1.	1.5	9.50				STL		
NLD	C008-005-1.5-2.0	C008-005	2697514	814142	10/17/2003	1.5	2.	3.0				STL		
NLD	C008-005-A-0.0-0.5	C008-005-A	2697521	814149	10/07/2003	0.	0.5	1.50				STL		
NLD	C008-006-0.0-0.5	C008-006	2697522	814192	10/17/2003	0.	0.5	11.00				STL		
NLD	C008-006-A-0.5-1.0	C008-006-A	2697522	814194	10/07/2003	0.5	1.	28.00				STL		
NLD	C008-007-0.0-0.5	C008-007	2697510	814240	10/17/2003	0.	0.5	56.00				STL		
NLD	C008-007-0.5-1.0	C008-007	2697510	814240	10/17/2003	0.5	1.	1.70				STL		
NLD	C008-007-A-1.0-1.5	C008-007-A	2697516	814235	10/07/2003	1.	1.5	0.01	U			STL		
NLD	C008-008-0.0-0.5	C008-008	2697515	814289	10/17/2003	0.	0.5	54.00				STL		
NLD	C008-008-0.5-1.0	C008-008	2697515	814289	10/17/2003	0.5	1.	18.00				STL		
NLD	C008-008-1.0-1.5	C008-008	2697515	814289	10/17/2003	1.	1.5	0.01	U			STL		
NLD	C008-008-1.5-2.0	C008-008	2697515	814289	10/17/2003	1.5	2.	0.01	U			STL		
NLD	C008-008-1.5-2.0REP	C008-008	2697515	814289	10/17/2003	1.5	2.	0.01	U			STL		
NLD	C008-009-0.0-0.5	C008-009	2697466	814167	10/17/2003	0.	0.5	24.00				STL		
NLD	C008-009-A-0.5-1.0	C008-009-A	2697477	814171	10/07/2003	0.5	1.	0.15				STL		
NLD	C009-001A-0.0-0.5	C009-001A	2697341	814181	10/21/2003	0.	0.5	0.05				STL		
NLD	C009-001A-0.5-1.0	C009-001A	2697341	814181	10/21/2003	0.5	1.	0.01	U			STL		
NLD	C009-001A-1.0-1.5	C009-001A	2697341	814181	10/21/2003	1.	1.5	0.04				STL		
NLD	C009-001A-1.5-2.0	C009-001A	2697341	814181	10/21/2003	1.5	2.	0.02	U			STL		
NLD	C009-001B-0.0-0.5	C009-001B	2697343	814203	10/21/2003	0.	0.5	4.50				STL		
NLD	C009-001B-0.5-1.0	C009-001B	2697343	814203	10/21/2003	0.5	1.	0.02				STL		
NLD	C009-001B-1.0-1.5	C009-001B	2697343	814203	10/21/2003	1.	1.5	0.17				STL		
NLD	C009-001C-0.0-0.5	C009-001C	2697326	814193	10/21/2003	0.	0.5	0.54				STL		
NLD	C009-001D-0.0-0.5	C009-001D	2697304	814178	10/20/2003	0.	0.5	0.01	U			STL		
NLD	C009-001D-0.5-1.0	C009-001D	2697304	814178	10/20/2003	0.5	1.	0.26				STL		
NLD	C009-001D-1.0-1.5	C009-001D	2697304	814178	10/20/2003	1.	1.5	0.01	U			STL		
NLD	C009-001E-0.0-0.5	C009-001E	2697315	814198	10/21/2003	0.	0.5	11.00				STL		
NLD	C009-001E-0.5-1.0	C009-001E	2697315	814198	10/21/2003	0.5	1.	0.45				STL		
NLD	C010-001-01-.5-1.0	C010-001	2697308	814362	09/18/2003	0.5	1.	9.70				STL		**

NEW BEDFORD HARBOR
NORTH LOBE DREDGING CONFIRMATORY SAMPLES
TOTAL PCB RESULTS (MG/KG)

Study ID	Sample ID	Station	Northing	Easting	Start Date	Depth Top	Depth Bot	Total PCB	Qual	Soil Type	Soil Color	Source	Remed*	Comments
NLD	C010-001-01-.5-1.0REP	C010-001	2697308	814362	09/18/2003	0.5	1.	12.00				STL		**
NLD	C010-001A-0.0-0.5	C010-001A	2697328	814359	09/18/2003	0.	0.5	37.00				STL		
NLD	C010-001B-0.0-0.5	C010-001B	2697330	814374	09/18/2003	0.	0.5	32.00				STL		
NLD	C010-001C-0.0-0.5	C010-001C	2697307	814358	09/18/2003	0.	0.5	24.00				STL		
NLD	C010-001D-0.0-0.5	C010-001D	2697289	814349	09/18/2003	0.	0.5	5.20				STL		
NLD	C010-001E-0.0-0.5	C010-001E	2697286	814370	09/18/2003	0.	0.5	0.05				STL		
NLD	C010-001E-0.0-0.5REP	C010-001E	2697286	814370	09/18/2003	0.	0.5	0.06				STL		

Notes:

U = Result is non-detect
STL = Severn Trent Laboratories

** This sample is a composite of samples C010-001A-0.5-1.0, C010-001B-0.5-1.0, C010-001C-0.5-1.0, C010-001D-0.5-1.0, and C010-001E-0.5-1.0. The sample was composited according to the procedures described in the project Field Sampling Plan (FSP). The means of the Northings and Eastings for stations C010-001A, C010-001B, C010-001C, C010-001D, and C010-001E are used as the Northing and Easting for this sample.
The 0.0-0.5 feet samples of the five locations (C010-001A-0.0-0.5, C010-001B-0.0-0.5, C010-001C-0.0-0.5, C010-001D-0.0-0.5, and C010-001E-0.0-0.5) were later sent to the laboratory for analysis for individual sample results as shown in this table.

Appendix B
Figure B-1 North Lobe Dredging Proposed Dredge Areas and Actual Confirmatory Sampling Locations

814000 814100 814200 814300 814400 814500

2698000 2697900 2697800 2697700 2697600 2697500 2697400 2697300 2697200

C007-001
C007-002
C007-003
C007-004
C007-005
C007-008
C007-010
C007-006
C007-007
C007-011
C007-009

Dredge Area C

C008-001-A
C008-002-A
C008-003-A
C008-004
C008-001
C008-002
C008-003
C008-004-A
C008-005-A
C008-006-A
C008-007-A
C008-008-A
C008-005
C008-007
C008-008
C008-009-A
C008-009

Dredge Area D

a b c d e
Composite
C009-001
(a,b,c,d,e)

Dredge Area A

a b c d e
Composite
C010-001
(a,b,c,d,e)

Dredge Area B

814000 814100 814200 814300 814400 814500

- Confirmatory Sample Locations
- Topographic and Bathymetric Contours
- North Lobe Dredge Areas
- Buildings

N

0 50 100 Feet

TETRA TECH FW, INC

NEW BEDFORD HARBOR SUPERFUND SITE
BRISTOL COUNTY, MASSACHUSETTS

Figure B-1
North Lobe Dredging
Proposed Dredge Areas and
Actual Confirmatory Sampling Locations

