CENAE–R–PT-MAS 25 March 2014

MEMORANDUM FOR: John Sargent, Project Manager, CENAE-R-PEB

SUBJECT: Sampling and Analysis Plan for the Town of Wellfleet, Wellfleet Harbor, Wellfleet, MA, Application Number NAE-2005-1059.

1. In response to your request of 5 March 2014, I have developed a sampling plan for the above project. The applicant is proposing to dredge two areas in Wellfleet Harbor north and south of the federal channel and anchorage area. The first area is composed of the north and south channels, North anchorage and access channel. The area would be approximately 15.48 acres and would be dredged to a depth of -6' MLW, producing a volume of approximately 118,300 cubic yards. The second area encompasses the South anchorage adjacent to the federal navigation project boundary. The area would be approximately 21.71 acres and would be dredged to a depth of -6' MLW, producing a volume of approximately 248,000 cubic yards. A total of 366,300 cubic yards would be produced. The applicant proposes to mechanically dredge this material and dispose of it at the Cape Cod Bay Disposal Site (CCBDS). This area was last dredged at least in part nine years ago.

2. Please note that the "Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters" (RIM) is now final and took effect on May 6, 2004. The RIM, as well as requirements for electronic submission of data, may be downloaded from the website http://www.nae.usace.army.mil/reg/rim.htm.

Additionally, the deadline for all laboratories to submit Laboratory Quality Assurance Plans (LQAPs) was **May 6, 2006. After this deadline, all data reports from labs that DO NOT have an approved LQAP on record at the Army Corps of Engineers WILL NOT be accepted.** Applicants and their agents should verify that their laboratory and any sub-contracting laboratory has, or is working towards, a valid LQAP before retaining their services.

3. SPILLS & OUTFALLS: There is a boat ramp and a fuel dock on the main pier as well as a drainage system to control runoff from impervious surfaces. No history of spills was reported by the contractor after examination of the area.

4. Fourteen cores (W-1 to W-14; nine from area 1 and five from area 2) should be taken from the area to be dredged according to the attached plan. Core samples should be taken to the proposed dredge depth. The cores should be inspected in the field for stratification. If the cores show significant stratification, in the opinion of the sampling crew, subsamples should be made of each layer. All sediments being held for testing should be stored in

accordance with the requirements of Table 8-2 in Evaluation of Dredged Material Proposed for Ocean Disposal, Testing Manual, 1991.

5. Please provide coordinates for each core location in latitude and longitude, NAD 83 decimal minutes. Required horizontal accuracy of each sample location is 3 meters or less. This accuracy can be achieved with a WAAS-enabled standard boat-mounted or hand-held GPS unit. The accuracy at each sample location shall be reported along with the coordinates. Accuracy can be improved by collecting data at a sampling location for a longer period of time.

6. Each core or core layer should be individually analyzed for sediment grain size and the results reported to me before any compositing is performed. I will review the data and determine if compositing is appropriate.

7. Bulk sediment chemistry analyses should be done on each composite sample according to the "Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters" (April 2004). The test parameters should include all of the items on the attached sheet. These parameters are extracted from Tables 1, 2, and 3 of the "Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters". The reporting limits should be those indicated on the attached sheet. **Please note that the 2004 RIM introduced new reporting limits, which for many analytes are lower than those previously accepted.** The listed analytical methods are recommended but can be replaced by other methods that will give the required reporting limits. The Total Organic Carbon analysis (TOC) should be done in duplicate on each composited sample and a TOC Standard Reference Material (SRM) should be run with the sample batch.

8. The 2004 RIM also introduced new quality control requirements. Quality Control Summary Tables must be completed and included with each data submission. These tables are found in Appendix II of the RIM and are also available on the RIM website http://www.nae.usace.army.mil/reg/rim.htm.

9. Beginning October 1, 2004, all sediment data was required to be submitted electronically in the electronic data deliverable (EDD) format available on the RIM website. EDD's may be e-mailed or mailed on CD. Hard copy data submission is still required, along with the electronic data submission. Electronic files in a printer-friendly, easy-to-read format (e.g., PDF, MS Word) may be substituted for hard copy submission.

