

**Monitoring Report for Seafood Harvested in 2014
from the New Bedford Harbor Superfund Site**

by

Massachusetts Department of Environmental Protection

and

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1. Introduction

This report documents the levels of PCBs (polychlorinated biphenyls) measured in edible seafood species caught in New Bedford Harbor and surrounding Buzzards Bay in southeastern Massachusetts in 2014. This seafood monitoring program is part of the ongoing PCB cleanup program for the New Bedford Harbor (NBH) Superfund Site, and was a collaborative effort involving the MA Department of Marine Fisheries (DMF), the MA Department of Environmental Protection, (MassDEP), and the U.S. Environmental Protection Agency Region I (EPA).

Due to the identification of high PCB levels in area seafood, the MA Department of Public Health in 1979 promulgated regulations restricting seafood consumption in three closure areas in and around NBH as shown on Figure 1 (MADPH, 1979). NBH was subsequently listed as a Superfund site in 1983. Per the 1998 Record of Decision (ROD) (EPA, 1998) for the Site, as modified by five Explanation of Significant Differences (ESDs), approximately 900,000 cubic yards (cy) of PCB-contaminated sediments are to be removed. Based on the 2013 supplemental Consent Decree settlement, the cleanup is estimated to take another five to seven years to complete. Consistent with the 1998 ROD, this seafood monitoring program will aid in the evaluation of the overall effectiveness of the harbor cleanup, as well as assist in the implementation of institutional controls and seafood restrictions.

2. Seafood Monitoring Program Design

Based on previous investigations and risk assessments performed for the NBH Site, a variety of species were selected for this monitoring program that are considered locally caught seafood; are generally available for field collection; and which bracket potential worst case tissue levels (MassDEP, 2014a). In previous sampling rounds, these species include lobster (*Homarus americanus*), blue crabs (*Carcinus maenas*), quahog (i.e., hard shelled clam, *Mercenaria mercenaria*), alewife (*Alosa pseudoharengus*), American eel (*Anguilla rostrata*), black sea bass (*Centropristes striatus*), winter flounder (*Pseudopleuronectes americanus*), and scup (*Stenotomus chrysops*). The goal of this seafood monitoring program is to acquire annual collections of these species in sufficient numbers from all three closure areas to enable statistical comparisons between them, but with the understanding that some species may not necessarily be caught in sufficient numbers every year.

To meet this goal, the monitoring design calls for five composite samples for each species from each of the three closure areas. Based on previous site sampling experience, modifications have been made to the original sampling approach. The species collected for 2014 were alewife, black sea bass, conch, scup, striped bass, tautog, and one pre-spawn and post-spawn quahog event.

Each composite sample consists of legally harvestable organisms. For alewife, black sea bass, scup and tautog the composite were generally five organisms. For conch, the

composite sample generally consists of twelve organisms. For quahog, the composite sample generally consists of 13 organisms. For striped bass, the sample consists of one organism (MassDEP, 2014b).

In addition to comparing the results of this monitoring to past and future seafood monitoring results, the results of this seafood monitoring program will be compared to the current U.S. Food and Drug Administration's (FDA's) criteria for PCBs in commercial seafood of 2 parts per million (ppm). It was exceedances of the FDA criteria in NBH seafood which prompted promulgation of the state's seafood closure areas in 1979 (the FDA criteria at that time was 5 ppm). In addition to comparisons to the current FDA level, and as explained in the 1998 ROD, EPA will compare the results of the seafood monitoring program to a risk-based site-specific threshold of 0.02 ppm PCBs. Consistent with CERCLA and the NCP, the selected remedy for the Site (EPA, 1998, Section X) uses a health-based seafood criteria of 0.02 ppm PCBs based on local patterns of seafood consumption which involve more frequent consumption of local PCB-contaminated seafood than that used by the FDA standard.

3. 2014 Field Collection

The DMF on-site field sampling program included the collection of alewife, black sea bass, conch, quahog, scup, and tautog. The Sampling Report for species collected in 2014 by DMF is in Appendix C (MA DMF, 2015).

Alewife was collected using a dip net in April (Figure 2). Black sea bass was harvested by fish pots during June and July (Figure 3). Conch was harvested by conch pots in October (Figure 4). Quahog was collected pre-spawn in May (Figure 5) and post-spawn in August (Figure 6) using a rake and diver. Scup was collected using fish pots during June and July (Figure 7). Tautog was harvested by fish pots during June and July (Figure 8).

Despite considerable effort to collect species according to the monitoring program design, all species were not obtained in all three closure areas as originally planned. No flounder were collected because the stock is considered "overfished" as determined by the Atlantic States Marine Fisheries Commission. Black sea bass and tautog were substituted for flounder.

The AMEC conducted the collection of striped bass. The Sampling Report for species collected in 2014 by AMEC is in Appendix D (AMEC, 2014).

Striped bass was collected using hook and line in June and July (Figure 9).

Complete collection information including the dates fished, identification information, species, station identification, latitude and longitude, and collection method are included on the Field Collection Forms in Appendix C and D. All samples were delivered frozen to Alpha Woods Hole Labs (Alpha) in Mansfield, MA for analysis.

4. Analytical Chemistry

The seafood samples were analyzed for 136 PCB congeners by GC/MS-SIM (gas

chromatography/mass spectrometry-selective ion monitoring) based on EPA Methods 680 and 8270D. This approach was used to allow comparisons with previous site data. The 136 congeners measured included the eighteen NOAA (National Oceanic and Atmospheric Administration) list congeners and the twelve WHO '98 (1998 World Health Organization) list of dioxin-like congeners. Two congeners, BZ #105 and #118, appear on both lists. The NOAA congener list was used by the MA DMF in its analysis of Area III lobsters from 1988 - 1998, while Aroclors had been used previous to this. The NOAA list typically represents approximately 45% of the total PCB in marine tissue (NOAA, 1993).

The congeners quantitated in this effort are listed in the New Bedford Harbor Superfund Site Quality Assurance Project Plan Revision 10 (MassDEP, 2014c). The WHO '98 congeners were included to enable the evaluation of risks to human health due to the presence of any dioxin-like PCB congeners, if deemed necessary.

Tissue from the collected specimens was filleted, sub-sampled and/or composited as necessary for sample homogenization, extraction and analysis. The first step in the analytical process for the quahog samples was the compositing of thirteen individual samples from each location; these were combined to form one composite sample per location. For each group, approximately five grams of wet sample tissue was homogenized using a tissumizer. Samples were then extracted using EPA method 3570 Microscale Solvent Extraction (MSE) techniques (spin extraction with acetone/methylene chloride in a sealed vessel).

The extract was then cleaned up to remove the lipid portion and separate the PCB Analytes from the lipid. Following sample cleanup, extracts were dried and concentrated using the Kuderna-Danish (K-D) method, brought up to final volume and analyzed. Extract cleanup was performed using Gel Permeation Chromatography (GPC) and Sulfuric Acid Cleanup. Silica Gel Cleanup was also employed as appropriate, based on the sample extracts.

Sample analysis using GC/MS-SIM allowed identification and quantitation of congeners using selected PCB congeners from BZ1 to BZ209. The identification of the specific congeners was accomplished by comparing their mass spectra with the electron impact spectra of the calibration standards. Congener concentrations were determined using mean relative response factors from a multi-level calibration curve. Response factors for congeners were determined relative to internal standard technique. A multi-point curve was used for the individual congeners to demonstrate the linear range of the instrument. Continuing calibrations assured linearity remained for the duration of the analysis. Laboratory SOPs are available in the Quality Assurance Project Plan Revision 10 (MassDEP, 2014c) should further details on chromatographic conditions, quality control criteria, and other elements of the analysis be needed. While lipid content was reported, the wet weight PCB concentrations reported herein are not lipid normalized.

The data validation summary for the laboratory analysis is presented in Appendix B (AMEC, 2015).

5. Results and Discussion

As with previous studies of sediments, water column, seafood, and air at the NBH Site, the current data set demonstrates a generally decreasing trend (north to south) of PCB levels in locally caught seafood. In other words, tissue PCB levels decrease proportionally with the distance from the primary source of PCBs to the upper harbor (the Aerovox facility). Figures 10 through 16 graphically summarize the current data, and Tables 1 through 9 tabulate the totals and averages of the congener sample results.

PCBs are a group of similar organic molecules featuring a “figure-eight” structure of two bonded benzene rings with chlorine atoms attached at up to ten different attachment sites. Theoretically, up to 209 different PCB congeners (or molecular variations) are possible, yet only about 120 of these are found in the natural environment. Furthermore, NOAA has demonstrated that 18 specific congeners are the most pervasive and generally make up almost half of the PCB mass in marine tissues. In addition, WHO considers the twelve specific dioxin-like congeners to present the greatest risk to human health. As noted above in Section 4, two congeners, BZ #105 and BZ #118, are included in both the NOAA and the WHO congener sets.

For the quahog, there was an average decrease of about 20% (100% - 80%) in PCB congener concentration after spawning using only the detected values as shown in Table 5. There was an average 13% decrease (100% - 87%) post-spawn in the lipid concentration for the quahog after spawning.

Overall, the current data set indicate continued levels of PCBs in NBH area seafood above the 1998 ROD’s site-specific target level of 0.02 ppm. One species (quahog) had an individual sample location at or above the FDA limit of 2 ppm PCBs.

It should be noted that these PCB levels do not apply to seafood caught by the harbor’s commercial fishing fleet, as this seafood is caught significantly further offshore than the three PCB closure areas at the New Bedford Harbor Superfund Site. However, these results do indicate the need to continue the outreach program to inform and educate the local communities and recreational sport fishermen about the fishing bans.

The seafood sampling program has been on-going since 2002, the previous year’s reports can be found at the EPA’s web site at www.epa.gov/ne/nbh under “Technical Documents”.

6. References

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NOAA, 1993. NOAA Technical Memorandum NOA ORCA 71. National Status and Trends Program for Marine Environmental Quality. Sampling and Analytical Methods of the National Status and Trends Program National Benthic Surveillance and Mussel Watch Projects, 1984-1992. Volume 1. Silver Springs, Maryland. July 1993

FIGURES

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Figure 14 PCBs Concentrations in Scup Areas II & III

