

**PORTSMOUTH HARBOR AND PISCATAQUA RIVER
NEW HAMPSHIRE AND MAINE
NAVIGATION IMPROVEMENT STUDY
FEASIBILITY REPORT**

APPENDIX L

**EELGRASS VIDEO SURVEY
AND BENTHIC COMMUNITY DATA
FOR THE
PORTSMOUTH TURNING BASIN DREDGING SITE**

This appendix presents the results of two investigations of the Portsmouth Harbor upper turning basin expansion. The first is a video survey to determine the presence or absence of eelgrass in the dredge area. The second is an analysis of the benthic community from sediment samples taken from the dredge area.

TRIP REPORT
Piscataqua River Turning Basin
Underwater Video Survey
and Sediment Sampling
Long Sands Beach Nearshore Placement Site
Maine and New Hampshire



US ARMY CORPS
OF ENGINEERS
New England District

November 2009

1.0 INTRODUCTION

The objective of this trip was to perform a video survey to confirm the presence or absence of eelgrass in the vicinity of the proposed project area in the Piscataqua River and to collect sediment grabs from the proposed nearshore disposal site at Long Sands Beach in York, ME. The sediment grab samples were collected to evaluate site suitability and potential impacts to the benthic community.

2.0 MATERIALS AND METHODS

The video survey and sediment sampling efforts were conducted on November 5, 2009. Work was carried out on board the 24 foot Corps of Engineers Environmental Survey Launch (CEESL). In attendance were U.S. Army Corps of Engineers (USACE) marine ecologists, Todd Randall, and Ben Loyd, and Department of the Army intern Jesse Morrill-Winter. Positioning was achieved using a Garmin GPSMAP 492 WAAS enabled chart plotter and Garmin external antenna.

General areas for the video survey (i.e., proposed dredging areas and historic eelgrass areas) were plotted on the Garmin chart plotter prior to the start of field activities. Individual points for the video survey were chosen in the field (Figure 1) based on comments from Dr. Fred Short of the University of New Hampshire indicating that historic eelgrass beds had been reestablished in the area to the north of the proposed project area. Each point was recorded on the Garmin chart plotter along with the vessel track for the duration of the video feed at each station. Video footage was collected using a Sea Viewer Sea-Drop 950 Underwater Video Camera and recorded to an onboard DVR system outfitted with an LCD monitor for real time viewing. The camera was deployed off the bow of the vessel. Depth and directional adjustments were made manually by USACE personnel positioned on the bow.

Sediment grab locations at the proposed Long Sands Nearshore Disposal Site (see Figure 2) were selected by USACE team members prior to sampling activities with the intent to represent surficial sediments adequately throughout the disposal site. These locations were stored on the Garmin chart plotter which was used for navigation in the field. Sediment samples were collected by USACE personnel using a 0.04m² Van Veen grab which was retrieved with a commercial grade pot hauler mounted on the CEESL.

The first grab from each station was transferred to a sample container and set aside for grain size analysis. The contents of the second grab were washed through a # 35 (0.5 mm) sieve, and the material retained was transferred to a sample container where it was treated with the biological stain rose bengal and preserved in a 10% formalin solution for benthic community analysis.

