

From: Sneeringer, Paul J NAE
To: ["Steve Block"](#)
Subject: South Terminal Project in New Bedford - Marsh Island Restoration Plan Drawings (UNCLASSIFIED)
Date: Wednesday, August 08, 2012 5:27:00 PM
Attachments: [Appendix E - 6-18-12.pdf](#)

Classification: UNCLASSIFIED
Caveats: NONE

Steve:

Thank you for your recommendations regarding the Commonwealth of Massachusetts proposed shellfish mitigation plan for the South Terminal Project in New Bedford, Massachusetts. If you want to review additional information on the South Terminal Project, copies of EPA's DRAFT ARARs decision document can be downloaded at <http://www.epa.gov/nbh/pdfs/509463.pdf>. The public comment period for this project ends on August 21, 2012. In addition to the extensive documentation in the DRAFT ARARs decision document, I am also forwarding you the Commonwealth's analysis of potential shellfish impacts for the South Terminal Project (Appendix E from their June 18, 2012 additional information package).

In addition, were you able to find a pdf copy of the Marsh Island Restoration Project plans? I am interested in getting a pdf copy of this documentation, if possible.

Feel free to contact me if you have any questions about the information presented in this e-mail. Thanks.

Paul Sneeringer
(978) 318-8491 (W)
(978) 505-9216 (cell)

-----Original Message-----

From: Steve Block [<mailto:steve.block@noaa.gov>]
Sent: Thursday, July 26, 2012 4:38 PM
To: Sneeringer, Paul J NAE
Subject: Fwd: FW: Marsh Island Drawing for Volume Calcs.

----- Forwarded message -----

From: Wood, Craig <cwood@louisberger.com>
Date: Thu, Jun 21, 2012 at 9:43 AM
Subject: FW: Marsh Island Drawing for Volume Calcs.
To: "CMorris@apexcos.com" <CMorris@apexcos.com>
Cc: Steve Block <steve.block@noaa.gov>

Chris: Per your request I have attached the cad files from which you can extract the desired information. Please keep in mind our plans are NAVD 88 and not NGVD 29. Regards, Craig

From: Luppino, Christopher
Sent: Thursday, June 21, 2012 9:38 AM
To: Wood, Craig

Subject: Marsh Island Drawing for Volume Calcs.

Here is the drawing. It best represents the final grading at the site.

Christopher Luppino, E.I.T.
Environmental Engineer

Phone: 401.521.5980

Direct: 401.415.9450

295 Promenade Street | Providence, Rhode Island 02908

LBWS Email Logo

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Classification: UNCLASSIFIED
Caveats: NONE

ATTACHMENT E

**Updated Calculation of Number of Shellfish to be Impacted
&
Revised Shellfish Mitigation Plan**

SHELLFISH IMPACT ESTIMATE: SOUTH TERMINAL EXTENSION PROJECT

Filled Footprint (Inter-Tidal Only)				
Data Drawn from Inter-Tidal Portion of Apex Companies, LLC Shellfish Survey **				
SQFT/AREA	ACRES /SUBAREA		SEED	LITTLENECK
62290.8	1.43			
			CHERRY	CHOWDER
Average Count per Square Meter**			1.33	1.33
Average Count per Square Foot			0.124	0.124
Shellfish Density by Size/Acre			5,396	5,396
Area of Impact - Acres			1.94	1.94
TOTAL number of Shellfish by Size			10,468	10,468
			0	0
			0.00	0.89
			0	0.083
			0	3,597
			1.94	1.94
			0	6,979
Total Shellfish Effected:			27,915	

