APPENDIX 5.8-A

UNDERWATER BENTHIC HABITAT SURVEY
MELFORD MARINE TERMINAL
MELFORD, NOVA SCOTIA
FINAL REPORT

UNDERWATER BENTHIC HABITAT SURVEY
MELFORD MARINE TERMINAL
MELFORD, NOVA SCOTIA

FINAL REPORT

Submitted to:

Melford Marine Terminal Inc.
Melford, Nova Scotia

Submitted by:

AMEC Earth & Environmental,

A division of AMEC Americas Limited
Saint John, New Brunswick

September 2007

TV71002

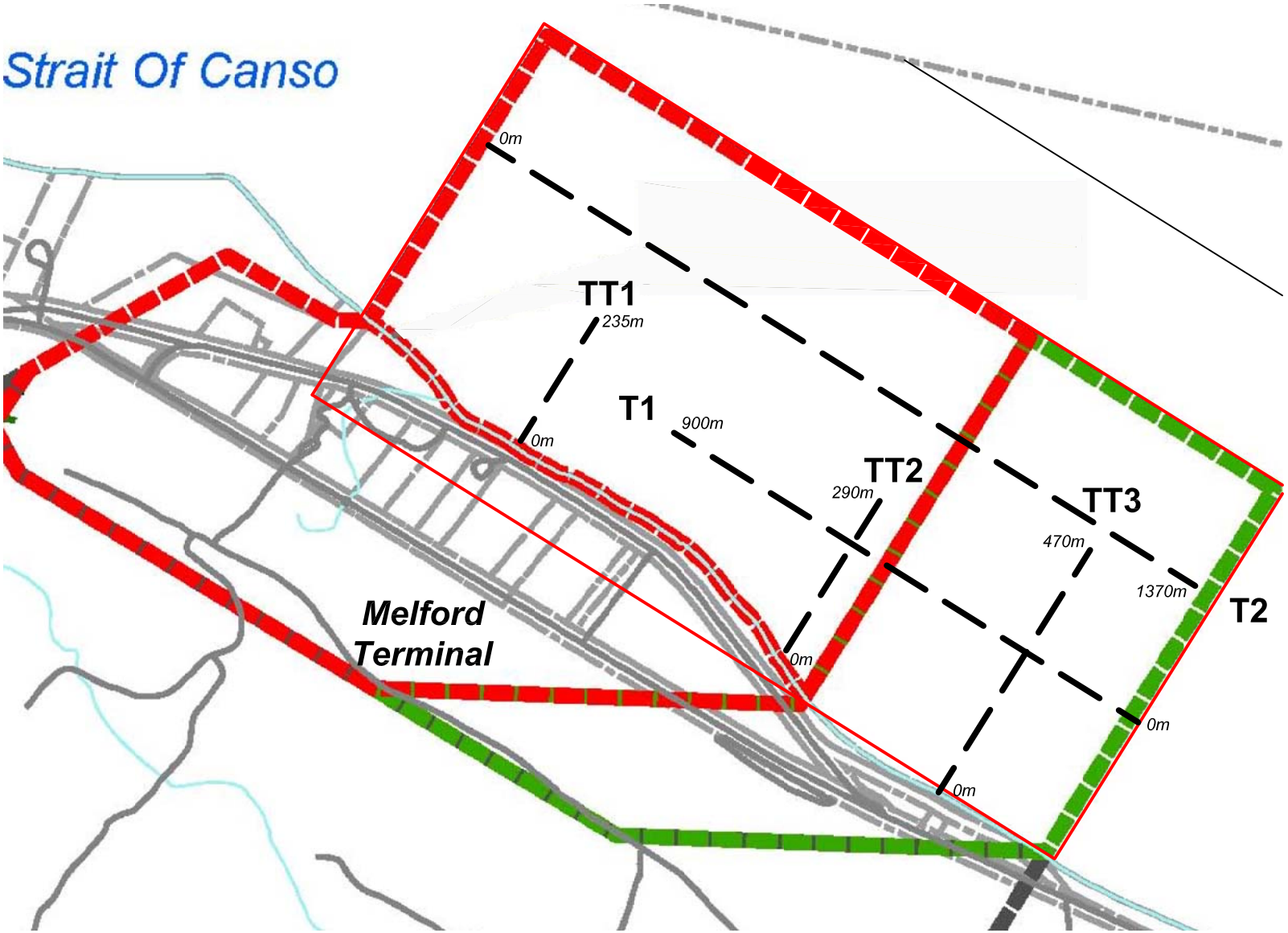
Introduction

At the request of Melford Marine Terminal Inc., AMEC Earth & Environmental, a division of AMEC Americas Limited (AMEC), is herein providing an underwater benthic habitat survey report for a field program undertaken at Melford, Guysborough County, Nova Scotia (NS). The purpose of this program was to characterize the substrate using a combination of visual field observations and underwater video survey techniques.

Scope and Methodology

On July 27, 2007 (TT1, TT2, TT3, and T1) and again on August 3, 2007 (T2) qualitative observations were conducted within the footprint of the proposed Melford Marine Terminal, using video survey techniques to map substrate type and document macrofaunal and macrofloral species presence and abundance. Connors Diving Services was contracted by AMEC to perform the diving and video surveillance services.

Video transects are depicted in Figure 1. Approximately 3265 metres (m) of video surveillance was conducted along the footprint of the proposed Melford Marine Terminal. The distance was divided into five transects. A 600m long transect (T1) and a 1370m long transect (T2) running parallel to the shoreline of the proposed Terminal site were spaced to give an accurate marine habitat survey between the low tide mark and the maximum depth which the divers could descend (15 m). Three more transects (TT1, TT2, and TT3) were laid out perpendicular to the shoreline and spaced to give an accurate representation of the marine habitat from the low tide mark to the maximum depth, or to the extent of the project footprint.



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INDEX MAP

LEGEND:

0m — 200m TRANSECT WITH DIMENSIONS

SCALE: 1:10,000

0 200 METRES

DATE:	September 10, 2007
DRAWN BY:	DET
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FILE NAME:	Melford Transects.dwg

MELFORD TERMINAL

FIGURE 1
UNDERWATER BENTHIC HABITAT SURVEY TRANSECT LOCATIONS

The transects consisted of lead line marked in 5m increments. The locations of the transects were determined in the field with the use of the site drawing provided by AMEC Earth & Environmental (Figure 1). A Garmin 2 Plus Global Positioning System (GPS) was used to georeference the transect locations. The start and end coordinates of the transects are listed in Table 1 as latitude and longitude (ddmm.mmm) (Datum: NAD83).

Table 1 Marine Video Survey Coordinates, Melford, Guysborough County, NS

Component		Latitude (ddmm.mmm)*	Longitude (ddmm.mmm)*
235m Transect Tie-Line (TT1)	0m	N 45° 31.976'	W 61° 17.764'
	235m	N 45° 32.089'	W 61° 17.695'
290m Transect Tie-Line (TT2)	0m	N 45° 31.744'	W 61° 17.360'
	290m	N 45° 31.899'	W 61° 17.286'
470m Transect Line (TT3)	0m	N 45° 31.611'	W 61° 17.129'
	470m	N 45° 31.800'	W 61° 16.970'
900m Transect Line (T1)	0m	N 45° 31.629'	W 61° 16.958'
	900m	N 45° 31.852'	W 61° 17.407'
1370m Transect Line (T2)	0m	N 45° 32.048'	W 61° 17.647'
	1370m	N 45° 31.677'	W 61° 16.810'

*All coordinates were recorded with a Garmin 2 Plus GPS.