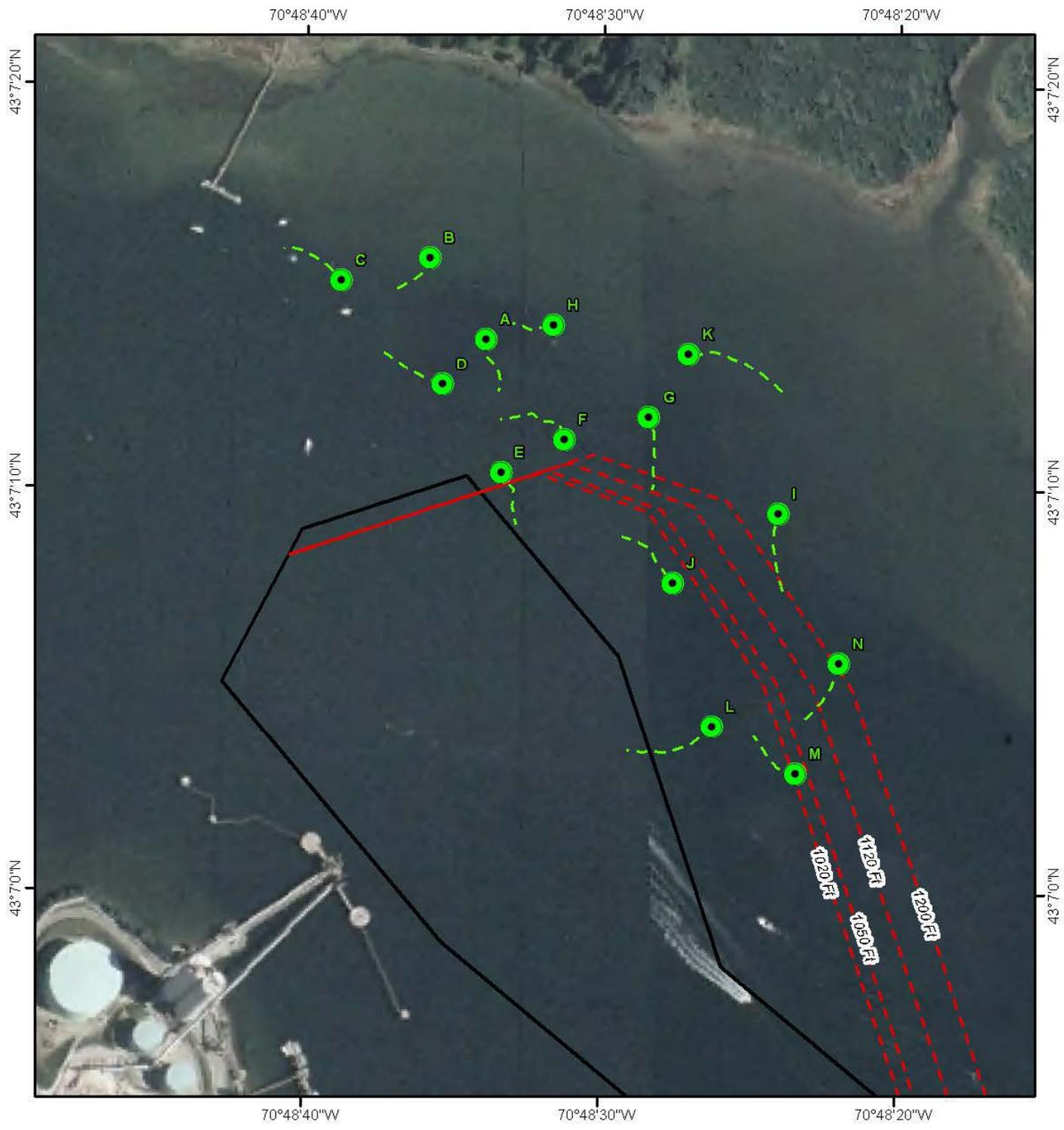
3.0 RESULTS

A video survey was successfully carried out by the above USACE personnel in the vicinity of the proposed project area in the Piscataqua River which were reported to have eelgrass beds. Depths in the area surveyed ranged from 5 to 24 feet at the time of survey (intertidal to 19 feet adjusted to MLLW). No eelgrass was observed in the survey area. Bottom type consisted of sand with cobble gravel and shell, and several areas with dense kelp beds. A record of the video survey log is presented in Table 1. Screen captures from each of the video survey stations can be found in Appendix A.

Sediment grabs were collected by USACE personnel at each of the 5 sample locations at the Long Sands Beach Nearshore Disposal Site. Sediments in the sample area uniformly consisted of well graded, medium to fine grained brownish-gray sand (see Table 1). Samples from stations LS1, LS2, LS4, and LS5 all contained polychaete worm tubes. The sample from station LS1 also included a green crab (*Carcinus maenas*) and a sand dollar (*Echinarachnius parma*). Two attempts were required to retrieve sufficient sample volume at each of the five locations. Grain size samples were transported to Geotesting Express in Boxborough, MA. Samples for benthic community analysis were sent to the Bigelow Lab for Ocean Sciences in West Boothbay Harbor, ME.

TABLE 1. Video Survey Log

Station	Easting NAD 83	Northing NAD83	Depth (ft)	Water Temp (°F)	Comments
A	-70.8094	43.12047	9.5	53.6	Sandy bottom with some gravel and shell. Hermit crabs noted.
B	-70.8099	43.12103	5.1	52.3	Sandy bottom with some gravel and shell.
C	-70.8108	43.12087	11.2	51.6	Sandy bottom with gravel cobble and shell. Patches of green algae.
D	-70.8098	43.12016	6.2	52.2	Sand, gravel, and some shell. Kelp bed with red algae.
E	-70.8093	43.11955	17.9	52.2	Sandy bottom with cobble, gravel, and some shell. Several small boulders. Patches of green algae.
F	-70.8087	43.11978	7.9	52.3	Sandy bottom with cobble, gravel, and some shell. Green crab noted.
G	-70.8079	43.11994	8.2	52.2	Sand bottom with scattered gravel and shell. Hermit crabs noted.
H	-70.8088	43.12057	7.6	52.1	Sandy bottom with gravel and shell.
I	-70.8067	43.11928	6.9	52.3	Sandy bottom. Dropped to 19 feet at end and still all sand.
J	-70.8076	43.1188	18.3	52.4	Sand and shell with gravel.
K	-70.8075	43.12038	6.0	52.7	Sand with scattered gravel and shell. Spider crab noted.
L	-70.8073	43.11781	13.5	52.4	Thick kelp bed on edge of channel.
M	-70.8065	43.11749	10.4	52.0	Gravel and shell bottom adjacent to kelp bed.
N	-70.8061	43.11825	24.4	52.5	Sandy bottom with cobble, gravel, and some shell.