Filled Footprint and Under Pile-Supported Apron (Sub-Tidal Only)				
Data Drawn From Sub-Tidal Portion of Apex Companies, LLC Shellfish Survey **				
SQFT/AREA	ACRES /SUBAREA		SEED	LITTLENECK
206039	4.73			
			CHERRY	CHOWDER
Average Count per Square Meter**			4.00	3.33
Average Count per Square Foot			0.372	0.309
Shellfish Density by Size/Acre			16,188	13,476
Area of Impact - Acres			4.73	4.73
TOTAL number of Shellfish by Size			76,568	63,743
			0	82,885
			2.00	4.33
			0	0.402
			0	17,523
			4.73	4.73
			0	82,885
Total Shellfish Effected:			223,197	

South Terminal CDF Boat Basin and Channels				
Data Drawn From Standing Crop Survey*				
SQFT/ SUBAREA*	SQFT/ SUBAREA*	ACRES /SUBAREA*		SEED
I7A	1,579,050	36.25		
			LITTLENECK	CHERRY
				CHOWDER
AVE/SQFT*			0.27	0.65
TOTAL/SUBAREA*			426,344	1,026,383
Shellfish Density by Size/Acre			11,761	28,314
Area of Impact - Acres			23.77	23.77
TOTAL number of Shellfish by Size			279,564	673,024
			931,879	828,337
			0.90	0.80
			1,421,145	1,263,240
			39,204	34,848
			23.77	23.77
			931,879	828,337
Total Shellfish Effected:			2,712,804	

Gifford Street Channel Relocation and Northern Mooring Mitigation Area				
Data Drawn From Standing Crop Survey*				
SQFT/ SUBAREA*	SQFT/ SUBAREA*	ACRES /SUBAREA*		SEED
I7A	1,579,050	36.25		
			LITTLENECK	CHERRY
				CHOWDER
AVE/SQFT*			0.27	0.65
TOTAL/SUBAREA*			426,344	1,026,383
Shellfish Density by Size/Acre			11,761	28,314
Area of Impact - Acres			3.48	3.48
TOTAL number of Shellfish by Size			40,929	98,533
			136,430	121,271
			0.90	0.80
			1,421,145	1,263,240
			39,204	34,848
			3.48	3.48
			136,430	121,271
Total Shellfish Effected:			397,163	

SHELLFISH IMPACT ESTIMATE: SOUTH TERMINAL EXTENSION PROJECT

Southern Mooring Mitigation Area						
Data Drawn From Standing Crop Survey*						
SUBAREA*	SQFT/ SUBAREA*	ACRES /SUBAREA*	SEED	LITTLENECK	CHERRY	CHOWDER
17B	568,458	13.05				
AVE/SQFT*			1.62	4.19	6.07	6.60
TOTAL/SUBAREA*			920,902	2,381,839	3,450,540	3,751,823
Shellfish Density by Size/Acre			70,567	182,516	264,409	287,496
Area of Impact - Acres			2.69	2.69	2.69	2.69
TOTAL number of Shellfish by Size			189,826	490,969	711,261	773,364
Total Shellfish Effected:			2,165,420			

Federal Channel Maintenance Dredging						
Data Drawn From Standing Crop Survey*						
SUBAREA*	SQFT/ SUBAREA*	ACRES /SUBAREA*	SEED	LITTLENECK	CHERRY	CHOWDER
15	2,905,452	66.7				
AVE/SQFT*			0.08	0.25	0.27	0.10
TOTAL/SUBAREA*			232,436	726,363	784,472	290,545
Shellfish Density by Size/Acre			3,485	10,890	11,761	4,356
Area of Impact - Acres			15.00	15.00	15.00	15.00
TOTAL number of Shellfish by Size			52,272	163,350	176,418	65,340
Total Shellfish Effected:			457,380			

CAD Cell Area						
Data Drawn From Standing Crop Survey*						
SUBAREA*	SQFT/ SUBAREA*	ACRES /SUBAREA*	SEED	LITTLENECK	CHERRY	CHOWDER
13	3,094,938	71.05				
AVE/SQFT*			1.02	1.81	2.52	3.02
TOTAL/SUBAREA*			3,156,837	5,601,838	7,799,244	9,346,713
Shellfish Density by Size/Acre			44,431	78,844	109,771	131,551
Area of Impact - Acres			8.76	8.76	8.76	8.76
TOTAL number of Shellfish by Size			389,217	690,670	961,596	1,152,389
Total Shellfish Effected:			3,193,871			

