F I N A L R E P O R T

Q27/2006 Sediment and Antifoul Monitoring Program

Stage 1 - Sediment Study

Prepared for

Hornsby Shire Council

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Section 1 Introduction

1.1 Background

URS Australia Pty Ltd (URS) was commissioned by Hornsby Shire Council to assess the contaminant status of the estuaries within Hornsby Shire, identify which contaminants are present and establish baseline data on levels of contamination to allow an assessment of the risks posed by contamination to human use and amenity, and ecological values of the Hawkesbury River. The work was undertaken by URS in accordance with a proposal dated 29 August 2006. This report details findings of the Stage 1 investigation.

1.2 Study Area

The study area is identified as the primary waterways of the Lower Hawkesbury River which include the Hawkesbury River, from the upstream limit of Wisemans Ferry to the downstream limit of Parsley Bay/Croppy Point, Marramarra Creek, Berowra Creek and Cowan Creek. Mooney Mooney and Mullet Creeks on the northern side of the river were also sampled during the Sediment Study (Stage 1). The overall study area incorporates the two study areas defined in the Berowra Creek and Brooklyn Estuary Process Studies with adjustments and includes the connecting water body from the mouth of Berowra Creek to the Freeway Bridge (Figure 1).

1.3 Previous Contaminant Investigations of Sediment and Biota in the Hawkesbury River

Anthropogenic trace metal contaminants have been assessed in the Hawkesbury River for over 20 years. Early work included the determination of the speciation of iron, copper and zinc in waters of the Hawkesbury River by Pik et al. (1982) and the assessment of heavy metal enrichment in the surface water microlayer of the Hawkesbury-Nepean River system (Barnes et al., 1982). Markich and Brown (1998) conducted a survey of trace metal concentrations in the freshwater reaches of the Hawkesbury River, the first such survey of a permanent coastal river in Australia using ‘clean’ sampling and handling techniques. That study established that concentrations of nutrients, organic carbon and trace metals in the Hawkesbury River increased as a consequence of anthropogenic inputs, particularly point discharges from sewage treatment plants (STPs) as well as diffuse urban and agricultural runoff during storm events. Markich and Brown (1998) established that the temporal variability of trace metals is correlated to the variability in water discharge. An increase in concentrations of trace metals by a factor of up to 2 was correlated with increased water discharge and was cited as evidence of anthropogenic point and diffuse source contributions during high flow events.

Anthropogenic contaminants in surface waters of the Hawkesbury River are highly variable and transient in nature. In contrast, sediments, which represent a sink for contaminants in aquatic systems, may be used to establish a time-integrated signature of anthropogenic contributions in aquatic environments. Anthropogenic heavy metal contaminants in sediments in the Hawkesbury River have been extensively studied since the mid-1990s and the majority of contaminant investigations of sediments in the Hawkesbury River estuary have been conducted by the Environmental Geology Group (EGG) at the University of Sydney and others (i.e. Parker, 1992; Shotter, 1994; Hardiman and Pearson, 1995; O’Donnell, 1995; Hayes and Buckney, 1998; Birch et al., 1998, 1999; Simonovski et al., 2003).

Concentrations of heavy metals in bed sediments of the Hawkesbury River are generally low and close to background, but are substantially elevated in the headwaters of Berowra Creek, Cowan Creek and in southeast Pittwater (Birch et al. 1998, 1999). In addition, high levels of contamination of sediments have been found adjacent to the Hornsby Sewage Treatment Plant (STP) and the Calna Creek STP. Simonowski et al. (2003) reported that sediments in the upper Hawkesbury-Nepean River are not heavily polluted by heavy metals, although elevated concentrations of heavy metals were found in sediments near industrialized areas and STPs.

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Other previous sediment studies of sediments in the Hawkesbury River estuary include Bourgues et al. (1998) (nutrients), Mann et al. (1996) (nutrients and algal blooms), Coastal & Marine Geosciences (1998) (nutrients and heavy metals) and University of New South Wales (2002).

1.4 Normalization of Sediment Contaminant Concentrations

An important aspect of previous geochemical research conducted by the EGG at the University of Sydney is the fact that the geochemical data for the sediments analysed is normalized for variations in grainsize (i.e. <62.5 μm fraction of sediments). Grainsize normalization minimizes texturally-induced spatial variability of the concentrations of trace metals, which allows an assessment of regional contaminant concentration gradients. However, normalization of the contaminant data in sediments may also be established through elemental normalization with lithogenic elements (i.e. elements which correlate positively with variations in grainsize but which are generally not anthropogenic in origin, e.g. Al, Li, Co) (Loring, 1990; Loring & Rantala, 1992; Matthai and Birch, 2001).