US Army Corps of Engineers
New England District

**PISCATAQUA RIVER
IMPROVEMENT DREDGING PROJECT
NOVEMBER 2009 SAV SURVEY**

- - - Survey Track
 ● Survey Point
 - - - Proposed Alternatives
 — Existing Project Area

0 100 200 400 600 800 1,000
Feet
1:4,000

2003 AERIALS FROM MEGIS WEBSITE



Figure 1

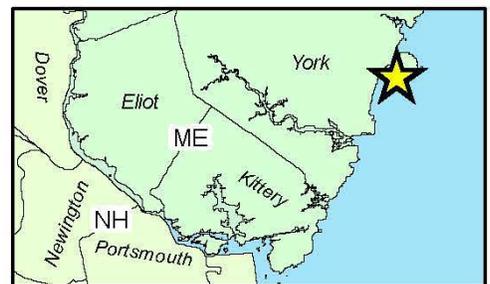
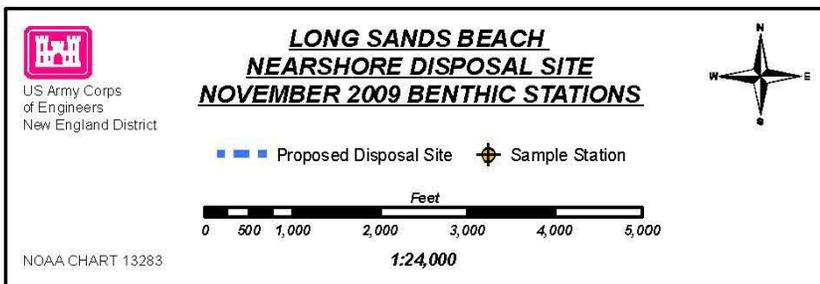
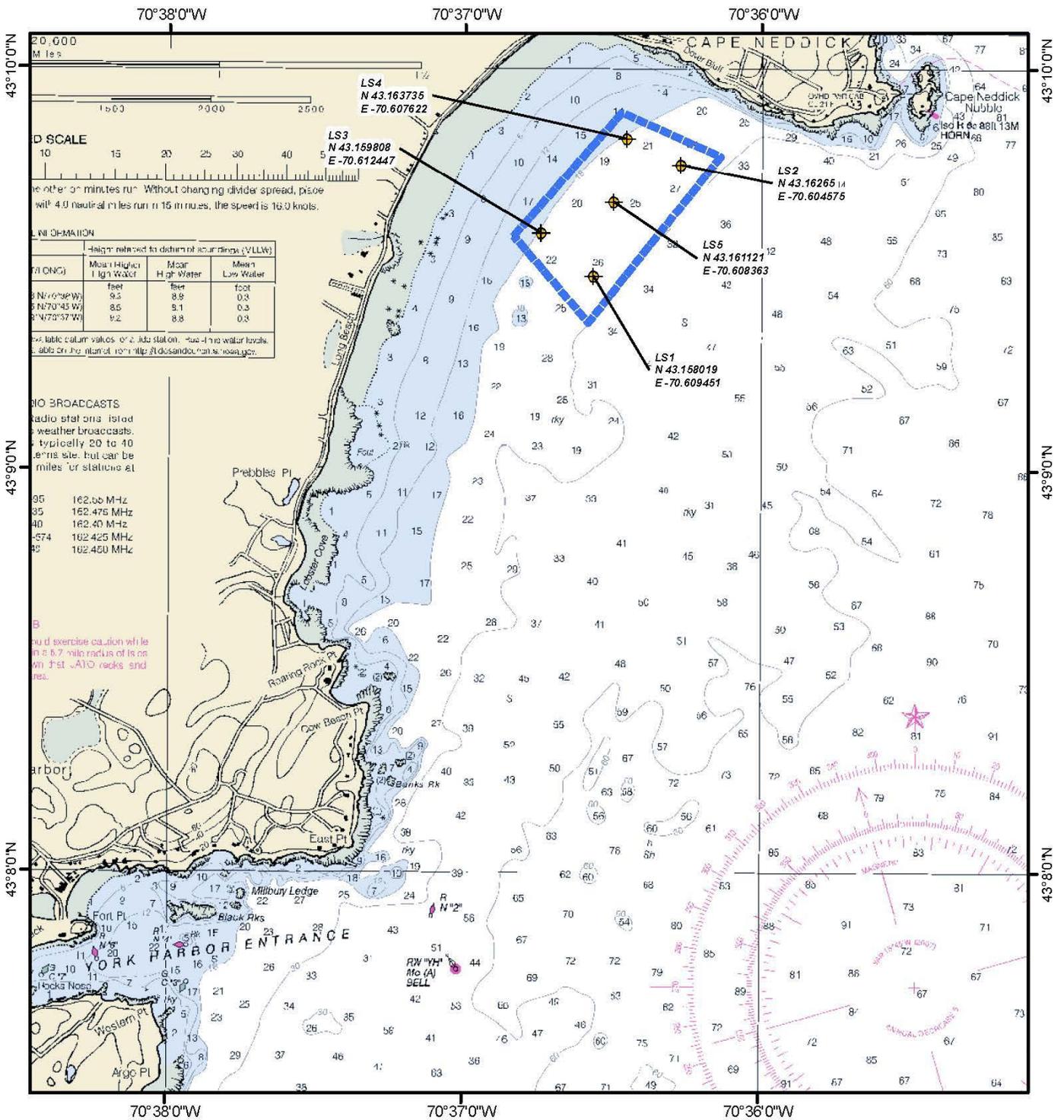


Figure 2

Data from samples taken offshore of Long Sands Beach, York, Maine, as part of investigations for potential nearshore berm placement sites for dredged sand from the Piscataqua River are presented in Appendix O.