The underwater surveillance of the transects required the use of an underwater video camera, operated by a CSA certified diver using SCUBA. As much as was practical, the underwater video surveillance encompassed a span of approximately 1m on either side of the transect line. Seabed characterization involved field observations made by the field crew and a review of the video surveillance tape. Observations along the video transect were made for every 25m interval for TT1, TT2, and TT3 and every 50m interval for T1 and T2.

Underwater Benthic Habitat Survey Results

The results of the transect surveys of the proposed Melford Marine Terminal footprint location is presented in Attachment A (Tables A.1 to A.5), including the following information for each 25m (TT1, TT2, and TT3) or 50m (T1, T2) increment of transect line:

- visual determination of substrate type (in order of dominance);
- macrofaunal species identification and abundance; and
- macrofloral species identification and percent coverage.

A summary of the information provided in Tables A.1 to A.5 is described in the following paragraphs.

- **Substrate**

According to the video surveillance, the predominant substrate types for the individual transects are as follows:

Transect TT1:

- 0-25m – predominantly rock (95%) with lesser amounts of cobble (5%).
- 25-50m – predominantly rock (100%).
- 50-75m – predominantly rock (90%) with lesser amounts of cobble (10%).
- 75-100m – predominantly rock (50%) with lesser amounts of cobble (45%) and sand (5%).
- 100-125m – predominantly cobble (40%) with lesser amounts of sand (40%) and rock (20%).
- 125-150m – predominantly cobble (50%) with lesser amounts of sand (40%) and rock (10%).
- 150-175m – predominantly cobble (50%) with lesser amounts of gravel (20%), sand (20%) and rock (10%).
- 175-200m – predominantly sand (40%) with lesser amounts of cobble (25%), gravel (25%) and rock (10%).
- 200-225m – predominantly sand (65%) with lesser amounts of cobble (15%), gravel (10%), rock (5%) and silt (5%).
- 225-235m – predominantly sand (45%) with lesser amounts of gravel (30%), cobble (10%), silt (10%) and rock (5%).

Transect TT2:

- 0-50m – predominantly rock (95%) with lesser amounts of cobble (5%).
- 50-75m – predominantly rock (85%) with lesser amounts of cobble (15%).
- 75-100m – predominantly rock (75%) with lesser amounts of cobble (25%).
- 100-125m – equal amounts of rock (50%) and cobble (50%).
- 125-150m – predominantly cobble (50%) with lesser amounts of sand (40%) and rock (10%).
- 150-175m – predominantly rock (40%) and cobble (40%) with lesser amounts of sand (20%).
- 175-200m – predominantly cobble (50%) with lesser amounts of sand (30%) and rock (20%).
- 200-225m – predominantly sand (50%) with lesser amounts of cobble (45%) and rock (5%).
- 225-250m – predominantly sand (70%) with lesser amounts of cobble (25%) and rock (5%).
- 250-275m – predominantly sand (80%) with lesser amounts of cobble (10%), rock (5%) and silt (5%).
- 275-290m – predominantly sand (75%) with lesser amounts of cobble (15%), rock (5%) and silt (5%).

Transect TT3:

- 0-25m – predominantly rock (95%) with lesser amounts of cobble (5%).
- 25-50m – predominantly rock (90%) with lesser amounts of cobble (10%).

- 50-75m – predominantly rock (60%) with lesser amounts of cobble (30%) and sand (10%).
- 75-100m – predominantly cobble (75%) with lesser amounts of sand (20%) and rock (5%).
- 100-125m – predominantly cobble (45%) and sand (45%) with lesser amounts of rock (10%).
- 125-150m – predominantly sand (75%) with lesser amounts of cobble (20%) and silt (5%).
- 150-225m – predominantly sand (80%) with lesser amounts of cobble (10%) and silt (10%).
- 225-250m – predominantly cobble (60%) with lesser amounts of sand (30%) and silt (10%).
- 250-275m – predominantly cobble (70%) with lesser amounts of sand (30%).
- 275-325m – predominantly cobble (60%) with lesser amounts of sand (40%).
- 325-425m – predominantly sand (80%) with lesser amounts of cobble (20%).
- 425-470m – predominantly sand (85%) with lesser amounts of cobble (15%).

Transect T1:

- 0-50m – predominantly gravel (30%) and silt (30%) with lesser amounts of sand (25%) and cobble (15%).
- 50-150m – predominantly gravel (30%) and silt (30%) with lesser amounts of sand (25%) and cobble (15%).
- 150-400m – predominantly gravel (30%), sand (30%), and silt (30%) with lesser amounts of cobble (10%).
- 400-450m – predominantly cobble (35%) with lesser amounts of gravel (25%), sand (20%) and silt (20%).
- 450-600m – predominantly cobble (60%) with lesser amounts of silt (20%), gravel (10%) and sand (10%).
- 600-650m – predominantly cobble (70%) with lesser amounts of gravel (10%), sand (10%) and silt (10%).
- 650-700m – predominantly cobble (65%) with lesser amounts of rock (10%), silt (10%) and sand (5%).
- 700-900m – predominantly cobble (65%) with lesser amounts of rock (10%), gravel (10%), silt (10%) and sand (5%).

Transect T2:

- 0-50m – predominantly sand (50%) with lesser amounts of gravel (30%) and rock (20%).
- 50-100m – predominantly sand (50%) with lesser amounts of gravel (30%) and rock (20%).
- 100-200m – predominantly sand (70%) with lesser amounts of rock (10%), gravel (10%) and silt (10%).
- 200-350m – predominantly sand (70%) with lesser amounts of gravel (15%), silt (10%) and rock (5%).

- 350-1200m – predominantly sand (70%) with lesser amounts of gravel (15%) and silt (15%).
- 1200-1370m – predominantly gravel (35%) and sand (35%) with lesser amounts of cobble (20%) and silt (10%).

- **Macroflora**

Observations of macrofloral life were noted along the entire length of TT1 and included Eelgrass (*Zostera marina*), Rockweed (*Ascophyllum nodosum*), Bladderwrack (*Fucus vesiculosis*), Sugar kelp (*Laminaria saccharina*), Sea colander (*Agarum clathratum*), Sea lettuce (*Ulva lactuca*), unidentified plant and macrofloral debris, as further detailed below:

- Eelgrass – observed along the 75-100m, 100-125m and 125-150m transect segments (2-5% coverage).
- Rockweed – observed along the 25-50m, 50-75m, 75-100m, 100-125m, 125-150m, 150-175m, 175-200m, 200-225m, and 225-235m transect segments (7-40% coverage).
- Bladderwrack – observed along the 0-25m, 25-50m, 50-75m, 75-100m, and 100-125m segments (25-95% coverage).
- Sugar kelp – observed along the 50-75m, 75-100m, 100-125m, 125-150m, 150-175m, 175-200m, and 200-225m segments (5-20% coverage).
- Sea colander – observed along the 175-200m, 200-225, and 225-235m segments (<5-15% coverage).
- Sea lettuce – observed along the 0-25m, 25-50m, 50-75m, and 75-100m segments (3-8% coverage).
- Unidentified plant – observed along the 150-175m, 175-200m, 200-225m, and 225-235m segments (10-25% coverage).
- Macrofloral debris – observed along the entire length of TT1.

Observations of macrofloral life were noted along the entire length of TT2 and included Eelgrass (*Zostera marina*), Rockweed (*Ascophyllum nodosum*), Bladderwrack (*Fucus vesiculosis*), Sugar kelp (*Laminaria saccharina*), Sea colander (*Agarum clathratum*), Sea lettuce (*Ulva lactuca*), unidentified plant and macrofloral debris, as further detailed below:

- Eelgrass – observed along the 0-25m, 25-50m, and 50-75m transect segments (5-10% coverage).
- Rockweed – observed along the 0-25m, 25-50m, 50-75m, 75-100m, 100-125m, 125-150m, 150-175m, 175-200m, 200-225m, 225-250m, 250-275m, and 275-290m transect segments (5-40% coverage).
- Bladderwrack – observed along the 0-25m, 25-50m, 50-75m, 75-100m, 100-125m, and 125-150m segments (5-80% coverage).
- Sugar kelp – observed along the 25-50m, 50-75m, 75-100m, 100-125m, 125-150m, 150-175m, 175-200m, 200-225m, 225-250m, and 250-275m segments (5-50% coverage).
- Sea colander – observed along the 200-225m, 225-250m, and 250-275m segments (5-15% coverage).