DRAFT: DECEMBER 31, 2003

MA STATE PLANE
NAD 83 FEET
NGVD 29
1 FOOT CONTOUR INTERVAL

Appendix C
Table of North Lobe Dredging Confirmatory Sampling Congener and Homologue Group Results

Individual PCB Results

Station Id	C007-001				C007-002									
Samp Id	C007-001-0.0-0.5		C007-001-0.5-1.0		C007-002-0.0-0.5		C007-002-0.5-1 0		C007-002-1.0-1 5		C007-002-1 5-2 0		C007-002-2 0-2 5	
Start Date	10/20/03		10/20/03		10/20/03		10/20/03		10/20/03		10/20/03		10/20/03	
Northing	2,697,794		2,697,794		2,697,756		2,697,756		2,697,756		2,697,756		2 697 756	
Easting	814,320		814,320		814,262		814,262		814,262		814,262		814,262	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.016	P	0.005		0.72		0 052		0.003	P	0 002	U	0 002	U
2,2',5-TriCB (BZ-18)	0.058	P	0 015		2.2		0.13		0 007	P	0 002	U	0 002	U
2,4,4'-TriCB (BZ-28)	0.22		0.054		6 4		0 34		0 013		0 003		0 003	
2,2',3,5'-TetraCB (BZ-44)	0.06		0.015		2		0.11		0 003	P	0 002	U	0 002	U
2,2',5,5'-TetraCB (BZ-54)	0.12		0.032		2.8		0 17		0.007	P	0 002	U	0 002	U
2,3',4,4'-TetraCB (BZ-66)	0.14		0.036		3.5		0.19		0.005		0 002	U	0 002	U
2,2',4,5,5'-PentaCB (BZ-101)	0.12	P	0.033	P	2.4	P	0 16	P	0.003	P	0.002	U	0 002	U
2,3,3',4,4'-PentaCB (BZ-105)	0.037	ZZ	0.009	ZZ	0.69	ZZ	0.054	ZZ	0.003	U	0.002	U	0 002	U
2,3',4,4',5-PentaCB (BZ-118)	0 11		0.03		2		0.14		0.004	P	0 002	U	0 002	U
2,2',3,3',4,4'-HexaCB (BZ-128)	0.017		0.005		0.26		0.025		0.003	U	0 002	U	0 002	U
2,2',3,4,4',5'-HexaCB (BZ-138)	0.067		0.018		1.2		0.11		0.003	U	0 002	U	0 002	U
2,2',4,4',5,5'-HexaCB (BZ-153)	0.08	P	0.022	P	1 3	P	0 094	P	0.003	U	0 002	U	0 002	U
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.011	U	0.003		0.18	U	0 013		0.003	U	0.002	U	0.002	U
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.013		0.004		0.2		0.017		0.003	U	0.002	U	0 002	U
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.011	U	0.003	U	0.18	U	0.009	U	0.003	U	0 002	U	0 002	U
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.011	U	0.003	U	0.18	U	0.009	U	0.003	U	0 002	U	0 002	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.011	U	0.003	U	0.18	U	0 009	U	0.003	U	0 002	U	0 002	U
DecaCB - Congener (BZ-209)	0.011	U	0.003	U	0.18	U	0.009	U	0 003	U	0 002	U	0 002	U
Total CONG	1.1		0 28		26		1.6		0.045		0 003		0 003	
Sum of NOAA Congeners x 2.6 + 0	2.8		0.73		67		4.2		0 12		0 008		0 007	
Total MonoCB											0	U		
Total DiCB											0.001	U		
Total TriCB											0 004			
Total TetraCB											0.005			
Total PentaCB											0 005			
Total HexaCB											0 002			
Total HeptaCB											0	U		
Total OctaCB											0	U		
Total NonaCB											0	U		
Total DecaCB											0	U		
Total PCB Homs											0 015			
Total PCB	2.8		0.73		67		4.2		0.12		0.008		0 007	

Individual PCB Results

Station Id	C007-003		C007-004										C007-005	
Samp Id	C007-003-0.0-0.5		C007-004-0.0-0.5		C007-004-0.5-1.0		C007-004-1.0-1.5		C007-004-1.5-2.0		C007-004-1.5-2 0REP		C007-005-0 0-0 5	
Start Date	10/20/03		10/20/03		10/20/03		10/20/03		10/20/03		10/20/03		10/20/03	
Northing	2,697,752		2,697,726		2,697,726		2,697,726		2,697,726		2,697,726		2,697,723	
Easting	814,305		814,261		814,261		814,261		814,261		814,261		814,310	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.017		0.19		0.26		0.56		5.8	D	4.6		0 003	U
2,2',5-TriCB (BZ-18)	0.054		0.61		0.87		1.6		12	D	12	D	0 007	P
2,4,4'-TriCB (BZ-28)	0.2		2.2		2.9	D	4.8		22	D	21	D	0.022	
2,2',3,5'-TetraCB (BZ-44)	0.06		0.66		0.91		1.4		3 5		3 2		0 006	
2,2',5,5'-TetraCB (BZ-54)	0.11		1.1		1.6		2		11	D	11	D	0 013	
2,3',4,4'-TetraCB (BZ-66)	0.14		1.4		1.8		2.7		3.3		3 1		0 013	
2,2',4,5,5'-PentaCB (BZ-101)	0.13	P	1 4	P	1.7	P	2	P	2 1	P	2		0 011	P
2,3,3',4,4'-PentaCB (BZ-105)	0.036	ZZ	0.34	ZZ	0.44	ZZ	0.53	ZZ	0.49	ZZ	0 46	ZZ	0 004	ZZ
2,3',4,4',5-PentaCB (BZ-118)	0.12		1 2		1.5		1.7		1.6		1 5		0 011	
2,2',3,3',4,4'-HexaCB (BZ-128)	0.018		0.18		0.22		0.21		0 33		0 29		0 003	U
2,2',3,4,4',5'-HexaCB (BZ-138)	0.073		0.79		1		0.98		1.5		1 3		0 006	
2,2',4,4',5,5'-HexaCB (BZ-153)	0.084	P	0.91	P	1.1	P	1.1	P	1.6	P	1 5	P	0 008	P
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.011		0.1		0 12		0.13	U	0.24		0.21		0 003	U
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.015		0.14		0.18		0.18		0.36		0 33		0 003	U
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.009	P	0.085	P	0.096	P	0.13	U	0.22	P	0.19	P	0 003	U
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.005	U	0.063	U	0.063	U	0.13	U	0.12	U	0.13	U	0 003	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.005	U	0.063	U	0.063	U	0.13	U	0.12	U	0.13	U	0 003	U
DecaCB - Congener (BZ-209)	0.005	U	0.063	U	0.063	U	0.13	U	0.12	U	0 13	U	0 003	U
Total CONG	1.1		11		15		20		66		63		0 1	
Sum of NOAA Congeners x 2.6 + 0	2.8		29		38		51		170		160		0 26	
Total MonoCB														
Total DiCB														
Total TriCB														
Total TetraCB														
Total PentaCB														
Total HexaCB														
Total HeptaCB														
Total OctaCB														
Total NonaCB														
Total DecaCB														
Total PCB Homs														
Total PCB	2.8		29		38		51		170		160		0.26	