Figure 15 PCBs Concentrations in Tautog Areas II & III

Figure 16 PCBs Concentrations in Striped Bass Areas II & III

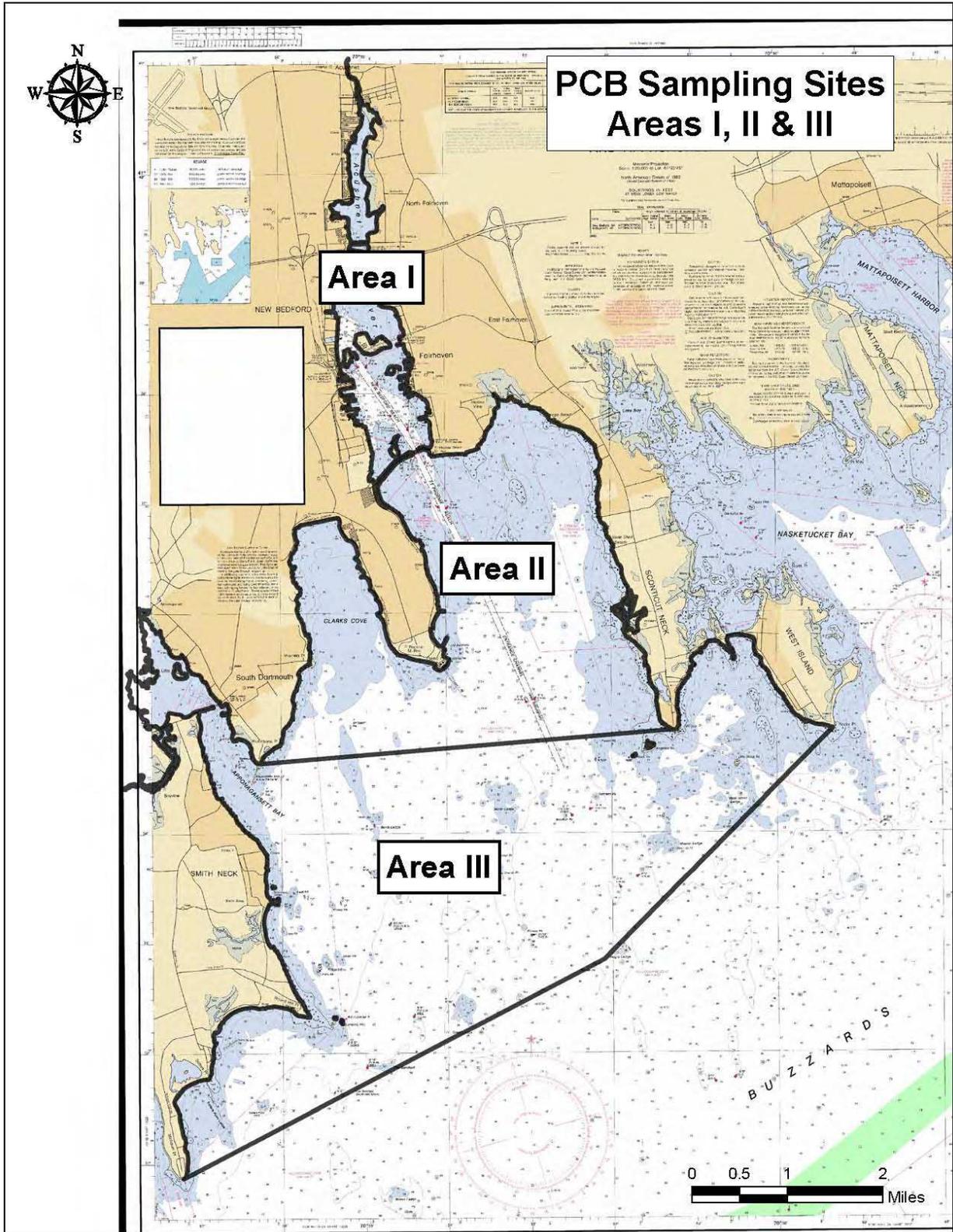


Figure 1 Fish Closure Areas I to III

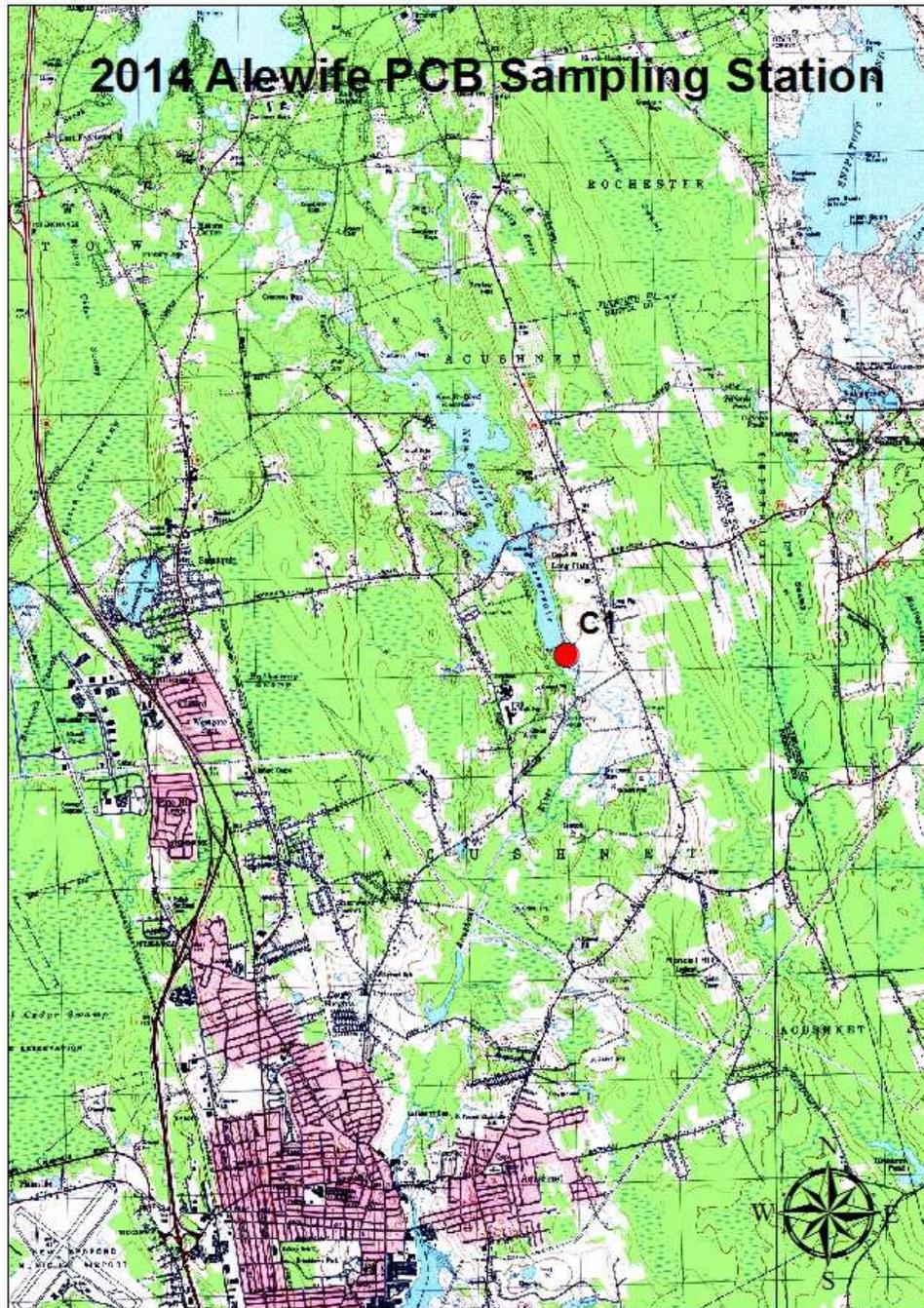


Figure 2 Alewife Sample Location Area I

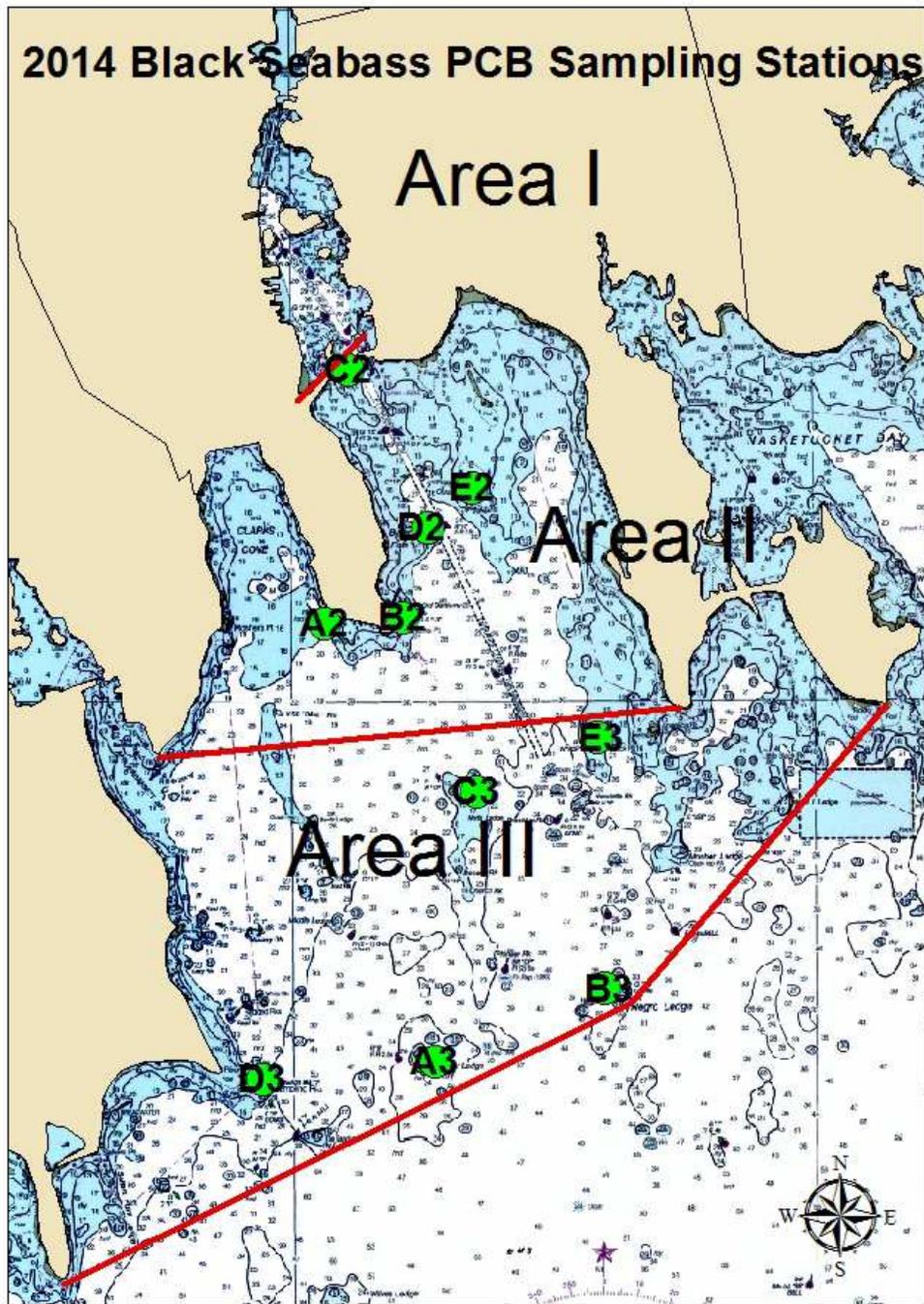


Figure 3 Black Sea Bass Sample Locations Areas II & III

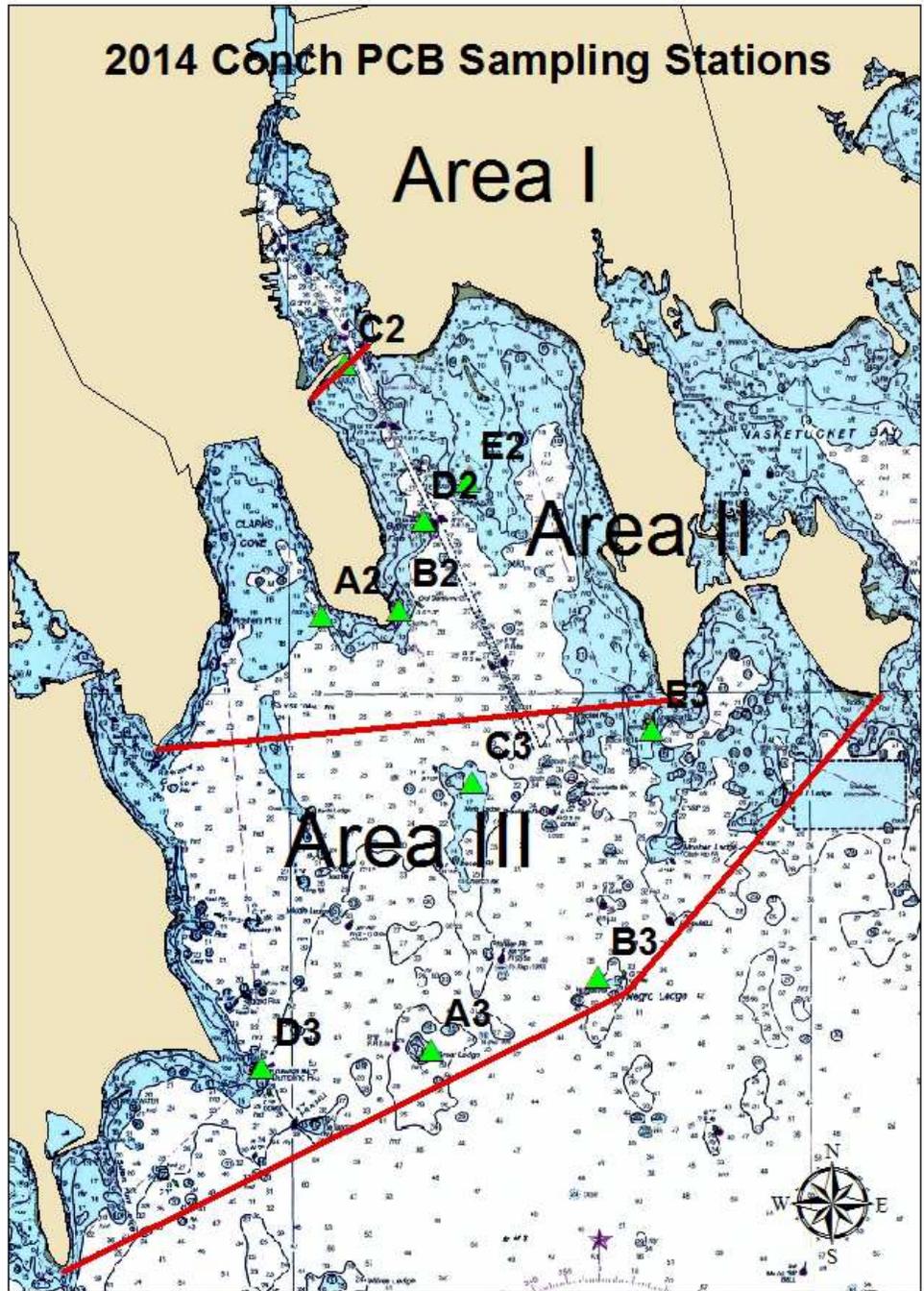


Figure 4 Conch Sample Locations Areas II & III

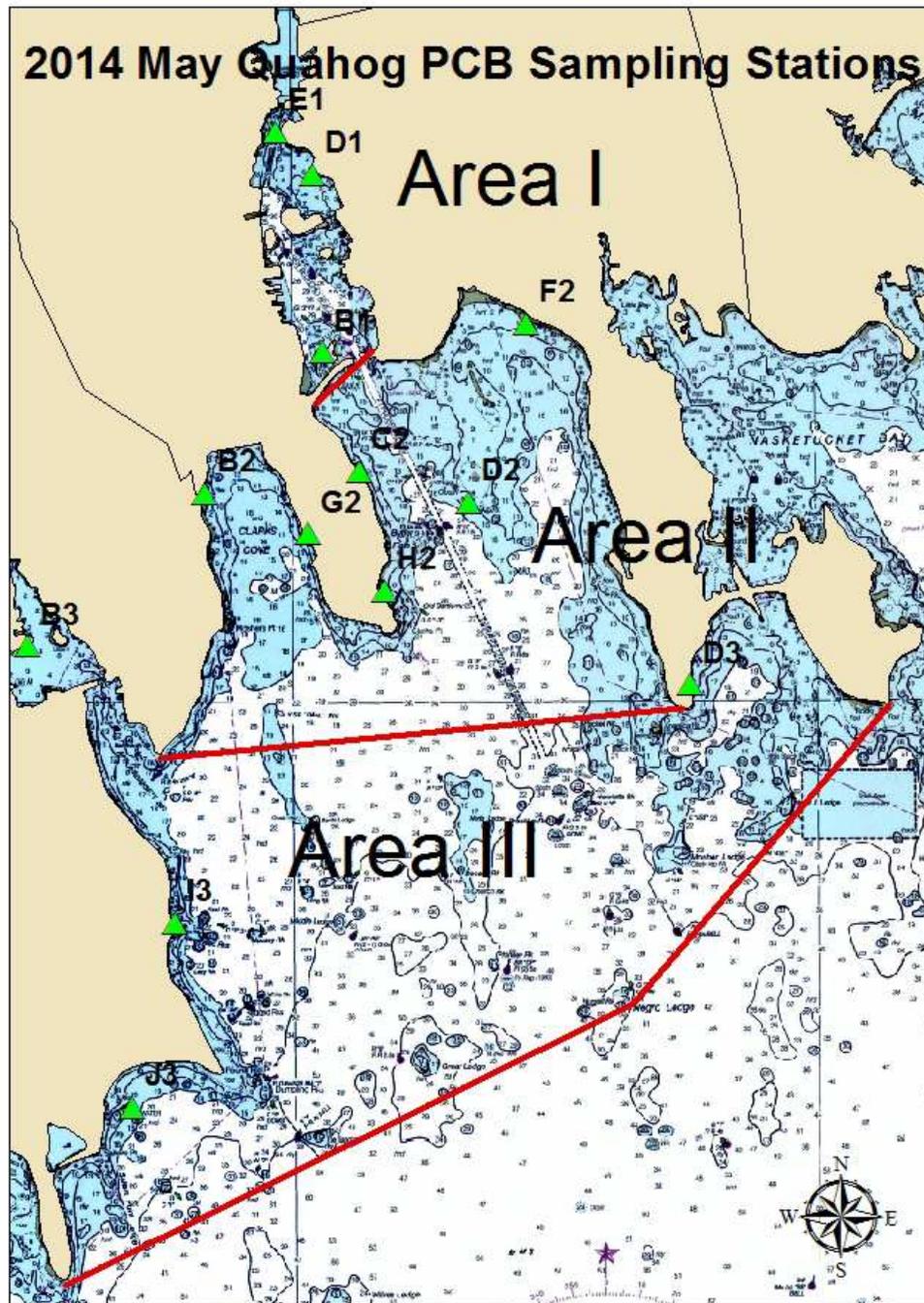


Figure 5 Quahog (Pre-spawn) Sample Locations Areas I to III

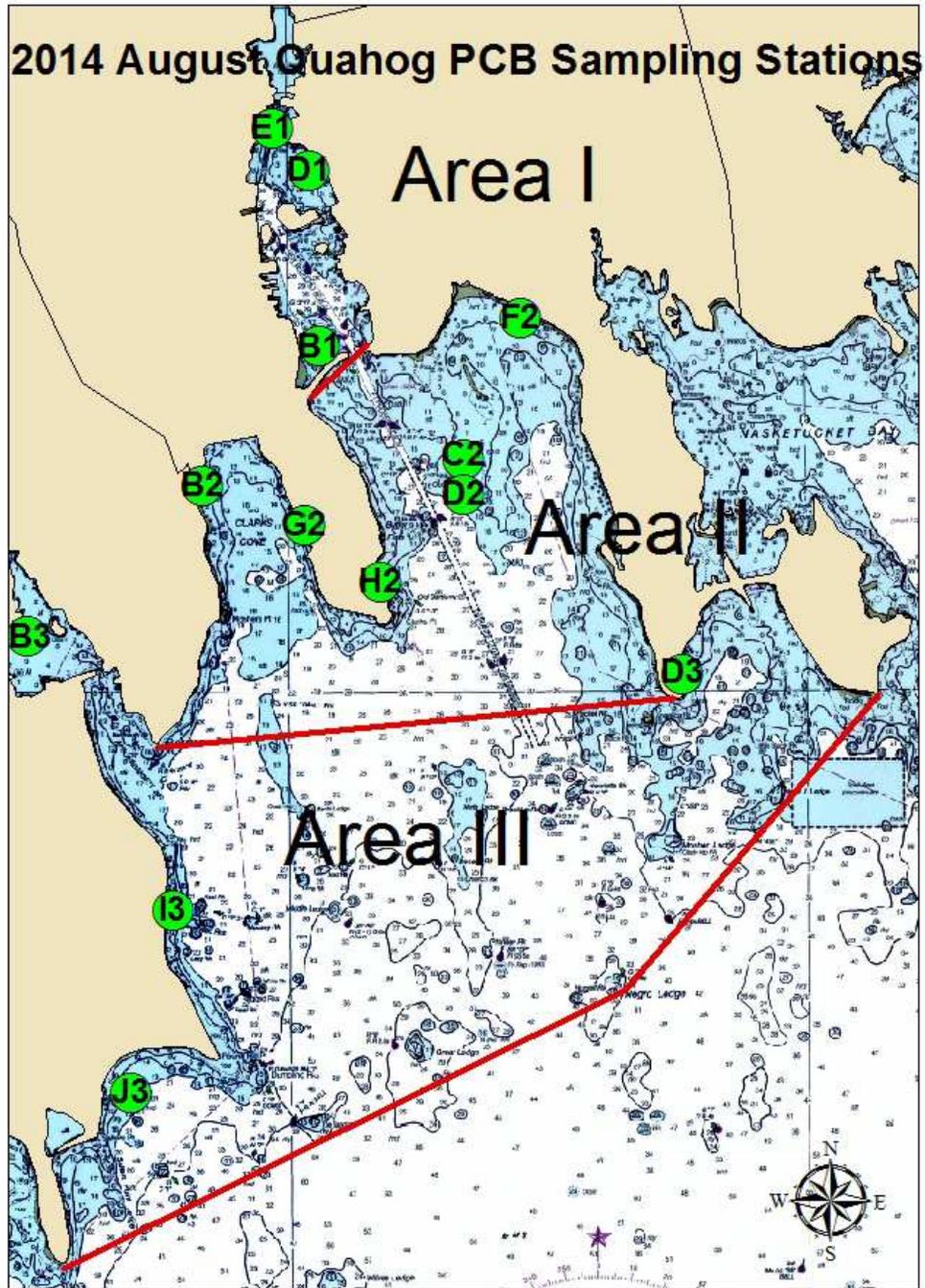


Figure 6 Quahog (Post-spawn) Sample Locations Areas I to III

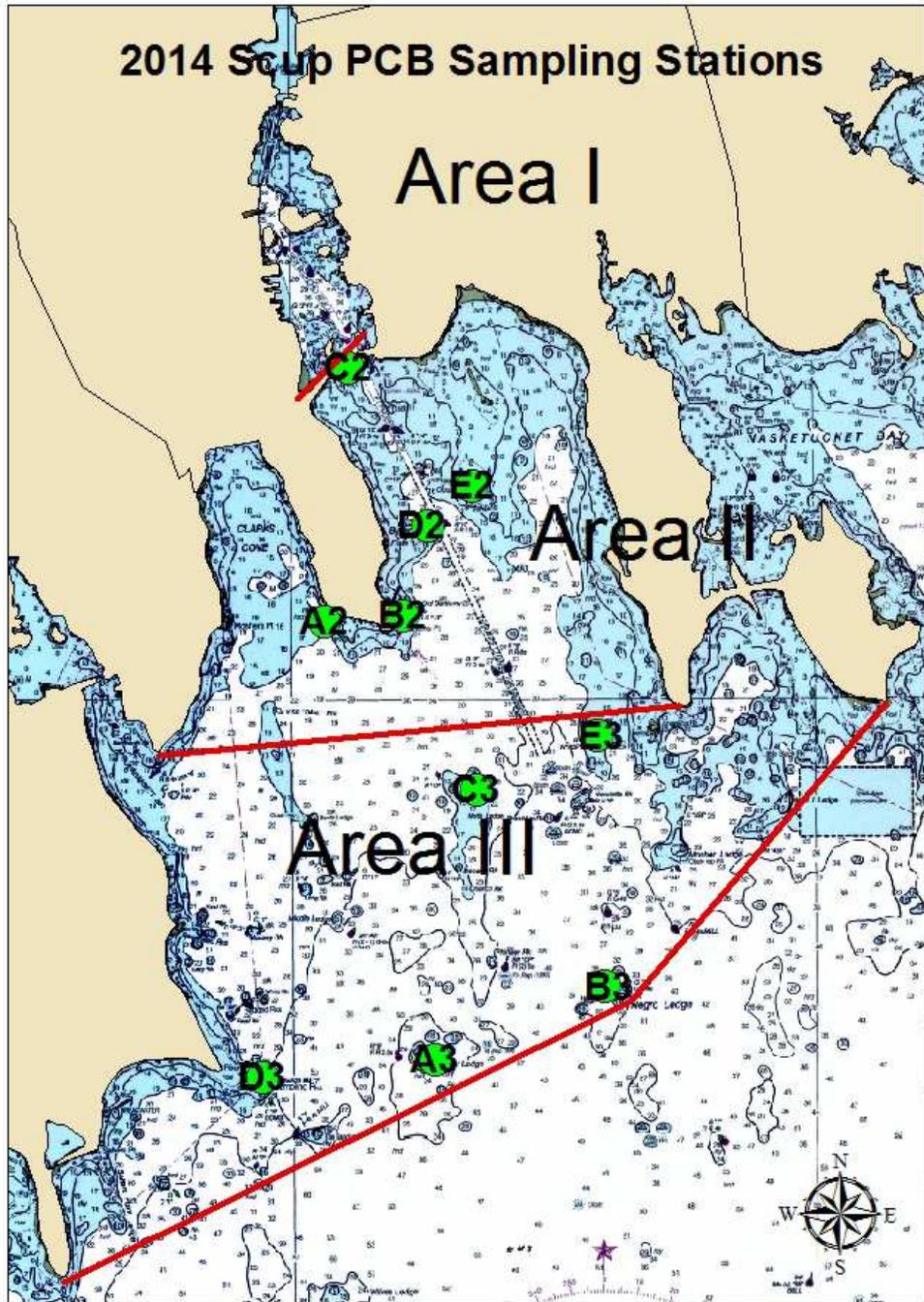


Figure 7 Scup Sample Locations Areas II & III

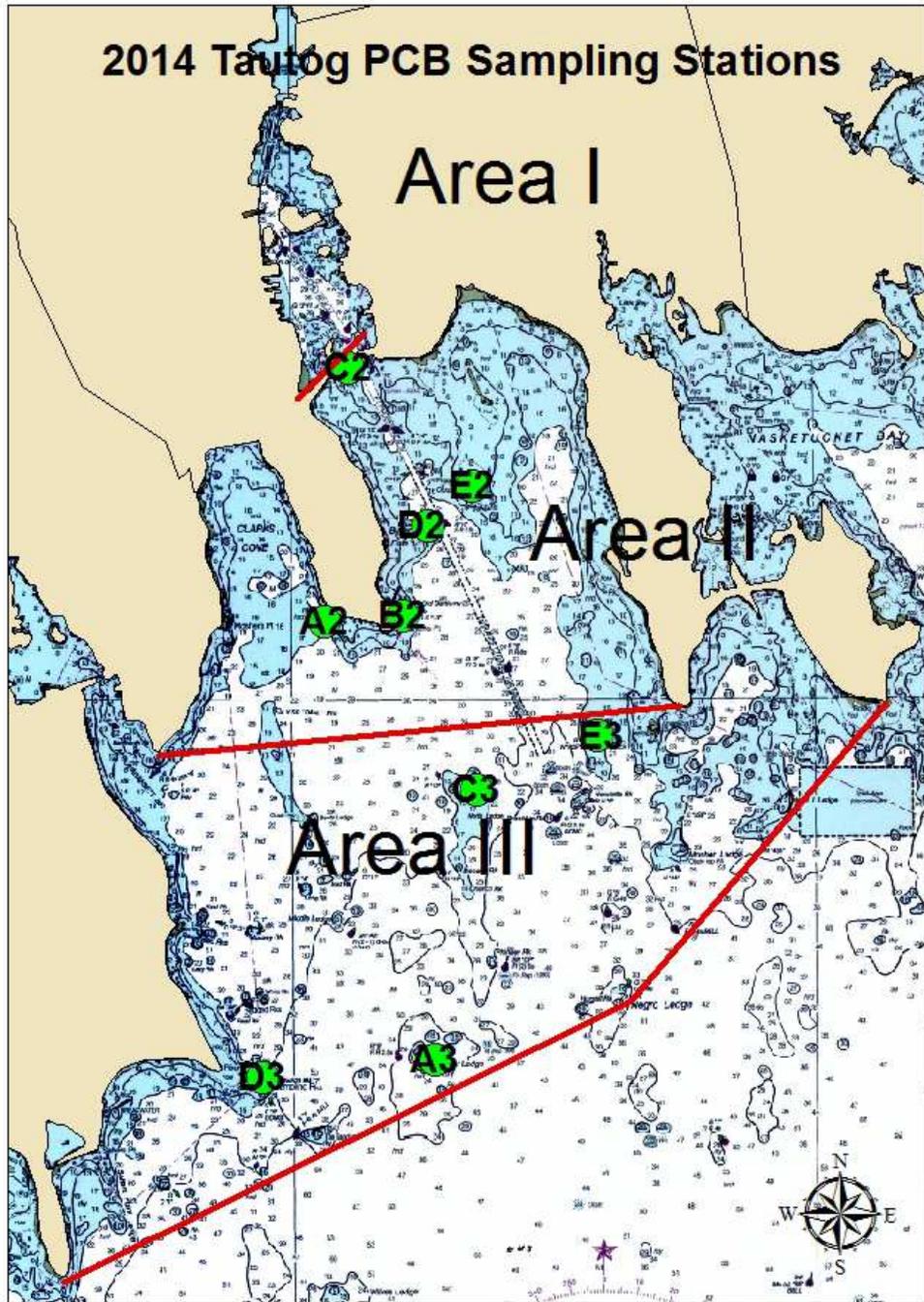
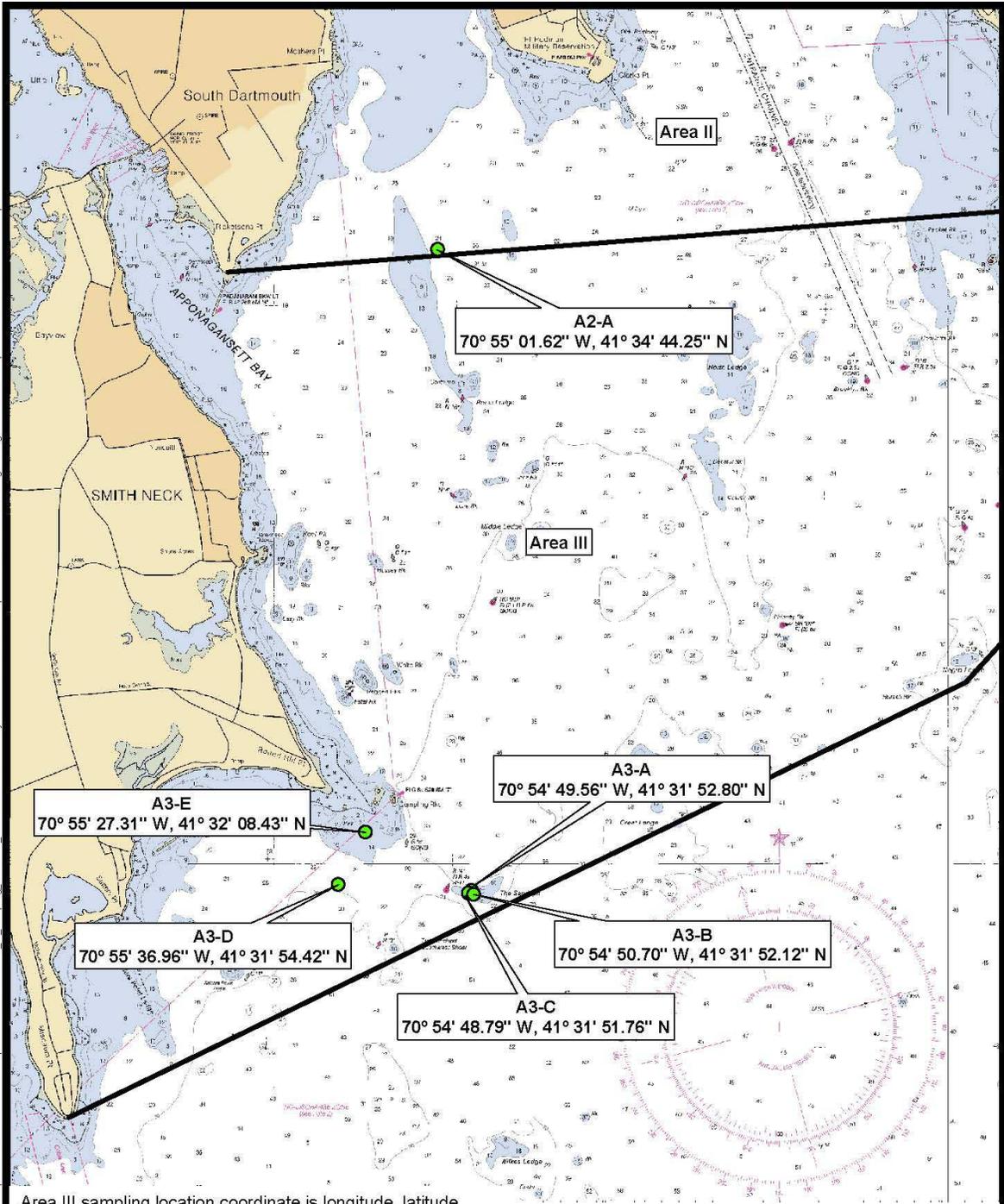