10. Please note the following modification to the 2004 RIM: Any analytes not detected shall be reported as the reporting limit and qualified with a U. Do not

report non-detects as the method detection limit (MDL).

11. Copies of this plan were sent to the MADEP, USEPA and NOAA. The EPA concurred with the plan. The other agencies did not respond within the 10 business day review period and their concurrence is assumed.

12. If you, the applicant or the testing laboratory have any questions, feel free to contact me at 978-318-8336.

Digitally signed by FARRIS.CHARLES.NORMAN.1260810975
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=FARRIS.CHARLES.NORMAN.1260810975
Date: 2014.03.26 15:03:38 -04'00'

CHARLES N. FARRIS
Project Manager
Marine Analysis Section

BULK SEDIMENT TESTING PARAMETERS

Parameter	Analytical Method	Reporting Limit (ppm)
Metals		
Arsenic	6010B, 6020, 7060, 7061	0.4
Cadmium	6010B, 6020, 7130, 7131	0.07
Chromium	6010B, 6020, 7190, 7191	0.5
Copper	6010B, 6020, 7210	0.5
Lead	6010B, 6020, 7420, 7421	0.5
Mercury	7471	0.02
Nickel	6010B, 6020, 7520	0.5
Zinc	6010B, 6020, 7950	1.0
PCBs (total by NOAA summation of congeners)		
See next page	8082A	0.001
Pesticides	NOAA (1993), 8081B	0.001
Aldrin	Heptachlor epoxide	
cis- & trans-Chlordane	Hexachlorobenzene	
4,4'-DDT, DDD, DDE	gamma-BHC (Lindane)	
Dieldrin	Methoxychlor	
α & β Endosulfan	cis- & trans-Nonachlor	
Endrin	Oxychlordane	
Heptachlor	Toxaphene	0.025
Polycyclic Aromatic Hydrocarbons (PAH's)	8270C-SIM	0.01
Acenaphthene	Chrysene	
Acenaphthylene	Dibenzo(a,h)anthracene	
Anthracene	Fluoranthene	
Benzo(a)anthracene	Fluorene	
Benzo(a)pyrene	Indeno(1, 2, 3-cd)pyrene	
Benzo(b)fluoranthene	Naphthalene	
Benzo(k)fluoranthene	Phenanthrene	
Benzo(g, h, i)perylene	Pyrene	
Total Organic Carbon	Plumb (1981), APHA (1995)	0.1%
Percent Moisture	Plumb (1981), EPA (1992), PSEP (1986)	1.0%
Grain Size	Wet Sieve (#4, 10, 40, 200)	

5/5/04

PCB CONGENERS

Analytical Method: NOAA (1993), 8082A

Reporting Limit: 1 ppb

Congeners:

8*	2,4' diCB
18*	2,2',5 triCB
28*	2,4,4' triCB
44*	2,2',3,5' tetraCB
49	2,2',4',5 tetraCB
52*	2,2',5,5' tetraCB
66*	2,3',4,4' tetraCB
87	2,2',3,4,5' pentaCB
101*	2,2',4,5,5' pentaCB
105*	2,3,3',4,4' pentaCB
118*	2,3',4,4',5 pentaCB
128*	2,3,3',4,4' hexaCB
138*	2,2',3,4,4',5' hexaCB
153*	2,2',4,4',5,5' hexaCB
170*	2,2',3,3',4,4',5 heptaCB
180*	2,2',3,4,4',5,5' heptaCB
183	2,2',3,4,4',5',6 heptaCB
184	2,2',3,4,4',6,6' heptaCB
187*	2,2',3,4',5,5',6 heptaCB
195*	2,2',3,3',4,4',5,6 octaCB
206*	2,2',3,3',4,4',5,5',6 nonaCB
209*	2,2',3,3',4,4',5,5',6,6' decaCB

* denotes a congener to be used in estimating Total PCB. To calculate Total PCB, sum the concentrations of all eighteen congeners marked with a "*" and multiply by 2.

The specified methods are recommendations only. Other acceptable methodologies capable of meeting the Reporting Limits can be used. Sample preparation methodologies (e.g. extraction and cleanup) and sample size may need to be modified to achieve the required Reporting Limits.