- Sea lettuce – observed along the 0-25m, 25-50m, 50-75m, 75-100m, and 100-125m segments (5-30% coverage).
- Unidentified plant – observed along the 125-150m, 175-200m, 200-225m, and 225-250m segments (5-25% coverage).
- Macrofloral debris – observed along the entire length of TT2.

Observations of macrofloral life were noted along the entire length of TT3 and included Eelgrass (*Zostera marina*), Rockweed (*Ascophyllum nodosum*), Bladderwrack (*Fucus vesiculosis*), Sugar kelp (*Laminaria saccharina*), Sea colander (*Agarum clathratum*), Sea lettuce (*Ulva lactuca*), unidentified plant and macrofloral debris, as further detailed below:

- Eelgrass – observed along the 25-50m transect segment (5% coverage).
- Rockweed – observed along the 0-25m, 25-50m, 50-75m, 75-100m, 100-125m, 125-150m, 150-175m, 175-200m, 200-225m, 225-250m, 250-275m, and 450-470m transect segments (5-50% coverage).
- Bladderwrack – observed along the 0-25m, 25-50m, and 50-75m segments (10-90% coverage).
- Sugar kelp – observed along the 25-50m, 50-75m, 75-100m, 100-125m, 125-150m, 150-175m, 175-200m, 200-225m, 225-250m, 250-275m, 275-300m, 300-325m, 325-350m, 350-375m, 375-400m, 400-425m, 425-450m, and 450-470m segments (1-20% coverage).
- Sea colander – observed along the 250-275m, 275-300m, 300-325m, 325-350m, 350-375m, 375-400m, 400-425m, 425-450m, and 450-475m segments (2-30% coverage).
- Sea lettuce – observed along the 0-25m and 25-50m segment (5-10% coverage).
- Unidentified plant – observed along the 100-125m, 125-150m, 150-175m, 175-200m, 200-225m, 225-250m, 250-275m, 275-300m, 300-325m, 375-400m, and 400-425m segments (4-30% coverage).
- Macrofloral debris – observed along the entire length of TT3.

Observations of macrofloral life were noted along the entire length of T1 and included Eelgrass (*Zostera marina*), Rockweed (*Ascophyllum nodosum*), Bladderwrack (*Fucus vesiculosis*), Sugar kelp (*Laminaria saccharina*), Sea colander (*Agarum clathratum*), unidentified plant and macrofloral debris, as further detailed below:

- Eelgrass – observed along the 800-850m, and 850-900m transect segments (5-10% coverage).
- Rockweed – observed along the 0-50m, 50-100m, 100-150m, 150-200m, 200-250m, 250-300m, 300-350m, 350-400m, 400-450m, 450-500m, 500-550m, 550-600m, 600-650m, 650-700m, 700-750m, 750-800m, 800-850m, and 850-900m transect segments (5-20% coverage).
- Bladderwrack – observed along the 650-700m, 700-750m, 750-800m, 800-850m, and 850-900m segments (15-20% coverage).

- Sugar kelp – observed along the 450-500m, 500-550m, 550-600m, 600-650m, 650-700m, 700-750m, 750-800m, 800-850m, and 850-900m segments (10-35% coverage).
- Sea colander – observed along the 0-50m, 50-100m, 100-150m, 150-200m, 200-250m, 250-300m, 300-350m, 350-400m, 400-450m, 450-500m, 500-550m, 550-600m, 650-700m, 700-750m, 750-800m, 800-850m, and 850-900m segments (5-15% coverage).
- Unidentified plant – observed along the 100-150m, 150-200m, 200-250m, 250-300m, 300-350m, 350-400m, 400-450m, 450-500m, 500-550m, 550-600m, 600-650m, 650-700m, 700-750m, and 750-800m segments (1-20% coverage).
- Macrofloral debris – observed along the entire length of T1.

Observations of macrofloral life were noted along the entire length of T2 and included Rockweed (*Ascophyllum nodosum*), Bladderwrack (*Fucus vesiculosis*), Sugar kelp (*Laminaria saccharina*), Sea colander (*Agarum clathratum*), unidentified plant and macrofloral debris, as further detailed below:

- Rockweed – observed along the 0-50m, 50-100m, 100-150m, 150-200m, 200-250m, 250-300m, and 300-350m transect segments (5-10% coverage).
- Bladderwrack – observed along the 0-50m and 50-100m segments (10% coverage).
- Sugar kelp – observed along the 150-200m segments (5% coverage).
- Sea colander – observed along the 0-50m, 50-100m, 100-150m, 150-200m, 200-250m, 250-300m, 300-350m, 350-400m, 400-450m, 450-500m, 500-550m, 550-600m, 600-650m, 650-700m, 700-750m, 750-800m, 800-850m, 850-900m, 900-950m, 950-1000m, 1000-1050m, 1050-1100m, 1100-1150m, 1150-1200m, 1200-1250m, 1250-1300m, 1300-1350m, and 1350-1370m segments (5-25% coverage).
- Unidentified plant – observed along the 0-50m, 150-200m, and 1200-1250m segments (1-10% coverage).
- Macrofloral debris – observed along the entire length of T2.

- **Macrofauna**

For the purposes of the video survey review and macrofaunal species identification and enumeration, four categories were developed to characterize the observed abundances. The categories are as follows:

A = Abundant

Numerous (not quantifiable) observations made throughout the entire 25m (TT1, TT2, and TT3) or 50m (T1, T2) segment.

C = Common

Numerous (not quantifiable) observations made intermittently along the 25m (TT1, TT2, and TT3) or 50m (T1, T2) segment.

O = Occasional

Quantifiable observations made intermittently along the 25m (TT1, TT2, and TT3) or 50m (T1, T2) segment.

U = Uncommon

Quantifiable observations made infrequently along the 25m (TT1, TT2, and TT3) or 50m (T1, T2) segment.

Along TT1, 11% of the transect showed no signs of macrofaunal life. The remaining 89% of the transect segments showed the following, along with shell hache observed along the 200-225m and 225-235m transect segments:

- Periwinkle (*Littorina sp.*) – uncommon occurrence along the 175-200m segment (1-25 individuals each 25m segment), occasional occurrence along the 150-175m transect segments and abundant occurrence along 100-125m and 125-150m transect segments.
- Unidentifiable fish species – uncommon occurrence along 25-50m, 50-75m, 125-150m, and 225-235m transect segments (1-10 individuals along each 25m segment).
- Green crab (*Carcinus maenas*) – uncommon occurrence along 25-50m transect segment (1-5 individuals along each 25m segment).
- Hermit crab (*Pagurus sp.*) – uncommon occurrence along 75-100m and 125-150m transect segments (1-5 individuals along each 25m segment).
- Sea star (*Asterias sp.*) – uncommon occurrence along 125-150m, 150-175m, 175-200m and 200-225m transect segments (1-5 individuals along each 25m segment).
- Northern moon snail (*Euspira heros*) – uncommon occurrence along 150-175m, 175-200m, 200-225m and 225-235m transect segments (1-5 individuals along each 25m segment).