Figure 8 Tautog Sample Locations Areas II & III

Document: P:\Projects\New Bedford Harbor Superfund Site\GIS\MapDocuments\2014 Area III - Sampling Locations Bx1.P.mxd PDF: P:\Projects\New Bedford Harbor Superfund Site\GIS\Figures\Figure 1 - June 2014.pdf 07/21/2014 9:07 AM brnpeters



Area III sampling location coordinate is longitude, latitude with units of degrees, minutes, seconds.
NOAA Raster Navigational Chart # 13232 for New Bedford Harbor and Approaches obtained from Office of Coast Survey at: <http://www.nauticalcharts.noaa.gov/mcd/Raster>



Prepared/Date: BRP 07/21/14
Checked/Date: CHL 07/21/14

Mass DEP, New Bedford Harbor
2014 Striped Bass Monitoring
New Bedford, Massachusetts



Area II and Area III
Sampling Locations
Project 3650-08-0120 Figure 1

Figure 9 Striped Bass Sample Locations Areas II & III

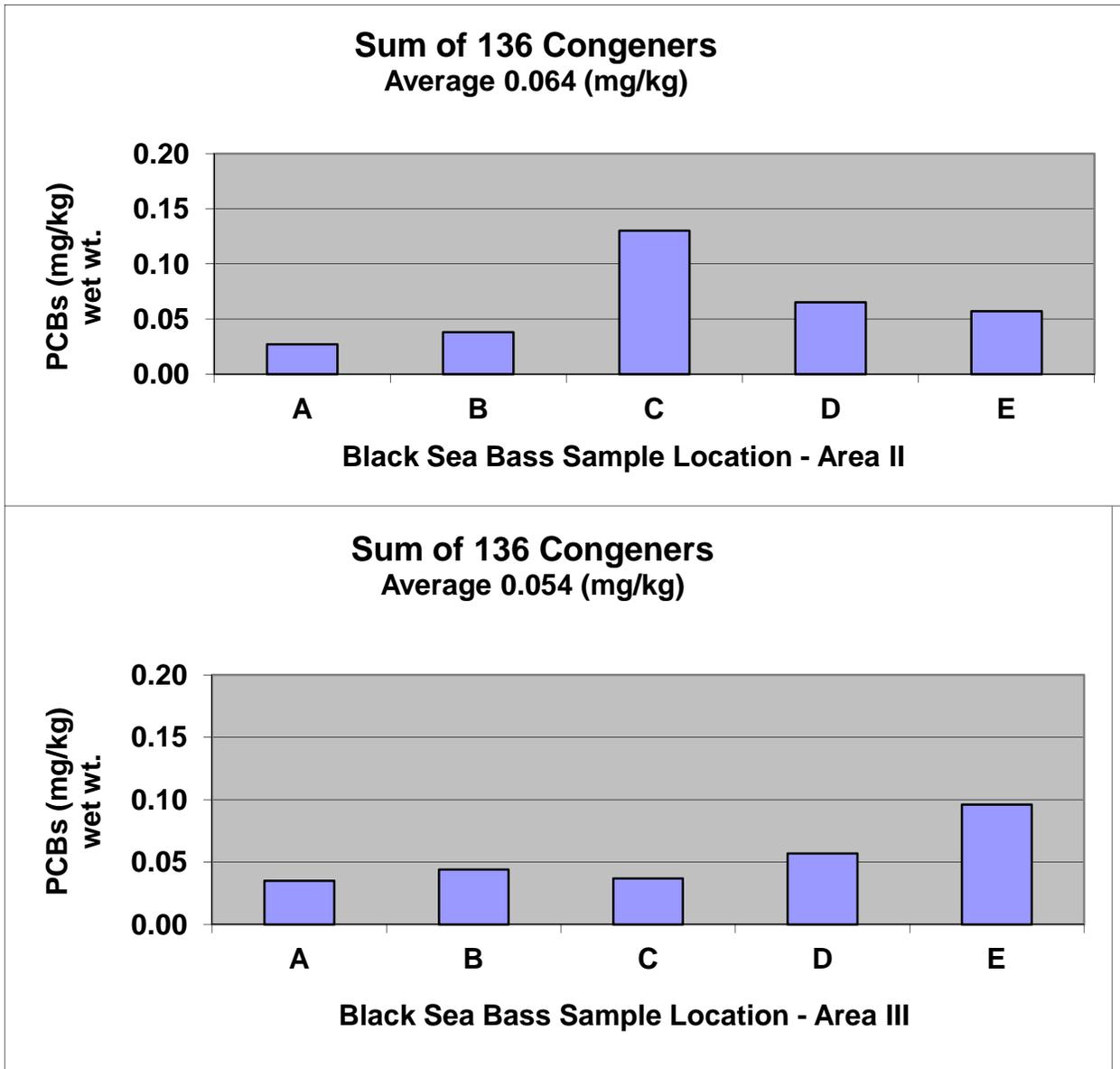


Figure 10 PCBs Concentrations in Black Sea Bass Areas II & III - 2014

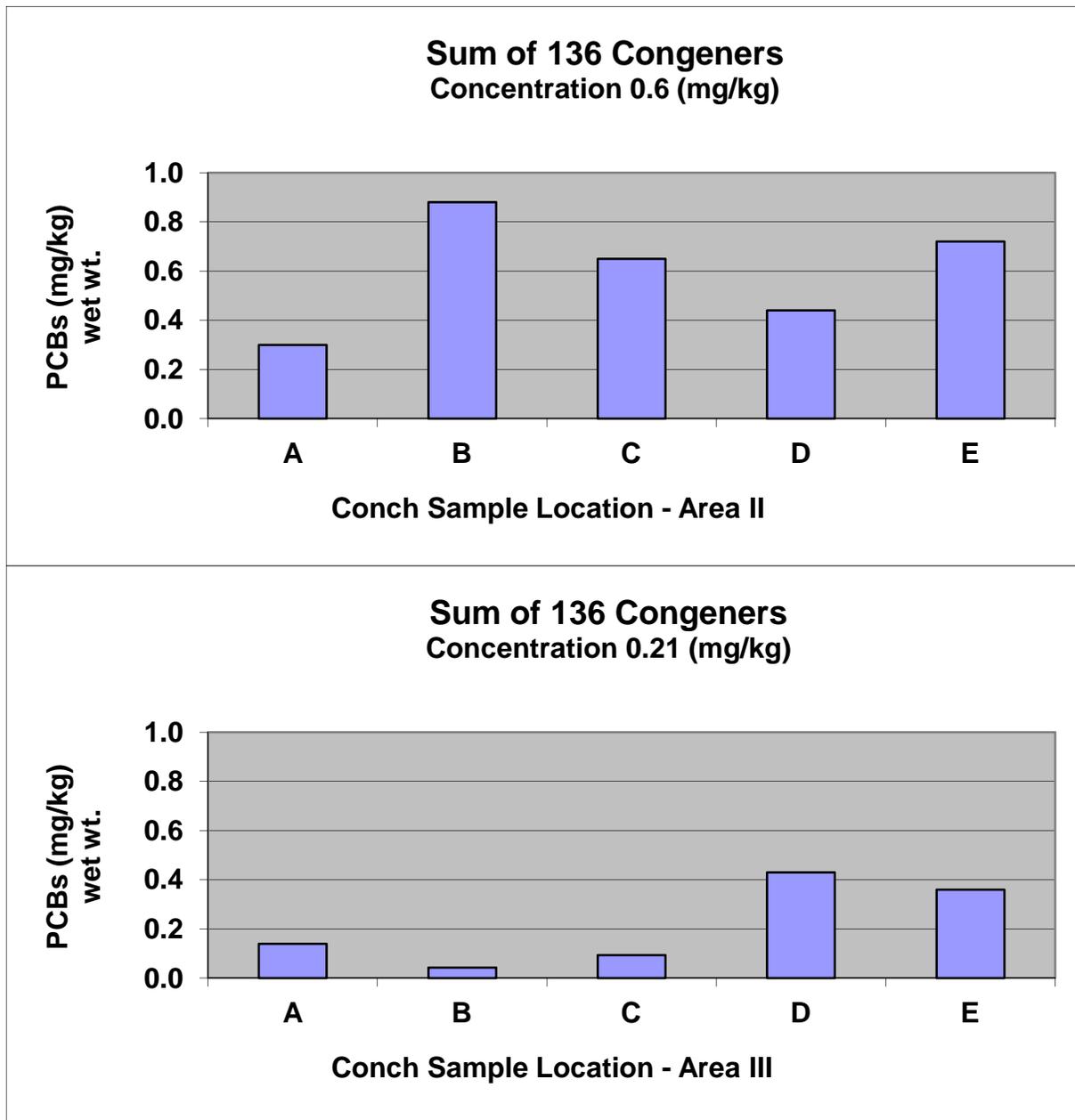


Figure 11 PCBs Concentrations in Conch Areas II & III - 2014

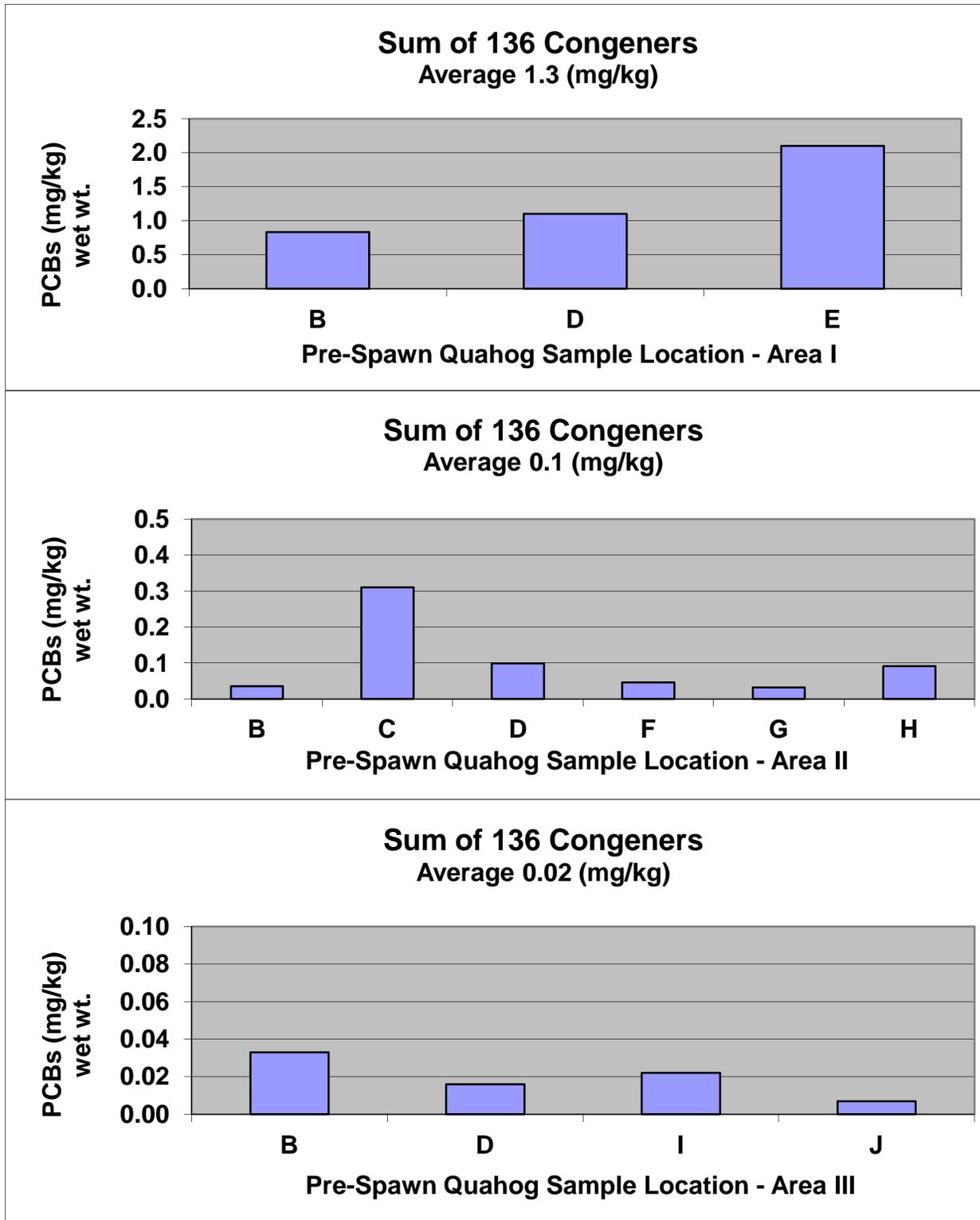


Figure 12 PCBs Concentrations in Pre-Spawn Quahog Areas I to III - 2014

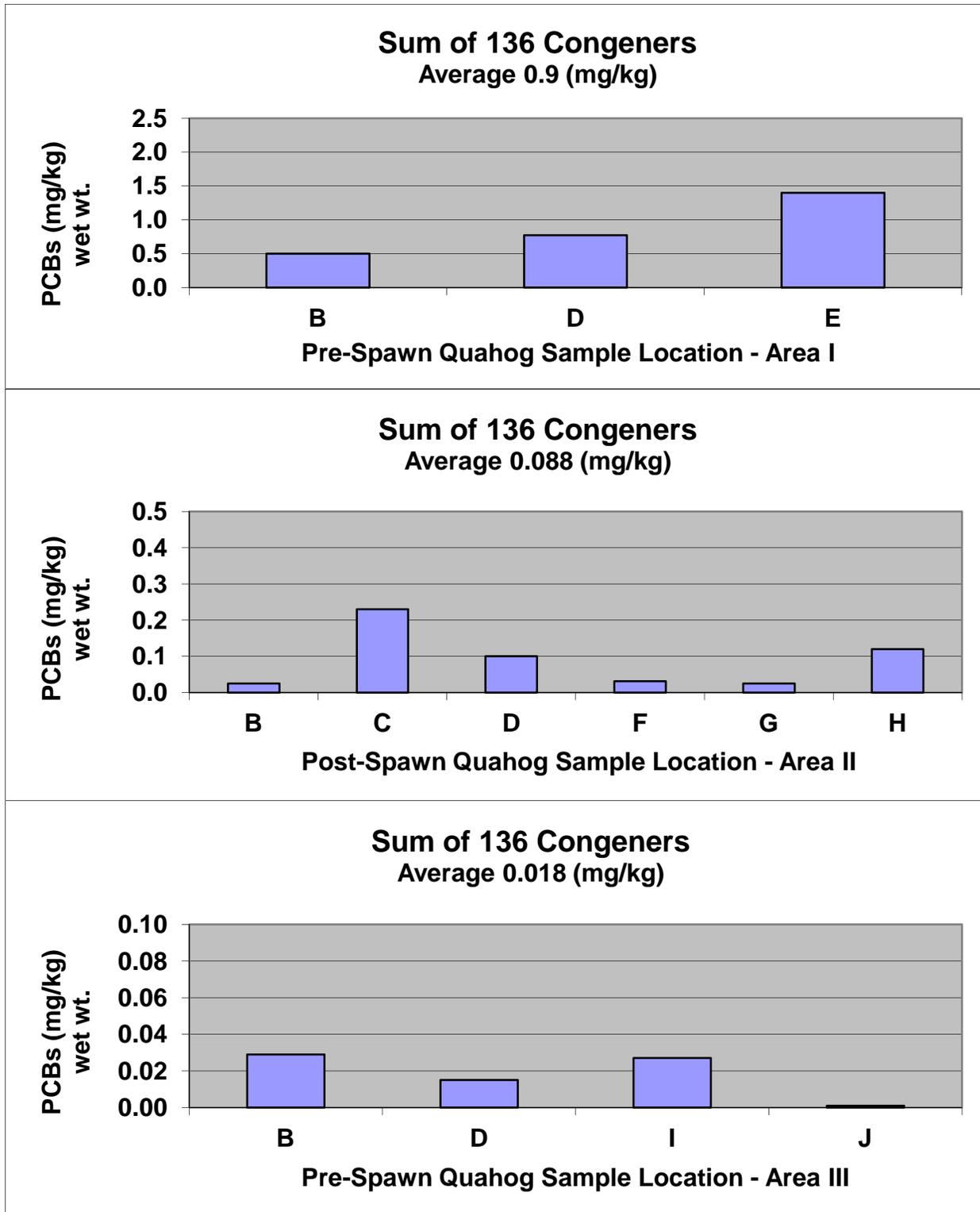


Figure 13 PCBs Concentrations in Post-Spawn Quahog Areas I to III - 2014

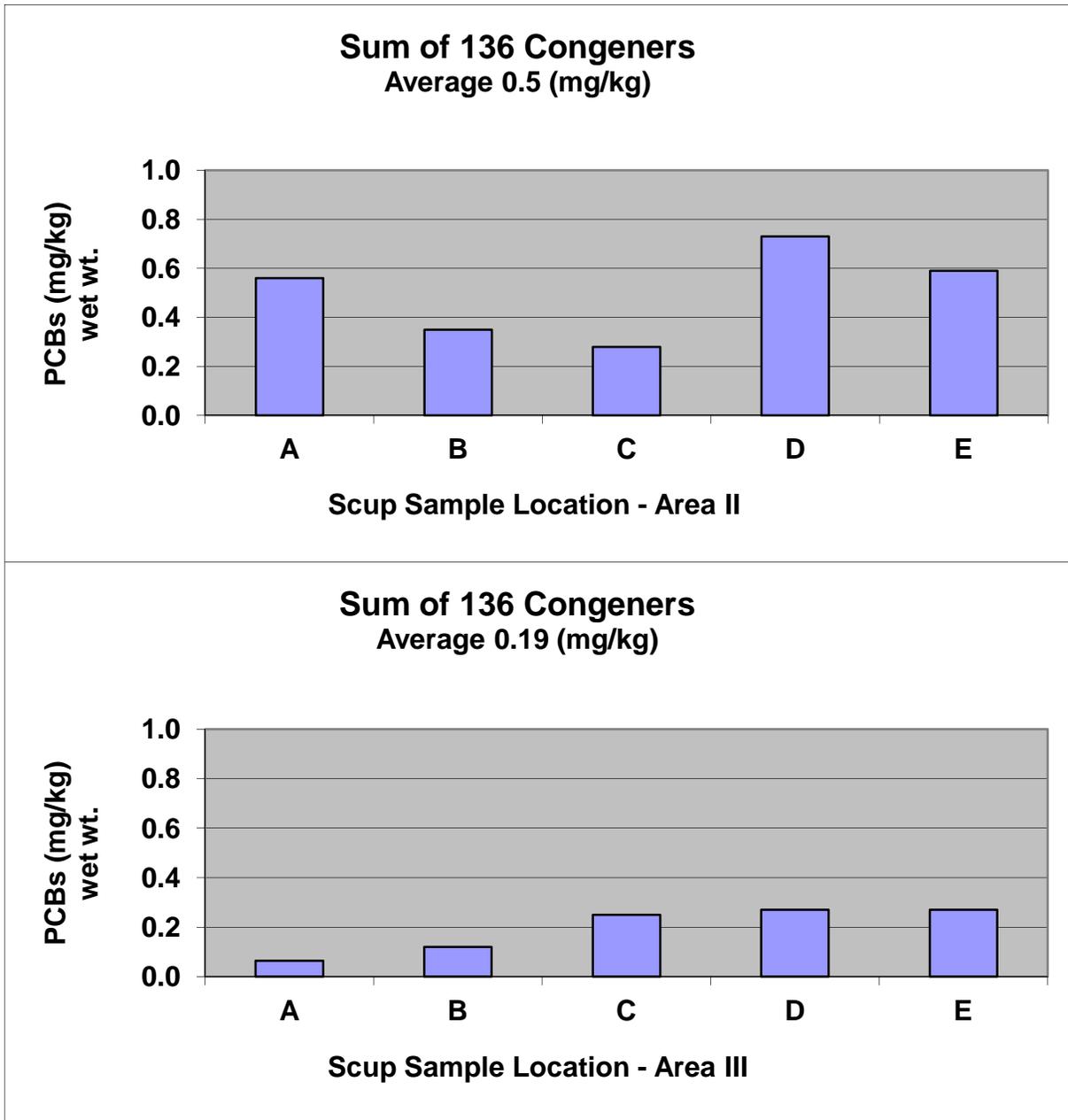


Figure 14 PCBs Concentrations in Scup Areas II & III - 2014

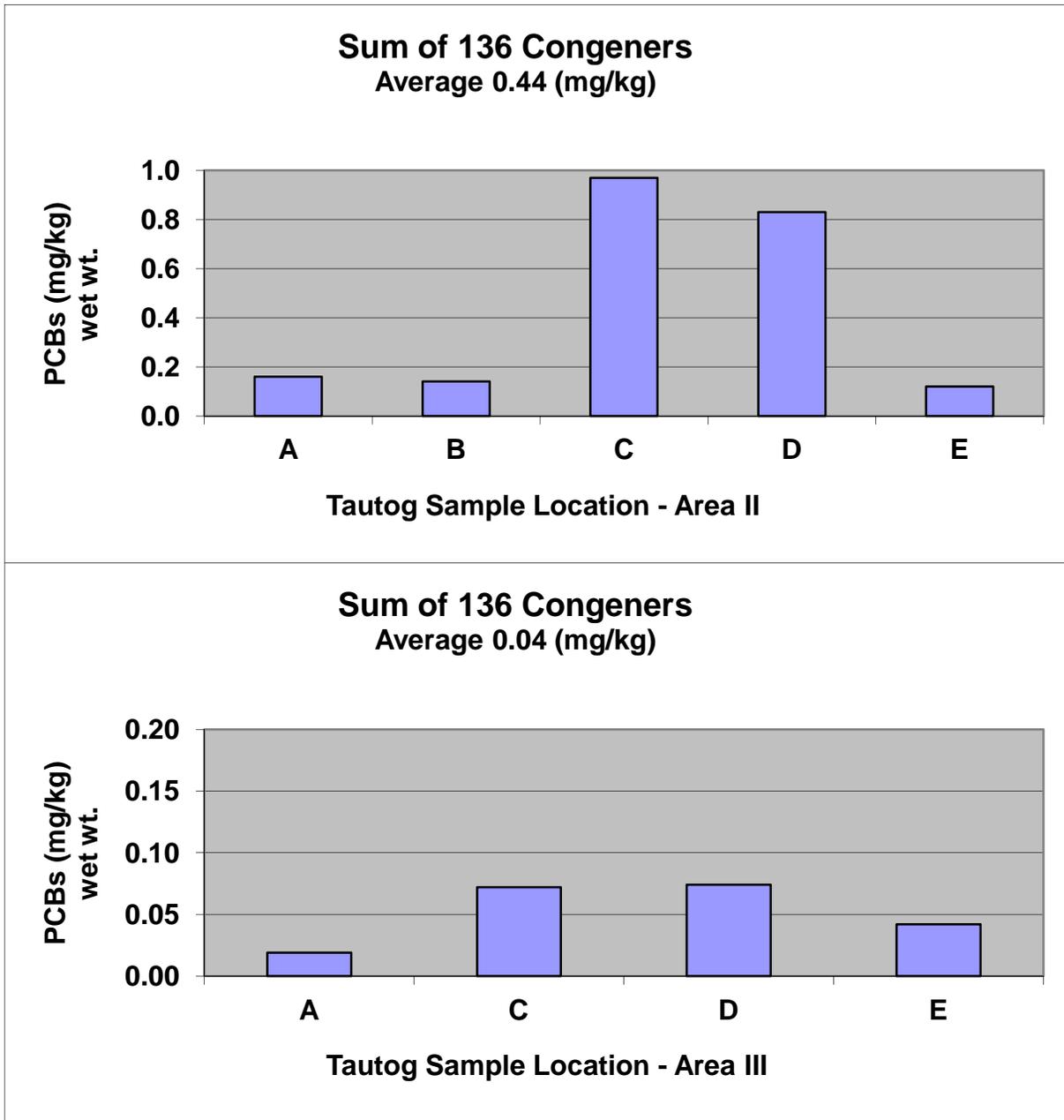


Figure 15 PCBs Concentrations in Tautog Areas II & III - 2014

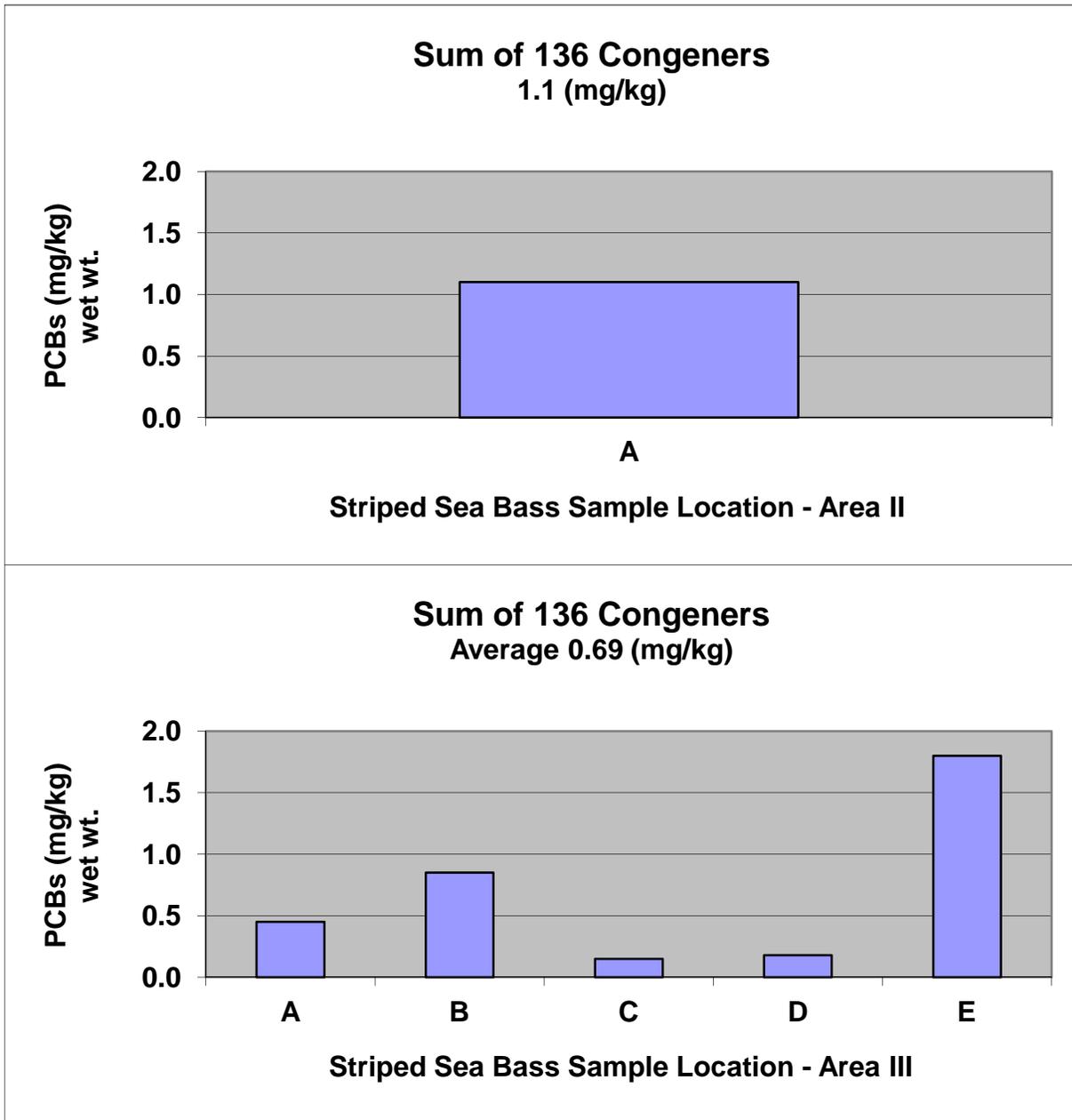


Figure 16 PCBs Concentrations in Striped Bass Areas II & III - 2014

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Table 1 Summary of Sample Data for Alewife Area I 2014

Parameter	Lipids	Total PCB Congeners¹	Total PCB Congeners Hits²	Total NOAA Congeners³	Total WHO Congeners⁴	Total WHO+NOAA Congeners⁵
Units	PERCENT	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station						
1C (Fillet)	3.7	1.0	1.0	0.43 J4	0.031 J3	0.43 J4

Table 2 Summary of Sample Data for Black Sea Bass Areas II & III 2014

Parameter	Lipids	Total PCB Congeners ¹	Total PCB Congeners Hits ²	Total NOAA Congeners ³	Total WHO Congeners ⁴	Total WHO+NOAA Congeners ⁵
Units	PERCENT	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station						
2A (Fillet)	0.36	0.052 J2	0.027	0.019 J2	0.0053 J2	0.021
2B (Fillet)	0.85	0.061 J2	0.038	0.023 J3	0.0056 J2	0.026
2C (Fillet)	1.3	0.15 J3	0.13	0.072 J4	0.013 J2	0.074
2D (Fillet)	0.65	0.084 J2	0.065	0.036 J3	0.0068 J2	0.038
2E (Fillet)	0.83	0.078 J2	0.057	0.034 J3	0.0080 J2	0.036
Average	0.79	0.084	0.064	0.037	0.0077	0.039
3A (Fillet)	0.35	0.059 J2	0.035	0.026 J3	0.0070 J2	0.028
3B (Fillet)	0.24	0.067 J2	0.044	0.033 J3	0.0092 J2	0.035
3C (Fillet)	0.36	0.060 J2	0.037	0.026 J3	0.0070 J2	0.028
3D (Fillet)	0.32	0.079 J2	0.057	0.039 J3	0.010 J2	0.042
3E (Fillet)	0.32	0.12 J2	0.096	0.063 J3	0.015 J2	0.065
Average	0.32	0.076	0.054	0.037	0.0097	0.040

Table 3 Summary of Sample Data for Conch Areas II & III 2014

Parameter	Lipids	Total PCB Congeners¹	Total PCB Congeners Hits²	Total NOAA Congeners³	Total WHO Congeners⁴	Total WHO+NOAA Congeners⁵
Units	PERCENT	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station						
2A	2.1	0.32 J3	0.30	0.18 J4	0.038 J3	0.18
2B	3.0	0.89 J4	0.88	0.50 J4	0.12 J4	0.51 J4
2C	1.4	0.66 J3	0.65	0.33 J4	0.061 J3	0.34 J4
2D	2.4	0.45 J3	0.44	0.24 J4	0.057 J3	0.25 J4
2E	3.5	0.73 J3	0.72	0.41 J4	0.091 J4	0.42 J4
Average	2.5	0.61	0.60	0.33	0.074	0.34
3A	3.1	0.16 J2	0.14	0.089 J3	0.019 J3	0.093
3B	1.3	0.067 J2	0.043	0.029 J3	0.0071 J2	0.032
3C	2.3	0.11 J2	0.094	0.055 J3	0.012 J2	0.058
3D	3.8	0.44 J3	0.43	0.28 J4	0.056 J3	0.29 J4
3E	3.2	0.37 J3	0.36	0.21 J4	0.056 J3	0.22 J4
Average	2.8	0.23	0.21	0.13	0.030	0.14

Table 4 Summary of Sample Data for Pre Spawn Quahogs Areas I to III 2014

Parameter	Lipids	Total PCB Congeners ¹	Total PCB Congeners Hits ²	Total NOAA Congeners ³	Total WHO Congeners ⁴	Total WHO+NOAA Congeners ⁵
Units	PERCENT	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station						
1B	0.50	0.83 J4	0.83	0.35 J4	0.045 J3	0.35 J4
1D	0.50	1.1 J4	1.1	0.48 J4	0.053 J3	0.49 J4
1E	0.47	2.1 J4	2.1	0.86 J4	0.069 J3	0.87 J4
Average	0.49	1.4	1.3	0.57	0.056	0.57
2B	0.25	0.056 J2	0.035	0.020 J3	0.0048 J2	0.022
2C	0.26	0.32 J3	0.31	0.13 J4	0.017 J2	0.14
2D	0.27	0.12 J2	0.099	0.045 J3	0.0069 J2	0.047
2F	0.23	0.067 J2	0.046	0.024 J3	0.0047 J1	0.026
2G	0.10 UJ	0.056 J2	0.032	0.019 J2	0.0051 J1	0.021
2H	0.27	0.11 J2	0.091	0.042 J3	0.0069 J2	0.045
Average	0.23	0.12	0.10	0.047	0.0076	0.050
3B	0.39	0.053 J2	0.033	0.018 J2	0.0047 J1	0.020
3D	0.31	0.039 J1	0.016	0.011 J2	0.0034 J1	0.013
3I	0.14	0.046 J1	0.022	0.014 J2	0.0042 J1	0.016
3J	0.26	0.036 J1	0.0070	0.0084 J1	0.0034 J1	0.010 J1
Average	0.28	0.044	0.020	0.013	0.0039	0.015

Table 5 Summary of Sample Data for Post Spawn Quahogs Areas I to III 2014

Parameter	Lipids	Total PCB Congeners ¹	Total PCB Congeners Hits ²	Total NOAA Congeners ³	Total WHO Congeners ⁴	Total WHO+NOAA Congeners ⁵
Units	PERCENT	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station						