Individual PCB Results

Station Id	C007-006										C007-007			
Samp Id	C007-006-0.0-0.5		C007-006-0.5-1.0		C007-006-1.0-1.5		C007-006-1.5-2.0		C007-006-2.0-2.5		C007-007-0.0-0.5		C007-007-0.5-1.0	
Start Date	10/20/03		10/20/03		10/20/03		10/20/03		10/20/03		10/20/03		10/20/03	
Northing	2,697,688		2,697,688		2,697,688		2,697,688		2,697,688		2,697,692		2,697,692	
Easting	814,257		814,257		814,257		814,257		814,257		814,304		814,304	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.87		8.6	D	4.6		1.7		0.086	U	0.008	U	0.007	U
2,2',5-TriCB (BZ-18)	2.5	D	17	D	19	D	4.5		0.086	U	0.008	U	0.007	U
2,4,4'-TriCB (BZ-28)	6.5	D	30	D	31	D	9.1	D	0.086	U	0.008	U	0.007	U
2,2',3,5'-TetraCB (BZ-44)	1.4		4.3		5.6	P	3.8		0.53		0.008	U	0.007	U
2,2',5,5'-TetraCB (BZ-54)	2.7	D	15	D	43	D	16	D	0.88		0.008	U	0.007	U
2,3',4,4'-TetraCB (BZ-66)	2.9	D	5.4		12	D	6.8	D	1.1		0.008	U	0.007	U
2,2',4,5,5'-PentaCB (BZ-101)	1.6	P	2.8	P	2.6		7.1	D	1.6		0.008	U	0.007	U
2,3,3',4,4'-PentaCB (BZ-105)	0.56	P	0.73	P	0.58	P	1.9	ZZ	0.64	P	0.008	U	0.007	U
2,3',4,4',5-PentaCB (BZ-118)	1.4		2.1		1.1	P	5.2		1.4		0.008	U	0.007	U
2,2',3,3',4,4'-HexaCB (BZ-128)	0.22		0.42		0.43		1.3		0.3		0.008	U	0.007	U
2,2',3,4,4',5'-HexaCB (BZ-138)	0.89		1.9		2.2	P	5.4		1.3		0.008	U	0.007	U
2,2',4,4',5,5'-HexaCB (BZ-153)	0.9	P	1.8	P	2.2	P	4.6	P	0.97	P	0.008	U	0.007	U
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.13		0.29		0.62		0.83		0.14		0.008	U	0.007	U
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.18		0.43		0.86		1.1		0.21		0.008	U	0.007	U
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.12	P	0.27	P	0.91	P	0.71	P	0.11	P	0.008	U	0.007	U
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.049	U	0.15	U	0.16	U	0.14	U	0.086	U	0.008	U	0.007	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.049	U	0.15	U	0.16	U	0.14	U	0.086	U	0.008	U	0.007	U
DecaCB - Congener (BZ-209)	0.049	U	0.15	U	0.16	U	0.14	U	0.086	U	0.008	U	0.007	U
Total CONG	23		91		130		70		9.2		0		0	
Sum of NOAA Congeners x 2.6 + 0	60		240		330		180		24			U		U
Total MonoCB							0.036	U						
Total DiCB							10.3							
Total TriCB							58							
Total TetraCB							87.4							
Total PentaCB							69.6							
Total HexaCB							39.8							
Total HeptaCB							6.47							
Total OctaCB							1.07							
Total NonaCB							0.222							
Total DecaCB							0.088							
Total PCB Homs							270							
Total PCB	60		240		330		180		24			U		U

Individual PCB Results

Station Id	C007-008				C007-009								C007-010	
Samp Id	C007-008-0.0-0.5		C007-008-0.5-1.0		C007-009-0.0-0.5		C007-009-0.0-0.5REP		C007-009-0.5-1.0		C007-009-1.0-1.5		C007-010-02-0.0-0.5	
Start Date	10/20/03		10/20/03		10/20/03		10/20/03		10/20/03		10/20/03		11/25/03	
Northing	2,697,711		2,697,711		2,697,665		2,697,665		2,697,665		2,697,665		2,697,716	
Easting	814,358		814,358		814,275		814,275		814,275		814,275		814,266	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.003		0.006	U	0.092		0.097		0.014	P	0.009	P	0.003	U
2,2',5-TriCB (BZ-18)	0.003	P	0.006	U	0.35		0.35		0.051		0.033		0.003	U
2,4,4'-TriCB (BZ-28)	0.006		0.006	U	1.2		1.2		0.17		0.11		0.007	
2,2',3,5'-TetraCB (BZ-44)	0.002	U	0.006	U	0.36		0.36		0.05		0.031		0.003	U
2,2',5,5'-TetraCB (BZ-54)	0.004		0.006	U	0.72		0.72		0.097		0.063		0.003	U
2,3',4,4'-TetraCB (BZ-66)	0.004		0.006	U	0.8		0.81		0.11		0.069		0.006	
2,2',4,5,5'-PentaCB (BZ-101)	0.002	U	0.006	U	0.75	P	0.76	P	0.1	P	0.064	P	0.004	
2,3,3',4,4'-PentaCB (BZ-105)	0.002	U	0.006	U	0.16	ZZ	0.16	ZZ	0.028	P	0.018	P	0.003	U
2,3',4,4',5-PentaCB (BZ-118)	0.003		0.006	U	0.65		0.65		0.093		0.058		0.005	
2,2',3,3',4,4'-HexaCB (BZ-128)	0.002	U	0.006	U	0.079		0.077		0.013		0.008		0.003	U
2,2',3,4,4',5'-HexaCB (BZ-138)	0.002	U	0.006	U	0.37		0.37		0.06		0.036		0.003	U
2,2',4,4',5,5'-HexaCB (BZ-153)	0.002	U	0.006	U	0.48	P	0.48	P	0.068	P	0.043	P	0.003	U
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.002	U	0.006	U	0.058	U	0.059	U	0.011	P	0.008	U	0.003	U
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.002	U	0.006	U	0.073		0.073		0.012		0.008	U	0.003	U
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.002	U	0.006	U	0.058	U	0.059	U	0.008	U	0.008	U	0.003	U
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.002	U	0.006	U	0.058	U	0.059	U	0.008	U	0.008	U	0.003	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.002	U	0.006	U	0.058	U	0.059	U	0.033		0.008	U	0.003	U
DecaCB - Congener (BZ-209)	0.002	U	0.006	U	0.058	U	0.059	U	0.018		0.008	U	0.003	U
Total CONG	0.021		0		6.1		6.1		0.93		0.54		0.021	
Sum of NOAA Congeners x 2.6 + 0	0.056			U	16		16		2.4		1.4		0.054	
Total MonoCB														
Total DiCB														
Total TriCB														
Total TetraCB														
Total PentaCB														
Total HexaCB														
Total HeptaCB														
Total OctaCB														
Total NonaCB														
Total DecaCB														
Total PCB Homs														
Total PCB	0.056			U	16		16		2.4		1.4		0.054	

