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March 5, 2009

Edward Porter
EKISTICS Town Planning Inc.
1925 Main Street
Vancouver, B.C. V5T 3C1

Re: Field Reconnaissance of Stage One of Nearshore Marine Assessment in Schooner Cove at Fairwinds, Nanoose Bay, BC

Dear Edward,

Attached is our report for the February 13, 2009 field reconnaissance of the Schooner Cove marina and surrounding lots. The report consists of an overview and description of the current shoreline features of the area, and is intended to provide materials to assist in your discussions for the Schooner Cove neighbourhood planning process.

Methods

The shoreline reviewed by this reconnaissance (referred to as the “study area”) is shown in Figure 1 and includes the resort area buildings along the south side of Schooner Cove and the breakwater as well as shoreline along the north shore of the cove and to the south, outside of the cove. Shorelines north of the entrance to Schooner Cove or further south than the pocket cove at Dolphin Place are not included in the review.

The field survey was consisted of observations made by shore-based access to the waterfront in Schooner Cove, augmented with the descriptions of features observed from a subsequent boat-based survey. The resort shoreline along the south shore of Schooner Cove was observed from land as well as by boat, whereas the breakwater, most of the north shore, and the coast outside of the Cove to the south were observed only by boat.

The observations were made from noon until about 16:30 on February 13, 2009 during which time the tide level was between +3 m and +1.8 m. The boat survey was done during the lowest tide levels (+1.8 to approximately +2.25 m). As well as providing the offshore perspective to the shore-based observations, the water visibility was excellent and a bottom viewer was used from the skiff to spot-check nearshore subtidal features.

The Google Earth aerial imagery was used as the base map for the figures in this report and for estimating shoreline lengths of segments described. The Google imagery showed the study area at low tide and showed more of the intertidal zone than the site plan airphoto. The shoreline features provided in this report have not been spatially referenced in GIS.



Figure 1. Overview of Schooner Cove and extent of shoreline south of the cove included in review. Thick red lines show extent of study area

Four across-shore transects were surveyed to measure shorezone width and elevations. Approximate locations of those transects are marked in the shore segment figures and the plotted profiles are included in Appendix A.

Results

The shoreline in the reconnaissance area was segmented into nine sections (Table 1). The alongshore length of each segment was estimated from Google Earth, using the approximate location of the higher high water line. The total shoreline length in the study area is approximately 2 km.

Table 1. List of shore segments described in the field reconnaissance report.

Shore Segment	Segment Name	Estimated Along-shore Length of Segment at High Water Line (m)
1	Boat ramp	30
2	Walled picnic area/grassy point	85
3	Hotel building	85
4	Schooner House	140
5	Riprap breakwater	245 west side, 240 east side
6	South shore, outside breakwater	340
7	South pocket beach	215
8	North shore, inside Schooner Cove	500*
9	Road bank, southwest Schooner Cove	165

* note: includes rock reef at north entrance to the cove.

In addition to the overall alongshore length of each segment, an estimate of the length of 'natural' and of 'modified' shoreline within each segment was also made (Table 2).

Table 2. Lengths of 'natural' and 'modified' shoreline by segment.

Segment	Segment Name	Estimated Length (m)	Est. Length Natural (m)	Est. Length Modified (m)	% of Segment Natural	% of Segment Modified
1	Boat ramp *	30	15	15	50%	50%
2	Walled picnic area	85	0	85	0%	100%
3	Hotel building	85	0	85	0%	100%
4	Schooner House	140	55	85	39%	61%
5	Riprap breakwater west	245	0	245	0%	100%
5	Riprap breakwater east	240	0	240	0%	100%
6	South shore, outside breakwater	340	340	0	100%	0%
7	South pocket beach	215	115	100	53%	47%
8	North shore, inside Schooner Cove **	500	500	0	100%	0%
9	Road bank, southwest Schooner Cove	165	0	165	0%	100%
	Total :	2045	1025	1020	50%	50%

* natural shoreline in the boat ramp segment is cobble/boulder beach

** natural shoreline in the north Schooner Cove shore is approximately half bedrock ramp, and half cobble beach.

Descriptions of substrate, biota and other key features observed in each segment, along with example photos and maps showing the segments locations are presented below (Figures 2 through 27).

From the measured profiles on the four surveyed transects, the marine limit elevation (natural boundary) was 5.27 m at Transect 1, the boat ramp beach, and 5.76 m at Schooner House Transect 3 (Appendix A, Table A – 1).