Along TT2, 9% of the transect showed no signs of macrofaunal life. The remaining 91% of the transect segments showed the following, along with shell hache observed along the 225-250m, 250-275m and 275-290m transect segments:

- Periwinkle (*Littorina sp.*) – uncommon occurrence along the 125-150m and 200-225m segment (1-25 individuals each 25m segment), occasional occurrence along the 100-125m, 150-175m and 175-200m transect segments.
- Unidentifiable fish species – uncommon occurrence along 25-50m, 175-200m and 200-225m transect segments (1-10 individuals along each 25m segment), occasional occurrence along the 50-75m transect segments.
- Hermit crab (*Pagurus sp.*) – uncommon occurrence along 100-125m transect segment (1-5 individuals along each 25m segment).
- Sea star (*Asterias sp.*) – uncommon occurrence along 150-175m, 175-200m, 225-250m, 250-275m, and 275-290m transect segments (1-5 individuals along each 25m segment).
- Northern moon snail (*Euspira heros*) – uncommon occurrence along 275-290m transect segments (1-5 individuals along each 25m segment), occasional occurrence along the 150-175m, 175-200m, 200-225m, 225-250m and 250-275m transect segments.

Along TT3, 16% of the transect showed no signs of macrofaunal life. The remaining 84% of the transect segments showed the following, along with shell hache observed along the 200-225m, 225-250m, 250-275m, 275-300m, 300-325m, 325-350m, 350-375m, 375-400m, 400-425m, 425-450m and 450-470m transect segments:

- Periwinkle (*Littorina sp.*) – uncommon occurrence along the 25-50m and 125-150m segment (1-25 individuals each 25m segment), occasional occurrence along the 50-75m, 75-100m and 100-125m transect segments.
- Unidentifiable fish species – uncommon occurrence along 125-150m, and 225-250m transect segments (1-10 individuals along each 25m segment).
- Green crab (*Carcinus maenas*) – uncommon occurrence along 75-100m, 175-200m and 225-250m transect segment (1-5 individuals along each 25m segment).
- Sea star (*Asterias sp.*) – uncommon occurrence along 75-100m, 100-125m, 175-200m, 225-250m, 250-275m, 275-300m, 350-375m, 375-400m, 400-425m, 425-450m and 450-470m transect segments (1-5 individuals along each 25m segment), occasional occurrence along the 325-350m transect segment.
- Northern moon snail (*Euspira heros*) – uncommon occurrence along 175-200m, 200-225m, 225-250m, 275-300m and 450-470m transect segments (1-5 individuals along each 25m segment), occasional occurrence along the 50-75m, 75-100m and 250-275m transect segment.
- Atlantic halibut (*Hippoglossus hippoglossus*) – uncommon occurrence along 50-75m transect segment (1-5 individuals along each 25m segment).
- Sea scallop (*Placopecten magellanicus*) – uncommon occurrence along 75-100m, 275-300m, 350-375m, 400-425m and 425-450m transect segments (1-5 individuals along each 25m segment).
- Northern horse mussel (*Modiolus modiolus*) – occasional occurrence along the 325-350m, 350-375m, 375-400m, 400-425m, 425-450m and 450-470m transect segments.
- Frilled anemone (*Metridium senile*) – uncommon occurrence along 425-450m transect segment (1-5 individuals along each 25m segment).

Along T1, 100% of the transect showed signs of the following macrofaunal life:

- Periwinkle (*Littorina sp.*) – uncommon occurrence along the 850-900m transect segment (1-25 individuals each 50m segment).
- Unidentifiable fish species – uncommon occurrence along 0-50m, 50-100m, 300-350m, 650-700m, and 700-750m transect segments (1-10 individuals along each 50m segment).
- Green crab (*Carcinus maenas*) – uncommon occurrence along 150-200m transect segment (1-5 individuals along each 50m segment).
- Rock crab (*Cancer irroratus*) – uncommon occurrence along 50-100m, 200-250m, 250-300m, 350-400m, 400-450m, 450-500m and 550-600m transect segment (1-5 individuals along each 50m segment).

- Sea star (*Asterias sp.*) – uncommon occurrence along 50-100m, 100-150m, 150-200m, 250-300m, 300-350m, 350-400m, 400-450m, 450-500m, 600-650m, 650-700m and 700-750m transect segments (1-5 individuals along each 50m segment)), occasional occurrence along the 500-550m and 550-600m transect segment.
- Northern moon snail (*Euspira heros*) – uncommon occurrence along 0-50m, 50-100m, 100-150m, 150-200m, 250-300m, 300-350m, 350-400m, 400-450m, 450-500m, 500-550m, 550-600m, 600-650m, 650-700m, 700-750m, 750-800m and 800-850m transect segments (1-5 individuals along each 50m segment).
- Hermit crab (*Pagurus sp.*) – uncommon occurrence along 350-400m, 800-850m and 850-900m transect segments (1-5 individuals along each 50m segment).
- American lobster (*Homarus americanus*) – uncommon occurrence along 700-750m and 850-900m transect segments (1-5 individuals along each 50m segment).
- Unidentifiable fish species – uncommon occurrence along 0-50m, 50-100m, 300-350m, 650-700m and 700-750m transect segments (1-10 individuals along each 25m segment).
- Frilled anemone (*Metridium senile*) – uncommon occurrence along 200-250m transect segment (1-5 individuals along each 25m segment).

Along T2, 100% of the transect showed signs of macrofaunal life. The transect segments showed the following macrofaunal life, along with shell hache along the 100-150m, 150-200m, 200-250m, 250-300m, 300-350m, 350-400m, 400-450m, 450-500m, 550-600m, 600-650m, 650-700m, 700-750m, 750-800m, 800-850m, 850-900m, 900-950m, 950-1000m, 1000-1050m, 1050-1100m, 1100-1150m and 1150-1200m transect segments:

- Unidentifiable fish species – uncommon occurrence along 100-150m, 150-200m, 150-200m, 550-600m, 800-850m and 1000-1050m transect segments (1-10 individuals along each 50m segment).
- Green crab (*Carcinus maenas*) – uncommon occurrence along 100-150m, 150-200m, 450-500m, 500-550m, 750-800m, 900-950m, 1150-1200m, 1200-1250m, 1250-1300m and 1300-1350m transect segments (1-5 individuals along each 50m segment).
- Sea star (*Asterias sp.*) – uncommon occurrence along 0-50m, 50-100m, 100-150m, 150-200m, 200-250m, 250-300m, 400-450m, 550-600m, 650-700m, 700-750m, 750-800m, 800-850m, 850-900m, 900-950m, 950-1000m, 1000-1050m, 1050-1100m, 1100-1150m, 1150-1200m, 1200-1250m, 1250-1300m, 1300-1350m and 1350-1370m transect segments (1-5 individuals along each 50m segment), occasional occurrence along the 450-500m, 500-550m and 600-650m transect segments.
- Northern moon snail (*Euspira heros*) – uncommon occurrence along 0-50m, 50-100m, 200-250m, 400-450m, 450-500m, 500-550m, 550-600m, 600-650m, 700-750m, 750-800m, 800-850m, 850-900m, 950-1000m, 1050-1100m, 1150-1200m, 1200-1250m, 1250-1300m, 1300-1350 and 1350-1370m transect segments (1-5 individuals along each 50m segment).
- Atlantic halibut (*Hippoglossus hippoglossus*) – uncommon occurrence along 150-200m and 400-450m transect segment (1-5 individuals along each 50m segment).