Winter Flounder Capping Area						
Data Drawn from Standing Crop Survey*						
SUBAREA*	SQFT/ SUBAREA*	ACRES /SUBAREA*	SEED	LITTLENECK	CHERRY	CHOWDER
16	4,660,920	107				
AVE/SQFT*			0.019	0.037	0.076	0.171
TOTAL/SUBAREA*			88,557	172,454	354,230	797,017
Shellfish Density by Size/Acre			828	1,612	3,311	7,449
Area of Impact - Acres			22.73	22.73	22.73	22.73
TOTAL number of Shellfish by Size			18,812	36,634	75,249	169,310
Total Shellfish Effected:			300,006			

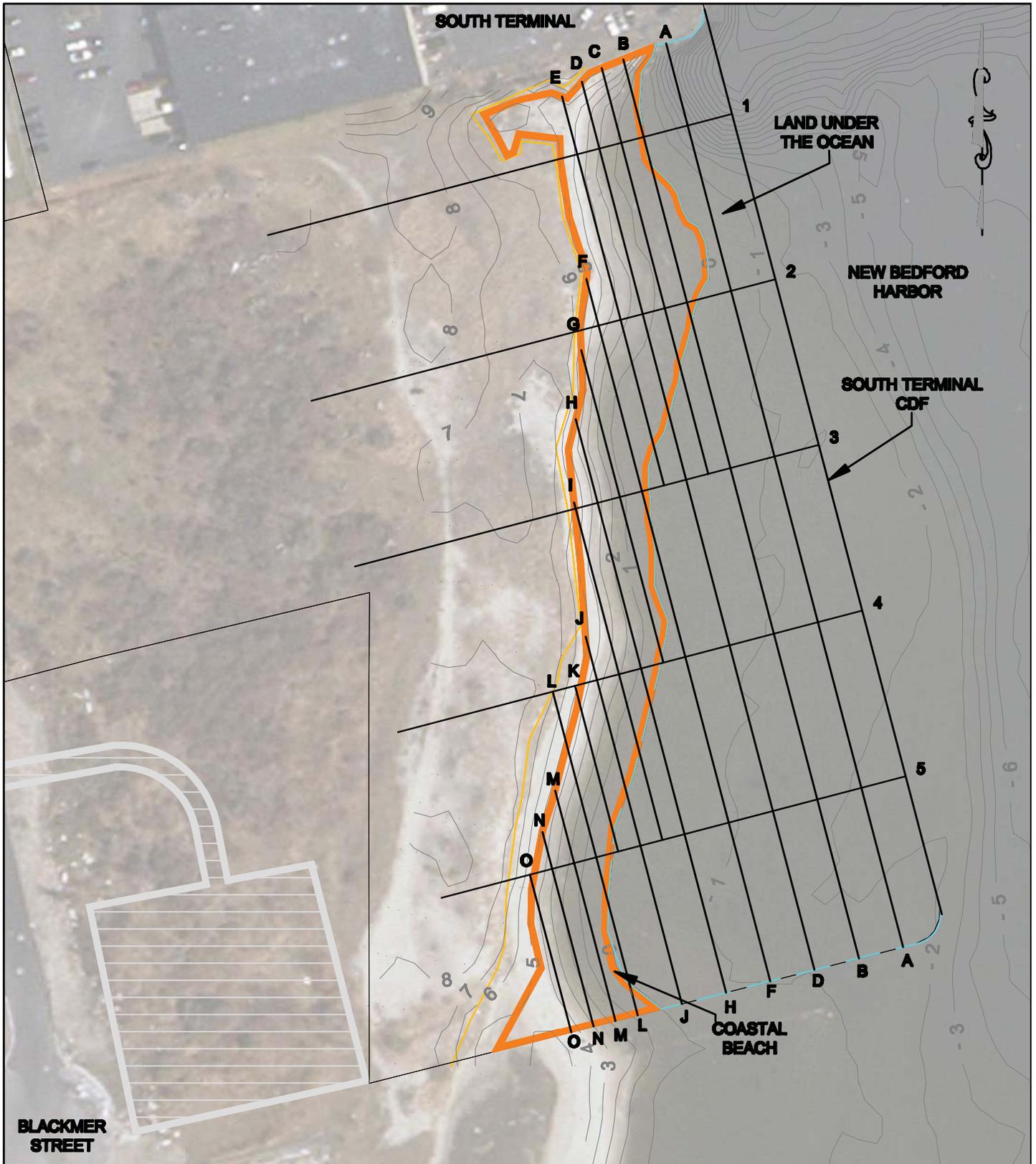
SHELLFISH IMPACT ESTIMATE: SOUTH TERMINAL EXTENSION PROJECT

OU-3 Capping Area				
Standing Crop Survey Subarea Population Estimate*				
SUBAREA*	SQFT/ SUBAREA*	ACRES/ SUBAREA*		
4	1,742,400	40	SEED	NECK
			CHERRY	CHOWDER
			AVE/SQFT*	0.1
			TOTAL/SUBAREA*	0.041
			Shellfish Density by Size/Acre	0.092
			Area of Impact - Acres	0.169
			TOTAL number of Shellfish by Size	0.174,240
				0.71,438
				0.160,301
				0.294,466
				0.4,356
				0.1,786
				0.4,008
				0.7,362
				0.19,38
				0.19,38
				0.19,38
				0.19,38
				0.84,419
				0.34,612
				0.77,666
				0.142,669
				0.339,366

Estimate of Total Shellfish Impact:	
Filled Footprint (Intertidal Only):	27,915