**SCHOONER COVE RECONNAISSANCE
SHORE SEGMENTS 1, 2, 3**



Figure 2: Southwest Schooner Cove shoreline showing segments 1, 2 and 3; showing the locations of Transects T1 and T2.

SHORELINE SEGMENT 1: BOAT RAMP

Description	The boat ramp segment is low-slope shoreline, made up with approximately half of the alongshore width as cobble beach, and half as concrete boat ramp and marine ways. The segment has been significantly altered, with concrete, pilings and paving associated with the boat ramp, float and marine ways. West side of segment bounded by fill from road bank. This is the only shore segment within the study area with low-bank, water access across a low-gradient beach.
Wave energy	Very protected
Supratidal and Upper Intertidal Features	Substrate: concrete and paving in upper ramp and ways, fill and terrestrial grasses at beach Biota: Riparian vegetation of mature cedar tree, terrestrial grasses, few sprigs of salt-tolerant grasses on upper beach, concrete bare
Intertidal Features	Substrate: paving and concrete at boat ramp and ways, boulder/cobble/pebble over sand/fines on beach, with more fines on lower beach. Old pilings on mid-beach, concrete at boat ramp and ways, metal pilings and paving at ways Biota: scattered rockweed, barnacles, oysters on lower beach, filamentous greens on concrete boat ramp, shell debris at ways
Photos	Figure 3, Figure 4
Transect	T1: shallow-gradient beach. See Figure 4 and profile in Appendix A.



Figure 3: View of beach, boat ramp and marine ways in Segment 1, showing paved concrete ramp, floating dock, metal piles of the marine ways. Transect T1 was surveyed across the beach area at the right of this photo.



Figure 4: Lower beach at boat ramp segment, with dotted line showing approximate location of the measured profile. Scattered rockweed and barnacles were observed, and substrate consisted of a cobble/boulder veneer over fine materials.

SHORELINE SEGMENT 2 – WALLED PICNIC AREA

Description	The walled picnic shore segment is a section of filled shoreline, with vertical stone blocks in the upper intertidal over riprap and fill in the lower intertidal. Shoreline segment is man-modified.
Wave energy	Very protected
Supratidal and Upper Intertidal Features	Substrate: Stone block wall Biota: Riparian vegetation is absent. Splash zone and upper intertidal is on vertical stone block wall
Intertidal Features	Substrate: Stone wall and riprap fill. Biota: Barnacle, rockweed and filamentous green algae on the lower half of the wall/ fill
Nearshore Subtidal Features	Substrate: rubble with cobble/pebble and silt. Some sections with subtidal bedrock ramp below fill. Biota: scattered bladed kelp, numerous leather stars, few sunflower star
Figure	Figure 5, Figure 6
Transect	No transect in this segment



Figure 5: Grassy picnic area (Segment 2) showing vertical block wall and riprap fill.



Figure 6: Shore Segment 2, with rockweed and green algae along the lower wall and riprap fill.

SHORELINE SEGMENT 3: HOTEL BUILDING

Description	The hotel building is built out on concrete pilings into the intertidal zone. The shoreline under the building has been modified with fill and riprap material. Segment shoreline is man-modified.
Wave energy	Very protected
Supratidal and Upper Intertidal Features	Building covers upper intertidal and splash zone. Biota: bare, shaded under building
Intertidal Features	Substrate: Rubble fill and riprap. Biota: low turf of filamentous brown and green algae, barnacles
Nearshore subtidal Features	Substrate: shell hash/ sand. Riprap does not extend much beyond building footprint Biota: scattered bladed kelp
Figure	Figure 7, Figure 8, Figure 9
Transect	T2: located at the east corner of the hotel building, across riprap and fill section. See Figure 8 and Appendix A.



Figure 7: View of hotel building, showing pilings over the intertidal zone.



Figure 8: Rubble and fill under hotel pilings.



Figure 9. Approximate location of profile measured in Transect T2 at east corner of hotel building shown in dotted line. Riparian shrubs in upland and low turf of biota across the intertidal zone.

**SCHOONER COVE RECONNAISSANCE
SHORELINE SEGMENTS 4 AND 5**



Figure 10: Schooner House and breakwater shoreline segments 4 and 5, showing the location of transect T3.