- Sea scallop (*Placopecten magellanicus*) – uncommon occurrence along 950-1000m transect segment (1-5 individuals along each 50m segment).
- Shorthorn sculpin (*Myoxocephalus scorpius*) – uncommon occurrence along 300-350m, 350-400m and 400-450m transect segments (1-5 individuals along each 50m segment).
- American lobster (*Homarus americanus*) – uncommon occurrence along 0-50m, 300-350m, 550-600m, 1100-1150m and 1150-1200m transect segment (1-5 individuals along each 50m segment).
- Frilled anemone (*Metridium senile*) – uncommon occurrence along 500-550m and 1100-1150m transect segments (1-5 individuals along each 50m segment).
- Lion's mane jellyfish (*Cyanea capillata*) – uncommon occurrence along 250-300m and 500-550m transect segments (1-5 individuals along each 50m segment).
- Unidentifiable eel species – uncommon occurrence along 400-450m transect segment (1-5 individuals along each 50m segment).

Quality Assurance/Quality Control

The field crew was comprised of a field supervisor who is experienced in data collection. This person was responsible for the supervision of the data collection and the overall data quality, had authority to make decisions in the field regarding the implementation of the program, and was responsible for ensuring that all standard operating procedures were followed and that adequate health and safety measures were taken.

As per AMEC's internal review policy, a project reviewer (Mr. Bruce Moore, B.Sc) was established at the outset of the project. This individual reviewed this report prior to its release.

Summary

Characterizations of the substrate along the transects at Melford, Guysborough County, NS were made using a combination of visual field observations and underwater video survey techniques. The dominant substrate type within the marine footprint of the proposed marine terminal was predominantly rock next to shore with increasing cobble and sand as you move farther from the shore. The deeper offshore waters were predominantly cobble and sand.

Macrofloral life observed in the marine footprint of the proposed terminal included Eelgrass, Rockweed, Bladderwrack, Sugar kelp, Sea colander, macrofloral debris, Sea lettuce, and areas of an unidentified plant.

Within the footprint of the proposed marine terminal, observations of macrofaunal life included Periwinkles, Sea star, Northern moon snail, Atlantic halibut, Sea scallop, Shorthorn sculpin, American lobster, Frilled anemone, Green crab, Lion's mane jellyfish, Northern horse mussel, unidentifiable eel species, unidentifiable fish species. Shell hache was also observed throughout the transect areas with it predominantly being in the deeper offshore waters.

Closing

AMEC appreciates the opportunity to provide services to your organization. Please do not hesitate to call if you have any questions regarding this, or any other matter.

Respectfully submitted,

Evan Morris, BET
Lead Technical Support

cc Mr. Bruce Moore, AMEC
Mr. Fred Meth, AMEC

Attachments

ATTACHMENT A
Qualitative Transect Observations

Table A.1 235m Transect – Transect TT1, July 27, 2007

Transect Distance (m)	Transect Tag Numbers	Substrate (% Coverage)	Macrofaunal Life Observed (Estimated Abundances*)	Macrofloral Life Observed (% Coverage)
0-25	0-25	Rock (95%); Cobble (5%)	No life observed	Sea lettuce (*Ulva lactuca*) (5%) Bladderwrack (*Fucus vesiculosis*) (95%)
25-50	25-50	Rock (100%)	Green crab (*Carcinus maenas*) (U); Unidentified fish (U)	Sea lettuce (*Ulva lactuca*) (3%); Rockweed (*Ascophyllum nodosum*) (7%); Bladderwrack (*Fucus vesiculosis*) (90%)
50-75	50-75	Rock (90%); Cobble (10%)	Unidentified fish (U)	Sea lettuce (*Ulva lactuca*) (5%); Rockweed (*Ascophyllum nodosum*) (25%); Bladderwrack (*Fucus vesiculosis*) (65%); Kelp (*Laminaria saccharina*) (5%)
75-100	75-100	Rock (50%); Cobble (45%); Sand (5%)	Hermit crab (*Pagurus* sp.) (U)	Sea lettuce (*Ulva lactuca*) (8%); Rockweed (*Ascophyllum nodosum*) (40%); Bladderwrack (*Fucus vesiculosis*) (40%); Kelp (*Laminaria saccharina*) (10%)
100-125	100-125	Rock (20%); Cobble (40%); Sand (40%)	Periwinkle (*Littorina sp.*) (A);	Eelgrass (*Zostera marina*) (5%); Bladderwrack (*Fucus vesiculosis*) (25%); Rockweed (*Ascophyllum nodosum*) (25%); Kelp (*Laminaria saccharina*) (10%)
125-150	125-150	Rock (10%); Cobble (50%); Sand (40%)	Periwinkle (*Littorina sp.*) (A); Hermit crab (*Pagurus* sp.) (U); Unidentified fish (U); Sea star (*Asterias* sp.) (U)	Eelgrass (*Zostera marina*) (5%); Rockweed (*Ascophyllum nodosum*) (25%); Kelp (*Laminaria saccharina*) (15%)
150-175	150-175	Rock (10%); Cobble (50%); Gravel (20%); Sand (20%)	Periwinkle (*Littorina sp.*) (O); Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Kelp (*Laminaria saccharina*) (20%); Unidentified plant (25%)
175-200	175-200	Rock (10%); Cobble (25%); Gravel (25%); Sand (40%)	Periwinkle (*Littorina sp.*) (U); Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Kelp (*Laminaria saccharina*) (20%); Unidentified plant (25%); Kelp (*Agarum clathratum*) (<5%)
200-225	200-225	Rock (5%); Cobble (15%); Gravel (10%); Sand (65%) Silt (5%)	Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U); Shell hache	Rockweed (*Ascophyllum nodosum*) (5%); Kelp (*Laminaria saccharina*) (10%); Unidentified plant (15%); Kelp (*Agarum clathratum*) (15%)
225-235	225-235	Rock (5%); Cobble (10%); Gravel (30%); Sand (45%) Silt (10%)	Northern moon snail (*Euspira heros*) (U); Unidentified fish (U)	Rockweed (*Ascophyllum nodosum*) (5%); Unidentified plant (10%); Kelp (*Agarum clathratum*) (10%)

*A = Abundant, C = Common, O = Occasional, U = Uncommon (See below last table).

Table A.2 290m Transect – Transect TT2, July 27, 2007

Transect Distance (m)	Transect Tag Numbers	Substrate (% Coverage)	Macrofaunal Life Observed (Estimated Abundances*)	Macrofloral Life Observed (% Coverage)
0-25	0-25	Rock (95%); Cobble (5%)	No life observed	Sea lettuce (*Ulva lactuca*) (5%); Rockweed (*Ascophyllum nodosum*) (10%); Bladderwrack (*Fucus vesiculosis*) (80%); Eelgrass (*Zostera marina*) (5%);
25-50	25-50	Rock (95%); Cobble (5%)	Unidentified fish (U)	Sea lettuce (*Ulva lactuca*) (15%); Rockweed (*Ascophyllum nodosum*) (10%); Bladderwrack (*Fucus vesiculosis*) (65%); Eelgrass (*Zostera marina*) (5%); Kelp (*Laminaria saccharina*) (5%)
50-75	50-75	Rock (85%); Cobble (15%)	Unidentified fish (O)	Sea lettuce (*Ulva lactuca*) (20%); Rockweed (*Ascophyllum nodosum*) (20%); Bladderwrack (*Fucus vesiculosis*) (45%); Eelgrass (*Zostera marina*) (10%); Kelp (*Laminaria saccharina*) (5%)