Individual PCB Results

Station Id			C007-011						C008-001					
Samp Id	C007-010-02-0.5-1.0		C007-011-02-0.0-0.5		C007-011-02-0.5-1.0		C007-011-02-1.0-1.5		C008-001-0.0-0.5		C008-001-0.5-1.0		C008-001-1.0-1.5	
Start Date	11/25/03		11/25/03		11/25/03		11/25/03		10/17/03		10/17/03		10/17/03	
Northing	2,697,716		2,697,680		2,697,680		2,697,680		2,697,554		2,697,554		2,697,554	
Easting	814,266		814,265		814,265		814,265		814,163		814,163		814,163	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.002	U	0.003	P	0.003	U	0.002	U	0.46		0.005	P	0.002	U
2,2',5-TriCB (BZ-18)	0.002	U	0.011		0.003	U	0.002	U	1.2		0.002	U	0.002	U
2,4,4'-TriCB (BZ-28)	0.002	U	0.037		0.004	ZZ	0.002	U	4	D	0.007		0.002	U
2,2',3,5'-TetraCB (BZ-44)	0.002	U	0.012		0.003	U	0.002	U	1		0.004	P	0.002	U
2,2',5,5'-TetraCB (BZ-54)	0.002	U	0.025		0.003	U	0.002	U	3.1	D	0.006		0.002	U
2,3',4,4'-TetraCB (BZ-66)	0.002	U	0.024		0.003	U	0.002	U	2	D	0.005		0.002	U
2,2',4,5,5'-PentaCB (BZ-101)	0.002	U	0.024	P	0.003	U	0.002	U	2	D	0.004		0.002	U
2,3,3',4,4'-PentaCB (BZ-105)	0.002	U	0.006	P	0.003	U	0.002	U	0.37	ZZ	0.002	ZZ	0.002	U
2,3',4,4',5-PentaCB (BZ-118)	0.002	U	0.021		0.003	U	0.002	U	1.4	D	0.004		0.002	U
2,2',3,3',4,4'-HexaCB (BZ-128)	0.002	U	0.003		0.003	U	0.002	U	0.22		0.002	U	0.002	U
2,2',3,4,4',5'-HexaCB (BZ-138)	0.002	U	0.011		0.003	U	0.002	U	0.93		0.003		0.002	U
2,2',4,4',5,5'-HexaCB (BZ-153)	0.002	U	0.014	P	0.003	U	0.002	U	1.1	P	0.003	P	0.002	U
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.002	U	0.002	U	0.003	U	0.002	U	0.15		0.002	U	0.002	U
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.002	U	0.002	J	0.003	U	0.002	U	0.26		0.002	U	0.002	U
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.002	U	0.002	U	0.003	U	0.002	U	0.18	P	0.002	U	0.002	U
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.002	U	0.002	U	0.003	U	0.002	U	0.035	U	0.002	U	0.002	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.002	U	0.002	U	0.003	U	0.002	U	0.046		0.002	U	0.002	U
DecaCB - Congener (BZ-209)	0.002	U	0.002	U	0.003	U	0.002	U	0.035	U	0.002	U	0.002	U
Total CONG	0		0.19		0.004		0		18		0.043		0	
Sum of NOAA Congeners x 2.6 + 0		U	0.5		0.01			U	48		0.11			U
Total MonoCB														
Total DiCB														
Total TriCB														
Total TetraCB														
Total PentaCB														
Total HexaCB														
Total HeptaCB														
Total OctaCB														
Total NonaCB														
Total DecaCB														
Total PCB Homs														
Total PCB		U	0.5		0.01			U	48		0.11			U

Individual PCB Results

Station Id	C008-001-A		C008-002								C008-003			
Samp Id	C008-001-A-1.5-2.0		C008-002-0.0-0.5		C008-002-0.5-1.0		C008-002-1.0-1.5		C008-002-1.5-2.0		C008-003-0 0-0 5		C008-003-0 5-1 0	
Start Date	10/07/03		10/17/03		10/17/03		10/17/03		10/17/03		10/17/03		10/17/03	
Northing	2,697,571		2,697,559		2,697,559		2,697,559		2,697,559		2,697,560		2,697,560	
Easting	814,163		814,212		814,212		814,212		814,212		814,260		814,260	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	7.8	D	0.06		0.006	P	0.002	U	0.002	U	0 7		0 56	
2,2',5-TriCB (BZ-18)	16	D	0.16		0.002	U	0 002	U	0.002	U	1 8		1 6	
2,4,4'-TriCB (BZ-28)	32	D	0.36		0.009	P	0.002	U	0.002	P	5 6	D	4 7	D
2,2',3,5'-TetraCB (BZ-44)	9.2	D	0.13		0.005		0.002	U	0.002	U	1 5		1 3	
2,2',5,5'-TetraCB (BZ-54)	15	D	0.37		0.008		0 002	U	0.002	U	4 2	D	3 2	D
2,3',4,4'-TetraCB (BZ-66)	7.8	D	0.21		0.005		0.002	U	0.002	U	3	D	2 6	D
2,2',4,5,5'-PentaCB (BZ-101)	4.7	DP	0.21		0.005		0.002	U	0.002	U	3	D	2 6	D
2,3,3',4,4'-PentaCB (BZ-105)	1	P	0.043	ZZ	0.002	U	0.002	U	0.002	U	0.54	ZZ	0.54	ZZ
2,3',4,4',5-PentaCB (BZ-118)	3.6	D	0.17		0.004		0.002	U	0.002	U	2 1		2 2	D
2,2',3,3',4,4'-HexaCB (BZ-128)	0.51		0.027		0.002	U	0.002	U	0 002	U	0 32		0 3	
2,2',3,4,4',5'-HexaCB (BZ-138)	2.5	D	0.12		0.003		0.002	U	0 002	U	1.4		1 3	
2,2',4,4',5,5'-HexaCB (BZ-153)	1.9	P	0.15	P	0.004	P	0.002	U	0.002	U	1.6	P	1 6	P
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.31		0.02		0.002	U	0.002	U	0 002	U	0 2		0 2	
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.45		0.027		0.002	U	0 002	U	0.002	U	0.31		0 31	
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.29	P	0.018	U	0.002	U	0.002	U	0.002	U	0.21	P	0 21	P
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.03	U	0.018	U	0.002	U	0 002	U	0 002	U	0 059	U	0 05	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.042		0.018	U	0 002	U	0 002	U	0.002	U	0 059	U	0 05	U
DecaCB - Congener (BZ-209)	0.03	U	0.018	U	0.002	U	0.002	U	0.002	U	0 059	U	0 05	U
Total CONG	100		2.1		0.048		0		0 002		27		23	
Sum of NOAA Congeners x 2.6 + 0	270		5 4		0.13			U	0.005		69		60	
Total MonoCB							0	U					0 009	U
Total DiCB							0	U					2 37	
Total TriCB							0.003						12 6	
Total TetraCB							0 004						19 2	
Total PentaCB							0.003						14.2	
Total HexaCB							0.001						7.09	
Total HeptaCB							0	U					1 04	
Total OctaCB							0	U					0 229	
Total NonaCB							0	U					0 029	
Total DecaCB							0	U					0 016	
Total PCB Homs							0.011						57	
Total PCB	270		5.4		0.13			U	0.005		69		60	