C	0.38	0.51 J3	0.50	0.21 J4	0.030 J3	0.22 J4
1D	0.39	0.77 J3	0.77	0.33 J4	0.037 J3	0.33 J4
1E	0.22	1.4 J4	1.4	0.60 J4	0.059 J3	0.61 J4
Average	0.33	0.91	0.90	0.38	0.042	0.39
2B	0.10	0.048 J2	0.025	0.016 J2	0.0043 J1	0.018
2C	0.21	0.23 J3	0.23	0.098 J4	0.014 J3	0.10
2D	0.34	0.12 J2	0.10	0.049 J3	0.0080 J2	0.051
2F	0.10 U	0.055 J2	0.031	0.017 J2	0.0043 J1	0.019
2G	0.19	0.050 J1	0.025	0.016 J2	0.0045 J1	0.018
2H	0.39	0.13 J2	0.12	0.053 J3	0.0085 J2	0.055
Average	0.22	0.11	0.088	0.041	0.0072	0.044
3B	0.35	0.053 J2	0.029	0.017 J2	0.0047 J1	0.019
3D	0.34	0.041 J1	0.015	0.012 J2	0.0038 J1	0.014
3I	0.36	0.052 J2	0.027	0.016 J2	0.0044 J1	0.019
3J	0.10 U	0.032 J1	0.00093	0.0060 J1	0.0030 U	0.0081 J1
Average	0.28	0.045	0.018	0.013	0.0040	0.015

Table 6 Comparison of Pre-Spawn and Post Spawn Quahog, 2014

Parameter Units	Lipids Percent			Total PCB Congeners Hits ² MG/KG		
	Pre	Post	Post/Pre Ration, as %	Pre	Post	Post/Pre Ration, as %
1B	0.50	0.38		0.83	0.50	60
1D	0.50	0.39		1.1	0.77	70
1E	0.47	0.22		2.1	1.4	67
Average						66
2B	0.25	0.10		0.035	0.025	71
2C	0.26	0.21		0.31	0.23	74
2D	0.27	0.34		0.099	0.10	101
2F	0.23	0.10 U		0.046	0.031	67
2G	0.10 UJ	0.19		0.032	0.025	78
2H	0.27	0.39		0.091	0.12	132
Average						87
3B	0.39	0.35		0.033	0.029	88
3D	0.31	0.34		0.016	0.015	94
3I	0.14	0.36		0.022	0.027	123
3J	0.26	0.10 U		0.0070	0.00093	13
Average						79
Average All Areas	0.30	0.27	87			80

Table 7 Summary of Sample Data for Scup Areas II & III 2014

Parameter	Lipids	Total PCB Congeners ¹	Total PCB Congeners Hits ²	Total NOAA Congeners ³	Total WHO Congeners ⁴	Total WHO+NOAA Congeners ⁵
Units	PERCENT	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station						
2A	1.8	0.57 J3	0.56	0.33 J4	0.083 J3	0.34 J4
2B	1.3	0.37 J3	0.35	0.20 J4	0.053 J3	0.21
2C	1.4	0.29 J3	0.28	0.16 J4	0.038 J3	0.16
2D	1.9	0.74 J3	0.73	0.41 J4	0.10 J4	0.42 J4
2E	1.6	0.61 J3	0.59	0.36 J4	0.091 J3	0.36 J4
Average	1.6	0.51	0.50	0.29	0.073	0.30
3A	1.4	0.084 J2	0.064	0.042 J3	0.0096 J2	0.045
3B	1.6	0.13 J2	0.12	0.073 J3	0.02 J3	0.075
3C	2.0	0.27 J3	0.25	0.16 J4	0.041 J3	0.16 J4
3D	1.2	0.28 J3	0.27	0.17 J4	0.042 J3	0.18
3E	1.2	0.29 J3	0.27	0.16 J4	0.043 J3	0.17
Average	1.5	0.21	0.19	0.12	0.031	0.13

Table 8 Summary of Sample Data for Tautog Areas II & III 2014

Parameter	Lipids	Total PCB Congeners ¹	Total PCB Congeners Hits ²	Total NOAA Congeners ³	Total WHO Congeners ⁴	Total WHO+NOAA Congeners ⁵
Units	PERCENT	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station						
2A	0.39 J	0.17 J2	0.16	0.11 J3	0.025 J3	0.11
2B	0.44 J	0.16 J2	0.14	0.093 J3	0.020 J3	0.096
2C	0.39 J	0.98 J4	0.97	0.52 J4	0.078 J3	0.53 J4
2D	1.0 J	0.84 J4	0.83	0.53 J4	0.11 J3	0.55 J4
2E	0.36 J	0.14 J2	0.12	0.080 J3	0.016 J2	0.083
Average	0.52	0.46	0.44	0.27	0.049	0.27
3A	0.55 J	0.046 J1	0.019	0.017 J2	0.0048 J2	0.019
3C	0.47 J	0.095 J2	0.072	0.054 J3	0.012 J2	0.057
3D	0.40 J	0.096 J2	0.074	0.055 J3	0.014 J2	0.058
3E	0.60 J	0.067 J2	0.042	0.033 J3	0.0084 J2	0.036
Average	0.50	0.076	0.052	0.040	0.0098	0.043

Table 9 - Summary of Sample Data for Striped Sea Bass Area II & III 2014

Parameter	Lipids	Total PCB Congeners ¹	Total PCB Congeners Hits ²	Total NOAA Congeners ³	Total WHO Congeners ⁴	Total WHO+NOAA Congeners ⁵
Units	PERCENT	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Station						
2A (Fillet)	3.3	1.1 J4	1.1	0.50 J4	0.030 J3	0.50 J4
2A (Stomach Contents)	7.6	0.43 J3	0.43	0.20 J4	0.034 J3	0.21 J4
3A (Fillet)	2.9	0.46 J3	0.45	0.25 J4	0.060 J3	0.26 J4
3B (Fillet)	1.9	0.86 J3	0.85	0.35 J4	0.057 J3	0.36 J4
3C (Fillet)	2.7	0.16 J3	0.15	0.081 J4	0.016 J2	0.083
3D (Fillet)	1.6	0.19 J3	0.18	0.094 J4	0.014 J2	0.096
3E (Fillet)	2.8	1.8 J4	1.8	0.85 J4	0.14 J4	0.86 J4
Average	2.4	0.70	0.69	0.33	0.058	0.33
3A (Stomach Contents)	5.6	0.13 J2	0.11	0.063 J3	0.016 J2	0.066
3B (Stomach Contents)	3.3	0.65 J3	0.64	0.25 J4	0.041 J3	0.26 J4
3C (Stomach Contents)	1.3	0.085 J2	0.066	0.042 J3	0.012 J2	0.045
3D (Stomach Contents)	2.2	0.051 J2	0.030	0.018 J3	0.0041 J2	0.020
3E (Stomach Contents)	5.7	0.94 J3	0.92	0.42 J4	0.069 J3	0.43 J4
Average	3.6	0.37	0.35	0.16	0.028	0.16

Appendix B

Data Validation Summary

**Massachusetts Department of Environmental Protection
New Bedford Harbor Seafood Contaminant Survey Monitoring
2014 Sampling
February 10, 2015**

Data Validation Summary
Massachusetts Department of Environmental Protection
New Bedford Harbor Superfund Site
Seafood Contaminant Survey Monitoring 2014 Sampling
New Bedford, Massachusetts

INTRODUCTION

Seventy-eight fish tissue samples were collected as part of the New Bedford Harbor Superfund Site's Seafood Contaminant Survey Monitoring. Seafood samples were collected between April 2014 and October 2014. Striped bass samples were collected by AMEC E&I. All other tissue samples were collected by the Massachusetts Department of Marine Fisheries (MADMF). Samples were submitted to Alpha Analytical Laboratory located in Mansfield, Massachusetts, for processing and analysis. Tissue samples were analyzed for percent lipids and polychlorinated biphenyls (PCBs) by GC/MS Selected Ion Monitoring (SIM).