75-100	75-100	Rock (75%); Cobble (25%)	No life observed	Sea lettuce (*Ulva lactuca*) (30%); Rockweed (*Ascophyllum nodosum*) (30%); Bladderwrack (*Fucus vesiculosis*) (25%); Kelp (*Laminaria saccharina*) (15%)
100-125	100-125	Rock (50%); Cobble (50%)	Periwinkle (*Littorina sp.*) (O); Hermit crab (*Pagurus* sp.) (U)	Sea lettuce (*Ulva lactuca*) (5%); Rockweed (*Ascophyllum nodosum*) (40%); Bladderwrack (*Fucus vesiculosis*) (10%); Kelp (*Laminaria saccharina*) (30%)
125-150	125-150	Rock (40%); Cobble (40%); Sand (20%)	Periwinkle (*Littorina sp.*) (U)	Unidentified plant (5%); Rockweed (*Ascophyllum nodosum*) (35%); Bladderwrack (*Fucus vesiculosis*) (5%); Kelp (*Laminaria saccharina*) (50%)
150-175	150-175	Rock (20%); Cobble (50%); Sand (30%)	Periwinkle (*Littorina sp.*) (O); Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (O)	Rockweed (*Ascophyllum nodosum*) (30%); Kelp (*Laminaria* sp.) (35%)
175-200	175-200	Rock (50%); Cobble (70%); Sand (25%)	Periwinkle (*Littorina sp.*) (O); Northern moon snail (*Euspira heros*) (O); Unidentified fish (U); Sea star (*Asterias* sp.) (U)	Rockweed (*Ascophyllum nodosum*) (5%); Unidentified plant (25%); Kelp (*Laminaria saccharina*) (10%); Kelp (*Agarum clathratum*) (25%)
200-225	200-225	Rock (5%); Cobble (45%); Sand (50%)	Periwinkle (*Littorina sp.*) (U); Northern moon snail (Euspira heros) (O); Unidentified fish (U)	Rockweed (*Ascophyllum nodosum*) (5%); Unidentified plant (25%); Kelp (*Laminaria saccharina*) (10%); Kelp (*Agarum clathratum*) (10%)
225-250	225-250	Rock (5%); Cobble (25%); Sand (70%)	Sea star (*Asterias* sp.) (O); Northern moon snail (*Euspira heros*) (O); Shell hache	Rockweed (*Ascophyllum nodosum*) (5%); Unidentified plant (15%); Kelp (*Laminaria saccharina*) (10%); Kelp (*Agarum clathratum*) (5%)
250-275	250-275	Rock (5%); Cobble (10%); Sand (80%); Silt (5%)	Sea star (Asterias sp.) (O); Northern moon snail (*Euspira heros*) (O); Shell hache	Rockweed (*Ascophyllum nodosum*) (5%); Kelp (*Laminaria saccharina*) (5%); Kelp (*Agarum clathratum*) (15%)
275-290	275-290	Rock (5%); Cobble (15%); Sand (75%); Silt (5%)	Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U); Shell hache	Rockweed (*Ascophyllum nodosum*) (5%)

*A = Abundant, C = Common, O = Occasional, U = Uncommon (See below last table).

Table A.3 470m Transect – Transect TT3, July 27, 2007

Transect Distance (m)	Transect Tag Numbers	Substrate (% Coverage)	Macrofaunal Life Observed (Estimated Abundances*)	Macrofloral Life Observed (% Coverage)
0-25	0-25	Rock (95%); Cobble (5%)	No life observed	Sea lettuce (*Ulva lactuca*) (5%); Rockweed (*Ascophyllum nodosum*) (5%); Bladderwrack (*Fucus vesiculosis*) (90%);
25-50	25-50	Rock (90%); Cobble (10%)	Periwinkle (*Littorina sp.*) (U)	Rockweed (*Ascophyllum nodosum*) (35%); Bladderwrack (*Fucus vesiculosis*) (45%); Eelgrass (*Zostera marina*) (5%); Kelp (*Laminaria saccharina*) (5%); Sea lettuce (*Ulva lactuca*) (10%)
50-75	50-75	Rock (60%); Cobble (30%); Sand (10%)	Periwinkle (*Littorina sp.*) (O); Northern moon snail (*Euspira heros*) (O); Atlantic halibut (*Hippoglossus hippoglossus*) (U); Sea star (*Asterias* sp.) (U)	Rockweed (*Ascophyllum nodosum*) (50%); Bladderwrack (*Fucus vesiculosis*) (10%); Kelp (*Laminaria* sp.) (5%)
75-100	75-100	Rock (5%); Cobble (75%); Sand (20%)	Periwinkle (*Littorina sp.*) (O); Northern moon snail (*Euspira heros*) (O); Sea star (*Asterias* sp.) (U); Green crab (*Carcinus maenas*) (U); Sea scallop (*Placopecten magellanicus*) (U)	Rockweed (*Ascophyllum nodosum*) (5%); Kelp (*Laminaria* sp.) (1%)
100-125	100-125	Rock (10%); Cobble (45%); Sand (45%)	Periwinkle (*Littorina sp.*) (O); Sea star (*Asterias* sp.) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Kelp (*Laminaria* sp.) (1%); Unidentified plant

				(5%)
125-150	125-150	Cobble (20%); Sand (75%); Silt (5%)	Periwinkle (*Littorina sp.*) (U); Unidentified fish (U)	Rockweed (*Ascophyllum nodosum*) (10%); Kelp (*Laminaria* sp.) (1%); Unidentified plant (4%)
150-175	150-175	Cobble (10%); Sand (80%); Silt (10%)	No Life Observed	Rockweed (*Ascophyllum nodosum*) (10%); Kelp (*Laminaria* sp.) (1%); Unidentified plant (10%)
175-200	175-200	Cobble (10%); Sand (80%); Silt (10%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U); Green crab (*Carcinus maenas*) (U);	Rockweed (*Ascophyllum nodosum*) (10%); Kelp (*Laminaria* sp.) (1%); Unidentified plant (30%)
200-225	200-225	Cobble (10%); Sand (80%); Silt (10%)	Northern moon snail (*Euspira heros*) (U); Shell hache	Rockweed (*Ascophyllum nodosum*) (10%); Kelp (*Laminaria* sp.) (15%); Unidentified plant (5%)
225-250	225-250	Cobble (60%); Sand (30%); Silt (10%)	Northern moon snail (*Euspira heros*) (U); Shell hache; Sea star (*Asterias* sp.) (U); Green crab (*Carcinus maenas*) (U); Unidentified fish (U)	Rockweed (*Ascophyllum nodosum*) (10%); Kelp (*Laminaria* sp.) (20%); Unidentified plant (5%)
250-275	250-275	Cobble (70%); Sand (30%)	Northern moon snail (Euspira heros) (O); Shell hache; Sea star (Asterias sp.) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Kelp (*Laminaria* sp.) (10%); Unidentified plant (10%); Kelp (*Agarum clathratum*) (10%)
275-300	275-300	Cobble (60%); Sand (40%)	Shell hache; Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U); Sea scallop (*Placopecten magellanicus*) (U)	Kelp (*Laminaria* sp.) (20%); Unidentified plant (20%); Kelp (*Agarum clathratum*) (2%)
300-325	300-275	Cobble (60%); Sand (40%)	Shell hache; No life observed	Kelp (*Laminaria* sp.) (10%); Unidentified plant (10%); Kelp (*Agarum clathratum*) (10%)
325-350	275-250	Cobble (60%); Sand (40%)	Shell hache; Sea star (*Asterias* sp.) (U); Mussels; Northern horse mussel (*Modiolus modiolus*) (O)	Kelp (*Laminaria* sp.) (10); Kelp (*Agarum clathratum*) (25%)
350-375	250-225	Cobble (60%); Sand (40%)	Shell hache; Sea star (*Asterias* sp.) (U); Mussels; Northern horse mussel (*Modiolus modiolus*) (O) Sea scallop (*Placopecten magellanicus*) (U)	Kelp (*Laminaria* sp.) (10%); Kelp (*Agarum clathratum*) (30%)
375-400	225-200	Cobble (60%); Sand (40%)	Shell hache; Sea star (*Asterias* sp.) (U); Mussels; Northern horse mussel (*Modiolus modiolus*) (O)	Kelp (*Laminaria* sp.) (5%); Unidentified plant (5%); Kelp (*Agarum clathratum*) (25%)
400-425	200-175	Cobble (60%); Sand (40%)	Shell hache; Sea star (*Asterias* sp.) (U); Mussels; Northern horse mussel (*Modiolus modiolus*) (O) Sea scallop (*Placopecten magellanicus*) (U)	Kelp (*Laminaria* sp.) (5%); Unidentified plant (5%); Kelp (*Agarum clathratum*) (15%)
425-450	175-150	Cobble (15%); Sand (85%)	Shell hache; Sea star (*Asterias* sp.) (U); Mussels; Northern horse mussel (*Modiolus modiolus*) (O); Sea scallop (*Placopecten magellanicus*) (U); Frilled anemone (*Metridium senile*) (U)	Kelp (*Laminaria* sp.) (5%); Kelp (*Agarum clathratum*) (10%)
450-470	150-130	Cobble (15%); Sand (85%)	Shell hache; Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U); Northern horse mussel (*Modiolus modiolus*) (O)	Kelp (*Laminaria* sp.) (5%); Unidentified plant (10%); Kelp (*Agarum clathratum*) (10%); Rockweed (*Ascophyllum nodosum*) (10%)