WELLFLEET HARBOR LAYOUT

WELLFLEET HARBOR DREDGING
TOWN OF WELLFLEET
WELLFLEET, MA
OCTOBER 2011

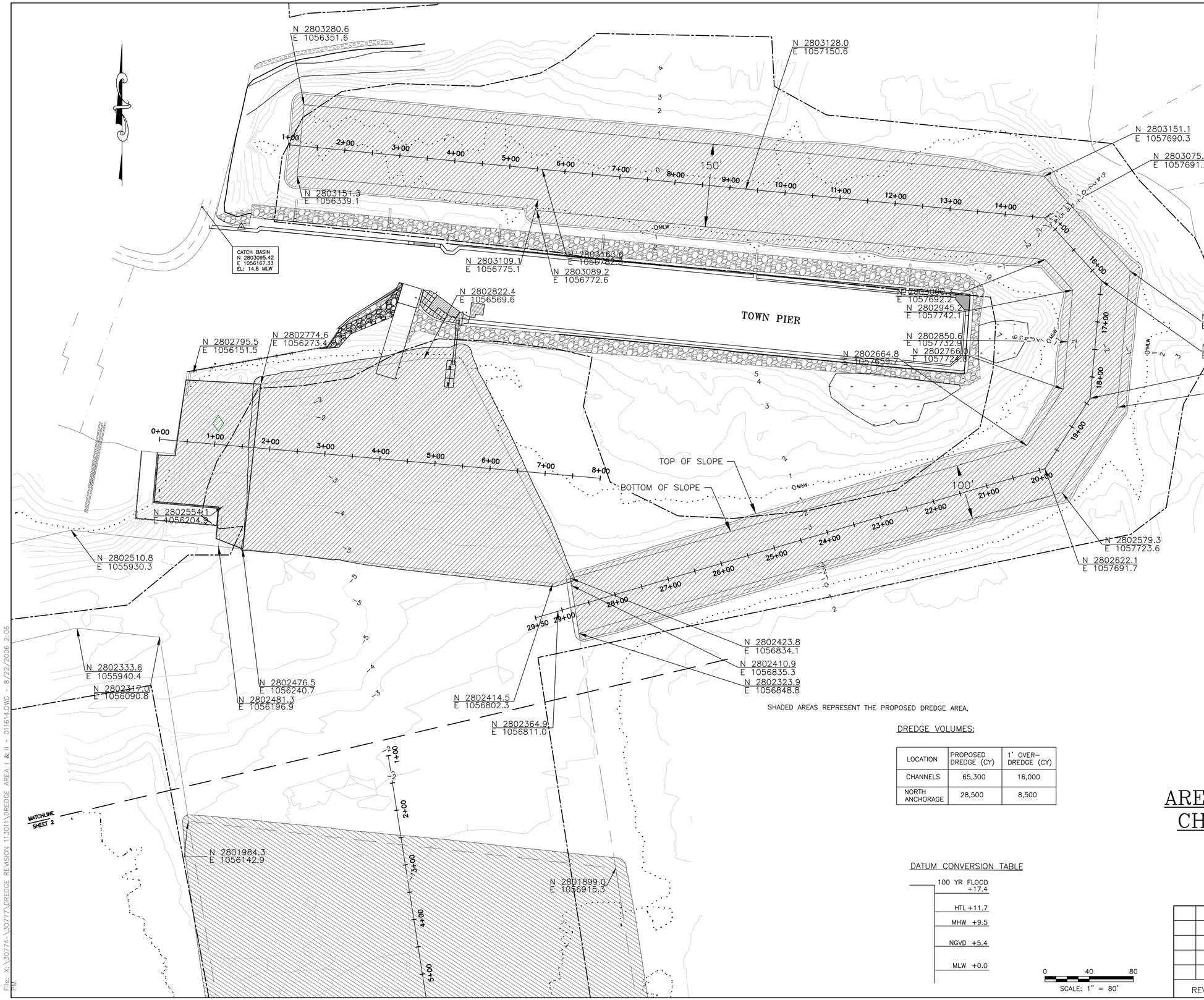
0 500

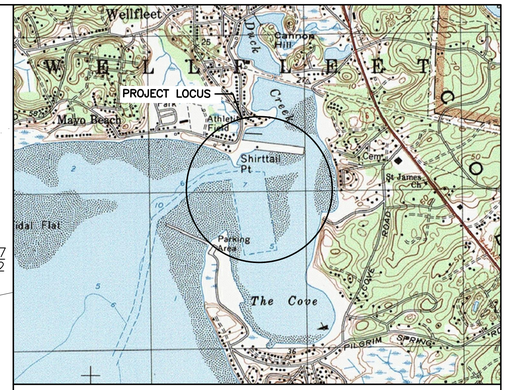
SCALE: 1" = 500'

Bourne Consulting Engineering
3 Bent Street
Franklin, MA 02038
PH. (508) 533-0666 FAX. (508) 533-0600

EXHIBIT 1

File: \\BCESBS01\ProjDrawings\30774-\30777\exhibit 1.dwg





SCALE: 1" = 1,500'

LOCUS PLAN

SHADED AREAS REPRESENT THE PROPOSED DREDGE AREA,

DREDGE VOLUMES:

LOCATION	PROPOSED DREDGE (CY)	1' OVER-DREDGE (CY)
CHANNELS	65,300	16,000
NORTH ANCHORAGE	28,500	8,500

DATUM CONVERSION TABLE

100 YR FLOOD	+17.4
HTL	+11.7
MHW	+9.5
NGVD	+5.4
MLW	+0.0

0 40 80

SCALE: 1" = 80'

NOTES:

1. SURVEY DATA SHOWN HEREON WAS COLLECTED ON JANUARY 5, 6 AND MARCH 17, 18 2010 BY BOURNE CONSULTING ENGINEERING AND CAN ONLY REFLECT CONDITIONS AS THEY EXISTED DURING THE TIME OF THE SURVEY.