Tissue samples were analyzed in seven separate data sets: L1423223 (striped bass), L1423568 (alewife, black sea bass), L1423576 (quahogs – pre-spawn), L1423579 (quahogs – post-spawn), L1423583 (scup), L1423591 (tautog), and L1429497 (conch). The data packages were validated using Region I EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses (USEPA, 1996), Region I Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses (USEPA, 2004), Alpha Analytical Laboratory Standard Operating Procedure (SOP) O-015 (Alpha, 2011), and the Quality Assurance Project Plan, Seafood Contaminant Survey, New Bedford Harbor Superfund Site, Revision 9.0 (MADEP, 2013). As specified in the QAPP, Tier I+ data validation was performed on 95 percent of the samples, and Tier II data validation was performed on 5 percent of the samples. Tier II validation was performed on samples submitted in SDG L1429497.

For Tier I+ data validation, data were evaluated for the following parameters:

- * Collection and Preservation
- * Holding Times
- * Data Completeness
- * Initial Calibration (for Tier I+ only if problems noted in case narrative)
- * Continuing Calibration (for Tier I+ only if problems noted in case narrative)
- * Blanks
- * Surrogate Standards
- * Standard Reference Material (SRM)
- * Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)
- * Matrix Spike/Matrix Spike Duplicates (MS/MSD)
- * Laboratory Duplicates
- * Internal Standards (for Tier I+ only if problems noted in case narrative)
- * Target Compound Quantitation (for Tier I+ only if problems noted in case narrative)
- * Miscellaneous

* - all criteria were met for this parameter

For Tier II data validation, the above checks were completed along with evaluations of initial calibrations, continuing calibrations, instrument tuning, and internal standards using summary forms provided in the data package.

DATA VALIDATION SUMMARY

In general, laboratory performance is considered acceptable and all results are usable. The following qualifying statements have been applied to the 2014 data.

Continuing Calibration

PCB (L1423568) – The narrative states that the continuing calibration percent differences (%Ds) for congeners BZ 1 (-21) and BZ 19 (-21) were outside the control limit of 20 in the continuing calibration standard associated with a subset of samples. Positive and non-detected results for BZ 1 and BZ 19 in the following associated samples were qualified estimated (J/UJ):

NBH14-FF-C-2_SB
NBH14-FF-D-2_SB
NBH14-FF-E-2_SB
NBH14-FF-A-3_SB
NBH14-FF-B-3_SB
NBH14-FF-C-3_SB
NBH14-FF-D-3_SB
NBH14-FF-E-3

PCB (L1423576) – The narrative states that the continuing calibration %D for congener BZ 1 (-21) was outside the control limit of 20 in the continuing calibration standard associated with sample NBH14-SF-G-2. Congener BZ 1 was not detected in sample NBH14-SF-G-2 and the reporting limit was qualified estimated (UJ).

PCB (L1429497) – Identified during Tier II validation of SDG L1429497, the continuing calibration %Ds for congeners BZ 1 (-26), BZ 4/10 (-24), and BZ 19 (-22) were outside the control limit of 20 in the continuing calibration standard associated with all samples of SDG L1429497. Positive and non-detected results for congeners BZ 1, BZ 4/10, and BZ 19 in all samples of SDG L1429497 were qualified estimated (J/UJ).

LCS/LCSD

PCB (L1423223) – The LCS/LCSD associated with all samples of SDG L1423223 had relative percent differences (RPDs) outside the control limit of 30 for congeners BZ 176 (32) and BZ 129 (31). Positive and non-detected results for congeners BZ 176 and BZ 129 in all samples of SDG L1423223 were qualified estimated (J/UJ).

MS/MSD

PCB (L1423583) – The MS associated with sample NBH14-FF-A-2 had a percent recovery less than the 40-140 control limits for BZ 153 (38), indicating a potential low bias. The positive detection of BZ 153 in sample NBH14-FF-A-2 was qualified estimated (J).

PCB (L1423591) – The MS associated with sample NBH14-FF-A-2 had a percent recovery less than the 40-140 control limits for BZ 153 (6), indicating a potential low bias. The positive detection of BZ 153 in sample NBH14-FF-A-2 was qualified estimated (J).

Laboratory Duplicates

PCB (L1423591) – RPDs between laboratory duplicate results for congeners BZ 44 (31) and BZ 91 (39) in sample NBH14-FF-A-2 were above the QAPP control limit of 30. Detections of congeners BZ 44 and BZ 91 in sample NBH14-FF-A-2 were qualified estimated (J).

Lipids (L1423576) – Two laboratory duplicates were analyzed using samples from SDG L1423576: NBH14-SF-B-1 and NBH14-SF-G-2. The RPD between results for sample NBH14-SF-B-1 and the associated laboratory duplicate was within the control limit of 20. Inconsistent results were reported for sample NBH14-SF-G-2 and the associated laboratory duplicate. Percent lipids were reported non-detect in sample NBH14-SF-G-2, but were reported above the reporting limit of 0.1% in the laboratory duplicate (0.12%). Based on professional judgment, only the sample result for NBH14-SF-G-2 was qualified estimated (UJ). Remaining samples in the data set were reported unqualified.

Lipids (L1423591) – The RPD between laboratory duplicate results for percent lipids (26) in sample NBH14-FF-A-2 was above the QAPP control limit of 20. Positive detections of lipids were reported in all samples of SDG L1423591 and were qualified estimated (J).

Reference:

U.S. Environmental Protection Agency (USEPA), 1996. "Region I, EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses, Parts I and II," Quality Assurance Unit Staff; Office of Environmental Measurement and Evaluation; December, 1996.

U.S. Environmental Protection Agency (USEPA), 2004. "Region I, Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses;" Hazardous Site Evaluation Division; Draft, February, 2004.

Alpha Analytical, Inc., 2011. "Determination of PCB Homologs, Individual Congeners, and Pesticides by GC/MS-SIM," Alpha Analytical, Inc.; August, 2011.

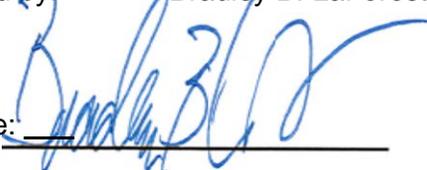
MADEP, May 10, 2014. "Quality Assurance Project Plan, Seafood Contaminant Survey, New Bedford Harbor Superfund Site, Revision 10.0", Massachusetts Department of Environmental Protection; May 2014.

Data Validator: Julie Ricardi

Signature: 

Date: February 18, 2015

Reviewed by: Bradley B. LaForest, NRCC-EAC

Signature: 

Date: February 23, 2015

Appendix C

Seafood Monitoring - Field Sampling Activities for the New Bedford Harbor Superfund Site 2014 Annual Report March 2015

Seafood Monitoring - Field Sampling Activities for the New Bedford Harbor Superfund Site
2014 Annual Report

Vin Malkoski, Senior Marine Fisheries Biologist
Massachusetts Division of Marine Fisheries
March 2015

The Massachusetts Division of Marine Fisheries (*Marine Fisheries*) under an agreement with the Massachusetts Department of Environmental Protection (MassDEP) collects legal-size fish and shellfish from the three New Bedford Harbor fish closure areas. At the end of the collection period, these frozen samples were delivered to the Alpha Woods Hole Laboratories in Mansfield, Massachusetts for analysis. MassDEP provides the results of the analyses to EPA to monitor and support the site remediation project. This report describes *Marine Fisheries'* field activities in 2014 in accordance with the Seafood Monitoring and Field Sampling Work Plan and makes recommendations for the upcoming 2015 field season based on results obtained during the previous field season.

Sample Sites

The three Fish Closure Areas are identified in Attachment 1 from the EPA Record of Decision for the Upper and Lower Operable Unit, New Bedford Harbor Superfund Site, New Bedford, Massachusetts, dated September 25, 1998. These three Fish Closure Areas were designated by the Mass. Dept. of Public Health in 1979. Area 1 includes the waters of the Acushnet River and the New Bedford/Fairhaven Inner Harbor north of the Hurricane Barrier. Area 2 comprises the waters of the Outer Harbor and Clarks Cove south of the Hurricane Barrier and north of a line drawn from Wilbur Point in Fairhaven to Ricketsons Point in Dartmouth. Area 3 is that portion of Buzzards Bay south of the line drawn from Wilbur Point in Fairhaven to Ricketsons Point in Dartmouth and north of a line drawn from Rocky Point on West Island in Fairhaven to the Negro Ledge C3 buoy then to Mishaum Point in Dartmouth.

There are five original sample stations in each of the three fish closure areas in the waters of the City of New Bedford and the Towns of Dartmouth and Fairhaven. Station locations within each area vary for different species as what may be suitable habitat for one species may not be suitable for another (Attachment 1 – Figure 1 to 8). During the 2014 collection season, the only species collected from Area 1 was quahog. In order to provide samples from as many stations as possible, both channel and knobbed whelk were included in the 2014 collections.

2014 Field Collections

Complete information including the harvest dates, collection identification information, species, and station identification information, location by latitude and longitude, and collection method is appended to this report as Attachment 2 – Collection Sheets 1 to 7. Data Form 1 contains length and weight information for the fish species collected.

Alewife (*Alosa pseudoharengus*)

Five alewives were collected at the New Bedford Reservoir at Station C-1 during April using a dip net.

Black sea bass (*Centropristis striata*)

Black sea bass sampling with fish pots began in June and continued into early July. We collected black sea bass from all stations in Areas 2 and 3 in 2014.

Channeled whelk (*Busycon canaliculatum*) and knobbed whelk (*Busycon carica*)

Channeled and knobbed whelk were collected in October from ten stations in Areas 2 and 3 during October using conch pots. Despite numerous attempts, we were only able to obtain two conch at Negro Ledge (SF B-3) in 2014.

Quahog (*Mercenaria mercenaria*)

Marine Fisheries collected pre-spawn quahog samples from thirteen stations in Areas 1, 2, and 3 during May and post-spawn samples from thirteen stations in August by rake and diver. With one exception, a minimum of 12 quahogs were harvested per station in each collection in order to provide sufficient sample sizes for the Work Plan. During the May sampling, we could only find 4 quahogs in the Nonquit area (SF I-3). In August, we moved slightly off the historic station (see Figures 5 and 6) and obtained a complete sample. Station SF C-2 (South of Fredrick St Ramp Pier) was also shifted slightly in August. We were unable to find any quahogs at two stations in Area 1 – SF A-1 (West of the Barrier Opening) and SF C-1 (Crow's Island). Station SF A-1 is a permanent loss due to dredging and construction in support of the new maritime terminal. It is unclear why we could not find quahogs at Station SF C-1, even after consultation with the Fairhaven Shellfish Constable.

Scup (*Stenotomus chrysops*)

Scup collections took place in June and early July at all ten stations in Areas 2 and 3 using fish pots.

Tautog (*Tautoga onita*)

As per the 2014 sampling plan, we collected tautog with fish pots at nine stations in Areas 2 and 3 during June and July. We were unable to obtain tautog from the Negro Ledge station (FF B-3).

Planning for 2015 Field Collections

The final EPA sampling plan was not complete at the time this report was prepared, but preliminary information is that we will only collect the pre-spawn quahog, sample in 2015. In addition, DMF will attempt to search for additional quahog stations in Areas 1 and 2.