Individual PCB Results

Station Id					C008-004									
Samp Id	C008-003-1.0-1.5		C008-003-1.5-2.0		C008-004-0.0-0.5		C008-004-0.0-0.5REP		C008-004-0.5-1.0		C008-004-1.0-1.5		C008-004-1.5-2.0	
Start Date	10/17/03		10/17/03		10/17/03		10/17/03		10/17/03		10/17/03		10/17/03	
Northing	2,697,560		2,697,560		2,697,561		2,697,561		2,697,561		2,697,561		2,697,561	
Easting	814,260		814,260		814,310		814,310		814,310		814,310		814,310	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.15		0.16		0.17		0.19		0.34		0.037		0.004	
2,2',5-TriCB (BZ-18)	0.47		0.46		0.69		0.72		0.91		0.083		0.01	
2,4,4'-TriCB (BZ-28)	1.4		1.3		2.7	D	2.8	D	2.7	D	0.17		0.024	
2,2',3,5'-TetraCB (BZ-44)	0.44		0.41		0.83		0.87		0.74		0.051		0.007	P
2,2',5,5'-TetraCB (BZ-54)	0.98		0.91		2.1	D	2.2	D	2.3	D	0.12		0.018	
2,3',4,4'-TetraCB (BZ-66)	0.87		0.73		1.3		1.4		1.1		0.074		0.013	
2,2',4,5,5'-PentaCB (BZ-101)	0.86		0.72		1.3	P	1.4		1		0.061		0.011	P
2,3,3',4,4'-PentaCB (BZ-105)	0.19	ZZ	0.16	ZZ	0.37	ZZ	0.4	P	0.27	P	0.016	P	0.003	P
2,3',4,4',5-PentaCB (BZ-118)	0.77		0.63		1.2		1.3		0.91		0.046		0.008	
2,2',3,3',4,4'-HexaCB (BZ-128)	0.1		0.093		0.21		0.23		0.17		0.009		0.002	U
2,2',3,4,4',5'-HexaCB (BZ-138)	0.45		0.41		0.89		0.94		0.72		0.041		0.007	
2,2',4,4',5,5'-HexaCB (BZ-153)	0.6	P	0.51	P	0.95	P	1	P	0.76	P	0.047	P	0.008	P
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.064		0.059		0.11		0.12		0.099		0.007	P	0.002	U
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.096		0.087		0.16		0.17		0.14		0.01		0.002	U
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.064	P	0.053	P	0.1	P	0.1	P	0.088	P	0.009	P	0.002	U
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.043	U	0.036	U	0.04	U	0.036	U	0.035	U	0.006	U	0.002	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.043	U	0.036	U	0.04	U	0.036	U	0.035	U	0.058		0.003	P
DecaCB - Congener (BZ-209)	0.043	U	0.036	U	0.04	U	0.036	U	0.035	U	0.037		0.003	
Total CONG	7.5		6.7		13		14		12		0.88		0.12	
Sum of NOAA Congeners x 2.6 + 0	20		17		34		36		32		2.3		0.31	
Total MonoCB									0.015	U				
Total DiCB									1.52					
Total TriCB									7.89					
Total TetraCB									10.8					
Total PentaCB									7.8					
Total HexaCB									4.13					
Total HeptaCB									0.592					
Total OctaCB									0.096					
Total NonaCB									0.013	U				
Total DecaCB									0.018	U				
Total PCB Homs									33					
Total PCB	20		17		34		36		32		2.3		0.31	

Individual PCB Results

Station Id	C008-004-A		C008-005				C008-005-A		C008-006		C008-006-A		C008-007	
Samp Id	C008-004-A-1.0-1.5		C008-005-1.0-1.5		C008-005-1.5-2.0		C008-005-A-0 0-0.5		C008-006-0.0-0 5		C008-006-A-0 5-1 0		C008-007-0 0-0 5	
Start Date	10/07/03		10/17/03		10/17/03		10/07/03		10/17/03		10/07/03		10/17/03	
Northing	2,697,560		2,697,514		2,697,514		2,697,521		2,697,522		2,697,522		2,697,510	
Easting	814,317		814,142		814,142		814,149		814,192		814,194		814,240	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.73		0.085		0.024		0 012		0.079		0 16		0 73	
2,2',5-TriCB (BZ-18)	2.5	D	0.26		0.074		0 034		0 24		0 47		2	
2,4,4'-TriCB (BZ-28)	6.3	D	0 74		0.21		0.094		0.71		2	D	4 7	
2,2',3,5'-TetraCB (BZ-44)	2.1	D	0.24		0.072		0 034		0.24		0 5		1 4	
2,2',5,5'-TetraCB (BZ-54)	4.7	D	0.44		0.14		0 063		0 43		1 2	D	3 1	
2,3',4,4'-TetraCB (BZ-66)	3.1	D	0.43		0.13		0 067		0.49		1 4	D	2 2	
2,2',4,5,5'-PentaCB (BZ-101)	3.1	D	0.41	P	0.13		0.067	P	0.52		1 5	D	2 1	
2,3,3',4,4'-PentaCB (BZ-105)	0.59	ZZ	0.11	P	0.035	ZZ	0 021	P	0.12	ZZ	0.3	P	0 45	P
2,3',4,4',5-PentaCB (BZ-118)	2.5	D	0.36		0.12		0 062		0.46		1 3	D	1 7	
2,2',3,3',4,4'-HexaCB (BZ-128)	0.35		0.053		0.019		0.01		0.068		0 16		0 25	
2,2',3,4,4',5'-HexaCB (BZ-138)	1.6	D	0.24		0.082		0 048		0.3		0.76	D	1 2	
2,2',4,4',5,5'-HexaCB (BZ-153)	1.5	P	0.25	P	0.086	P	0.046	P	0.33	P	0 68	P	1 4	P
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.23		0.036	U	0.011		0 008		0.04		0 088		0 2	U
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.33		0.043		0.015		0 012		0.056		0 12		0 26	
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.22	P	0.036	U	0.008	P	0 008	P	0 032	P	0 074	P	0 2	U
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.022		0.036	U	0.007	U	0.003	U	0 018	U	0 014	U	0 2	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.042		0.036	U	0.007	U	0.003		0.018	U	0.014		0 2	U
DecaCB - Congener (BZ-209)	0.021	U	0.036	U	0.007	U	0 003	U	0.018	U	0 014	U	0 2	U
Total CONG	30		3.7		1.2		0.59		4.1		11		22	
Sum of NOAA Congeners x 2.6 + 0	78		9.5		3		1.5		11		28		56	
Total MonoCB													0 013	U
Total DiCB													3 37	
Total TriCB													17 4	
Total TetraCB													24 5	
Total PentaCB													16 2	
Total HexaCB													7 84	
Total HeptaCB													1 31	J
Total OctaCB													0 309	
Total NonaCB													0 045	
Total DecaCB													0 019	
Total PCB Homs													71	
Total PCB	78		9.5		3		1 5		11		28		56	