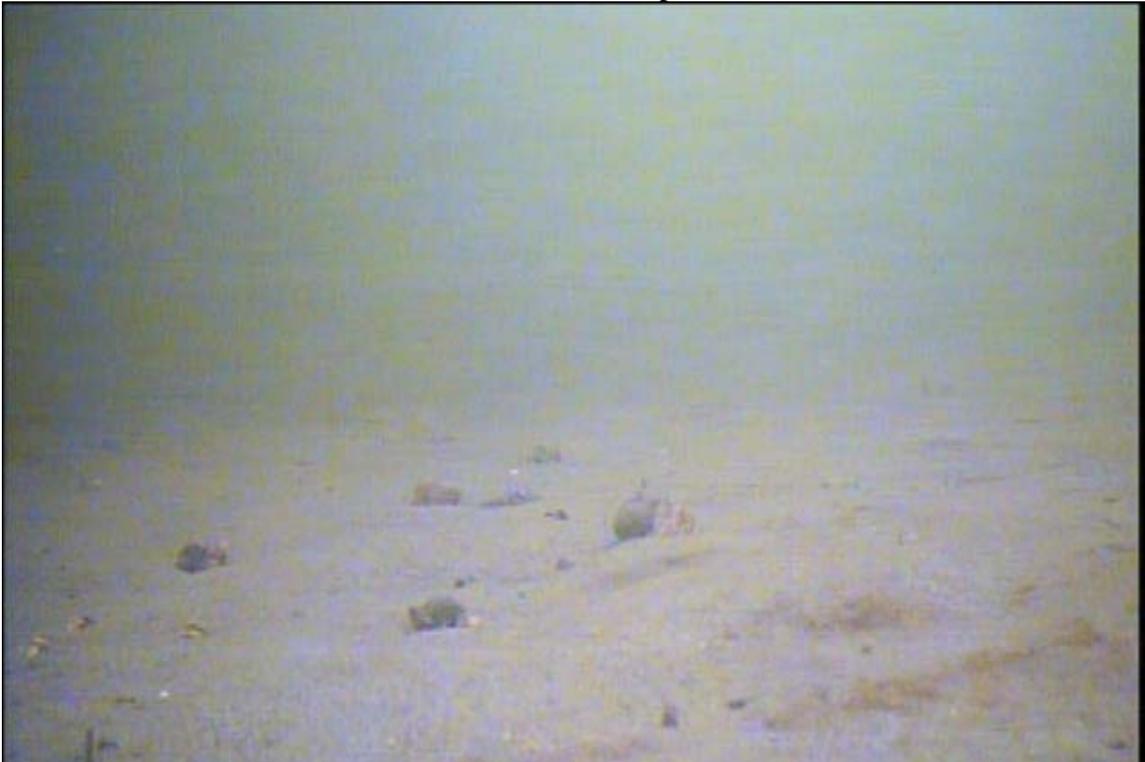
APPENDIX A

**VIDEO SURVEY SCREEN CAPTURES
PORTSMOUTH HARBOR AND PISCTAQUA RIVER
UPPER TURNING BASIN EXPANSION**

Appendix A: Video Survey Screen Captures



Station A Screen Capture 1



Station A Screen Capture 2

Appendix A: Video Survey Screen Captures



Station B Screen Capture 1

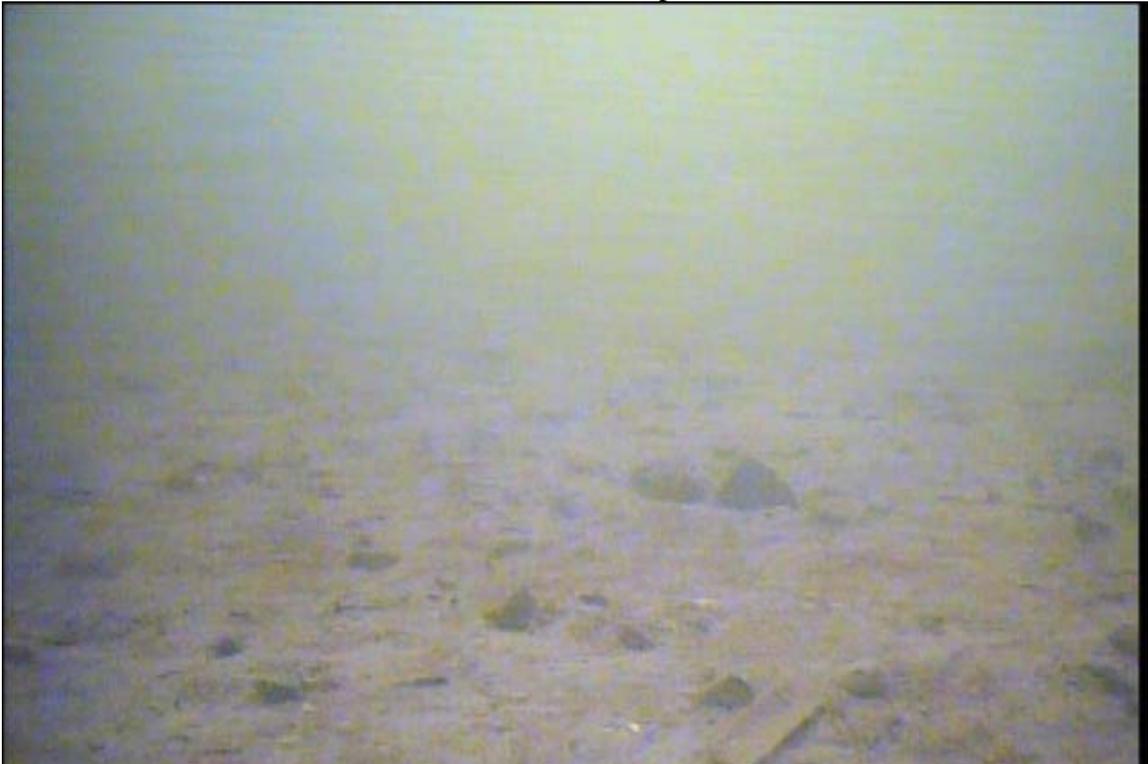


Station B Screen Capture 2

Appendix A: Video Survey Screen Captures



Station C Screen Capture 1



Station C Screen Capture 2

Appendix A: Video Survey Screen Captures

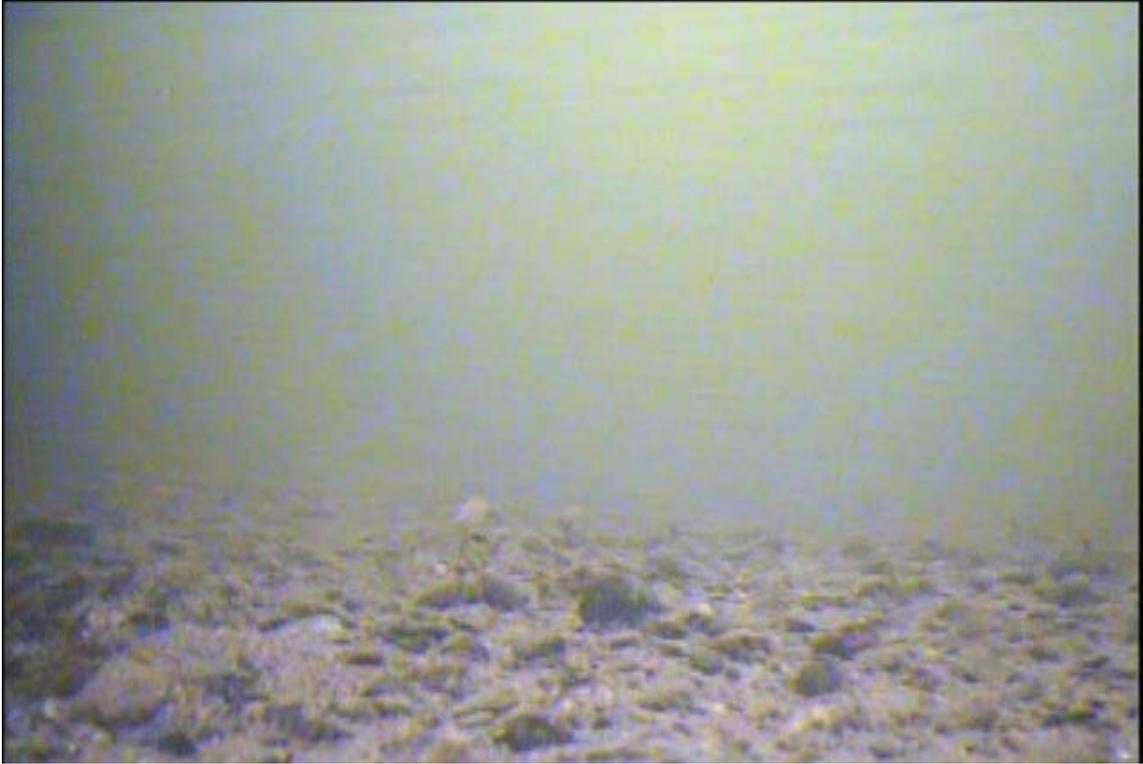


Station D Screen Capture 1



Station D Screen Capture 2

Appendix A: Video Survey Screen Captures



Station E Screen Capture 1

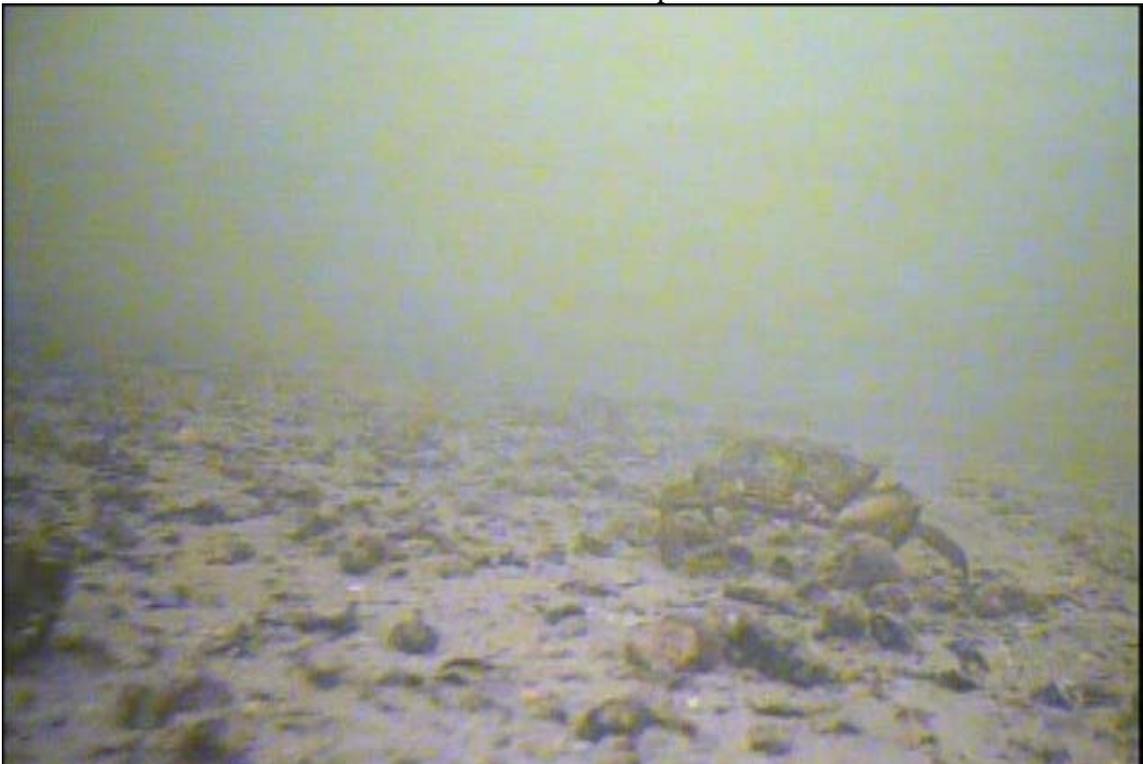


Station E Screen Capture 2

Appendix A: Video Survey Screen Captures



Station F Screen Capture 1