2. SOUNDINGS AND ELEVATIONS ARE SHOWN IN FEET AND TENTHS BASED ON A MEAN LOW WATER DATUM. POSITIVE VALUES REPRESENT AN ELEVATION ABOVE THAT SAME PLANE.
3. BENCHMARK "CATCH BASIN" IS THE CENTER OF A CATCH BASIN AT THE SOUTH END OF COMMERCIAL STREET 100 FEET NORTH OF KENDRICK AVENUE ON THE WEST SIDE OF THE ROAD. ELEVATION 14.8 MLW.
4. PROPERTY LINES, FEDERAL CHANNEL, CHANNEL AND ANCHORAGE LIMITS ARE TAKEN FROM THE VINE ASSOCIATES DRAWING TITLED "PROPOSED CHANNEL AND BASIN DREDGE, PRE-DREDGE SURVEY, WELLFLEET HARBOR, WELLFLEET, MA" DATED FEBRUARY 2, 2001
5. TOWN PIER REVETMENT LIMITS ARE APPROXIMATE AND ARE TAKEN FROM THE CONSTRUCTION DRAWINGS BY BOURNE CONSULTING ENGINEERING TITLED "REVETMENT REHABILIATION WELLFLEET TOWN PEIR, WELLFLEET, MA" DATED DECEMBER 2006.

AREA 1 – PROPOSED DREDGE CHANNELS AND ANCHORAGE

WELLFLEET HARBOR
TOWN OF WELLFLEET
WELLFLEET, MA
JANUARY 2014

REVISIONS

BCE Bourne Consulting Engineering
3 Bent Street
Franklin, MA 02038
PH. (508) 533-6666 FAX. (508) 533-0600

