

## Preparation Procedures and Analytical Methods Associated with Sediment Samples from the Torres Strait Baseline Study

Prepared by G. A. Barry, Queensland Department of Primary Industries

The following procedures relate to samples taken for the Main Study.

### Sample Preparation

For chemical analysis, all samples were wet sieved with the > 2 mm size fraction being removed using plastic sieves and ultra pure water. The < 2 mm portion, along with all washings, was dried at 50°C in a stainless steel forced draft oven. Samples were subsequently ground to < 50 µm particle size using a 'shatter box' grinding mill equipped with a stabilised zirconium grinding head.

### Chemical Analysis

For Al, Ca, Co, Cr, Cu, Fe, Mg, Mn, Ni, Pb, Si and Zn determination samples were pelleted using the pressed powder technique and analysed by X-ray fluorescence. For As and Se determination samples were digested using nitric:perchloric:sulphuric acid (13:1:2) and analysed by hydride generation atomic absorption spectrometry. Cadmium and Hg determinations were performed on solutions obtained from a nitric:hydrochloric acid (6:2) digest following two hours on a steam bath. Cadmium was analysed by graphite furnace AAS, while Hg was determined by hydride generation AAS. Organic carbon was determined by the wet oxidation method of Walkley and Black (1934). Calcium carbonate was determined by a weight loss gravimetric method following a procedure outlined by Blakemore et al (1987).

Reporting limits were as follows (units are in mg/kg unless otherwise indicated):

Al 0.01%, As 1, Ca 0.01%, Cd 0.01, Co 1, Cr 1, Cu 1, Fe 0.01%, Hg 0.005, Mg 0.01%, Mn 1, Ni 1, Pb 1, Se 0.04, Si 0.01%, Zn 1, Particle Size Analysis 1%, Organic carbon 0.1%, Calcium carbonate 1%.

### Physical Analysis

A sub-sample was wet sieved and separated into four particle size fractions as follows: > 2 mm, 2-0.2 mm, 0.2-0.063 mm, < 0.063 mm.

### Literature Cited

- Blakemore, L. C., Searle, P. L., Daly, B. K. 1987, Methods for chemical analysis of soils, NZ, Soil Bur. Sci. Rep. 80.
- Walkley, A. and Black, I. A. 1934, An examination of the Degtjareff method for soil organic matter and a proposed modification of the chromic acid titration method, *Soil Sci.*, 37: 29-38.