Individual PCB Results

Station Id			C008-007-A		C008-008									
Samp Id	C008-007-0.5-1.0		C008-007-A-1.0-1.5		C008-008-0.0-0 5		C008-008-0 5-1.0		C008-008-1.0-1 5		C008-008-1 5-2.0		C008-008-1 5-2 0REP	
Start Date	10/17/03		10/07/03		10/17/03		10/17/03		10/17/03		10/17/03		10/17/03	
Northing	2,697,510		2,697,516		2,697,515		2,697,515		2,697,515		2,697,515		2,697,515	
Easting	814,240		814,235		814,289		814,289		814,289		814,289		814,289	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.019		0.002	U	0.6		0 15		0 002	U	0 002	U	0 002	U
2,2',5-TriCB (BZ-18)	0.052		0.002	U	1.6		0 45		0 002	U	0 002	U	0 002	U
2,4,4'-TriCB (BZ-28)	0.13		0 002	U	4.4	D	1.2		0 002	U	0 002	U	0 002	U
2,2',3,5'-TetraCB (BZ-44)	0.039		0.002	U	1.3		0.41		0 002	U	0 002	U	0 002	U
2,2',5,5'-TetraCB (BZ-54)	0.084		0.002	U	2.9		0 93		0.002	U	0 002	U	0 002	U
2,3',4,4'-TetraCB (BZ-66)	0.067		0.002	U	2.2		0.75		0 002	U	0 002	U	0 002	U
2,2',4,5,5'-PentaCB (BZ-101)	0.069		0.002	U	2.1		0 81		0.002	U	0 002	U	0 002	U
2,3,3',4,4'-PentaCB (BZ-105)	0.014	ZZ	0.002	U	0 46	P	0 16	ZZ	0 002	U	0 002	U	0 002	U
2,3',4,4',5-PentaCB (BZ-118)	0.057		0.002	U	1.8		0.68		0 002	U	0.002	U	0 002	U
2,2',3,3',4,4'-HexaCB (BZ-128)	0.008		0.002	U	0.26		0.097		0 002	U	0 002	U	0 002	U
2,2',3,4,4',5'-HexaCB (BZ-138)	0.036		0.002	U	1.2		0 44		0.002	U	0 002	U	0 002	U
2,2',4,4',5,5'-HexaCB (BZ-153)	0.045	P	0.002	U	1.5	P	0.56	P	0.002	U	0.002	U	0 002	U
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.006		0.002	U	0.18		0.064		0 002	U	0 002	U	0 002	U
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.008		0.002	U	0.27		0.093		0.002	U	0.002	U	0 002	U
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.005	U	0.002	U	0.17	P	0 06	P	0.002	U	0.002	U	0 002	U
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.005	U	0.002	U	0.079	U	0.04	U	0.002	U	0 002	U	0 002	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.005	U	0.002	U	0.079	U	0.04	U	0.002	U	0 002	U	0 002	U
DecaCB - Congener (BZ-209)	0.005	U	0.002	U	0.079	U	0.04	U	0.002	U	0.002	U	0 002	U
Total CONG	0.63		0		21		6.9		0		0		0	
Sum of NOAA Congeners x 2.6 + 0	1.7			U	54		18			U		U		U
Total MonoCB														
Total DiCB														
Total TriCB														
Total TetraCB														
Total PentaCB														
Total HexaCB														
Total HeptaCB														
Total OctaCB														
Total NonaCB														
Total DecaCB														
Total PCB Homs														
Total PCB	1.7			U	54		18			U		U		U

Individual PCB Results

Station Id	C008-009		C008-009-A		C009-001A								C009-001B	
Samp Id	C008-009-0.0-0.5		C008-009-A-0.5-1.0		C009-001A-0.0-0.5		C009-001A-0.5-1.0		C009-001A-1.0-1.5		C009-001A-1.5-2.0		C009-001B-0.0-0.5	
Start Date	10/17/03		10/07/03		10/21/03		10/21/03		10/21/03		10/21/03		10/21/03	
Northing	2,697,466		2,697,477		2,697,341		2,697,341		2,697,341		2,697,341		2,697,343	
Easting	814,167		814,171		814,181		814,181		814,181		814,181		814,203	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.23		0.002	U	0.002	U	0.002	U	0.002	U	0.006	U	0 038	
2,2',5-TriCB (BZ-18)	0.73		0.006	P	0.002	U	0.002	U	0.002	U	0.006	U	0 11	
2,4,4'-TriCB (BZ-28)	1.9		0.015		0.006		0.002	U	0.005		0.006	U	0 32	
2,2',3,5'-TetraCB (BZ-44)	0.74		0.005		0.002	U	0.002	U	0.002	U	0 006	U	0.12	
2,2',5,5'-TetraCB (BZ-54)	1.2		0.009		0.003		0 002	U	0 002		0.005	U	0.2	
2,3',4,4'-TetraCB (BZ-66)	1		0.007		0.004		0 002	U	0.003		0 006	U	0 19	
2,2',4,5,5'-PentaCB (BZ-101)	0.92	P	0.005	P	0.003	P	0.002	U	0.002	P	0 006	U	0 19	P
2,3,3',4,4'-PentaCB (BZ-105)	0.28	ZZ	0.002	P	0 002	U	0 002	U	0.002	U	0 006	U	0 062	ZZ
2,3',4,4',5-PentaCB (BZ-118)	0.79		0.004		0.003		0 002	U	0 002		0.006	U	0 18	
2,2',3,3',4,4'-HexaCB (BZ-128)	0 14		0 002	U	0 002	U	0.002	U	0.002	U	0 006	U	0 03	
2,2',3,4,4',5'-HexaCB (BZ-138)	0.63		0.003		0.002	U	0 002	U	0.002	U	0 006	U	0 12	
2,2',4,4',5,5'-HexaCB (BZ-153)	0.56	P	0.003	P	0 002	U	0 002	U	0 002	U	0 006	U	0 12	P
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.079		0.002	U	0.002	U	0 002	U	0 002	U	0 006	U	0 019	
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.11		0.002	U	0 002	U	0.002	U	0 002	U	0 006	U	0 026	
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0 072	U	0.002	U	0.002	U	0.002	U	0 002	U	0 006	U	0 015	U
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.072	U	0.002	U	0 002	U	0 002	U	0 002	U	0 006	U	0 015	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.072	U	0 002	U	0 002	U	0.002	U	0 002	U	0 006	U	0 015	U
DecaCB - Congener (BZ-209)	0.072	U	0.002	U	0.002	U	0.002	U	0 002	U	0 006	U	0 015	U
Total CONG	9.3		0.058		0.019		0		0.014		0		1 7	
Sum of NOAA Congeners x 2.6 + 0	24		0 15		0.049			U	0.037			U	4 5	
Total MonoCB														
Total DiCB														
Total TriCB														
Total TetraCB														
Total PentaCB														
Total HexaCB														
Total HeptaCB														J
Total OctaCB														
Total NonaCB														
Total DecaCB														
Total PCB Homs														
Total PCB	24		0.15		0 049			U	0.037			U	4 5	