DRAWN: KDB/JJG
CHECKED: JJG
APPROVED: RJT
DATE: 01/16/14

DRAWING NO. 30777-01-01

SHEET 1 OF 2

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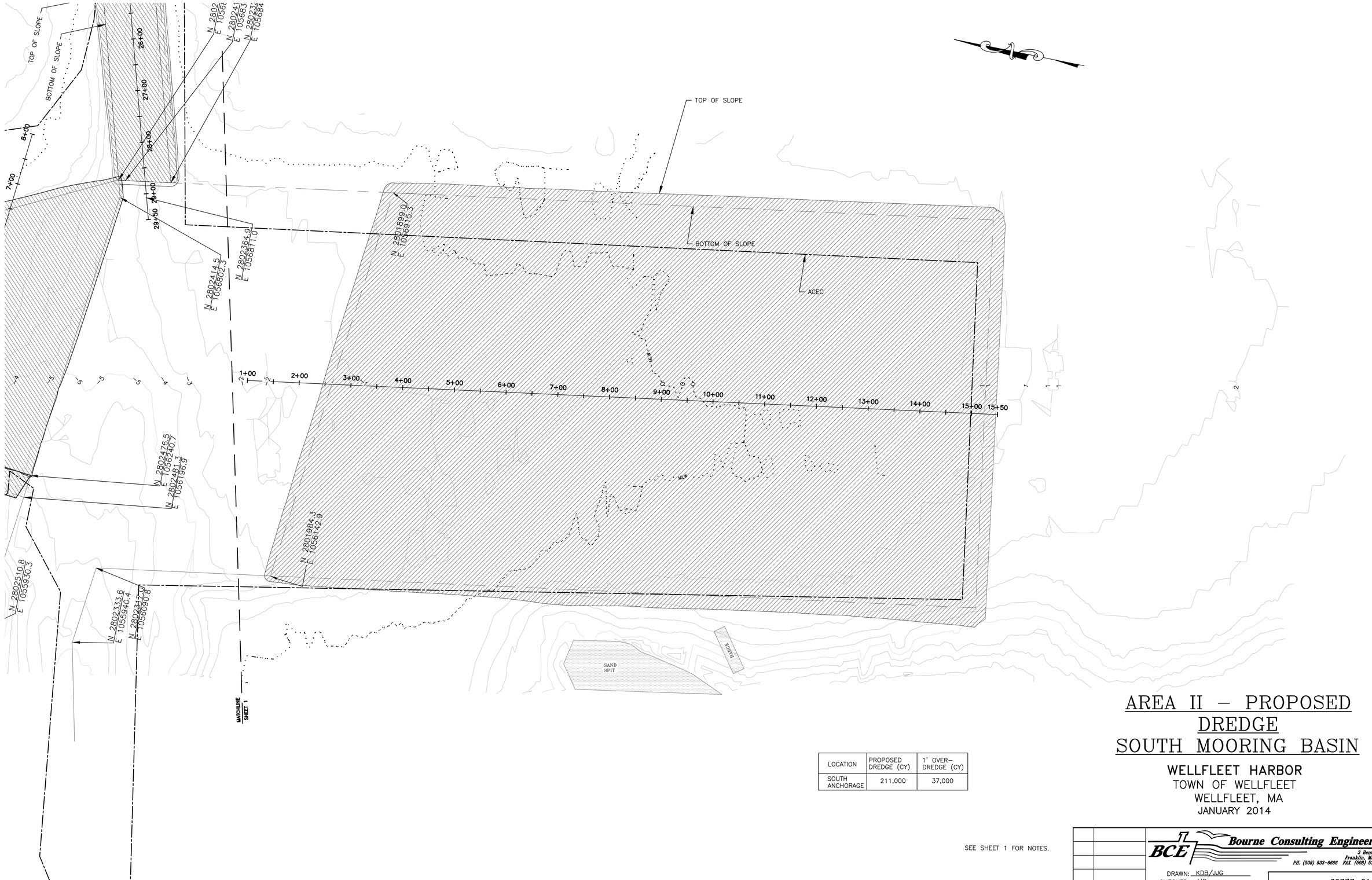

LOCATION	PROPOSED DREDGE (CY)	1' OVER-DREDGE (CY)
SOUTH ANCHORAGE	211,000	37,000

AREA II – PROPOSED DREDGE SOUTH MOORING BASIN

WELLFLEET HARBOR

TOWN OF WELLFLEET
WELLFLEET, MA
JANUARY 2014

SEE SHEET 1 FOR NOTES.