*A = Abundant, C = Common, O = Occasional, U = Uncommon (See below last table).

Table A.4 900m Transect – Transect T1, July 27, 2007

Transect Distance (m)	Transect Tag Numbers	Substrate (% Coverage)	Macrofaunal Life Observed (Estimated Abundances*)	Macrofloral Life Observed (% Coverage)
0-50	0-50	Cobble (15%); Gravel (30%); Sand (25%); Silt (30%)	Unidentified fish (U); Northern moon snail (*Euspira heros*) (U)	Rockweed (*Ascophyllum nodosum*) (5%); Sea colander (*Agarum clathratum*) (10%)
50-100	50-100	Cobble (15%); Gravel (30%); Sand (25%); Silt (30%)	Unidentified fish (U); Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U); Rock crab (*Cancer irroratus)* (U)	Rockweed (*Ascophyllum nodosum*) (5%); Sea colander (*Agarum clathratum*) (10%)
100-150	100-150	Cobble (15%); Gravel (30%); Sand (25%); Silt (30%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U);	Rockweed (*Ascophyllum nodosum*) (5%); Sea colander (*Agarum clathratum*) (10%); Unidentified plant (3%)
150-200	150-200	Cobble (10%); Gravel (30%); Sand (30%); Silt (30%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U); Green crab (*Carcinus maenas*) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Sea colander (*Agarum clathratum*) (10%); Unidentified plant (1%)
200-250	200-250	Cobble (10%); Gravel (30%); Sand (30%); Silt (30%)	Rock crab (*Cancer irroratus*) (U); Frilled anemone (*Metridium senile*) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Sea colander (*Agarum clathratum*) (10%); Unidentified plant (2%)
250-300	250-300	Cobble (10%); Gravel (30%); Sand (30%); Silt (30%)	Northern moon snail (*Euspira heros*) (U); Rock crab (*Cancer irroratus*) (U); Sea star (*Asterias* sp.) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Sea colander (Agarum clathratum) (10%); Unidentified plant (10%)
300-350	300-250	Cobble (10%); Gravel (30%); Sand (30%); Silt (30%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U); Unidentified fish (U);	Rockweed (*Ascophyllum nodosum*) (10%); Sea colander (*Agarum clathratum*) (10%); Unidentified plant (10%)
350-400	250-200	Cobble (10%); Gravel (30%); Sand (30%); Silt (30%)	Northern moon snail (Euspira heros) (U); Sea star (Asterias sp.) (U); Rock crab (Cancer irroratus) (U); Hermit crab (Pagurus sp.) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Sea colander (*Agarum clathratum*) (10%); Unidentified plant (10%)
400-450	200-150	Cobble (35%); Gravel (25%); Sand (20%); Silt (20%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U); Rock crab (*Cancer irroratus*) (U);	Rockweed (*Ascophyllum nodosum*) (20%); Sea colander (Agarum clathratum) (10%); Unidentified plant (15%)
450-500	150-100	Cobble (60%); Gravel (10%); Sand (10%); Silt (20%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U); Rock crab (*Cancer irroratus*) (U);	Rockweed (*Ascophyllum nodosum*) (10%); Sea colander (*Agarum clathratum*) (5%); Unidentified plant (20%); Kelp (*Laminaria* sp.) (10%)
500-550	100-50	Cobble (60%); Gravel (10%); Sand (10%); Silt (20%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (O)	Rockweed (*Ascophyllum nodosum*) (15%); Sea colander (*Agarum clathratum*) (10%); Unidentified plant (20%); Kelp (*Laminaria* sp.) (10%)
550-600	50-0	Cobble (60%); Gravel (10%); Sand (10%); Silt (20%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (O); Rock crab (*Cancer irroratus*) (U);	Rockweed (*Ascophyllum nodosum*) (15%); Sea colander (*Agarum clathratum*) (10%); Unidentified plant (20%); Kelp (*Laminaria* sp.) (10%)
600-650	0-50	Cobble (70%); Gravel (10%); Sand (10%); Silt (10%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U)	Rockweed (*Ascophyllum nodosum*) (15%); Unidentified plant (10%); Kelp (*Laminaria* sp.) (15%)
650-700	50-100	Rock (10%); Cobble (65%); Gravel (10%); Sand (5%); Silt (10%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U); Unidentified fish (U)	Rockweed (*Ascophyllum nodosum*) (15%); Sea colander (*Agarum clathratum*) (10%); Unidentified plant (10%); Kelp (*Laminaria* sp.) (35%); Bladderwrack (*Fucus vesiculosis*) (15%)
700-750	100-150	Rock (10%); Cobble (65%); Gravel (10%); Sand (5%); Silt (10%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U); Unidentified fish (U); American lobster (*Homarus americanus*) (U)	Rockweed (*Ascophyllum nodosum*) (20%); Sea colander (*Agarum clathratum*) (10%); Unidentified plant (5%); Kelp (*Laminaria* sp.) (20%); Bladderwrack (*Fucus vesiculosis*) (20%)
750-800	150-200	Rock (10%); Cobble (65%); Gravel (10%); Sand (5%); Silt (10%)	Northern moon snail (*Euspira heros*) (U); Green crab (*Carcinus maenas*) (U)	Rockweed (*Ascophyllum nodosum*) (20%); Sea colander (*Agarum clathratum*) (10%); Unidentified plant (1%); Kelp (*Laminaria* sp.) (10%); Bladderwrack (*Fucus*

				vesiculosis) (20%)
800-850	200-250	Rock (10%); Cobble (65%); Gravel (10%); Sand (5%); Silt (10%)	Northern moon snail (*Euspira heros*) (U); Hermit crab (*Pagurus* sp.) (U)	Rockweed (*Ascophyllum nodosum*) (20%); Sea colander (*Agarum clathratum*) (15%); Eelgrass (*Zostera marina*) (5%); Kelp (*Laminaria* sp.) (10%); Bladderwrack (*Fucus vesiculosis*) (20%)
850-900	250-300	Rock (10%); Cobble (65%); Gravel (10%); Sand (5%); Silt (10%)	American lobster (*Homarus americanus*) (U); Hermit crab (*Pagurus* sp.) (U); Periwinkle (*Littorina sp.*) (U)	Rockweed (*Ascophyllum nodosum*) (20%); Sea colander (*Agarum clathratum*) (10%); Eelgrass (*Zostera marina*) (10%); Kelp (*Laminaria* sp.) (10%); Bladderwrack (*Fucus vesiculosis*) (20%)

*A = Abundant, C = Common, O = Occasional, U = Uncommon (See below).