Station F Screen Capture 2

Appendix A: Video Survey Screen Captures



Station G Screen Capture 1



Station G Screen Capture 2

Appendix A: Video Survey Screen Captures



Station H Screen Capture 1



Station H Screen Capture 2

Appendix A: Video Survey Screen Captures



Station I Screen Capture 1



Station I Screen Capture 2

Appendix A: Video Survey Screen Captures



Station J Screen Capture 1

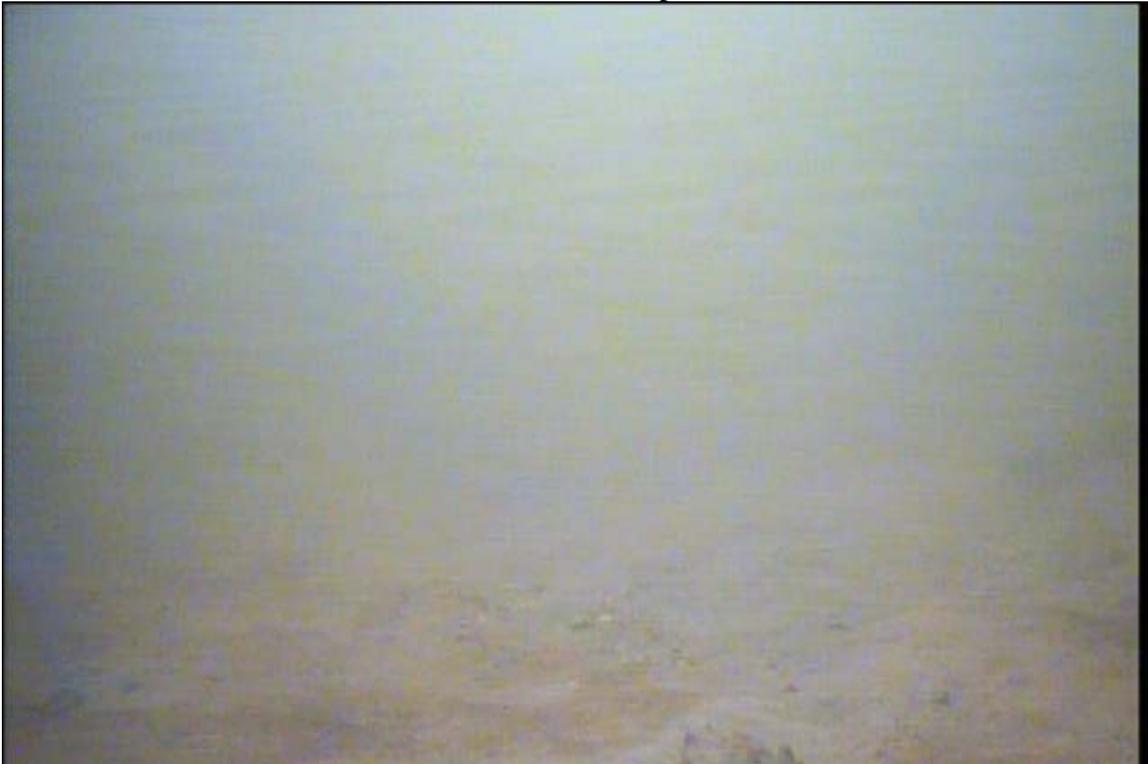


Station J Screen Capture 2

Appendix A: Video Survey Screen Captures



Station K Screen Capture 1



Station K Screen Capture 2

Appendix A: Video Survey Screen Captures



Station L Screen Capture 1



Station L Screen Capture 2

Appendix A: Video Survey Screen Captures



Station M Screen Capture 1

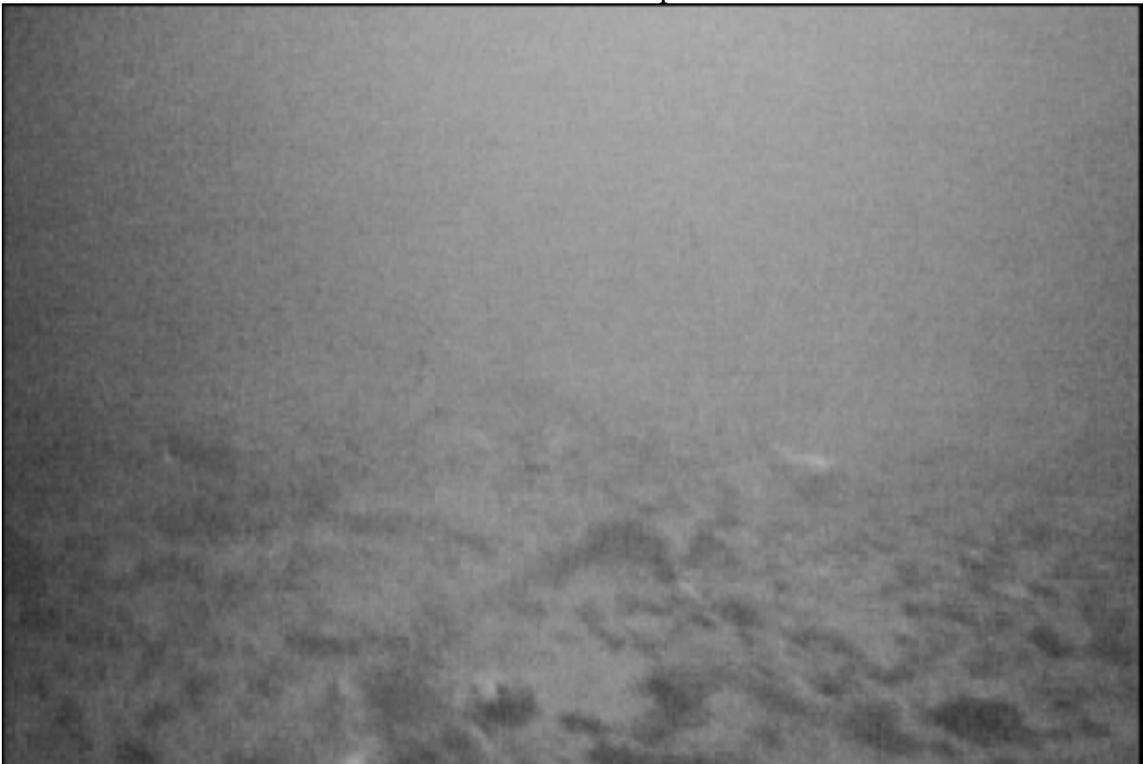


Station M Screen Capture 2

Appendix A: Video Survey Screen Captures