SHORELINE SEGMENT 4: SCHOONER HOUSE

Description	The north-facing shoreline in the Schooner House segment is a combination of natural bedrock cliff and ramp (shallow sloped bedrock ledge), with rubble-filled sections. Most of the segment is steep, however the waterline is accessible across the natural bedrock ramp near the west end of the segment. Segment is partly modified and partly natural shoreline.
Wave energy	Very protected
Supratidal and Upper Intertidal Features	Substrate: fill over bedrock, landscaping, bedrock Biota: mature <i>Arbutus</i> and Douglas fir, landscape plantings in riparian. Splash zone lichen, barnacles in upper intertidal
Intertidal Features	Substrate: rock rubble or natural bedrock cliff and ramp. Nearshore subtidal zone observed to have bedrock platforms and shell hash/fines Biota: Rockweed, barnacles, green algae; along with <i>Mastocarpus</i> (red alga), oysters, periwinkle snails, amphipods, purple sea star in lowermost intertidal.
Nearshore Subtidal Features	Substrate: natural bedrock platforms, with pockets shell hash/ fines/ silt. Some rubble from upper intertidal fill. Biota: few <i>Sargassum</i> (brown alga), leather star, mottled star, scattered bladed kelps
Figure	Figure 11, Figure 12, Figure 13
Transect	T3: located at the easternmost segment. See Figure 13 and Appendix A.



Figure 11: View of steep bedrock and fill shoreline in Schooner House segment.

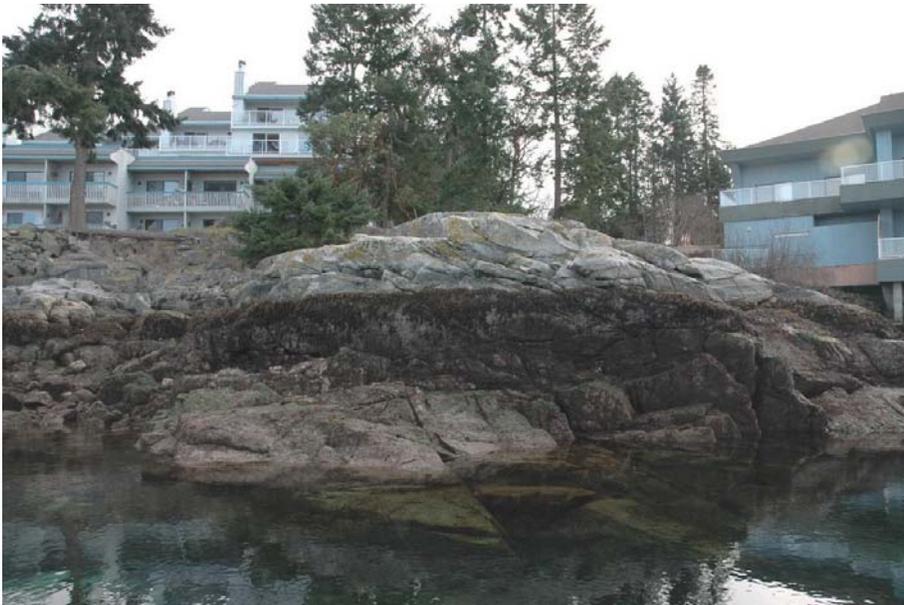


Figure 12: Natural bedrock outcrop at west end of Schooner House segment.



Figure 13. Approximate location of profile measured in Transect 4 shown in dotted line, on rubble fill bank at east end of Schooner Cove segment.

SHORELINE SEGMENT 5: BREAKWATER

Description	The artificial breakwater extends north-south across the entrance to Schooner Cove, and shelters the marina.
Wave energy	Very protected at south end of inside (west) of breakwater with gradual increase to Semi-protected at northwest end. Semi-exposed on outside (east) breakwater.
Supratidal and Upper Intertidal Features	Substrate: riprap and rubble over fill. Drift logs were perched at the top of the berm, indicating considerable wave energy from the east, open to the Strait of Georgia. Biota: No riparian vegetation was observed on the breakwater. Biota differed between the sheltered west and the exposed east side of the breakwater. Inside, the upper intertidal was bare while on the east side, upper intertidal zone showed splash zone lichens, barnacles and <i>Porphyra</i> (dulse, a red alga). A group of four or five river otters were observed on the top of the breakwater, near Transect 3.
Intertidal Features	Substrate: riprap and rubble over fill. The exposed east side of the berm was much coarser material throughout than on the sheltered west side, where the substrate is cobble/pebble/boulder in the lower intertidal. Biota: Rockweed, barnacles, green algae; along with <i>Mastocarpus</i> (red alga), oysters, periwinkle snails, amphipods, purple sea star in lowermost intertidal
Figure	Figure 14, Figure 15
Transect	No transects on breakwater, however south inside of breakwater would be very similar to Transect 3.