Filled Footprint (Subtidal Only):	223,197
South Terminal CDF Boat Basin and Channel:	2,712,804
Gifford Street Channel Relocation and Northern Mooring Mitigation Area:	397,163
Southern Mooring Mitigation Area:	2,165,420
Federal Channel Maintenance Dredging:	457,380
CAD Cell Area:	3,193,871
Winter Flounder Capping Area:	300,006
OU-3 Capping Area:	339,366
Estimate of Total Shellfish Impact:	9,817,121

*Number of Quahogs estimated in Whittaker, 1999 "Quahog Standing Crop Survey", Massachusetts Department of Marine Fisheries. See pages B-5, B-11, B-16, B-19, C-4 and C-16 for detailed distribution information in these subareas.

**Number of Quahogs estimated via shellfish survey completed on April 29, 2010 by Apex Companies, LLC, contained within the report entitled "State Enhanced Remedy in New Bedford, South Terminal", dated August 25, 2010.



APEX COMPANIES, LLC
 184 HIGH STREET, BOSTON,
 MA. 02110
 1 WAMSUTTA STREET, NEW
 BEDFORD, MA 02740

NEW BEDFORD HARBOR
 DEVELOPMENT COMMISSION

FIGURE
 1

PROJECT TITLE:

SOUTH TERMINAL CDF
 SHELLFISH SURVEY

DRAWING TITLE:

SHELLFISH SURVEY
 GRID AND SAMPLE
 LOCATIONS

SCALE:



Table 1: Recovered Shellfish and Invertebrate Data

Sample Location	Organism	Size (inches)	Number
A1	Quahog	2 1/2	2
	Quahog	2 1/4	2
	Quahog	2	1
	Quahog	2 3/4	3
	Quahog	3 3/4	1
	Common Oyster	2 1/2	1
A2	Quohog	2 7/8	1
	Quohog	1 1/2	1
	Quohog	3/4	1
A3	Quohog	2 1/2	1
A4	Hermit Crabs		7-10
	Shrimp	1 - 1 1/4	7-10
A5	Quohog	3	2
	Quohog	2 1/2	1
	Quohog	3 1/2	1
	Quohog	3 3/4	1
	Quohog	3 5/8	1
	Long Clawed Hermit Crab in Perwinkle Shell	1 1/2	1
B1	Common Oyster	2	1
	Common Oyster	2 1/4	1
	Common Oyster	3	1
	Common Oyster	4	1
	Common Oyster	2 7/8	1
	Common Oyster	2 3/4	1
	Quohog	2 1/4	1
	Quohog	2 5/8	1
	Quohog	1 7/8	1
	Quohog	3 1/2	1
	Quohog	2 3/8	1
	Quohog	2 1/2	1
	Quohog	1	2
	Quohog	1 1/2	2
	Quohog	1 1/4	1
	Quohog	1 3/8	1

Table 1: Recovered Shellfish and Invertebrate Data

Sample Location	Organism	Size (inches)	Number
B2	Common Oyster	3 1/8	1
	Quohog	2 3/8	1
B3	Common Oyster	2 3/4	1
	Common Oyster	3	1
	Smooth Periwinkle	3/8	2
B4	Quohog	3 1/2	1
	Quohog	3 1/8	1
B5	Quohog	2 1/2	2
	Quohog	3	1
	Quohog	3 1/2	1
C1	Smooth Periwinkle	3/8	2
	Common Oyster	2 1/2	1
	Common Oyster	2 1/8	1
	Common Oyster	1 7/8	1
	Common Oyster	2 1/4	1
	Quohog	2 7/8	1
C2	Milky Ribbon Worm	10	1
	Smooth Periwinkle	1/4 - 3/8	36
	Common Oyster	2 1/2	1
D1	Quohog	3	1
	Smooth Periwinkle	1/4 - 3/8	3
D2	Ribbed Mussel	1 7/8	1
	Ribbed Mussel	2	1
	Smooth Periwinkle	1/4 - 3/8	17
D3	No Findings		

Table 1: Recovered Shellfish and Invertebrate Data

Sample Location	Organism	Size (inches)	Number
D4	No Findings		
D5	Quahog	1 7/8	1
E1	No Findings		
E2	No Findings		
F2	No Findings		
F3	No Findings		
F4	No Findings		
F5	Smooth Periwinkle	5/8	1
	Quahog	3	2
	Quahog	2 3/8	1
	Quahog	2 5/8	1
	Quahog	3 1/8	1
G3	Dog Winkle/Young Waved Whelk	7/8	1
	Dog Winkle/Young Waved Whelk	7/8	1
H3	Soft-Shelled Clam	1	1
	Soft-Shelled Clam	2 1/4	1
	Smooth Periwinkle	3/8	1
H4	Dog Winkle/Young Waved Whelk	7/8	7
	Dog Winkle/Young Waved Whelk	1	1
	Quahog	2	1
	Unknown Polychaete	3	1
H5	Quahog	1 1/8	1
	Quahog	1 1/2	1
	Quahog	1 3/4	2
	Quahog	2	1
	Quahog	2 1/2	1

Table 1: Recovered Shellfish and Invertebrate Data

Sample Location	Organism	Size (inches)	Number
I3	No Findings		
I4	Soft-Shelled Clam Soft-Shelled Clam	2 3	1 1
J4	No Findings		
J5	No Findings		
K5	No Findings		
L5	No Findings		
M5	Quahog Quahog Quahog Quahog Unknown Polychaete	1 1/8 7/8 1 1/4 2 1/4 4 1/4	1 1 1 1 1
N5	No Findings		
O5	No Findings		