Table A.4 1370m Transect – Transect T2, August 3, 2007

Transect Distance (m)	Transect Tag Numbers	Substrate (% Coverage)	Macrofaunal Life Observed (Estimated Abundances*)	Macrofloral Life Observed (% Coverage)
0-50	0-50	Rock (20%); Gravel (30%); Sand (50%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U); American lobster (*Homarus americanus*) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Bladderwrack (*Fucus vesiculosis*) (10%); Sea colander (*Agarum clathratum*) (20%); Unidentified plant (1%)
50-100	50-100	Rock (20%); Gravel (30%); Sand (50%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Bladderwrack (*Fucus vesiculosis*) (10%); Sea colander (*Agarum clathratum*) (20%)
100-150	100-150	Rock (10%); Gravel (10%); Sand (70%); Silt (10%)	Shell hache; Green crab (*Carcinus maenas*) (U); Unidentified fish (U); Sea star (*Asterias* sp.) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Sea colander (*Agarum clathratum*) (25%)
150-200	150-200	Rock (10%); Gravel (10%); Sand (70%); Silt (10%)	Shell hache; Green crab (*Carcinus maenas*) (U); Unidentified fish (U); Sea star (*Asterias* sp.) (U); Atlantic halibut (*Hippoglossus hippoglossus*) (U)	Rockweed (*Ascophyllum nodosum*) (10%); Sea colander (*Agarum clathratum*) (20%); Unidentified plant (10%); Kelp (*Laminaria* sp.) (5%)
200-250	200-250	Rock (5%); Gravel (15%); Sand (70%); Silt (10%)	Shell hache; Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U)	Rockweed (*Ascophyllum nodosum*) (5%); Sea colander (*Agarum clathratum*) (20%)
250-300	250-300	Rock (5%); Gravel (15%); Sand (70%); Silt (10%)	Shell hache; Sea star (*Asterias* sp.) (U); Lion's mane jellyfish (*Cyanea capillata*) (U)	Rockweed (*Ascophyllum nodosum*) (5%); Sea colander (*Agarum clathratum*) (20%)
300-350	300-250	Rock (5%); Gravel (15%); Sand (70%); Silt (10%)	Shell hache; American lobster (*Homarus americanus*) (U); Shorthorn sculpin (*Myoxocephalus scorpius*) (U)	Rockweed (*Ascophyllum nodosum*) (5%); Sea colander (*Agarum clathratum*) (20%)
350-400	250-200	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Shorthorn sculpin (*Myoxocephalus scorpius*) (U)	Sea colander (*Agarum clathratum*) (10%)
400-450	200-150	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (Asterias sp.) (U); Northern moon snail (*Euspira heros*) (U); Shorthorn sculpin (*Myoxocephalus scorpius*) (U); Atlantic halibut (*Hippoglossus hippoglossus*) (U); Unidentifiable eel species (U)	Sea colander (*Agarum clathratum*) (15%)
450-500	150-100	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Green crab (*Carcinus maenas*) (U); Unidentified fish (U); Sea star (*Asterias* sp.) (O); Northern moon snail (*Euspira heros*) (U)	Sea colander (*Agarum clathratum*) (10%)
500-550	100-50	Gravel (15%); Sand (70%); Silt (15%)	Sea star (*Asterias* sp.) (O); Lion's mane jellyfish (*Cyanea capillata*) (U); Frilled anemone (*Metridium senile*) (U); Green crab (*Carcinus maenas*) (U);	Sea colander (*Agarum clathratum*) (10%)

			Northern moon snail (*Euspira heros*) (U);	
550-600	50-0	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U); American lobster (*Homarus americanus*) (U); Unidentified fish (U)	Sea colander (*Agarum clathratum*) (10%)
600-650	0-50	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (O); Northern moon snail (*Euspira heros*) (U)	Sea colander (*Agarum clathratum*) (10%)
650-700	50-100	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U)	Sea colander (*Agarum clathratum*) (15%)
700-750	100-150	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U)	Sea colander (*Agarum clathratum*) (20%)
750-800	150-200	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U); Green crab (*Carcinus maenas*) (U)	Sea colander (*Agarum clathratum*) (20%)
800-850	200-250	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U); Unidentified fish (U)	Sea colander (*Agarum clathratum*) (20%)
850-900	250-300	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U)	Sea colander (*Agarum clathratum*) (15%)
900-950	300-250	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U); Green crab (*Carcinus maenas*) (U)	Sea colander (*Agarum clathratum*) (25%)
950-1000	250-200	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U); Sea scallop (*Placopecten magellanicus*) (U);	Sea colander (*Agarum clathratum*) (20%)
1000-1050	200-150	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U); Unidentified fish (U)	Sea colander (*Agarum clathratum*) (15%)
1050-1100	150-100	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U); Northern moon snail (*Euspira heros*) (U)	Sea colander (*Agarum clathratum*) (15%)
1100-1150	100-50	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U);); American lobster (*Homarus americanus*) (U); Frilled anemone (*Metridium senile*) (U)	Sea colander (*Agarum clathratum*) (10%)
1150-1200	50-0	Gravel (15%); Sand (70%); Silt (15%)	Shell hache; Sea star (*Asterias* sp.) (U); American lobster (*Homarus americanus*) (U); Green crab (*Carcinus maenas*) (U); Northern moon snail (*Euspira heros*) (U)	Sea colander (*Agarum clathratum*) (10%)
1200-1250	0-50	Cobble (20%); Gravel (35%); Sand (35%); Silt (10%)	Sea star (*Asterias* sp.) (U); Green crab (*Carcinus maenas*) (U); Northern moon snail (*Euspira heros*) (U)	Sea colander (*Agarum clathratum*) (15%); Unidentified plant (1%)
1250-1300	50-100	Cobble (20%); Gravel (35%); Sand (35%); Silt (10%)	Sea star (*Asterias* sp.) (U); Green crab (*Carcinus maenas*) (U); Northern moon snail (*Euspira heros*) (U)	Sea colander (*Agarum clathratum*) (20%)
1300-1350	100-150	Cobble (20%); Gravel (35%); Sand (35%); Silt (10%)	Sea star (*Asterias* sp.) (U); Green crab (*Carcinus maenas*) (U); Northern moon snail (*Euspira heros*) (U)	Sea colander (*Agarum clathratum*) (10%)
1350-1370	150-170	Cobble (20%); Gravel (35%); Sand (35%); Silt (10%)	Northern moon snail (*Euspira heros*) (U); Sea star (*Asterias* sp.) (U)	Sea colander (*Agarum clathratum*) (5%)

*A = Abundant, C = Common, O = Occasional, U = Uncommon (See below).

A = Abundant
Numerous (not quantifiable) observations made throughout the entire 5 m segment.

C = Common
Numerous (not quantifiable) observations made intermittently along the 5 m segment.

O = Occasional
Quantifiable observations made intermittently along the 5 m segment.

U = Uncommon
Quantifiable observations made infrequently along the 5 m segment.

ATTACHMENT B
Limitations

LIMITATIONS

1. The work performed in this report was carried out in accordance with the Standard Terms of Conditions made part of our contract. The conclusions presented herein are based solely upon the scope of services and time and budgetary limitations described our contract.
2. The report has been prepared in accordance with generally accepted environmental study practices. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report.
3. The objective of this report was to characterize the seabed footprint of the proposed Project area, given the context of the terms of reference provided by Melford Marine Terminal Inc.
4. The conclusions of this report are based in part, on the information provided by others. The possibility remains that unexpected environmental conditions may be encountered at the site in locations not specifically investigated. Should such an event occur, AMEC Earth & Environmental, a division of AMEC Americas Limited must be notified in order that we may determine if modifications to our conclusions are necessary.
5. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it are the responsibility of such third parties. AMEC Earth & Environmental, a division of AMEC Americas Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.