

## Report Series I: Marine Nearshore Habitat

Since 2004, the Pebble Partnership has been working with Pentec Environmental/Hart-Crowser Inc., a consulting firm specializing in marine surveys and biological assessment to study the nearshore habitats around potential Pebble Project infrastructure sites. This data release is an introductory piece intended to supplement forthcoming data releases on marine wildlife, nearshore fish and benthic (bottom-dwelling) organisms.

The following release addresses the habitat types of Pebble's Marine Study areas in Iniskin Bay and Iliamna Bay, in southwest Cook Inlet. These habitat descriptions provide context for future data releases and are fundamental to understanding the marine environment.

This study provides general descriptions of the nearshore habitats in Iniskin Bay and Iliamna Bay. It also provides detailed information on habitats in the area of several possible port-site alternatives. The study draws from the marine investigators' long history of work in the area, and from field observations gathered from 2004 to 2006.

### Scope and Objectives:

The objective of the marine nearshore habitat survey is to characterize the existing habitats of the Iniskin Bay and Iliamna Bay. As seen in Figure I-1, the study area includes all marine waters and shorelines from the east entrance of Iniskin Bay and Scott Island to the south entrance of Iliamna Bay at South Head, with the exception of inner Cottonwood Bay and inner Iniskin Bay. The description of these habitats provides the context for biological conditions in the bays (biological conditions, including fish and benthic invertebrates, will be discussed in the August 2009 data release).

Data were gathered from 2004 to 2006 and included a thorough search of literature related to the natural environment of Cook Inlet, float plane reconnaissance, boat-based shoreline observations, and shore-based surveys. Further marine wildlife surveys continued in 2007 and 2008.



*Low rocky beach at Port Site 1 looking towards a series of arches.*



*Sea stacks at the entrance to the Y Valley lagoon, looking north.*

## Study History:

Members of the team leading the study for Pebble have been involved in scientific surveys and investigations of lower Cook Inlet for over 30 years, including repeated sampling of stations within Iniskin Bay and Iliamna Bay beginning in 1978. More recently, the Cook Inlet Regional Citizens Advisory Council (CIRCAC) conducted extensive mapping of morphology, sediment and vegetation types in the area – all of which are important in determining habitat functions. In 2005 consultants for the Pebble Partnership took boat-based shoreline observations, where GPS coordinates were taken at each major transition in shoreline type to “ground-truth” existing CIRCAC data and to allow for independent mapping of shoreline habitat types (Figure I-1).



Port Site 4 upper pebble beach looking west.

## Findings:

The shorelines of the Iniskin Bay and Iliamna Bay study areas include a diversity of habitats ranging from steep rocky cliffs to very fine-grain sand and mudflats (Table I-1). Cobble and pebble beaches between the bays along Knoll Head are characterized by well-rounded particles, while pebbles and angular cobbles are common on sheltered beaches and in the inner bays. Wave and surge activity is high at the headlands and along outer portions of the bays at high tides. At lower tides swells are damped significantly by reefs and islets at bay entrances and by low gradient mudflats.

Subtidal habitat is similarly varied, ranging from mud and sand within central portions of the bays to a variety of gravel, boulder and rock in channel bottoms, where strong currents, high wave action or steep gradients prevent the build-up of sediment.



Rocky bench and sea stacks, south side of Scott Island, looking west.

**Table I-1: Summary of predominant morphologies by study area**

	Sand	Pebble	Pebble/ Cobble	Pebble/ Cobble/ Bedrock	Cobble	Cobble/ Boulder	Boulder	Vertical Cliff/ Bedrock	Offshore Rock	Caverns
Scott Island				✓				✓	✓	
Iniskin Bay	✓	✓		✓	✓	✓		✓	✓	
Knoll Head to Y Valley Lagoon	✓	✓	✓	✓	✓	✓		✓	✓	✓
Iliamna Bay	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Cottonwood Bay to South Head		✓		✓						
White Gull Island		✓	✓	✓	✓			✓		

**\*Preliminary data only. Do not cite or quote.**

**Marine Nearshore Habitat data reports, released as part of the Pebble Partnership's Pre-Permitting Environmental & Socio- Economic Data Report Series, are available online at [www.pebblepartnership.com](http://www.pebblepartnership.com).**