1.5 Sediment Study - Objectives

The overall project was divided into two stages, namely the Sediment Study (Stage 1) and the Antifoul Study (Stage 2) (see URS Proposal dated 29 August 2006). The objectives of the Stage 1 investigation are to:

- Determine the distribution of contaminated sediments within the study area;
- Compare current levels of sediment contamination with levels established in previous studies to identify areas of accumulation;
- Assess sources of contemporaneous contaminants in the sediments;
- Assess potential anthropogenic contributions to sediments; and
- Provide recommendations for remedial management actions based on the findings of Stage 1 assessment.

A further objective to establish baseline sediment quality data prior to the commencement of discharge from the Brooklyn and Dangar Island Sewerage Scheme outfall was excluded from the current Stage 1 sediment study project objectives at locations H40 to H42 (Hawkesbury River west of Road Bridge) and will be addressed in Stage 2 (see Section 2.1).

1.6 Sediment Study - Scope of Work

Sediment samples were collected at 52 locations during the Sediment Study (Stage 1). Samples were analysed for the following:

- Total Kjeldahl nitrogen (TKN), Total organic carbon (TOC), nitrate and nitrite (NOX); Reactive phosphorus;
- Ca, Mg, Be, Al, V, Cr, Mn, Fe, Co, Cu, Zn, As, Sr, Ba, Pb, Cd, Hg;
- Polychlorinated biphenyls (PCBs);
- Polycyclic aromatic hydrocarbons (PAHs);
- Organochlorine Pesticides (OCs);
- Organophosphate Pesticides (OPs);
- Total petroleum hydrocarbons (TPHs) (C6-C36); and
- BTEX.

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Grainsize was determined by wet sieving (4 fractions: <0.063 mm; 0.063 mm-0.25 mm; 0.25 mm-2 mm; >2 mm).

The date and time of sampling, water depth, latitude and longitude (GPS) and a field description of the sediment type were recorded in the field and a photograph of the sample was taken.

The regional sediment geochemical data was displayed spatially on a GIS system (Mapinfo^{TM}) and the data screened against ANZECC/ARMCANZ (2000) sediment quality guideline values. An assessment of contaminant sources was performed after elemental normalization with aluminium (i.e. a non-anthropogenic analyte). An assessment of background concentrations based on available data for the Hawkesbury River and other estuarine sediments in the Sydney area (e.g. Taylor, 2000) allowed the estimation of enrichments above pre-anthropogenic background for the various analytes (except nutrients).

An assessment of potential sources of Cu-based antifouling agents was performed using an assessment of the Cu:Zn concentration ratios in the surficial sediments. This approach has been used successfully by Taylor (2000) to assess anthropogenic contributions of contaminants from marinas and areas of increased boating activities in the waterways of Port Jackson.

Section 2 Methodology

2.1 Sampling Locations

Fifty-five sampling locations (H1 to H55) (plus 6 additional QA/QC samples, i.e. field replicates) were initially proposed. However, the number of sample locations was reduced to 52, following the difficulties experienced in obtaining a surficial sediment sample from locations H40 to H42 (Hawkesbury River west of Road Bridge). At these three locations the high current velocities, water depths >20 m and coarse sandy sediments made sampling difficult. These three sampling locations were therefore excluded from the Stage 1 sediment investigation but will be included in the Stage 2 investigation.

The 52 sampled locations included 19 of the 20 locations that were sampled during the Berowra Creek Estuary Process Study (1998) (13 Locations: VCBC1 to VCBC11, MCAH1 and MCAC2; Sampling Location MCAH2 in Marramarra Creek was moved to the mouth of Marramarra Creek east of Kulkah Creek) and the Brooklyn Estuary Process Study (2002) (7 Locations: Site 1, Site 3 and Sites 5 to 9; Site 1 and Site 3 were located in Mooney Mooney Creek and Mullet Creek, respectively, and are outside the study area and were therefore included as single resampling locations only). The resampling of sediments at 19 of the 20 sampling locations (Site MCAH2 in Marramarra Creek was moved to the mouth of the creek) allows a comparison with previous data over time and enhances the robustness of the overall data to increases in spatial variability.