Figure 14: View of the protected southwest side of the breakwater, looking north from Schooner House. Note slightly finer fill material on the lower slope of the breakwater.



Figure 15: East facing, high-energy side of the breakwater, showing coarse riprap and log debris on the top of the berm.

**SCHOONER COVE RECONNAISSANCE
SHORELINE SEGMENT 6**



Figure 16: Shore Segment 6, along the outer south shore, near Schooner Cove.

SHORELINE SEGMENT 6: OUTER SOUTH SHORE

Description	The northeast-facing shoreline outside the breakwater and south from Schooner Cove is primarily natural bedrock shoreline. Several houses are built along this section but no shore modifications were observed.
Wave energy	Semi-exposed
Supratidal and Upper Intertidal Features	Substrate: natural bedrock ramp and cliff, east facing Biota: mostly natural riparian Douglas fir, arbutus and other shrubs and herbs Splash zone lichen, barnacles in upper intertidal
Intertidal Features	Substrate: natural bedrock ramp and cliff, east facing Biota: Rockweed, barnacles, green algae observed from the skiff-survey; no on-the-ground observations were made in this segment
Nearshore Subtidal	Substrate: Shell hash/ fine sediment between bedrock Biota: scattered bladed kelps
Figure	Figure 17, Figure 18
Transect	No transects on this segment



Figure 17: View of bedrock shoreline along outer south shoreline segment, showing zonation of biota, natural riparian, and setback of buildings from the marine limit.



Figure 18: Southern point of segment 6, at north entrance to pocket beach in segment 7, showing bedrock ramp and natural riparian vegetation.

**SCHOONER COVE RECONNAISSANCE
SHORE SEGMENT 7**



Figure 19. Shore Segment 7, in pocket beach, south of Schooner Cove.

SHORELINE SEGMENT 7: SOUTH POCKET BEACH

Description	The small pocket beach is open to the east, and located between adjacent bedrock headlands. Some man-made seawall and fill at private properties along supratidal zone/ marine limit, with sections of natural shoreline. Modification in this segment is in the upper intertidal/ splash zone. Uncertain of estimate of alongshore length of modification and a site visit would be required to confirm which properties have seawall or fill in the supratidal. Rock ramp on bedrock headlands included as natural shoreline.
Wave energy	Semi-exposed to Semi-protected
Supratidal and Upper Intertidal Features	Substrate: pebble/cobble beach face, with driftwood accumulated in the log line on the beach berm. Biota: scattered rockweed on larger cobble in mid-beach
Intertidal Features	Substrate: Natural pebble/cobble/boulder beach Biota: Rockweed, barnacle, oyster observed from skiff-survey, no on-the-ground observations in this segment
Nearshore Subtidal Features	Substrate: Shell hash/ fine sediment, with scattered pebble/cobble Biota: scattered bladed kelps and eelgrass Shallow water depth throughout the bay between the enclosing headlands.
Figure	Figure 20, Figure 21
Transect	No transects on this segment



Figure 20: South pocket beach, showing log line on upper beach and man-made seawall at private property.



Figure 21: South pocket beach, showing vegetated scarp in supratidal zone (possibly natural?), pebble/cobble zonation on beach face and in mid-intertidal zone.