ATTACHMENT 1
DMF HARVEST SITE MAPS

Figure 1 PCB Sample Areas 1, 2, & 3

Figure 2 Alewife, Area 1

Figure 3 Black sea bass, Areas 2 & 3

Figure 4 Conch (Channel and knobbed whelk), Areas 2 & 3

Figure 5 Quahog (Pre-spawn May), Areas 1, 2, & 3

Figure 6 Quahog (Post-spawn August), Areas 1, 2, & 3

Figure 7 Scup, Areas 2 & 3

Figure 8 Tautog, Areas 2 & 3

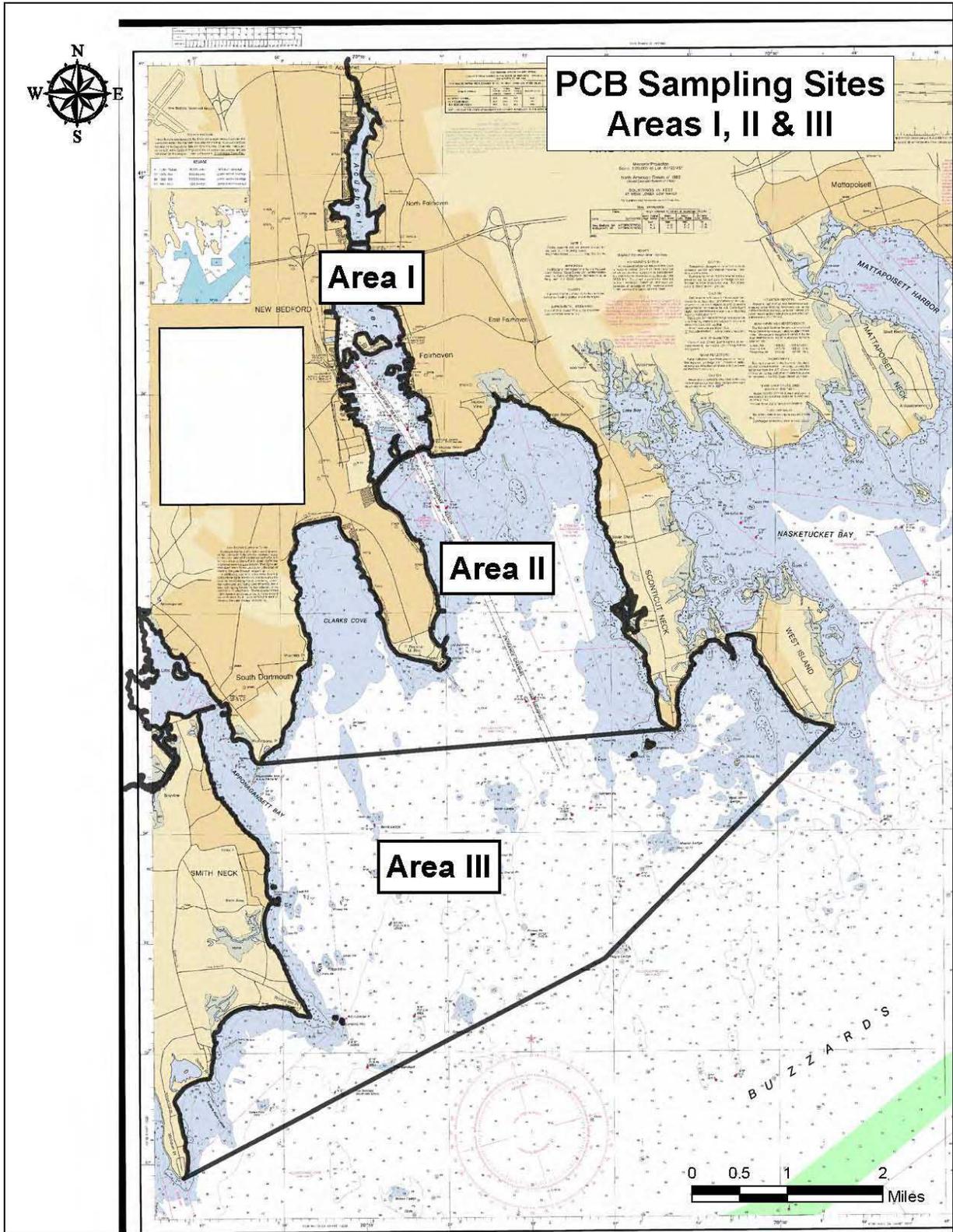


Figure 1 PCB Sample Areas I to III

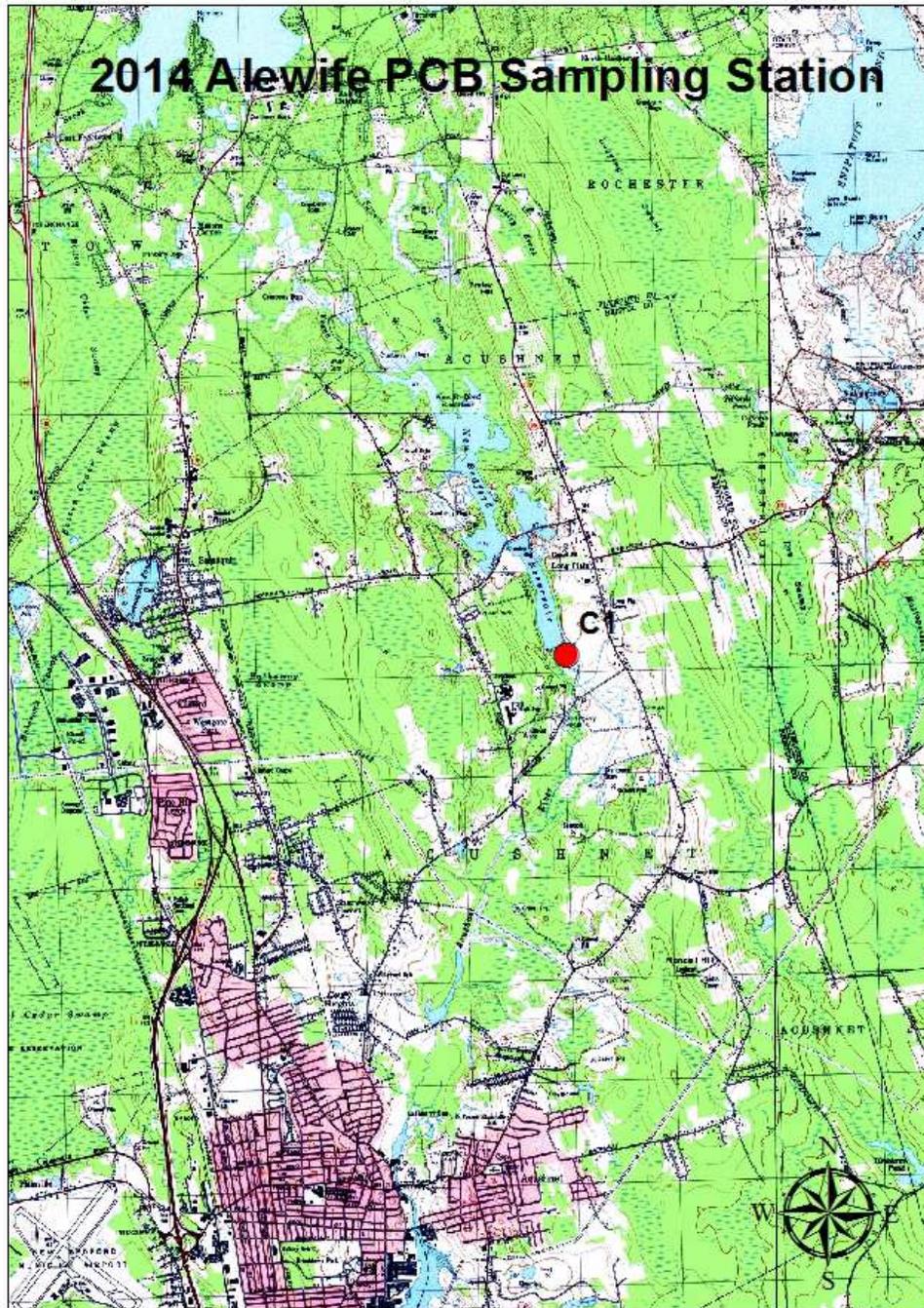


Figure 2 Alewife, Area I

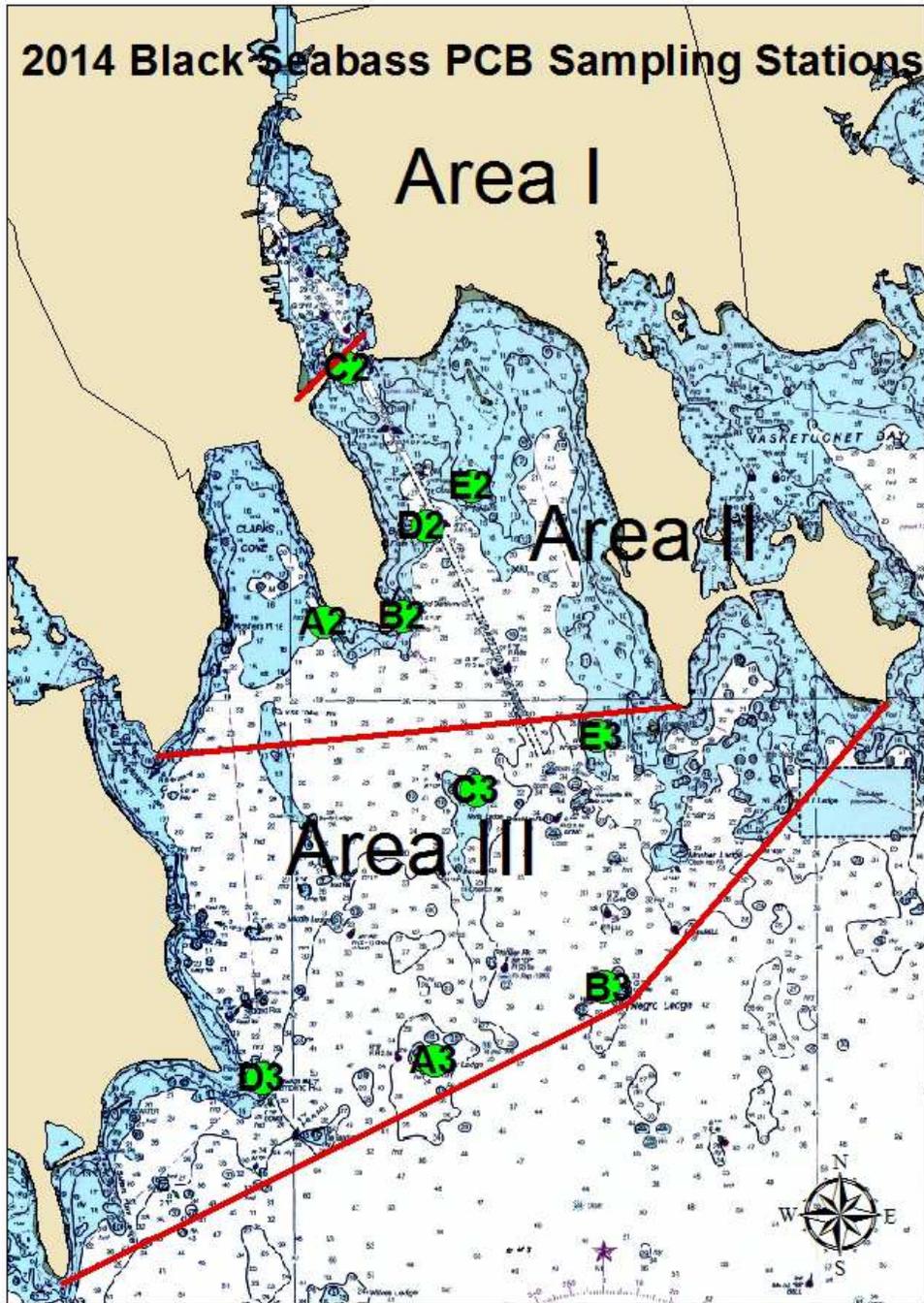


Figure 3 Black Sea Bass, Areas II & III

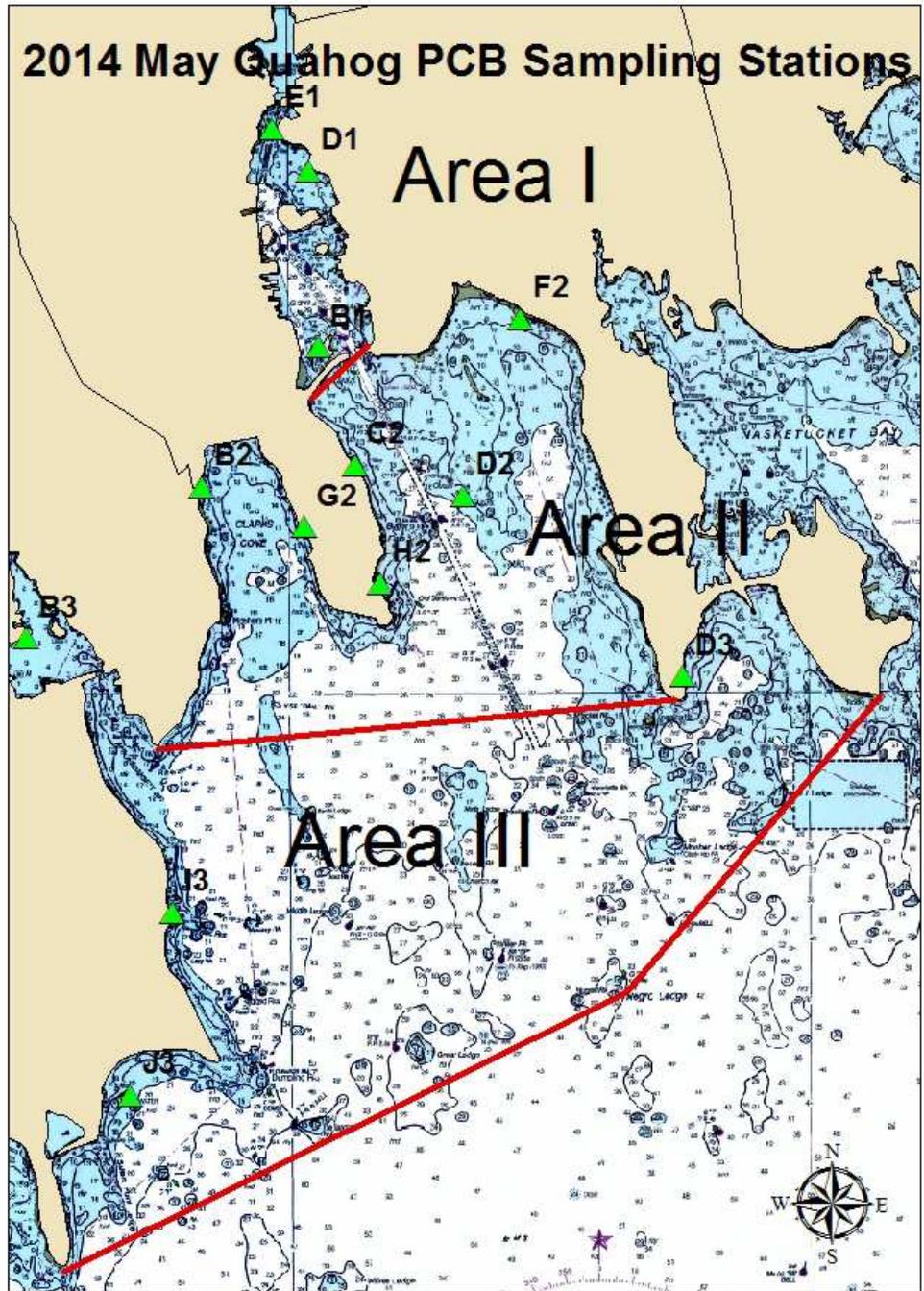


Figure 5 Quahog (Pre-spawn May), Areas I, II, & III

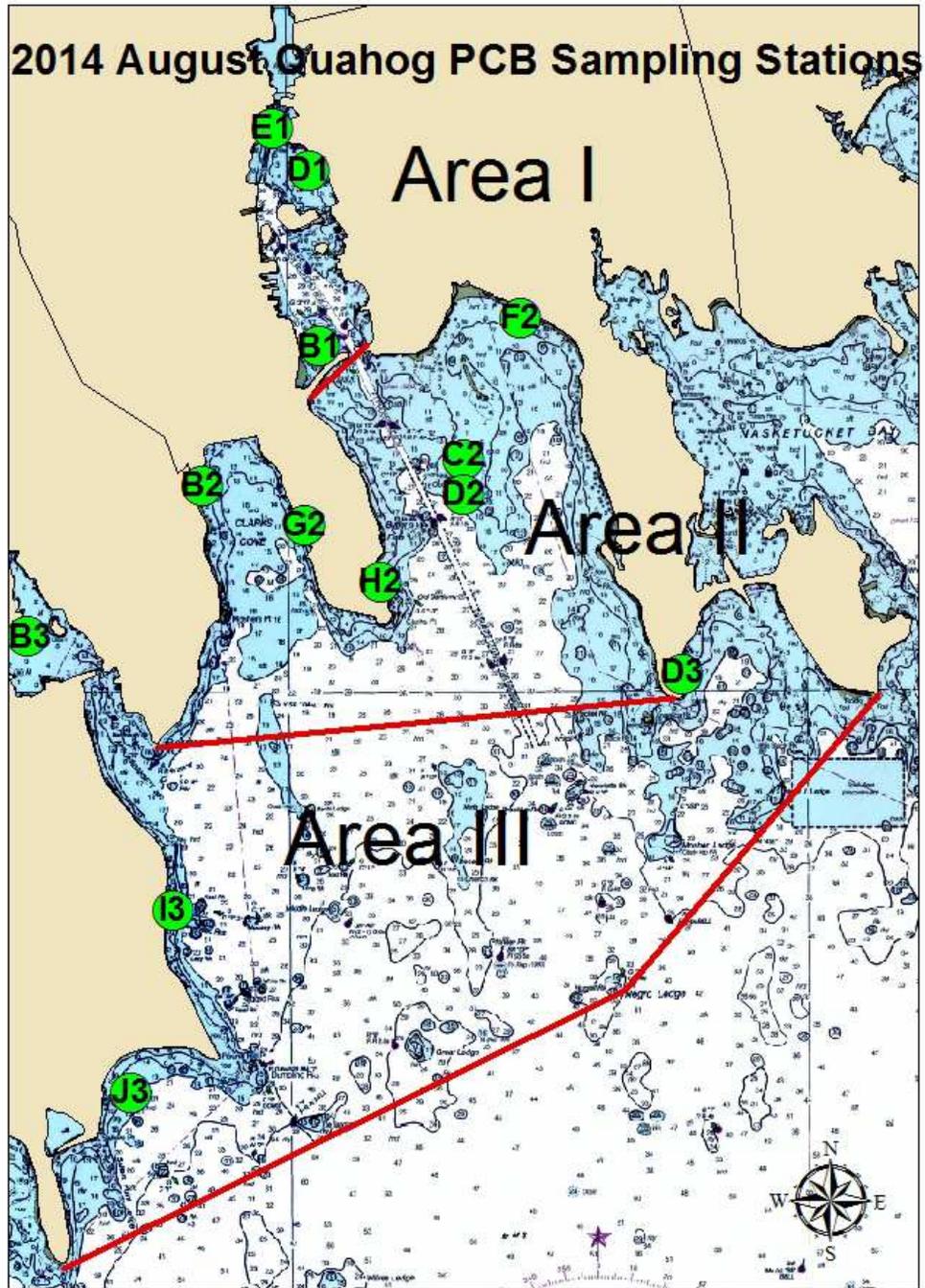


Figure 6 Quahog (Post-spawn August), Areas I, II, & III

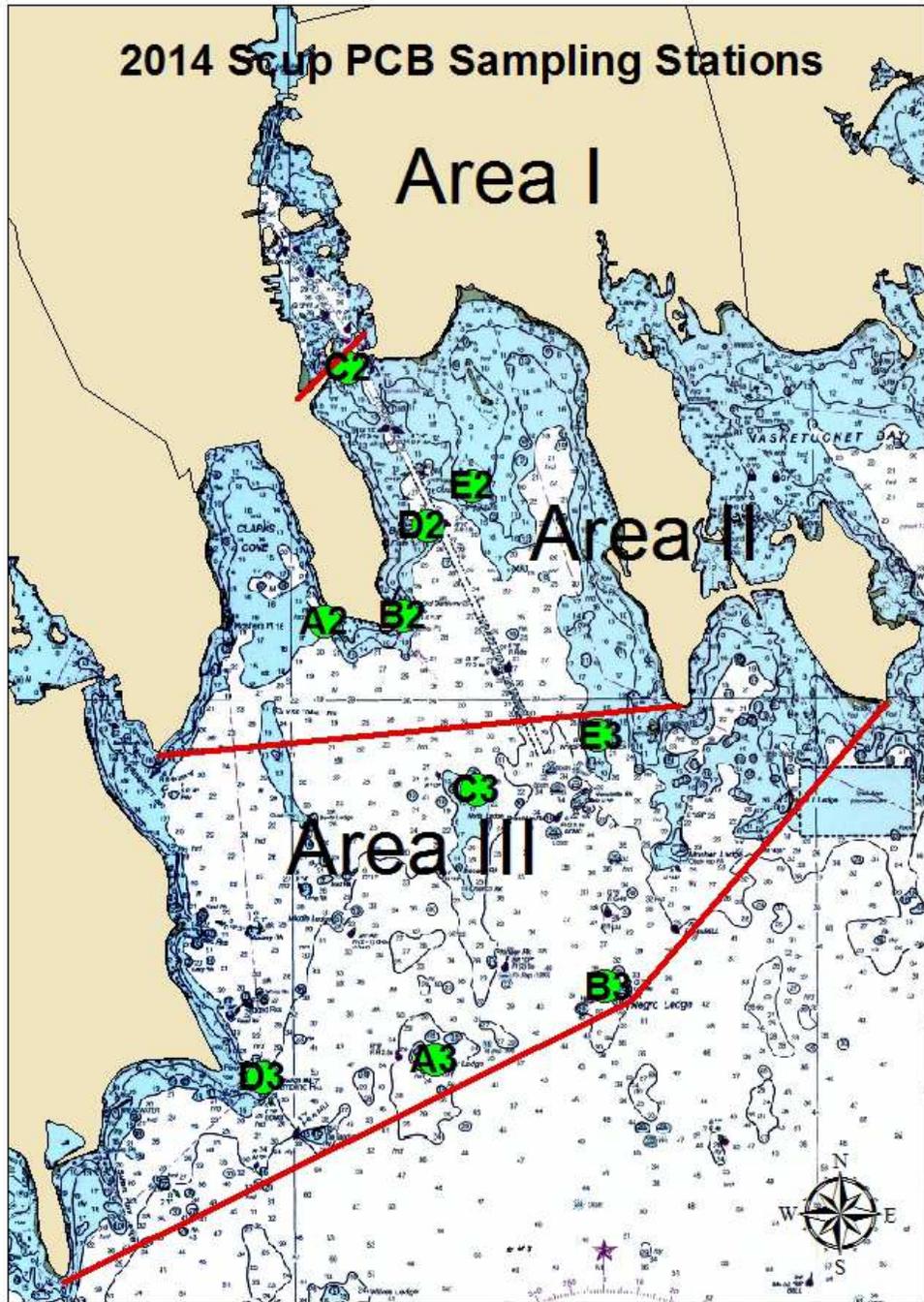


Figure 7 Scup, Areas II & III

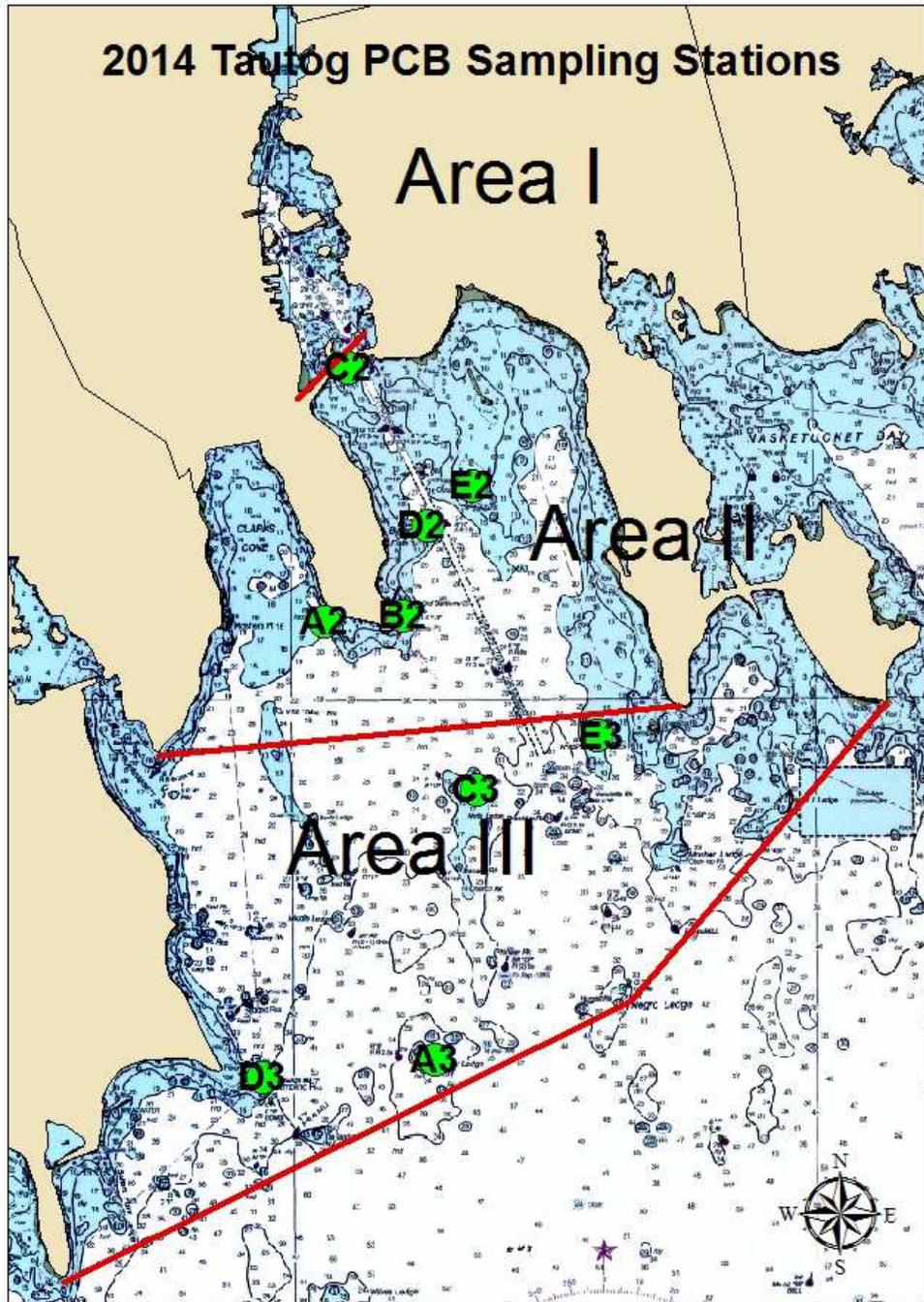


Figure 8 Tautog, Areas II & III

ATTACHMENT 2
DMF FIELD COLLECTION SHEETS

Field Collection Form 1 Alewife
Field Collection Form 2 Black sea bass
Field Collection Form 3 Conch
Field Collection Form 4 Quahog Pre-spawn
Field Collection Form 5 Quahog Post-spawn
Field Collection Form 6 Scup
Field Collection Form 7 Tautog

Field Data Form 1 – Length and weight data by species

FIELD COLLECTION FORM 1: DIVISION MARINE FISHERIES, NEW BEDFORD OFFICE, 838 S. RODNEY FRENCH BLVD, NEW BEDFORD, MA 02744
 PROJECT #: NBH14 REQUESTED BY/AGENCY: Paul Craffey / Dept. Environmental Protection ANALYSIS REQUESTED:

COLLECTOR: MDMF Vin Malkoski SHIPPER: MDMF Vin Malkoski SAMPLE CONDITION: FRESH FROZEN

COLLECTION DATE DDMMYY	COLLECTION/TAG #	SPECIES & # IN SAMPLE	STATION I.D.	LOCATION	LAT/LONG DEG. MIN.	COLLECTION METHOD	RESERVED FOR OFFICE USE
4/24/2014	NBH14-FF-C-1	5 Alewife	NBR	NBH Area 1	041° 43.724' 070° 53.915'	Net	

FIELD COLLECTION FORM 2: DIVISION MARINE FISHERIES, NEW BEDFORD OFFICE, 838 S. RODNEY FRENCH BLVD, NEW BEDFORD, MA 02744

PROJECT #: NBH14 REQUESTED BY/AGENCY: Paul Craffey / Dept. Environmental Protection ANALYSIS REQUESTED:

COLLECTOR: MDMF Vin Malkoski SHIPPER: MDMF Vin Malkoski SAMPLE CONDITION: FRESH FROZEN

COLLECTION DATE DDMMYY	COLLECTION/TAG #	SPECIES & # IN SAMPLE	STATION I.D.	LOCATION	LAT/LONG DEG. MIN.	COLLECTION METHOD	RESERVED FOR OFFICE USE
6/16/2014	NBH14-FF-A-2	5 Black sea bass	SMAST Pier	NBH Area 2	041° 35.556' 070° 54.669'	Fish Pots	
6/23/2014	NBH14-FF-B-2	5 Black sea bass	E of Fort Rodman	NBH Area 2	041° 35.596' 070° 53.922'	Fish Pots	
6/16/2014	NBH14-FF-C-2	5 Black sea bass	W of Opening	NBH Area 2	041° 37.380' 070° 54.430'	Fish Pots	
6/16/2014	NBH14-FF-D-2	5 Black sea bass	Lighthouse	NBH Area 2	041° 36.242' 070° 53.683'	Fish Pots	
6/16/2014, 6/19/2014, 6/23/2014	NBH14-FF-E-2	7 Black sea bass	Egg Island Rocks	NBH Area 2	041° 36.523' 070° 53.258'	Fish Pots	
7/1/2014	NBH14-FF-A-3	5 Black sea bass	Great Ledge	NBH Area 3	041° 31.591' 070° 56.110''	Fish Pots	
6/26/2014	NBH14-FF-B-3	5 Black sea bass	Negro Ledge	NBH Area 3	041° 32.922' 070° 52.023'	Fish Pots	
6/19/2014	NBH14-FF-C-3	5 Black sea bass	North Ledge	NBH Area 3	041° 34.341' 070° 53.234'	Fish Pots	
6/24/2014	NBH14-FF-D-3	5 Black sea bass	Radome	NBH Area 3	041° 32.281' 070° 55.292'	Fish Pots	
6/23/2014	NBH14-FF-E-3	4 Black sea bass	Packet Rock	NBH Area 3	41° 34.723' 070° 52.071'	Fish Pots	

FIELD COLLECTION FORM 3: DIVISION MARINE FISHERIES, NEW BEDFORD OFFICE, 838 S. RODNEY FRENCH BLVD, NEW BEDFORD, MA 02744

PROJECT #: NBH14 REQUESTED BY/AGENCY: Paul Craffey / Dept. Environmental Protection ANALYSIS REQUESTED:

COLLECTOR: MDMF Vin Malkoski SHIPPER: MDMF Vin Malkoski SAMPLE CONDITION: FRESH FROZEN