Table 2: Quahog Data

Sample Location	Organism	Size (inches)	Number	Class Size
A1	Quahog	2 1/2	2	Cherrystone
	Quahog	2 1/4	2	Littleneck
	Quahog	2	1	Littleneck
	Quahog	2 3/4	3	Chowder
	Quahog	3 3/4	1	Chowder
A2	Quohog	2 7/8	1	Chowder
	Quohog	1 1/2	1	Seed
	Quohog	3/4	1	Seed
A3	Quohog	2 1/2	1	Cherrystone
A4	No Quahogs Found Within Sample			
A5	Quohog	3	2	Chowder
	Quohog	2 1/2	1	Cherrystone
	Quohog	3 1/2	1	Chowder
	Quohog	3 3/4	1	Chowder
	Quohog	3 5/8	1	Chowder
B1	Quohog	2 1/4	1	Littleneck
	Quohog	2 5/8	1	Cherrystone
	Quohog	1 7/8	1	Seed
	Quohog	3 1/2	1	Chowder
	Quohog	2 3/8	1	Cherrystone
	Quohog	2 1/2	1	Cherrystone
	Quohog	1	2	Seed
	Quohog	1 1/2	2	Seed
	Quohog	1 1/4	1	Seed
	Quohog	1 3/8	1	Seed
B2	Quohog	2 3/8	1	Cherrystone
B3	No Quahogs Found Within Sample			

Table 2: Quahog Data

Sample Location	Organism	Size (inches)	Number	Class Size
B4	Quohog Quohog	3 1/2 3 1/8	1 1	Chowder Chowder
B5	Quohog Quohog Quohog	2 1/2 3 3 1/2	2 1 1	Cherrystone Chowder Chowder
C1	Quohog	2 7/8	1	Chowder
C2	No Quahogs Found Within Sample			
D1	Quohog	3	1	Chowder
D2	No Quahogs Found Within Sample			
D3	No Findings			
D4	No Findings			
D5	Quahog	1 7/8	1	Seed
E1	No Findings			
E2	No Findings			
F2	No Findings			
F3	No Findings			
F4	No Findings			

Table 2: Quahog Data

Sample Location	Organism	Size (inches)	Number	Class Size
F5	Quahog Quahog Quahog Quahog	3 2 3/8 2 5/8 3 1/8	2 1 1 1	Chowder Cherrystone Cherrystone Chowder
G3	No Quahogs Found Within Sample	7/8	1	Seed
H3	No Quahogs Found Within Sample			
H4	Quahog	2	1	Littleneck
H5	Quahog Quahog Quahog Quahog Quahog	1 1/8 1 1/2 1 3/4 2 2 1/2	1 1 2 1 1	Seed Seed Seed Littleneck Cherrystone
I3	No Findings			
I4	No Quahogs Found Within Sample	2	1	Littleneck
J4	No Findings			
J5	No Findings			
K5	No Findings			
L5	No Findings			
M5	Quahog Quahog Quahog Quahog	1 1/8 7/8 1 1/4 2 1/4	1 1 1 1	Seed Seed Seed Littleneck
N5	No Findings			
O5	No Findings			

Table 3a: Intertidal Relative Abundance Survey Calculations

Intertidal Shellfish Survey Statistics

Total Intertidal Survey Area ⁷ :	5,140 m ²
Intertidal Survey Area With No Quahogs ⁵ :	3,141 m ²
Percentage of Intertidal Survey Area With No Quahogs:	61%
Intertidal Survey Area With Quahogs ⁵ :	1,999 m ²
Percentage of Intertidal Survey Area With Quahogs:	39%

Average Shellfish Count Per Square Meter in Intertidal Survey Area^{1,7}

Sample Location	Number Per Quadrat ¹					
	Quahogs				Oysters	Soft-Shelled Clam
	"Seed"	"Littlenecks"	"Cherrystones"	"Chowder"		
B2	0	1	0	0	1	0
C1	0	0	0	1	4	0
C2	0	0	0	0	1	0
D1	0	0	0	1	0	0
D2	0	0	0	0	0	0
H3	0	0	0	0	0	2
H4	0	1	0	0	0	0
I4	0	0	0	0	0	2
M5	3	1	0	0	0	0
Average Count per Intertidal Survey Quadrat ¹ :	0.33	0.33	0	0.22	0.67	0.44
Average Count per Intertidal Survey Square Meter:	1.33	1.33	0	0.89	2.67	1.78