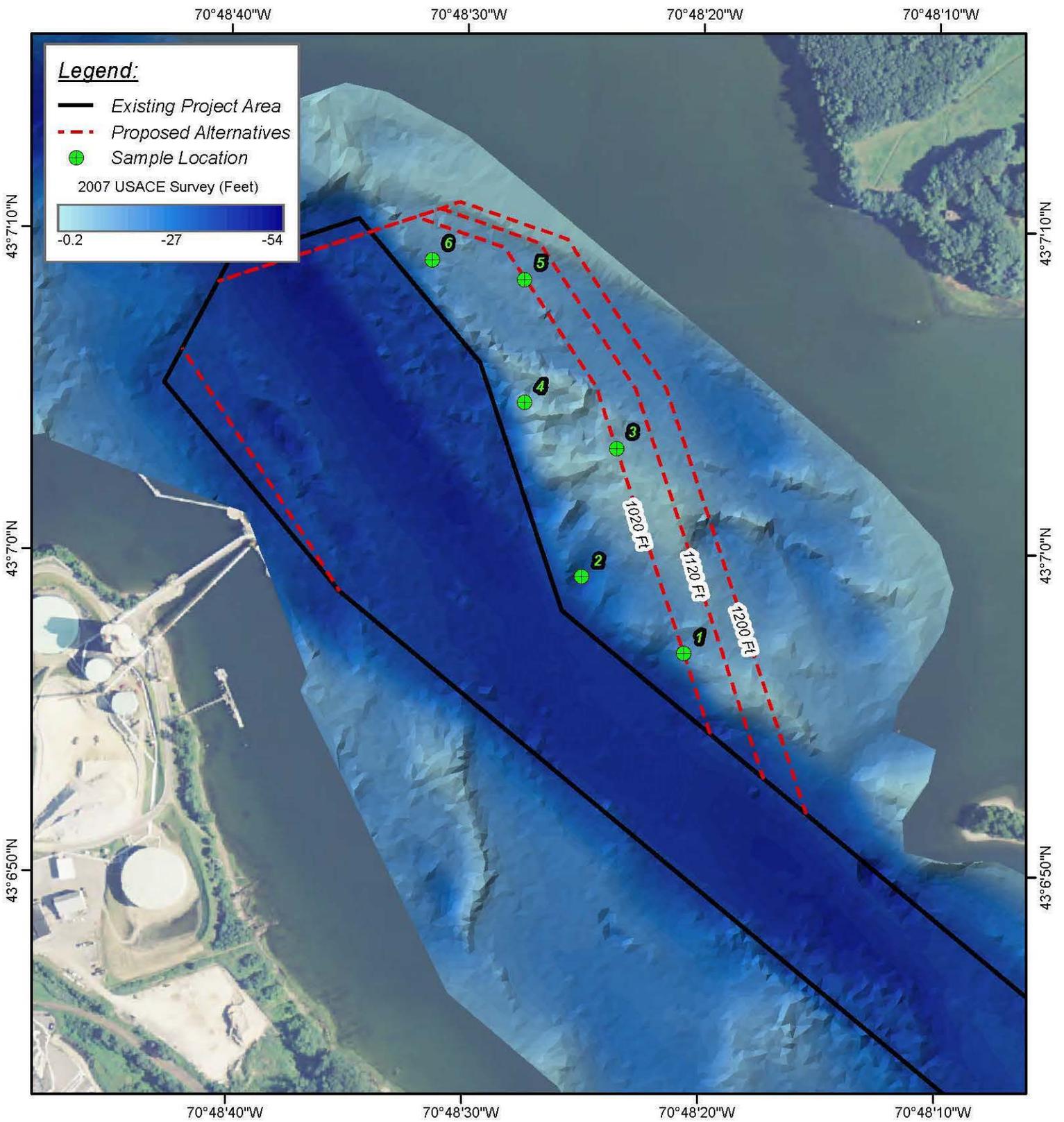


Station N Screen Capture 1



Station N Screen Capture 2

BENTHIC COMMUNITY DATA
PORTSMOUTH HARBOR AND PISCTAQUA RIVER
UPPER TURNING BASIN EXPANSION



US Army Corps of Engineers
New England District

**PISCATAQUA RIVER
IMPROVEMENT DREDGING PROJECT
2007 BENTHIC SAMPLE LOCATIONS**

0 100 200 300 Meters
0 250 500 750 1,000 Feet

1:5,000

L-25 GCS NAD 1983

NOS NE ATLANTIC DEM



TABLE B-1. Benthos collected in the Piscataqua River Turning Basin (Stations 1- 6) on September 11, 2007. Density values are per 0.04m².

SPECIES	STA. 1	STA. 2	STA. 3	STA. 4	STA. 5	STA. 6
ANNELIDA						
POLYCHAETA						
<i>Leitoscoloplos fragilis</i>		7	8			28
<i>Phyllodoce mucosa</i>	5	8	4	7	6	9
<i>Lepidonotus squamatus</i>		1	8	10	1	13
<i>Nereis arenaceodonta</i>		1	8		1	6
<i>Pygospio elegans</i>		5	3		14	
<i>Exogone hebes</i>		8	1			