COLLECTION DATE DDMMYY	COLLECTION/TAG #	SPECIES & # IN SAMPLE	STATION I.D.	LOCATION	LAT/LONG DEG. MIN.	COLLECTION METHOD	RESERVED FOR OFFICE USE
10/24/2014	NBH14-SF-A-2	12 Conch	SMAST Pier	NBH Area 2	041° 35.556' 070° 54.669'	Pots	
10/15/2014	NBH14-SF-B-2	12 Conch	E of Fort Rodman	NBH Area 2	041° 35.596' 070° 53.922'	Pots	
10/15/2014, 10/22/2014	NBH14-SF-C-2	12 Conch	W of Opening	NBH Area 2	041° 37.380' 070° 54.430'	Pots	
10/15/2014, 10/20/2014	NBH14-SF-D-2	12 Conch	Lighthouse	NBH Area 2	041° 36.242' 070° 53.683'	Pots	
10/15/2014	NBH14-SF-E-2	12 Conch	Egg Island	NBH Area 2	041° 36.523' 070° 53.258'	Pots	
10/20/2014, 10/22/2014, 10/30/2014	NBH14-SF-A-3	10 Conch	Great Ledge	NBH Area 3	041° 31.591' 070° 56.110'	Pots	
10/30/2014	NBH14-SF-B-3	2 Conch	Negro Ledge	NBH Area 3	41° 32.922' 070° 52.023'	Pots	
10/20/2014	NBH14-SF-C-3	12 Conch	North Ledge	NBH Area 3	041° 34.341' 070° 53.234'	Pots	
10/20/2014, 10/22/2014	NBH14-SF-D-3	12 Conch	Radome	NBH Area 3	041° 32.281' 070° 55.292'	Pots	
10/22/2014	NBH14-SF-E-3	12 Conch	Angelica Rock	NBH Area 3	041° 34.711' 070° 51.498'	Pots	

FIELD COLLECTION FORM 4: DIVISION MARINE FISHERIES, NEW BEDFORD OFFICE, 838 S. RODNEY FRENCH BLVD, NEW BEDFORD, MA 02744

PROJECT #: NBH14 REQUESTED BY/AGENCY: Paul Craffey / Dept. Environmental Protection ANALYSIS REQUESTED:

COLLECTOR: MDMF Vin Malkoski SHIPPER: MDMF Vin Malkoski SAMPLE CONDITION: FRESH FROZEN

COLLECTION DATE DDMMYY	COLLECTION/TAG #	SPECIES & # IN SAMPLE	STATION I.D.	LOCATION	LAT/LONG DEG. MIN.	COLLECTION METHOD	RESERVED FOR OFFICE USE
5/29/2014	NBH14-SF-B-1	12 Quahogs (Prespawn)	Palmer Island	NBH Area 1	41° 37.505' 070° 54.690'	Rake	
5/29/2014	NBH14-SF-D-1	13 Quahogs (Prespawn)	North of Gifford's Marina	NBH Area 1	41° 38.783' 070° 54.773'	Rake	
5/29/2014	NBH14-SF-E-1	13 Quahogs (Prespawn)	Tin Can island	NBH Area 1	41° 39.092' 070° 55.122'	Rake	
5/8/2014	NBH14-SF-B-2	13 Quahogs (Prespawn)	Rogers Street	NBH Area 2	041° 36.500' 070° 55.820'	Dive	
5/8/2014	NBH14-SF-C-2	13 Quahogs(Prespawn)	S of Fredrick St Ramp	NBH Area 2	041° 36.650' 070° 54.345'	Dive	
5/8/2014	NBH14-SF-D-2	13 Quahogs (Prespawn)	Egg Island	NBH Area 2	041° 36.422 070° 53.290'	Dive	
5/29/2014	NBH14-SF-F-2	13 Quahogs (Prespawn)	Priest's Cove	NBH Area 2	041° 37.700' 070° 52.740'	Dive	
5/8/2014	NBH14-SF-G-2	13 Quahogs (Prespawn)	W Rodney Family Area	NBH Area 2	041° 36.205' 070° 54.842'	Dive	
5/8/2014	NBH14-SF-H-2	13 Quahogs (Prespawn)	E Rodney Family Area	NBH Area 2	041° 35.790' 070° 54.108'	Dive	

FIELD COLLECTION FORM 4: DIVISION MARINE FISHERIES, NEW BEDFORD OFFICE, 838 S. RODNEY FRENCH BLVD, NEW BEDFORD, MA 02744

PROJECT #: NBH14 REQUESTED BY/AGENCY: Paul Craffey / Dept. Environmental Protection ANALYSIS REQUESTED:

COLLECTOR: MDMF Vin Malkoski SHIPPER: MDMF Vin Malkoski SAMPLE CONDITION: FRESH FROZEN

COLLECTION DATE DDMMYY	COLLECTION/TAG #	SPECIES & # IN SAMPLE	STATION I.D.	LOCATION	LAT/LONG DEG. MIN.	COLLECTION METHOD	RESERVED FOR OFFICE USE
5/29/2014	NBH14-SF-B-3	13 Quahogs (Prespawm)	Star of the Sea	NBH Area 3	041° 35.410' 070° 57.524'	Rake	
5/29/2014	NBH14-SF-D-3	13 Quahogs (Prespawm)	Nakata Beach	NBH Area 3	041° 35.102' 070° 51.192'	Dive	
5/8/2014	NBH14-SF-I-3	4 Quahogs (Prespawm)	Nonquit	NBH Area 3	041° 33.415' 070° 56.128'	Dive	
5/8/2014	NBH14-SF-J-3	13 Quahogs (Prespawm)	Salters Point	NBH Area 3	41° 32.09' 070 56.56'	Dive	

FIELD COLLECTION FORM 5: DIVISION MARINE FISHERIES, NEW BEDFORD OFFICE, 838 S. RODNEY FRENCH BLVD, NEW BEDFORD, MA 02744

PROJECT #: NBH14 REQUESTED BY/AGENCY: Paul Craffey / Dept. Environmental Protection ANALYSIS REQUESTED:

COLLECTOR: MDMF Vin Malkoski SHIPPER: MDMF Vin Malkoski SAMPLE CONDITION: FRESH FROZEN

COLLECTION DATE DDMMYY	COLLECTION/TAG #	SPECIES & # IN SAMPLE	STATION I.D.	LOCATION	LAT/LONG DEG. MIN.	COLLECTION METHOD	RESERVED FOR OFFICE USE
8/8/2014	NBH14-SF-B-1	13 Quahogs (Post-spawn)	Palmer Island	NBH Area 1	41° 37.505' 070° 54.690'	Rake	
8/8/2014	NBH14-SF-D-1	13 Quahogs (Post-spawn)	North of Gifford's Marina	NBH Area 1	41° 38.783' 070° 54.773'	Rake	
8/8/2014	NBH14-SF-E-1	13 Quahogs (Post-spawn)	Tin Can island	NBH Area 1	41° 39.092' 070° 55.122'	Rake	
8/7/2014	NBH14-SF-B-2	13 Quahogs (Post-spawn)	Rogers Street	NBH Area 2	041° 36.500' 070° 55.820'	Dive	
8/7/2014	NBH14-SF-C-2	13 Quahogs(Post-spawn)	S of Fredrick St Ramp	NBH Area 2	041° 36.679' 070° 54.312'	Dive	
8/7/2014	NBH14-SF-D-2	13 Quahogs (Post-spawn)	Egg Island	NBH Area 2	041° 36.422 070° 53.290'	Dive	
8/7/2014	NBH14-SF-F-2	13 Quahogs (Post-spawn)	Priest's Cove	NBH Area 2	041° 37.700' 070° 52.740'	Dive	
8/7/2014	NBH14-SF-G-2	13 Quahogs (Post-spawn)	W Rodney Family Area	NBH Area 2	041° 36.205' 070° 54.842'	Dive	
8/7/2014	NBH14-SF-H-2	13 Quahogs (Post-spawn)	E Rodney Family Area	NBH Area 2	041° 35.790' 070° 54.108'	Dive	

FIELD COLLECTION FORM 5: DIVISION MARINE FISHERIES, NEW BEDFORD OFFICE, 838 S. RODNEY FRENCH BLVD, NEW BEDFORD, MA 02744

PROJECT #: NBH14 REQUESTED BY/AGENCY: Paul Craffey / Dept. Environmental Protection ANALYSIS REQUESTED:

COLLECTOR: MDMF Vin Malkoski SHIPPER: MDMF Vin Malkoski SAMPLE CONDITION: FRESH FROZEN

COLLECTION DATE DDMMYY	COLLECTION/TAG #	SPECIES & # IN SAMPLE	STATION I.D.	LOCATION	LAT/LONG DEG. MIN.	COLLECTION METHOD	RESERVED FOR OFFICE USE
8/7/2014	NBH14-SF-B-3	13 Quahogs (Post-spawn)	Star of the Sea	NBH Area 3	041° 35.410' 070° 57.524'	Rake	
8/7/2014	NBH14-SF-D-3	13 Quahogs (Post-spawn)	Nakata Beach	NBH Area 3	041° 35.102' 070° 51.192'	Dive	
8/7/2014	NBH14-SF-I-3	13 Quahogs (Post-spawn)	Nonquit	NBH Area 3	041° 33.258' 070° 56.132'	Dive	
8/7/2014	NBH14-SF-J-3	13 Quahogs (Post-spawn)	Salters Point	NBH Area 3	41° 32.09' 070 56.56'	Dive	

FIELD COLLECTION FORM 6: DIVISION MARINE FISHERIES, NEW BEDFORD OFFICE, 838 S. RODNEY FRENCH BLVD, NEW BEDFORD, MA 02744

PROJECT #: NBH14 REQUESTED BY/AGENCY: Paul Craffey / Dept. Environmental Protection ANALYSIS REQUESTED:

COLLECTOR: MDMF Vin Malkoski SHIPPER: MDMF Vin Malkoski SAMPLE CONDITION: FRESH FROZEN

COLLECTION DATE DDMMYY	COLLECTION/TAG #	SPECIES & # IN SAMPLE	STATION I.D.	LOCATION	LAT/LONG DEG. MIN.	COLLECTION METHOD	RESERVED FOR OFFICE USE
6/16/2014	NBH14-FF-A-2	5 Scup	SMAST Pier	NBH Area 2	041° 35.556' 070° 54.669'	Fish Pots	
6/16/2014, 6/19/2014	NBH14-FF-B-2	5 Scup	E of Fort Rodman	NBH Area 2	041° 35.596' 070° 53.922'	Fish Pots	
6/16/2014	NBH14-FF-C-2	5 Scup	W of Opening	NBH Area 2	041° 37.380' 070° 54.430'	Fish Pots	
6/16/2014	NBH14-FF-D-2	5 Scup	Butler Flat Light	NBH Area 2	041° 36.242' 070° 53.683'	Fish Pots	
6/16/2014	NBH14-FF-E-2	5 Scup	Egg Island	NBH Area 2	041° 36.523' 070° 53.258'	Fish Pots	
6/26/2014	NBH14-FF-A-3	5 Scup	Great Ledge	NBH Area 3	041° 31.591' 070° 56.110'	Fish Pots	
6/26/2014	NBH14-FF-B-3	4 Scup	Negro Ledge	NBH Area 3	041° 32.922' 070° 52.023'	Fish Pots	
6/23/2014	NBH14-FF-C-3	5 Scup	North Ledge	NBH Area 3	041° 34.341' 070° 53.234'	Fish Pots	
6/26/2014, 7/1/2014	NBH14-FF-D-3	5 Scup	Radome	NBH Area 3	041° 32.281' 070° 55.292'	Fish Pots	
6/19/2014	NBH14-FF-E-3	5 Scup	Packet Rock	NBH Area 3	41° 34.711' 070° 51.498'	Fish Pots	

FIELD COLLECTION FORM 7: DIVISION MARINE FISHERIES, NEW BEDFORD OFFICE, 838 S. RODNEY FRENCH BLVD, NEW BEDFORD, MA 02744

PROJECT #: NBH14 REQUESTED BY/AGENCY: Paul Craffey / Dept. Environmental Protection ANALYSIS REQUESTED:

COLLECTOR: MDMF Vin Malkoski SHIPPER: MDMF Vin Malkoski SAMPLE CONDITION: FRESH FROZEN

COLLECTION DATE DDMMYY	COLLECTION/TAG #	SPECIES & # IN SAMPLE	STATION I.D.	LOCATION	LAT/LONG DEG. MIN.	COLLECTION METHOD	RESERVED FOR OFFICE USE
6/26/2014	NBH14-FF-A-2	3 Tautog	SMAST Pier	NBH Area 2	041° 35.556' 070° 54.669'	Fish Pots	
6/23/2014	NBH14-FF-B-2	4 Tautog	E of Fort Rodman	NBH Area 2	041° 35.596' 070° 53.922'	Fish Pots	
6/16/2014	NBH14-FF-C-2	5 Tautog	W of Opening	NBH Area 2	041° 37.380' 070° 54.430'	Fish Pots	
6/16/2014	NBH14-FF-D-2	5 Tautog	Butler Flat Light	NBH Area 2	041° 36.242' 070° 53.683'	Fish Pots	
6/16/2014, 6/19/2014, 6/23/2014	NBH14-FF-E-2	5 Tautog	Egg Island	NBH Area 2	041° 36.523' 070° 53.258'	Fish Pots	
7/1/2014, 7/3/2014	NBH14-FF-A-3	5 Tautog	Great Ledge	NBH Area 3	041° 31.591' 070° 56.110'	Fish Pots	
6/19/2014	NBH14-FF-C-3	5 Tautog	North Ledge	NBH Area 3	041° 34.341' 070° 53.234'	Fish Pots	
6/26/2014	NBH14-FF-D-3	5 Tautog	Radome	NBH Area 3	041° 32.281' 070° 55.292'	Fish Pots	
7/1/2014	NBH14-FF-E-3	2 Tautog	Packet Rock	NBH Area 3	41° 34.711' 070° 51.498'	Fish Pots	

Field Data Form 1 – Fish Length & Weight Data by Species

New Bedford Harbor PCB Sampling Stations - 2014			
	DEP Sample Number	DEP Sample Location	Comments
Alewife			
Area 1			
Station C	NBH14-FF-C-1	New Bedford Reservoir	27 cm FL, 0.3 kg; 24 cm FL, 0.2 kg; 26 cm FL, 0.3 kg; 24 cm FL, 0.2 kg; 25 cm FL, 0.3 kg;
Black Sea Bass			
Area 2			
Station A	NBH14-FF-A-2	SMAST Pier	28 cm TL, 0.3 kg; 28 cm TL, 0.3 kg; 32 cm TL, 0.4 kg; 29 cm TL, 0.3 kg; 30 cm TL, 0.4 kg
Station B	NBH14-FF-B-2	East of Fort Rodman (Old Bart)	46 cm TL, 1.0 kg; 34 cm TL, 0.6 kg; 30 cm TL, 0.7 kg; 37 cm TL, 0.6 kg; 46 cm TL, 1.2kg
Station C	NBH14-FF-C-2	West of Opening	49 cm TL, 1.5 kg; 42 cm TL, 0.3 kg; 45 cm TL, 1.2 kg; 36 cm TL, 0.6 kg; 37 cm TL, 0.6 kg
Station D	NBH14-FF-D-2	Lighthouse	29 cm TL, 0.3 kg; 29 cm TL, 0.4 kg; 30 cm TL, 0.3 kg; 32 cm TL, 0.4 kg; 33 cm TL, 0.5 kg
Station E	NBH14-FF-E-2	Egg Island	35 cm TL, 0.4 kg; 30 cm TL, 0.4 kg; 6-19-2014 - 31 cm TL, 0.4 kg; 6-23-2014 - 32 cm TL, 0.4 kg; 35 cm TL, 0.5 kg; 28 cm TL, 0.4 kg; 32 cm TL, 0.5 kg
Area 3			
Station A	NBH14-FF-A-3	Great Ledge	32 cm TL, 0.5 kg; 30 cm TL, 0.4 kg; 32 cm FL, 0.4 kg; 31 cm TL, 0.4 kg; 29 cm TL, 0.4 kg
Station B	NBH14-FF-B-3	Negro Ledge	45 cm TL, 0.9 kg; 33 cm TL, 0.5 kg; 44 cm TL, 0.8 kg; 33 cm TL, 0.4 kg; 31 cm TL, 0.4 kg
Station C	NBH14-FF-C-3	North Ledge	32 cm TL, 0.4 kg; 36 cm TL, 0.7 kg; 33 cm TL, 0.4 kg; 31 cm TL, 0.4 kg; 33 cm TL, 0.5 kg
Station D	NBH14-FF-D-3	Radome	35 cm TL, 0.5 kg; 34 cm TL, 0.4 kg; 33 cm TL, 0.5 kg; 29 cm TL, 0.3 kg; 29 cm TL, 0.4 kg
Station E	NBH14-FF-E-3	Packet Rock	30 cm TL, 0.3 kg; 31 cm TL, 0.4 kg; 31 cm TL, 0.5 kg; 38 cm TL, 0.7 kg
Scup			
Area 2			
Station A	NBH14-FF-A-2	SMAST Pier	21 cm FL, 0.2 kg; 21 cm FL, 0.2 kg; 21 cm FL, 0.2 kg; 22 cm FL, 0.2 kg; 24 cm FL, 0.3 kg
Station B	NBH14-FF-B-2	East of Fort Rodman (Old Bart)	21 cm 0.2 kg; 21 cm 0.2 kg; 21 cm 0.2 kg; 6-19-2014 - 21 cm FL, 0.2 kg; 22 cm FL, 0.2 kg
Station C	NBH14-FF-C-2	West of Opening	21 cm 0.2 kg; 21 cm 0.2 kg; 21 cm 0.2 kg; 27 cm FL, 0.4 kg; 22 cm FL, 0.2kg
Station D	NBH14-FF-D-2	Butler Flat Lighthouse	21 cm FL, 0.2 kg; 21 cm FL, 0.2 kg; 21 cm FL, 0.2 kg; 22 cm FL, 0.2 kg; 22 cm FL, 0.2 kg;
Station E	NBH14-FF-E-2	Egg Island	24 cm FL, 0.3kg; 21 cm FL, 0.2 kg; 24 cm FL, 0.3 kg; 21 cm FL, 0.2 kg; 27 cm FL, 0.5 kg
Area 3			
Station A	NBH14-FF-A-3	Great Ledge	21 cm FL, 0.2 kg; 23 cm FL, 0.3 kg; 21 cm FL, 0.3 kg; 24 cm FL, 0.3 kg; 21 cm FL, 0.2 kg
Station B	NBH14-FF-B-3	Negro Ledge	22 cm FL, 0.2 kg; 21 cm FL, 0.2 kg; 21 cm FL, 0.2 kg; 21 cm FL, 0.2 kg
Station C	NBH14-FF-C-3	North Ledge	6/23/2014 - 23 cm FL, 0.3 kg; 25 cm FL, 0.4 kg; 26 cm FL, 0.4 kg; 23 cm FL, 0.3 kg; 28 cm FL, 0.5 kg
Station D	NBH14-FF-D-3	Radome	24 cm FL, 0.3 kg; 21 cm FL, 0.2 kg; 22 cm FL, 0.2 kg; 29 cm FL, 0.6 kg; 23 cm FL, 0.3 kg;
Station E	NBH14-FF-E-3	Packet Rock	20 cm FL, 0.2 kg; 21 cm FL, 0.2 kg' 20cm FL, 0.2 kg; 20 cm FL, 0.2 kg; 23 cm FL, 0.3 kg
Tautog			
Area 2			
Station A	NBH14-FF-A-2	SMAST Pier	28 cm TL, 0.3 kg; 31 cm TL, 0.5 kg; 34 cm TL, 0.7 kg
Station B	NBH14-FF-B-2	East of Fort Rodman (Old Bart)	35 cm TL, 0.8 kg; 33 cm TL, 0.7 kg; 41 cm TL, 1.4 kg; 33 cm TL, 0.6 kg
Station C	NBH14-FF-C-2	West of Opening	37 cm TL, 1.2 kg; 38 cm TL, 1.2 kg; 39 cm TL, 1.2 kg; 43 cm TL, 1.3 kg; 38 cm TL, 0.9 kg
Station D	NBH14-FF-D-2	Butler Flat Lighthouse	39 cm TL, 1.2 kg; 42 cm TL, 1.5 kg; 39 cm TL, 1.2kg; 44 cm TL, 1.4 kg; 46 cm TL, 1.4 kg
Station E	NBH14-FF-E-2	Egg Island	37 cm TL, 0.9 kg; 6-19-2014 - 20 cm TL, 0.5 kg; 6-23-2014 - 33 cm TL, 0.7 kg; 38 cm TL, 1.0 kg; 43 cm TL, 0.5 kg
Area 3			
Station A	NBH14-FF-A-3	Great Ledge	31 cm TL, 0.6 kg; 39 cm TL, 1.4 kg; 42 cm TL, 1.4 kg; 36 cm TL, 0.9 kg; 36 cm TL, 0.9 kg
Station C	NBH14-FF-C-3	North Ledge	36 cm TL, 1.0kg; 34 cm TL, 0.6 kg; 39 cm TL, 1.2 kg; 38 cm TL, 1.0 kg; 46 cm TL, 1.5 kg
Station D	NBH14-FF-D-3	Radome	39 cm TL, 1.2 kg; 35 cm TL, 0.8 kg; 39 cm TL, 1.0 kg; 38 cm TL, 1.2 kg; 39 cm TL, 1.0 kg;
Station E	NBH14-FF-E-3	Packet Rock	29 cm TL, 0.5 kg; 29 cm TL, 0.5 kg;

Appendix D

**Field Sampling Report 2014
Striped Bass Monitoring
for
the New Bedford Harbor Superfund Site Superfund Site
August 2014**

2014 FIELD SAMPLING REPORT STRIPED BASS MONITORING

New Bedford Harbor Superfund Site

Prepared For:

Massachusetts Department of Environmental Protection

Prepared By:



**AMEC Environment and Infrastructure
511 Congress Street
Portland, Maine**

August 2014

AMEC Project Number: 3650080120.05.01

2014 FIELD SAMPLING REPORT STRIPED BASS MONITORING

New Bedford Harbor Superfund Site

Prepared For:

Massachusetts Department of Environmental Protection

Prepared By:



AMEC Environment and Infrastructure
511 Congress Street
Portland, Maine

August 2014

AMEC Project Number: 3650080120.05.01

Jayme P. G.
Jayme Connolly
Project Manager

Charles H. Lyman
Charles Lyman
Senior Project Scientist

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Appendix A - Field Data Forms
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ACRONYMS

AMEC	AMEC Environmental and Infrastructure
MassDEP	Massachusetts Department of Environmental Protection
PCB	polychlorinated biphenyl

1.0 INTRODUCTION

AMEC Environmental and Infrastructure (AMEC) under contract with the Massachusetts Department of Environmental Protection (MassDEP) conducted the 2014 striped bass sampling as a part of the seafood monitoring program at the New Bedford Harbor Superfund Site. The purpose of the fish sampling is to track spatial and temporal changes in the tissue polychlorinated biphenyl (PCB) levels and evaluate the effectiveness of the harbor cleanup over the long term. Proposed sampling locations included Fish Closure Areas II and III, as well as the waters off of Cuttyhunk Island.