The 32 new sampling locations were selected in collaboration with Hornsby Shire Council, using existing information of sources of contamination and previous sediment data, including the database from the Environmental Geology Group at the University of Sydney, which comprises contaminant data for more than 7,000 sample locations in estuaries in the Sydney metropolitan area and surrounding regions, as well as considering an evenly distributed regional distribution of locations in the Lower Hawkesbury River estuary. The sampling locations were also selected based on the outcomes of a literature review, which includes, amongst others, an evaluation and assessment of the following studies: Bourgues et al., 1998; Coastal and Marine Geosciences (1998), Mann et al. (1996), University of New South Wales (2002), Birch et al. (1998, 1999) and Simonovski et al. (2003). Other topic-related literature was evaluated to support the sampling rationale.

2.2 Sample Collection

2.2.1 Sediment Sampling

Sediment sampling was undertaken by Dr Carsten Matthai (URS) and Kristy Guise and Peter Coad (Hornsby Shire Council) using a tall Ekman grab sampler (0.15m x 0.15 m x 0.225 m). A Ponar grab sampler was deployed at two locations (H11 and H12) where the sediment was too sandy (8% and 22% mud, respectively) to be sampled with the Ekman grab sampler. Up to 1000 ml of sediment were collected at each site for geochemical and grain size analyses. Sampling was conducted from a small motorized boat supplied by Hornsby Shire Council on 13, 14 and 21 December 2006. A Global Positioning System (GPS) was used to locate the sampling locations throughout the study area.

2.2.2 Sediment Subsampling

One homogenised sample was collected to a maximum depth of 10 cm at each sampling location. The depth penetration of the grab sampler varied between 5 and 12 cm, depending on sediment texture. The penetration of the grab sampler was generally less in sandy sediment compared to muddy sediment, where a depth penetration of up to 12 cm was achieved. Following retrieval, samples were photographed (Appendix A) and homogenized using a clean stainless steel spoon and bowl. Homogenized samples were transferred into two 250 ml clean, laboratory-supplied, glass jars for geochemical analyses and one 500 ml resealable plastic bag for grain size analyses. Sample containers were prelabelled and filled with zero headspace. Samples were then stored in eskies on ice. All eskies were filled to capacity and sealed with adhesive tape.

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Samples collected from each sampling location were given unique sample numbers (H1 to H55, excluding H40 to H42).A CoC form was included in the esky. The samples were delivered to the laboratory within 48 hours of sampling for processing and analysis. Sample labels included the sampling date and sample point number/designation.

Essentially, all sample handling and processing were performed to minimize contamination and possible cross-contamination of sample. The workspace on the boat was washed down with ambient seawater to clean all surfaces and minimize dust contamination of samples. Nitrile gloves were worn by the sampling personnel.

General Field Activities Documentation

Field activity records and observations were noted in bound field logbooks. The aim of the documentation within the field logbooks was to allow future reconstruction of field activities without relying on the memory of field team members. To supplement the information and data collected during sample collection and field testing, field data sheets were also completed and were compiled in Table 1.

Items that were recorded into the field logbook include:

- Sample collection method; and
- Health and safety documentation.

Field documentation included the following information as is applicable to the specific task at hand:

- Project name and number;
- Date, time, weather conditions;
- Personnel present;
- Type of sample;
- Sampling method;
- Sampling location description, ID and time of collection;
- Sample depth;
- Visual descriptions;
- Sample container type; and
- Photograph number (where applicable).

The field logbook and the field data sheets contain the field data collected during the investigation and the information is summarized in Table 1.

2.2.3 Sample Handling, Processing and Analysis

This section outlines the general procedures necessary for sample custody that were performed by the laboratory. It is understood that the laboratory acted in full accordance with the terms of its NATA Registration for Chemical Testing.

Chain of Custody Protocols

A chain of custody (CoC) record was utilised by field personnel to document possession of all samples collected for chemical analysis. The CoC record included the following information:

- Project name and number;

- Name(s) of sampler(s);
- Sample type, identification number and location;
- Date and time of collection;
- Number and type of containers;
- Required analyses;
- Preservatives; and
- Signatures documenting change of sample custody.

The eskies containing the samples were sealed with tape and secured with a signed custody seal. The custody seal provided an indication of whether the cooler was opened by unauthorised personnel. The temperature that the samples were stored at following transit to the lab and upon receipt was noted on the CoC forms.