<i>Polycirrus eximius</i>	1	8	4		12	16
<i>Eulalia viridis</i>				1		3
<i>Clymenella torquata</i>						2
<i>Harmothoe imbricata</i>				1		3
<i>Podarke obscura</i>				1	2	
<i>Autolytus prolifera</i>				1	1	4
<i>Paradoneis lyra</i>					7	
<i>Exogone dispar</i>					4	
<i>Spio</i> sp.					1	
<i>Streptosyllis arenae</i>					1	
<i>Pontogeneia inermis</i>						3
<i>Ninoe nigripes</i>						1
<i>Acmira catherinae</i>					11	
OLIGOCHAETA						
Unidentified species A	29	51	19	21	55	51
MOLLUSCA						
BIVALVIA						
<i>Gemma gemma</i>			10		1	
<i>Macoma baltica</i>						2
<i>Lyonsia hyalina</i>			1		5	41
<i>Mya arenaria</i>		6				8
<i>Mytilus edulis</i>	24	15	9	63	4	6
<i>Cerastoderma</i> sp.				1		
GASTROPODA						
<i>Crepidula</i> sp.			1			
<i>Littorina</i> sp.		4	2		1	1
<i>Acanthodoris pilosa</i>	1		1	10	1	

SPECIES	STA. 1	STA. 2	STA. 3	STA. 4	STA. 5	STA. 6