Individual PCB Results

Station Id					C009-001C		C009-001D						C009-001E	
Samp Id	C009-001B-0.5-1 0		C009-001B-1 0-1.5		C009-001C-0.0-0 5		C009-001D-0.0-0.5		C009-001D-0.5-1.0		C009-001D-1.0-1.5		C009-001E-0 0-0 5	
Start Date	10/21/03		10/21/03		10/21/03		10/20/03		10/20/03		10/20/03		10/21/03	
Northing	2,697,343		2,697,343		2,697,326		2,697,304		2,697,304		2,697,304		2,697,315	
Easting	814,203		814,203		814,193		814,178		814,178		814,178		814,198	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.002	U	0.002	U	0 008		0.002	U	0.003	U	0 002	U	0 095	
2,2',5-TriCB (BZ-18)	0.002	U	0.004	P	0.016	P	0.002	U	0.007	P	0 002	U	0 27	P
2,4,4'-TriCB (BZ-28)	0.003		0.012		0.033		0 002	U	0.019		0 002	U	0 79	
2,2',3,5'-TetraCB (BZ-44)	0.002	U	0 004	P	0.016		0.002	U	0 007		0 002	U	0 3	
2,2',5,5'-TetraCB (BZ-54)	0.002	U	0.008		0.019		0.002	U	0.012		0 002	U	0 54	
2,3',4,4'-TetraCB (BZ-66)	0.002		0.008		0 024		0.002	U	0.013		0 002	U	0 44	
2,2',4,5,5'-PentaCB (BZ-101)	0.002	U	0.008		0.022	P	0.002	U	0.012		0.002	U	0 43	P
2,3,3',4,4'-PentaCB (BZ-105)	0.002	U	0.003	ZZ	0.009	ZZ	0.002	U	0.005	ZZ	0.002	U	0.14	ZZ
2,3',4,4',5-PentaCB (BZ-118)	0.002		0.007		0.021		0 002	U	0 01		0.002	U	0 4	
2,2',3,3',4,4'-HexaCB (BZ-128)	0.002	U	0 002	U	0.004		0 002	U	0.003	U	0 002	U	0 073	
2,2',3,4,4',5'-HexaCB (BZ-138)	0.002	U	0.005		0.017		0 002	U	0.008		0 002	U	0 3	
2,2',4,4',5,5'-HexaCB (BZ-153)	0.002	U	0.005	P	0.013	P	0 002	U	0 007	P	0 002	U	0 28	P
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.002	U	0.002	U	0.003	U	0.002	U	0 003	U	0 002	U	0 041	
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.002	U	0.002	U	0.003		0 002	U	0 003	U	0 002	U	0 057	
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.002	U	0.002	U	0.003	U	0 002	U	0.003	U	0 002	U	0 028	U
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.002	U	0 002	U	0 003	U	0.002	U	0 003	U	0 002	U	0 028	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.002	U	0 002	U	0 003	P	0.002	U	0 003	U	0 002	U	0 028	U
DecaCB - Congener (BZ-209)	0.002	U	0.002	U	0.003	U	0.002	U	0.003	U	0 002	U	0 028	U
Total CONG	0.008		0.064		0 21		0		0.099		0		4 2	
Sum of NOAA Congeners x 2.6 + 0	0.02		0.17		0 54			U	0 26			U	11	
Total MonoCB														
Total DiCB														
Total TriCB														
Total TetraCB														
Total PentaCB														
Total HexaCB														
Total HeptaCB														
Total OctaCB														
Total NonaCB														
Total DecaCB														
Total PCB Homs														
Total PCB	0.02		0.17		0.54			U	0.26			U	11	

Individual PCB Results

Station Id			C010-001				C010-001A		C010-001B		C010-001C		C010-001D	
Samp Id	C009-001E-0.5-1.0		C010-001-01-.5-1.0		C010-001-01-.5-1.0REP		C010-001A-0.0-0 5		C010-001B-0.0-0.5		C010-001C-0 0-0 5		C010-001D-0 0-0 5	
Start Date	10/21/03		09/18/03		09/18/03		09/18/03		09/18/03		09/18/03		09/18/03	
Northing	2,697,315		2,697,308		2,697,308		2,697,328		2,697,330		2,697,307		2,697,289	
Easting	814,198		814,362		814,362		814,359		814,374		814,358		814,349	
Cleanup Level														
Description	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.002	U	0.053		0.064		0.21		0 15		0 12		0 028	
2,2',5-TriCB (BZ-18)	0.002	U	0.18		0.22		0.7		0 51		0 4		0 095	
2,4,4'-TriCB (BZ-28)	0.003	P	0.6		0.76		2.6	D	2.1		1 5		0 29	
2,2',3,5'-TetraCB (BZ-44)	0.013		0.21		0.26		0.8		0 65		0 5		0.12	
2,2',5,5'-TetraCB (BZ-54)	0.025		0.34		0.43		1.2		1.2		0 85		0 19	
2,3',4,4'-TetraCB (BZ-66)	0.024		0.48		0.6		1.8		1.5		1 1		0 27	
2,2',4,5,5'-PentaCB (BZ-101)	0.029		0.48	P	0.62	P	1.8	P	1.6		1.2		0 27	P
2,3,3',4,4'-PentaCB (BZ-105)	0.011	ZZ	0.15	ZZ	0.18	ZZ	0 53	P	0.44	P	0.33	P	0 076	ZZ
2,3',4,4',5-PentaCB (BZ-118)	0.026		0.46		0.58		1.6		1 5		1.1		0.25	
2,2',3,3',4,4'-HexaCB (BZ-128)	0.005		0.072		0.088		0.26		0.2		0.16		0 035	
2,2',3,4,4',5'-HexaCB (BZ-138)	0.021		0.3		0.38		1.1		0.93		0.71		0.16	
2,2',4,4',5,5'-HexaCB (BZ-153)	0.015	P	0.3	P	0.38	P	1.1	P	1.1	P	0.78	P	0.16	P
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.002	U	0.036		0.046		0.13		0.12		0.088		0 018	
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0.003		0.051		0.064		0.18		0.17		0.13		0 026	
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.002	U	0.027	P	0.032	U	0.1	P	0.096	P	0.074	P	0 012	P
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.002	U	0.016	U	0 032	U	0 052	U	0.053	U	0 043	U	0 012	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.002	U	0.016	U	0.032	U	0 052	U	0.053	U	0 043	U	0 012	U
DecaCB - Congener (BZ-209)	0.002	U	0.016	U	0 032	U	0.052	U	0.053	U	0 043	U	0 012	U
Total CONG	0.17		3.7		4.7		14		12		9		2	
Sum of NOAA Congeners x 2.6 + 0	0 45		9.7		12		37		32		24		5 2	
Total MonoCB														
Total DiCB														
Total TriCB														
Total TetraCB														
Total PentaCB														
Total HexaCB														
Total HeptaCB														J
Total OctaCB														
Total NonaCB														
Total DecaCB														
Total PCB Homs														
Total PCB	0.45		9.7		12		37		32		24		5 2	