Notes:

- 1). Average Shellfish Count Per Square Meter in Intertidal Survey Area = Frequency of Shellfish In Intertidal Areas When Shellfish Present X Percentage of Impacted Area with Shellfish.
- 2). Percentage of Intertidal Survey Area with Shellfish assumed to be the same as the percentage of Intertidal Impacted Area with Shellfish.
- 3). Survey Area with (or without) Shellfish estimated based on recovery during shellfish survey.
- 4). Estimated count in Intertidal Impacted Area = Intertidal Average Count per Square Meter in Survey Area X Estimated Intertidal Impacted Area.
- 5). Impacted Area = Shellfish habitat to be impacted during New Bedford South Terminal CDF Project
- 6). Quahog Classifications from Table 1: Class Size Lengths, page 4, Quahog Standing Crop Survey, New Bedford/Fairhaven Inner and Outer Harbors, David K. Whittaker, Massachusetts Division of Marine Fisheries, June 6, 1999.
- 7). Survey Area = Area in which a manual shellfish survey was conducted on 5/2/2010 and 5/3/2010

Table 3b: Subtidal Relative Abundance Survey Calculations

Subtidal Shellfish Survey Statistics

Total Subtidal Survey Area ⁷ :	12,100 m ²
Subtidal Survey Area With No Quahogs ⁵ :	3,361 m ²
Percentage of Subtidal Survey Area With No Quahogs:	28%
Subtidal Survey Area With Quahogs ⁵ :	8,739 m ²
Percentage of Subtidal Survey Area With Quahogs:	72%

Average Shellfish Count Per Square Meter in Subtidal Survey Area^{1,7}

Sample Location	Number Per Quadrat ¹					
	Quahogs				Oysters	Soft-Shelled Clam
	"Seed"	"Littlenecks"	"Cherrystones"	"Chowder"		
A1	1	2	1	1	1	0
A2	2	0	0	1	0	0
A3	0	1	0	0	0	0
A5	0	1	0	4	0	0
B1	5	2	2	1	6	0
B2	0	1	0	0	1	0
B3	0	0	0	0	2	0
B4	0	0	0	2	0	0
B5	0	0	1	2	0	0
D5	1	0	0	0	0	0
F5	0	1	1	2	0	0
H5	3	2	1	0	0	0
Average Count per Subtidal Survey Quadrat ¹	1.00	0.83	0.50	1.08	0.83	0.00
Average Count per Subtidal Survey Square Meter:	4.00	3.33	2	4.33	3.33	0.00

Notes:

- 1). Average Shellfish Count Per Square Meter in Subtidal Survey Area = Frequency of Shellfish In Subtidal Areas When Shellfish Present X Percentage of Impacted Area with Shellfish.
- 2). Percentage of Subtidal Survey Area with Shellfish assumed to be the same as the percentage of Subtidal Impacted Area with Shellfish.
- 3). Survey Area with (or without) Shellfish estimated based on recovery during shellfish survey.
- 4). Estimated count in Subtidal Impacted Area = Subtidal Average Count per Square Meter in Survey Area X Estimated Subtidal Impacted Area.
- 5). Impacted Area = Shellfish habitat to be impacted during New Bedford South Terminal CDF Project
- 6). Quahog Classifications from Table 1: Class Size Lengths, page 4, Quahog Standing Crop Survey, New Bedford/Fairhaven Inner and Outer Harbors, David K. Whittaker, Massachusetts Division of Marine Fisheries, June 6, 1999.
- 7). Survey Area = Area in which a manual shellfish survey was conducted on 5/2/2010 and 5/3/2010