0 40 80
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DRAWING NO. 30777-01-02

SHEET 2 OF 2

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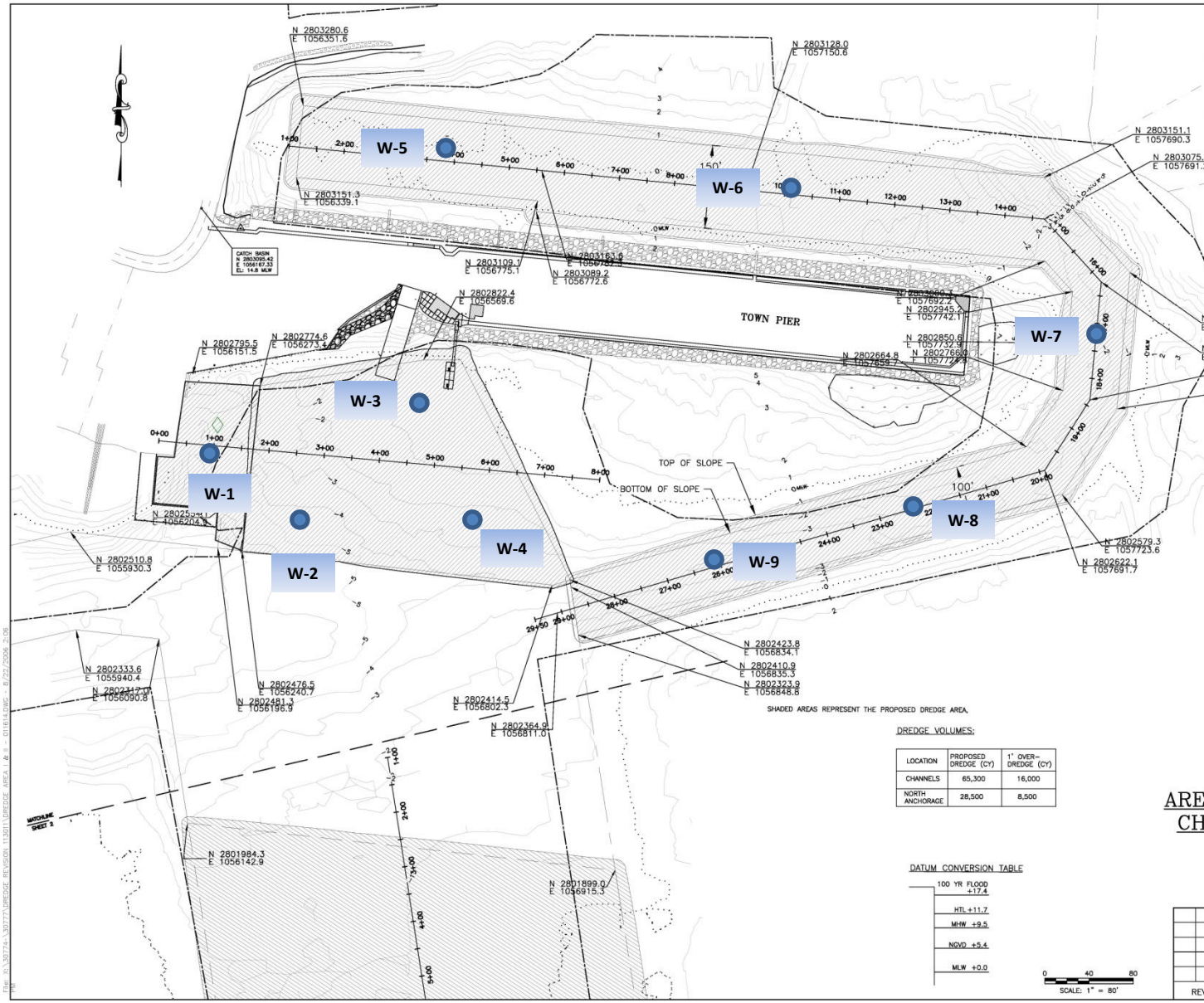

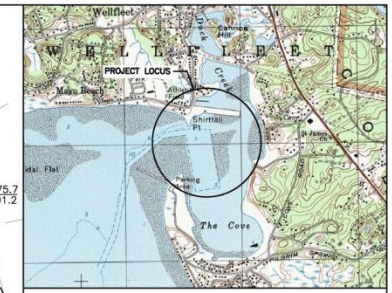

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JANUARY 2014

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3 Boat Street
Franklin, MA 02038
PH. (508) 533-8666 FAX (508) 533-8600