Individual PCB Results

Station Id	C010-001E			
Samp Id	C010-001E-0.0-0.5		C010-001E-0.0-0.5REP	
Start Date	09/18/03		09/18/03	
Northing	2,697,286		2,697,286	
Easting	814,370		814,370	
Cleanup Level				
Description	Result	Final Qual	Result	Final Qual
2,4'-DiCB (BZ-8)	0.002	U	0 002	U
2,2',5-TriCB (BZ-18)	0.002	U	0.002	U
2,4,4'-TriCB (BZ-28)	0.005		0 004	
2,2',3,5'-TetraCB (BZ-44)	0.002	U	0 002	U
2,2',5,5'-TetraCB (BZ-54)	0.002		0.002	
2,3',4,4'-TetraCB (BZ-66)	0.004		0 004	
2,2',4,5,5'-PentaCB (BZ-101)	0.003	P	0.003	P
2,3,3',4,4'-PentaCB (BZ-105)	0.002	U	0.002	U
2,3',4,4',5-PentaCB (BZ-118)	0.002	P	0.003	
2,2',3,3',4,4'-HexaCB (BZ-128)	0.002	U	0.002	U
2,2',3,4,4',5'-HexaCB (BZ-138)	0.002	P	0.002	
2,2',4,4',5,5'-HexaCB (BZ-153)	0.002	P	0.002	P
2,2',3,3',4,4',5-HeptaCB (BZ-170)	0.002	U	0.002	U
2,2',3,4,4',5,5'-HeptaCB (BZ-180)	0 002	U	0.002	U
2,2',3,4',5,5',6-HeptaCB (BZ-187)	0.002	U	0.002	U
2,2',3,3',4,4',5,6-OctaCB (BZ-195)	0.002	U	0 002	U
2,2',3,3',4,4',5,5',6-NonaCB (BZ-206)	0.002	U	0.002	U
DecaCB - Congener (BZ-209)	0.002	U	0.002	U
Total CONG	0.021		0.021	
Sum of NOAA Congeners x 2.6 + 0	0.054		0.055	
Total MonoCB				
Total DiCB				
Total TriCB				
Total TetraCB				
Total PentaCB				
Total HexaCB				
Total HeptaCB				
Total OctaCB				
Total NonaCB				
Total DecaCB				
Total PCB Homs				
Total PCB	0.054		0.055	

Appendix L.2

Graphical Depiction of Confirmatory Sampling Results

NOTE THAT ALL ZERO'S ARE PRESENTED BY THE LAB AS NON-DETECT

A C009

Sample Depths		1a	1b	1c	1d	1e
0.0	0.5	0.049	4.5	0.54	0	11
0.5	1.0	0	0.02		0.26	0.45
1.0	1.5	0.037	0.17		0	
1.5	2.0	0				

10-Oct Fri
17-Oct Fri
20-Oct Mon.
21-Oct Tues.

B C010

Sample Depths		1a	1b	1c	1d	1e	
0.0	0.5	37	32	24	5.2	0.054	
0.5	1.0	10.85	10.85	10.85	10.85	10.85	Composite smaple

C C007

Sample Depths		1	2	3	4	5	6	7	8	9
0.0	0.5	2.8	4.2	2.8	29	0.26	59	0	0.056	16
0.5	1.0	0.73	67		38		240	0	0	2.4
1.0	1.5		0.12		51		330			1.4
1.5	2.0		0.0078		165		180			
2.0	2.5		0.0065				24			

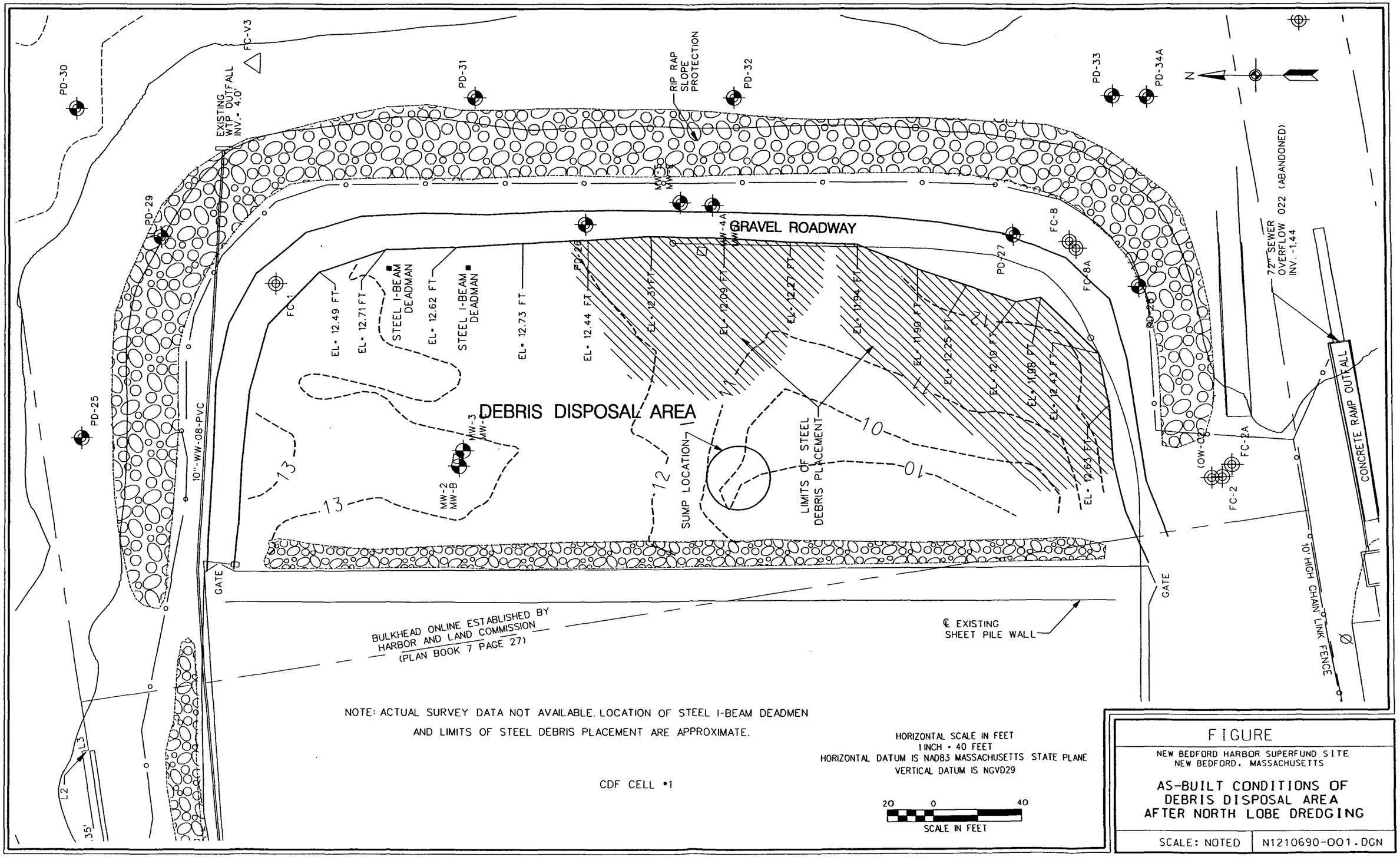
D C008

Sample Depths		1	2	3	4	5	6	7	8	9
0.0	0.5	48	5.3	69	35	1.5	11	56	54	24
0.5	1.0	0.11	0.13	60	32		28	1.6	18	0.15
1.0	1.5	0	0	20	2.3	9.5		0.0025	0	
1.5	2.0	270	0.0047	17	0.31	3			0	

M

Appendix M

Debris Disposal Area As-Built Drawing



NOTE: ACTUAL SURVEY DATA NOT AVAILABLE. LOCATION OF STEEL I-BEAM DEADMEN AND LIMITS OF STEEL DEBRIS PLACEMENT ARE APPROXIMATE.

CDF CELL #1

HORIZONTAL SCALE IN FEET
1 INCH = 40 FEET
HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE
VERTICAL DATUM IS NGVD29

20 0 40
SCALE IN FEET

FIGURE

NEW BEDFORD HARBOR SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS

AS-BUILT CONDITIONS OF DEBRIS DISPOSAL AREA AFTER NORTH LOBE DREDGING

SCALE: NOTED | N1210690-001.DGN