**SCHOONER COVE RECONNAISSANCE
SHORE SEGMENTS 8 AND 9**



Figure 22: North and west shore of Schooner Cove, shoreline segment 8 and 9

SHORELINE SEGMENT 8: NORTH SHORE

Description	<p>The north shoreline of Schooner Cove is characterized in the eastern half by bedrock ramp (shallow sloped ledge) with the western half dominated by cobble/boulder/pebble beach. The backshore is steep, forested bank along the west half, and more than 50 m high along much of its length. Private properties with buildings occur along the segment, however all are setback from the natural boundary.</p> <p>Several docks and wharves are present and some partly cleared paths across the lower cobble beaches were seen, however the shoreline in the segment is largely unmodified.</p> <p>No public access was seen except from the roadway at the easternmost end of the segment.</p>
Wave energy	Semi-exposed (at the east end) to Semi-protected to the west, inside the Cove
Supratidal and Upper Intertidal Features	<p>Substrate: pebble/cobble with fines and driftwood in logline, natural bedrock ramps</p> <p>Biota: on beaches, patches of salt marsh vegetation in splash zone, dune grass and gumweed in the logline. East end of segment observed from skiff-survey, with no on-the-ground survey</p>
Intertidal Features	<p>Substrate: cobble/pebble/boulder veneer over fine/granular or bedrock platform and ramp</p> <p>Biota: Rockweed, barnacle, oyster observed at Transect 4. East end of segment observed only from skiff-survey. East end bedrock similar to biota in Segment 6.</p>
Nearshore Subtidal Features	<p>Observations at westernmost end of segment, offshore from Transect 4:</p> <p>Substrate: fine sediment/ sand</p> <p>Biota: scattered eelgrass, moon snail observed with bottom viewer</p>
Figure	Figure 23, Figure 24, Figure 25, Figure 26
Transect	T4: low-slope pebble/cobble beach, abundant oysters on lower transect



Figure 23: View from western end of north shore Schooner Cove, showing boulder/cobble/pebble beach, with steep, forested backshore. Approximate location of profile measured on Transect 4 indicated by dotted line.



Figure 24: Steep forested backshore and cobble/pebble beach with bedrock outcrops, at the west end of north shore Segment 8 in Schooner Cove.



Figure 25: Natural bedrock ramp at east end of north shore Schooner Cove, with private residence building set back from the marine limit.



Figure 26: Bedrock ramp at north entrance to Schooner Cove. This section of the segment would be classified as semi-exposed wave energy.

SHORELINE SEGMENT 9: ROAD BANK

Description	The riprap filled roadway along the west side of Schooner Cove, making the shoreline in the segment completely man-modified.
Wave energy	Protected
Supratidal and Upper Intertidal Features	Substrate: riprap and fill Biota: no riparian vegetation present. Upper intertidal has splash zone and barnacles.
Intertidal Features	Substrate: riprap and fill Biota: Rockweed, barnacle and green algae as seen from the skiff-based survey. No on-the-ground observations were made in this segment.
Nearshore Subtidal Features	Substrate: fines/shell hash Biota: scattered eelgrass, moon snail observed with bottom viewer
Figure	Figure 27
Transect	No transects were surveyed in this segment



Figure 27: Steep riprap road bank at the west end of Schooner Cove in Segment 9.

Discussion

Coastal Habitats in the Schooner Cove Study Area

Coastal habitats can be defined in terms of the dominant shoreline geomorphology (i.e., bedrock versus beach; natural versus modified) and in terms of wave energy. The interaction of the shoreline type and the wave exposure determines the structuring processes that define the coastal habitat at that site.

Using the estimated shoreline lengths in each of the described segments, the distribution of modified versus natural shorelines in the study area is about 50% ‘natural’ versus about 50% ‘modified’ (Table 2). Approximately the same ratio of natural versus modified shore (50%) was calculated for the shoreline inside Schooner Cove (Segments 1, 2, 3, 4, half of 5, 8 and 9), and the shoreline outside the cove (Segments 6, 7 and east side of 5) (Appendix B. Table B-1). Natural shorelines are generally considered to be more valuable than modified shorelines. Development planning should attempt to retain or conserve natural shorelines whenever possible. Conversely, modified shorelines may have potential for restoration of some or all of the natural coastal processes. For example, restoration of riparian vegetation on otherwise modified shorelines can help to restore ecological function, and increase habitat value.

Shorelines within Schooner Cove proper, and sheltered by the breakwater, have lower wave energies than the open east-facing shore segments outside of Schooner Cove. All of the shoreline outside of the Cove was considered ‘semi-exposed’ wave energy where the shoreline inside the Cove ranged from ‘semi-protected’ to ‘protected’ (Appendix B, Table B – 2). Coastal processes and habitat characteristics are different between, for example, natural bedrock shoreline of low wave energy inside the Cove than those of higher exposure outside the cove.

Shore segments can be further summarized as to each habitat as listed in Table 3. Habitat is defined by the combination of ‘naturalness’, wave exposure and shore type. Nearly one-quarter of the natural shoreline in the study area is semi-exposed, bedrock and about another quarter is protected, riprap fill.