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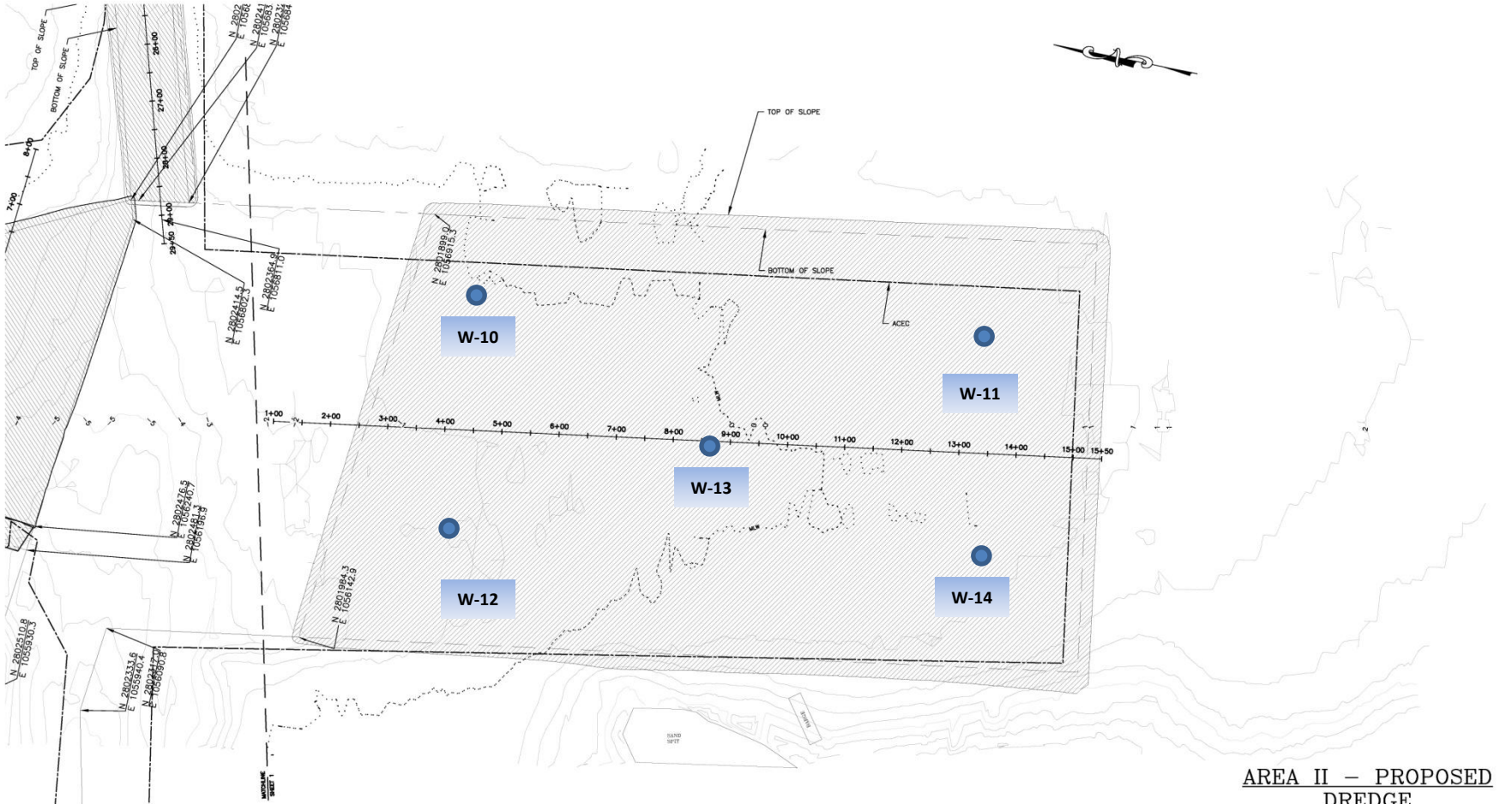

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AREA II – PROPOSED DREDGE SOUTH MOORING BASIN

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SEE SHEET 1 FOR NOTES.

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