POLYPLACOPHORA						
<i>Chaetopleura</i> sp.						1
ARTHROPODA						
CRUSTACEA						
AMPHIPODA						
<i>Corophium acutum</i>	75	37	104	326	70	95
<i>Ampelisca abdita</i>					4	
<i>Microdeutopus gryllotalpa</i>	34	52	277	284	86	305
<i>Caprella</i> sp.	6	13	39	56	18	14
<i>Calliopus laevis</i>				3		
<i>Gammarus annulatus</i>				2	1	
<i>Gammarus mucronatus</i>				3		
<i>Erichthonius filiformis</i>				1		
<i>Phoxocephalus hollboli</i>					3	
<i>Unciola</i> sp.						1
<i>Orchomenella pinguis</i>						1
ISOPODA						
<i>Jaera marina</i>	7	3	27	3	11	
<i>Chiridotea tuftsi</i>					5	
<i>Tanaidacea</i>						
<i>Leptocheilia savigni</i>					2	
DECAPODA						
<i>Cancer</i> sp.			1			
MYSIDACEA						
<i>Heteromysis formosa</i>			1	3	14	
ECHINODERMATA						
<i>Arbacia punctulata</i>		2		1		
TOTALS						
# of species	9	16	20	20	28	23
# of individuals	181	221	528	798	342	614