Table 3. Schooner Cove Study Area Shoreline Lengths by Coastal Habitat

Category	Wave Exposure	Shore Type	% of Study Area
Natural	Protected	Cobble/pebble beach	1%
	Semi-protected	Cobble/pebble beach	12%
	Semi-exposed	Cobble/pebble beach	6%
	Protected	Bedrock	3%
	Semi-protected	Bedrock	6%
	Semi-exposed	Bedrock	23%
Modified	Protected	Riprap	26%
	Protected	Other	6%
	Semi-protected	Riprap	6%
	Semi-exposed	Riprap	12%
			100%

Elevations of Shoreline Features

The marine limit (natural boundary) was difficult to estimate from the features on Transects 2 and 3 because both upper profiles were filled landscaped lawns, with low wave energy. The top elevation at the boat ramp at Transect 1 is likely low, as the upper beach is also affected by fill from the roadway and has an artificially narrowed beach berm. The best estimate of the natural marine limit is the elevation from the storm log line at Transect 4, on the north shore beach (+ 5.6 m) (Table A - 1). From the tidal curve estimate for Winchelsea Island, the maximum predicted tidal height occurring in 2007 through 2009 is + 5.24 m.

Other valued habitat features

Eelgrass is a 'valued habitat feature' and was observed during the boat survey along the northwest area of Schooner Cove. The full extent of eelgrass would require further survey and mapping of the marina cove.

Conclusions

Our reporting is a summary overview of existing conditions of shoreline habitats in the Schooner Cove/ Fairwinds Study Area. Specific comments on site design including shore access, building siting, infilling, and possible compensation requirements will be made subsequent to our upcoming design review meeting.

We look forward to further discussions with you about this project.

Sincerely,

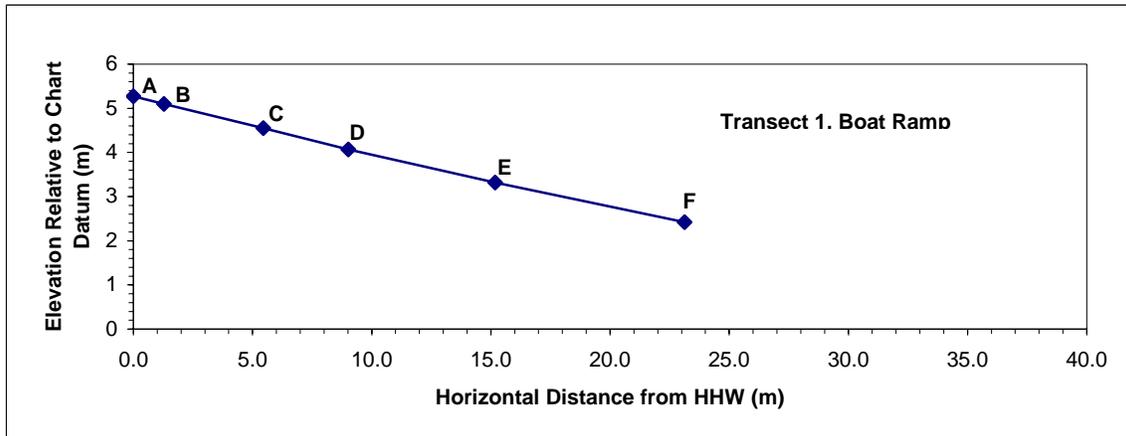


Mary Morris, M.Sc., R.P.Bio.
Archipelago Marine Research Ltd.