The objective of the 2014 field sampling is to collect legally harvestable striped bass in support of the tissue PCB monitoring effort. Striped bass (*Morone Saxatilis*) is the target species for the 2014 sampling event. Five samples were proposed from Fishing Closure Areas II and III. Target sampling locations, sample collection methods, and laboratory analyses are summarized in Table 1.

This report describes the field sampling activities conducted during June/July 2014 includes:

- Description of sampling methodology (Section 2);
- Chronology of sampling efforts (Section 3); and
- Conclusions and recommendations (Section 4).

2.0 SAMPLING METHODOLOGY

Field collections were performed by Mr. Charles Lyman of AMEC. The vessel-based sampling was done aboard the motor vessel *Islander* with Captain Mike Massa and crew Colin Massa. The *Islander* is a 35' Duffy & Duffy Downeast sport fishing boat used for fin fish charters, commercial lobstering, and scientific sampling.

The following section describes the methods used to collect fish samples, sample handling procedures, and any deviations from the original work plan. The target species for this sampling event included only striped bass.

2.1 Sample Collection and processing

2.1.1 Striped Bass

The methods employed to collect striped bass included trolling with a variety of lures, and by chumming with menhaden chunks while fishing with live menhaden as bait. When striped bass were hooked they were brought on board and measured. Any fish that were less than 28 inches in length (i.e., the legal size in Massachusetts) were released. Fish greater than or equal to 28" were retained. These samples were measured, weighed, photographed, transferred into labeled

plastic bags, and placed in a cooler on ice. Samples were kept on ice and transported to the laboratory within 24 hours of collection.

2.2 Sampling Stations

Target sampling areas were selected by the MassDEP. As shown in Table 1, striped bass were targeted in Fishing Closure Area II and III at the New Bedford Superfund Site. These areas were fished with varied success; however five samples were collected from Area III. One fish of legal size was collected in Area II, no other striped bass were caught in Area II.

Actual sample location coordinates are shown in Table 2 and sample locations are shown on Figure 1.

2.3 Deviations

The original project scope called for the collection of 5 striped bass from each of the proposed sampling areas (i.e. Area II and Area III). After two days of fishing only three samples were collected from Area III and one sample from Area II. As requested by the MassDEP, an additional day of fishing was conducted in Area II and Area III in an attempt to collect additional samples. After the second fishing event, two additional fish were collected in Area III, however no additional fish were caught in Area II. One of the fish caught in Area III was fowl hooked (22") and would not have survived if released; therefore, it was retained as a sample even though it measured below the required 28".

There were no deviations from the work plan regarding sample collection or handling. Samples were transferred to the laboratory on ice within 24 hours of sample collection.

3.0 SAMPLING EFFORT

All of the fish collected during this sampling event were caught on lures while trolling. Lures that were trolled included, umbrella rigs and plastic "tubes" baited with sand worms. Other methods employed included casting surface and swimming lures and using chunk and live bait, which required anchoring the boat and chumming with chunks of menhaden and setting out (4) lines with baited hooks. Typically while fishing with bait we also employed casting surface and swimming plugs.

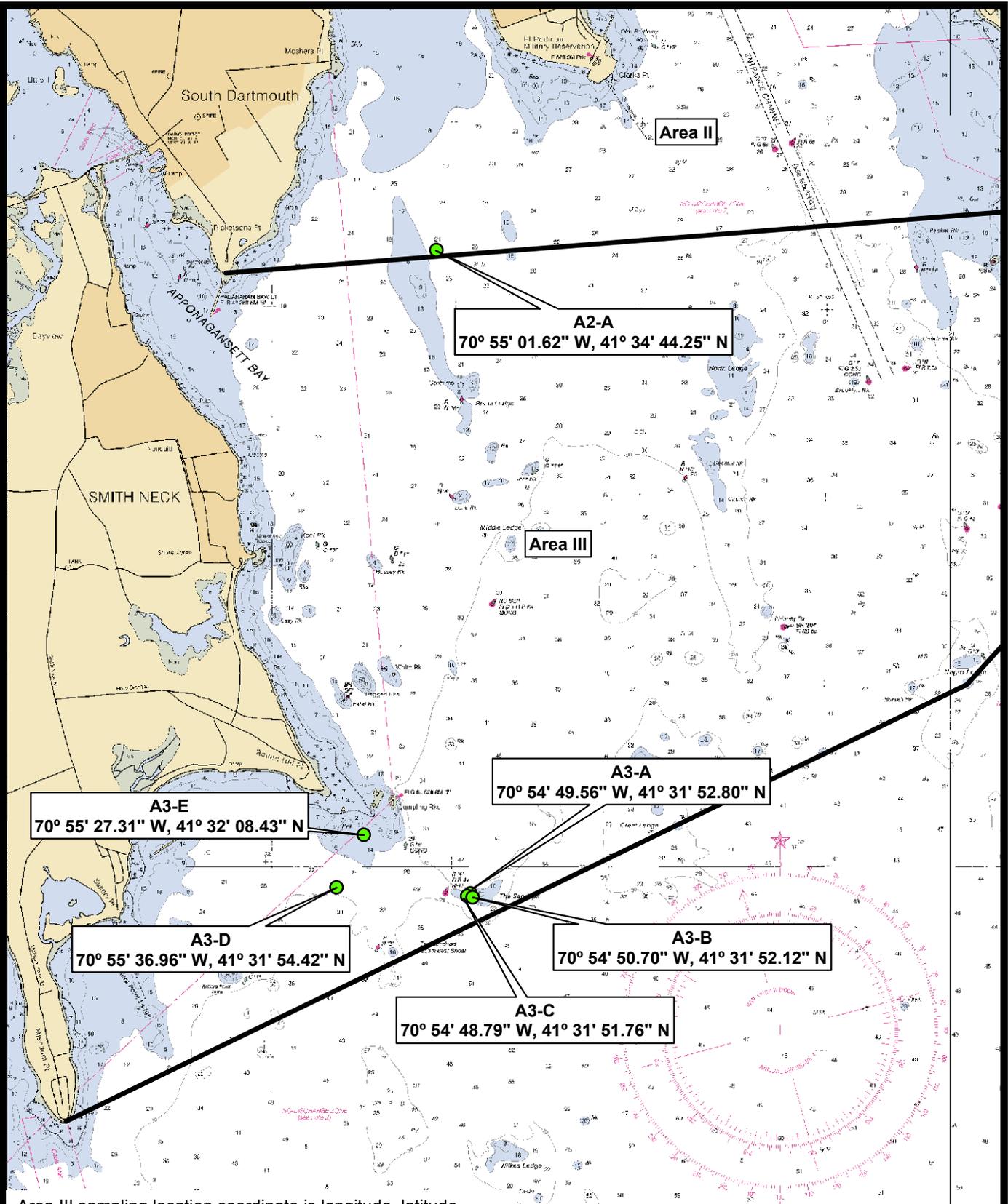
4.0 CONCLUSIONS AND RECOMMENDATIONS

No logistical or technical problems occurred during the sampling event. A total of three days were spent fishing in Area II and Area III, with limited success in Area II with only one (1) fish sample obtained from this area.

The limited success in Area II is consistent with previous years sampling success and may be attributed to both physical and biological factors. The lack of deep water and structure in the outer harbor (Area II and Area III) may explain the lower numbers of large striped bass being caught in these areas. All of the fish caught this year were caught in areas of the harbor with underwater structure (i.e., Bents Ledge and the Sand spit). The ocean bottom in this area included rocks and eelgrass beds, which is known to provide habitat for immature striped bass.

All five of the striped bass caught in Area III were caught in the vicinity of the "Sand Spit", and the striped bass caught in Area II was caught on Bents Ledge. In addition, bait fish (menhaden) were observed, snagged, and used as live bait on both sampling events. .

FIGURES



A3-E
70° 55' 27.31" W, 41° 32' 08.43" N

A2-A
70° 55' 01.62" W, 41° 34' 44.25" N

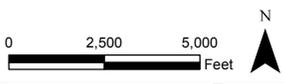
A3-A
70° 54' 49.56" W, 41° 31' 52.80" N

A3-D
70° 55' 36.96" W, 41° 31' 54.42" N

A3-B
70° 54' 50.70" W, 41° 31' 52.12" N

A3-C
70° 54' 48.79" W, 41° 31' 51.76" N

Area III sampling location coordinate is longitude, latitude with units of degrees, minutes, seconds.
NOAA Raster Navigational Chart # 13232 for New Bedford Harbor and Approaches obtained from Office of Coast Survey at: <http://www.nauticalcharts.noaa.gov/mcd/Raster>



Prepared/Date: BRP 07/21/14
Checked/Date: CHL 07/21/14



TABLES

Table 1: MassDEP Seafood Sampling 2014: Target Species, Sampling Locations and Number of Samples

Species	Collection Season/Month	Collection Area	Collection Method	Sample Limits	Total Number of Samples Proposed	Total Number of Samples Obtained	Analysis	Media
Striped Bass	May-July	NBH Area II	Hook and Line	28 inches minimum [a]	5	1	PCB Congeners, Aroclors, Lipids	Fillet and Stomach Content (separate analyses)
		NBN Area III	Hook and Line	28 inches minimum	5	5	PCB Congeners, Aroclors, Lipids	Fillet and Stomach Content (separate analyses)

Notes:

[a] The minimum size limit was reduced to 25 inches per MassDEP in NBH Area II.

Prepared By: CL

Checked By: JPC

Table 2: Target Areas and Actual Sample Location Coordinates

Species	Target Area	Sample Locations (degrees/minutes/seconds)		Sample IDs [a]
		Latitude	Longitude	
Striped Bass	NBH Area II	41° 34' 44.25"	70° 55' 01.62"	NBH14-XX-A-2
	NBH Area III	41° 31' 52.80"	70° 54' 49.56"	NBH14-XX-A-3
		41° 31' 52.12"	70° 54' 50.70"	NBH14-XX-B-3
		41° 31' 51.76"	70° 54' 48.79"	NBH14-XX-C-3
		41° 31' 54.42"	70° 55' 36.96"	NBH14-XX-D-3
		41° 32' 08.43"	70° 55' 27.31"	NBH14-XX-E-3

Note:

[a] Each sample (i.e., fish) includes a filet tissue sample and stomach content sample.
 "XX" replaced with: "FF" for tissue sample and "SC" for stomach contents sample.

Prepared By: CHL
 Checked By: JPC

APPENDIX A
FIELD DATA FORMS

**FISH SAMPLE COLLECTION AND SAMPLE PREPARATION FORM
SEAFOOD MONITORING PROGRAM**

**NEW BEDFORD HARBOR
NEW BEDFORD, MASSACHUSETTS**

Date: 6/26/14 Time: 0915

(A3-A)
Area 3 fish A

Climate: Sunny. Partly cloudy Breezy

Field Personnel: Clyde

Collection Method: Hook/line Other Species: Striped bass

Sample Area: I / II / III - circle one

N Latitude: ~~41° 21' 00"~~ 41° 31' 52.80" Longitude: ~~70° 54' 02"~~ 70° 54' 49.56" (deg/min/seconds)

Sample ID Number: NBH14-XX-A-3 (A3-A)

Photo ID Number(s): Yes

SAMPLE SPECIMEN SUMMARY

Specimen Number	Species	length (cm)	whole mass (g) lbs	Sex	Physical Observations/Anomalies
A31A	SB	29	6.61	—	Sex Lice.

SB = Striped Bass M = Male F = Female

LABORATORY PREPARATION SUMMARY

- Fillet Skin off - six section composite
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____
- Offal Scale/skin - six section composite (from fillet)
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____
- Offal Liver
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____

Comments:

**FISH SAMPLE COLLECTION AND SAMPLE PREPARATION FORM
SEAFOOD MONITORING PROGRAM**

**NEW BEDFORD HARBOR
NEW BEDFORD, MASSACHUSETTS**

Date: 6/26/14 Time: 0935

Climate: Sunny few clouds BREEZY

Field Personnel: Clymer

Collection Method: Hook/line Other Species: Striped bass

Sample Area: I / II (III) - circle one

Latitude: 41° 31' 51.76" Longitude: 70° 54' 48.79" (deg/min/seconds) SEE A3-A

Sample ID Number: NBH14-XX-C-3

Photo ID Number(s): yes

(A3-C)
AREA 3: fish C

SAMPLE SPECIMEN SUMMARY

Specimen Number	Species	length (cm) ^W	whole mass (g) ^W	Sex	Physical Observations/Anomalies
3	SB	31	12.2	-	SEA Lice; lesion

SB = Striped Bass M = Male F = Female

LABORATORY PREPARATION SUMMARY

Fillet Skin off - six section composite
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____

() Offal Scale/skin - six section composite (from fillet)
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____

() Offal Liver
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____

Comments:

**FISH SAMPLE COLLECTION AND SAMPLE PREPARATION FORM
SEAFOOD MONITORING PROGRAM**

**NEW BEDFORD HARBOR
NEW BEDFORD, MASSACHUSETTS**

Date: 6/27/14 Time: 1130

Climate: Sunny BREEZY

(A2-A)

Field Personnel: Chymon

Collection Method: Hook/line Other Species: Striped bass

Sample Area: I II III - circle one

Latitude: 41° 34.604' Longitude: 70° 55.027' (deg/min/seconds)
41° 34' 14.25" 70° 55' 01.62"

Sample ID Number: NBH14-XX-A-2

Photo ID Number(s): _____

SAMPLE SPECIMEN SUMMARY

Specimen Number	Species	length (cm) in	whole mass (g) lbs	Sex	Physical Observations/Anomalies
<u>A2-24</u>	<u>SB</u>	<u>36</u>	<u>18.2</u>	<u>-</u>	<u>SEA LICE</u>

SB = Striped Bass M = Male F = Female

LABORATORY PREPARATION SUMMARY

Fillet Skin off - six section composite
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____

() Offal Scale/skin - six section composite (from fillet)
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____

() Offal Liver
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____

Comments:

**FISH SAMPLE COLLECTION AND SAMPLE PREPARATION FORM
SEAFOOD MONITORING PROGRAM**

**NEW BEDFORD HARBOR
NEW BEDFORD, MASSACHUSETTS**

Date: 7/1/14 Time: 0845

Climate: Cloudy, Breezy

(A3-D)

Field Personnel: Chymen

Collection Method: Hook/line Other Species: Striped bass

Sample Area: I / II / III - circle one

Latitude: 41° 31.907' Longitude: 70° 55.616' (deg/min/seconds)
41° 31' 54.42" 70° 55' 36.96"

Sample ID Number: NBH 14 - XX - D - 3

Photo ID Number(s): _____

SAMPLE SPECIMEN SUMMARY

Specimen Number	Species	length (cm) ⁱⁿ	whole mass (g) lbs	Sex	Physical Observations/Anomalies
5	SB	37 1/2	20	-	See label

SB = Striped Bass M = Male F = Female

LABORATORY PREPARATION SUMMARY

Fillet Skin off - six section composite
 PCB - Final lab sample weight (g) _____
 Lipids - Final Lab sample weight (g) _____

() Offal Scale/skin - six section composite (from fillet)
 PCB - Final lab sample weight (g) _____
 Lipids - Final Lab sample weight (g) _____

() Offal Liver
 PCB - Final lab sample weight (g) _____
 Lipids - Final Lab sample weight (g) _____

Comments:

FISH SAMPLE COLLECTION AND SAMPLE PREPARATION FORM
SEAFOOD MONITORING PROGRAM

NEW BEDFORD HARBOR
NEW BEDFORD, MASSACHUSETTS

Date: 7/1/14 Time: 1100

Climate: cloudy, hot, Breezy

Field Personnel: Chym

(A3-E)

Collection Method: Hook/line Other Species: Striped bass

Sample Area: I / II / III - circle one

Latitude: ~~41° 32' 00.43"~~ 41° 32' 08.43" Longitude: ~~70° 55' 27.31"~~ 70° 55' 27.31" (deg/min/seconds)

(SAND SPIT)

Sample ID Number: NB14-XX-E-3

Photo ID Number(s): _____

SAMPLE SPECIMEN SUMMARY

Specimen Number	Species	length (cm)	whole mass (g) lbs	Sex	Physical Observations/Anomalies
<u>5</u>	<u>SB</u>	<u>22</u>	<u>3.5</u>	<u>-</u>	<u>NO SEA LICE/LESIONS</u>

SB = Striped Bass M = Male F = Female

LABORATORY PREPARATION SUMMARY

Fillet Skin off - six section composite
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____

() Offal Scale/skin - six section composite (from fillet)
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____

() Offal Liver
PCB - Final lab sample weight (g) _____
Lipids - Final Lab sample weight (g) _____

Comments:

Note "Shore" Belly/fowl Hooked on Umbrella Rig.
Kept.

APPENDIX B
SAMPLE PHOTOGRAPHS

Photographs

Client: Mass DEP

Project Number: 3650080120.05.01

Site Name: New Bedford Harbor Superfund Site

Site Location: New Bedford, Massachusetts

Photographer:
Charles Lyman

Date:
June 26, 2014

Photograph: 1

Direction:
NA

Description:
Fish A3-A



Photographer:
Charles Lyman

Date:
June 26, 2014

Photograph: 2

Direction:
NA

Description:
Fish A3-B



Photographs

Client: Mass DEP

Project Number: 3650080120.05.01

Site Name: New Bedford Harbor Superfund Site

Site Location: New Bedford, Massachusetts

Photographer:
Charles Lyman

Date:
June 26, 2014

Photograph: 3

Direction:
NA

Description:
Fish A3-C



Photographer:
Charles Lyman

Date:
June 26, 2014

Photograph: 4

Direction:
NA

Description:
Fish A2-A



Photographs

Client: Mass DEP

Project Number: 3650080120.05.01

Site Name: New Bedford Harbor Superfund Site

Site Location: New Bedford, Massachusetts

Photographer:
Charles Lyman

Date:
July 1, 2014

Photograph: 5

Direction:
NA

Description:
Fish A3-D



Photographer:
Charles Lyman

Date:
July 1, 2014

Photograph: 6

Direction:
NA

Description:
Fish A3-E



APPENDIX C
CHAIN OF CUSTODY



CHAIN OF CUSTODY

PAGE 1 OF 1

WESTBORO, MA MANSFIELD, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: AMEC
 Address: 511 CONGRESS ST
Portland, Me 04104
 Phone: (207) 775-5401
 Fax: _____
 Email: JAYME.CONNOLLY@AMEC.COM

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

If MS is required, indicate in Sample Specific Comments which samples and what tests MS to be performed.
 (Note: All **CAM** methods for inorganic analyses require MS every 20 soil samples)

Project Information

Project Name: NEW Bedford Harbor
 Project Location: New Bedford, Ma
 Project #: _____
 Project Manager: Jayme Connolly
 ALPHA Quote #: _____

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)
 Date Due: _____ Time: _____

Date Rec'd in Lab: _____

ALPHA Job #: _____

Report Information - Data Deliverables

FAX EMAIL
 ADEX Add'l Deliverables

Billing Information

Same as Client info PO #: _____

Regulatory Requirements/Report Limits

State /Fed Program Criteria

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTO

Yes No Are MCP Analytical Methods Required?
 Yes No Is Matrix Spike (MS) Required on this SDG? (If yes see note in Comments)
 Yes No Are CT RCP (Reasonable Confidence Protocols) Required?

ANALYSIS PCB - Protect Method	SAMPLE HANDLING										TOTAL # BOTTLES
	Filtration _____ <input type="checkbox"/> Done <input type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do <small>(Please specify below)</small>										
Sample Specific Comments											

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	X	Sample Specific Comments									
		Date	Time													
	A3-A	6/26/14	0915	Fish	CHL	X	fillet									
	A3-B	↓	0930	↓	↓	↓	↓									
	A3-C	↓	0940	↓	↓	↓	↓									
	A2-A	6/27/14	1130	↓	↓	↓	↓									
Note: Call BRAD SCHOONARD (AMEC-Portland) for SAMPLE ID'S for Fillet of fish; when you process the fish.																

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT
 MA MCP or CT RCP?

Container Type

Preservative

Relinquished By:

Charles H. [Signature]

Date/Time

6/27/14 1622

Received By:

[Signature]

Date/Time

6/27/14 16:22

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.