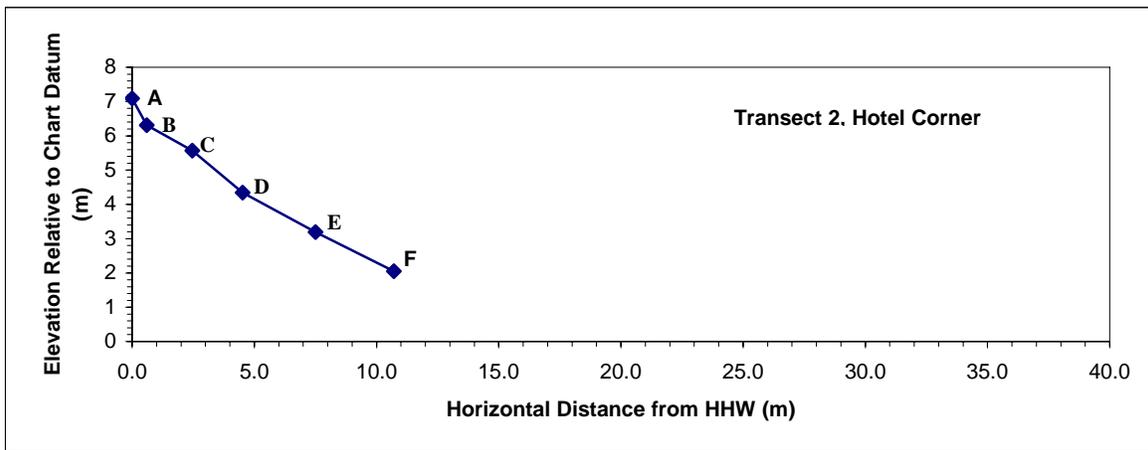
APPENDIX A – Transect Profiles

Table A – 1. Transect Features, by Profile Survey Point. Elevations corrected to tidal datum using tide height at time of survey.

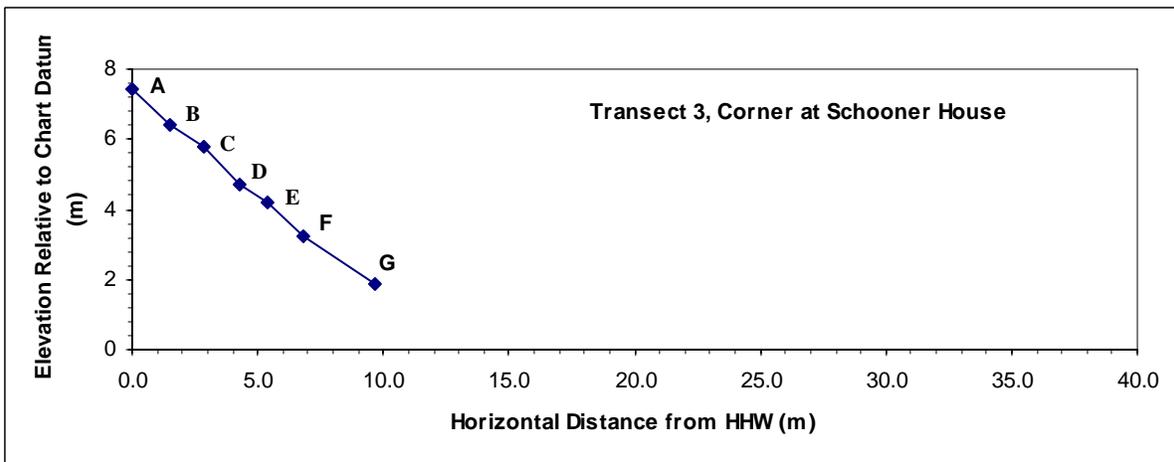
Profile	Point	Cumulative Horizontal (m)	Cumulative Elevation (m)	Description of Point
Transect 1. Boat ramp beach	A	0.0	5.27	at marine limit
	B	1.3	5.10	top beach face
	C	5.5	4.55	mid beach face
	D	9.0	4.07	top boulder/cobble, top rockweed
	E	15.2	3.32	mid boulder/cobble, rockweed
	F	23.1	2.42	waterline at 12:52
Transect 2. Hotel corner	A	0.0	7.09	edge of hotel deck, concrete
	B	0.6	6.31	mid terrestrial grasses
	C	2.5	5.57	bottom terrestrial grasses, marine limit
	D	4.5	4.34	top barnacles, btm bare
	E	7.5	3.19	mid rockweed
	F	10.7	2.05	waterline at 13:37
Transect 3. Schooner House	A	0.0	7.41	terrestrial grass and moss
	B	1.5	6.40	lower grass and moss
	C	2.8	5.76	btm grass and moss, top riprap, marine limit
	D	4.3	4.70	mid bare riprap
	E	5.4	4.19	top rockweed, barnacle, btm bare
	F	6.8	3.21	mid rockweed
	G	9.7	1.90	waterline at 14:09
Transect 4. North shore beach	A	0.0	5.66	storm log line, marine limit
	B	3.3	4.85	btm log line, last HHW swash
	C	13.3	3.80	top barnacle
	D	22.3	3.02	mid beach face
	E	30.5	2.41	mid beach face, abund oyster
	F	34.5	2.16	waterline at 16:12



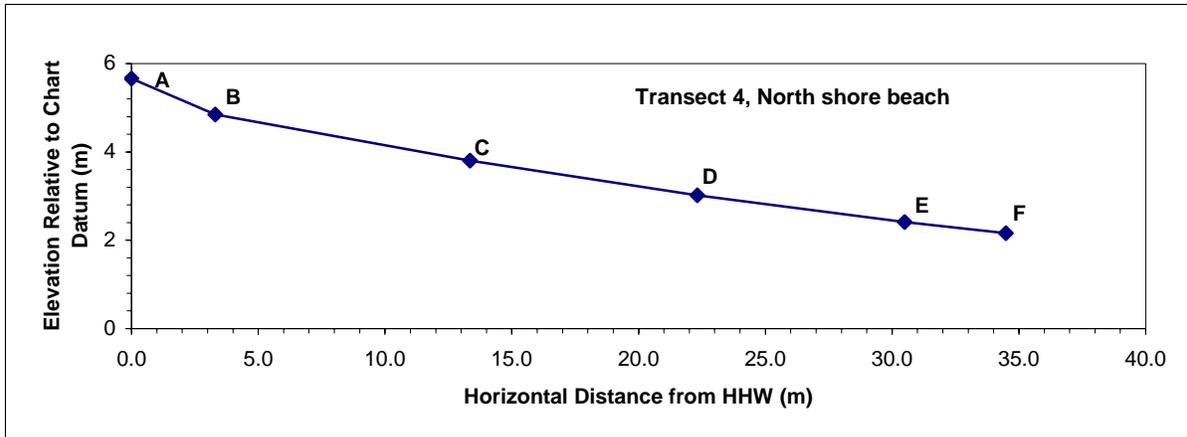
Transect 1. Schooner Cove, Boat Ramp Beach



Transect 2. Schooner Cove, Riprap bank at east end of hotel building



Transect 3. Schooner Cove, Steep bank inside south end of breakwater, in Schooner House segment.



Transect 4. Schooner Cove, north shore beach.

APPENDIX B. Estimated shoreline lengths in shore segments.

Table B-1. Summary of shoreline lengths inside versus outside of Schooner Cove.

INSIDE SCHOONER COVE

		Estimated Length (m)	Natural	Modified	% Natural	% Modified
1	Boat ramp	30	15	15	50%	50%
2	Walled picnic area	85	0	85	0%	100%
3	Hotel building	85	0	85	0%	100%
4	Schooner House	140	55	85	39%	61%
5	Riprap breakwater west	245	0	245	0%	100%
8	North shore, inside Schooner Cove *	500	500	0	100%	0%
9	Road bank, southwest Schooner Cove	165	0	165	100%	0%
	TOTALS:	1250	570	680	46%	54%

OUTSIDE SCHOONER COVE

7	South pocket beach	215	115	100	53%	47%
5	Riprap breakwater east	240	0	240	0%	100%
6	South shore, outside breakwater	340	340	0	100%	0%
	TOTALS:	795	455	340	57%	43%

Table B – 2 Summary of shore types and wave exposures for natural shoreline in the study area

INSIDE SCHOONER COVE

Segment	Segment Name	Estimated Length, Whole Segment (m)	Natural Length (m)	Modified Length (m)	Natural Shore type	Wave Energy
1	Boat ramp	30	15	15	cobble/boulder beach	protected
2	Walled picnic area	85	0	85	--	protected
3	Hotel building	85	0	85	--	protected
4	Schooner House	140	55	85	bedrock ramp	protected
5	Riprap breakwater west, south	245	0	120	--	protected
5	Riprap breakwater west, south	--		125	--	semi-protected
8	North shore, inside Schooner Cove	500	250	0	cobble/boulder beach	semi-protected
8	North shore, inside Schooner Cove	--	125	0	bedrock ramp	semi-protected
8	North shore, inside Schooner Cove	--	125	0	bedrock ramp	semi-exposed
9	Road bank, southwest Schooner Cove	165	0	165	--	protected
	TOTALS	1250	570	680		
			46%	54%		

OUTSIDE SCHOONER COVE

Segment	Segment Name	Estimated Length, Whole Segment (m)	Natural Length (m)	Modified Length (m)	Natural Shore type	Wave Energy
5	Riprap breakwater east	240	0	240	--	semi-exposed
6	South shore, outside breakwater	340	340	0	bedrock ramp	semi-exposed
7	South pocket beach	215	115	100	cobble/boulder beach	semi-exposed
	TOTALS	795	455	340		
			57%	43%		