The original CoC record accompanied the samples to the analytical laboratory. A copy of the CoC record was placed in the appropriate project file. Samples were delivered to the laboratory within 48 hours of sample collection to ensure the specified analytical holding times were met.

Laboratory Receipt of Samples

Field samples for this project were delivered to the laboratory pre-contained and pre-preserved (as appropriate) in accordance with laboratory procedures. Sample containers used for the collection of field samples were supplied by ALS Environmental, pre-cleaned and inspected. Accompanying each delivery of samples was a Chain of Custody (CoC) Record (Appendix B).

The following items were checked and performed by the laboratory upon receipt of samples with the CoC:

- The custody seals and tape on the cooler were unbroken and uncut;
- The signature on the external custody seal matched one of the sampler(s) signature(s) on the internal CoC;
- Measurement was taken to determine if samples had arrived at the appropriate temperature;
- The sample containers within the cooler were intact;
- The identification on the sample containers corresponded to the entries on the CoC;
- The number of sample containers received was equal to the number of samples listed on the CoC;
- When sample custody was confirmed to be valid, the samples were logged in by the laboratory as per the standard operating procedure;
- A copy of the CoC was delivered to the Project Manager within three working days.

Pre-and Post-analysis Storage

Samples were transported to a laboratory within 48 hours of sample collection. After the Sample Custodian logged in the samples, they were placed in temporary refrigerated storage, and maintained at a temperature of 6^0C or less until analyses were performed. Sample analyses were scheduled as soon as practicable following delivery to the laboratory and extractions and analyses were consistent with the analyte holding times specified by the laboratory.

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Sediment Analyses

Whole sediment samples from each of the 52 sample locations were submitted to an independent NATA accredited laboratory, ALS Environmental, for analysis of the COPCs listed in Section 1.6. Samples for PAHs, OCPs, OPPs and PCBs were analysed for standard limits of reporting. All analytical methods are NATA accredited for all of the tests, except for particle size distribution (subcontracted by ALS Environmental to Golder Associates). Certificates of analysis and Quality Control/Quality Assurance reports are shown in Appendix B.

2.2.4 Analytical Quality Assurance/Quality Control (QA/QC)

Specific mechanisms for checking the accuracy and precision of analytical data in order to ensure that data quality objectives were met, involve the analysis of the laboratory and field QA check samples.

Laboratory QA/QC Samples

Blanks - contaminant free samples designed to monitor the introduction of artefacts into a process. Reagent blanks or method blanks were analysed to assess the level of contamination which exists in the analytical system and which might lead to the reporting of elevated concentrations or false positive data. A reagent/method blank consists of reagents specific to the method that were carried through clean-up and analysis. Ideally, the concentration of an analyte in the blank is below the reporting limit of that analyte.

Calibration Check Standards – are pre-prepared from the same solution and were used to confirm linearity of the initial calibration curve. Acceptance must be within predicted limits.

Laboratory Duplicates - samples prepared by dividing a field sample into two or more aliquots, then analysed separately. Duplicate samples were considered to be two replicates. Replicate samples should ideally be representative of the originating sample, but in many cases this is not practical due to the nature of the sample; hence the analysis of replicate samples provide an indication of the effect of sample matrix variability on precision, in addition to assessing analytical precision.

Matrix Spikes - are field samples to which predetermined concentrations of analytes have been added. The matrix spike (MS) was taken through the entire analytical procedure and the percent recovery of each analyte was calculated as follows:

Percent Recovery = X/T x 100%

where, X = the observed value of measurement; and

T = “true “ value (value of primary sample with no spiking matrix added).

Percent recovery values provided an indication of the effect of sample matrix on the accuracy of the analysis, in addition to analytical accuracy.

Surrogates - are organic compounds which are similar to analytes of interest in chemical composition, extraction, and chromatography, but which are not normally found in field samples. These compounds were spiked into all sample aliquots prior to preparation and analysis. Percent recoveries were calculated for each surrogate, providing an indication of analytical accuracy including unusual matrix effects and gross sample processing errors.

The following QC checks were performed at a frequency of 1 in 20 field samples or greater for volatile, semi-volatile and metal analytes:

Reagent/method blanks;

Calibration check standards;

Laboratory duplicates;

Control spikes;

Laboratory Control Samples; and

MS/MSDs (metals only).

With respect to routine organics analysis, ALS used spiked samples because of the difficulty in obtaining appropriate, matrix-matched, certified reference materials for all target analytes. ALS QC protocols require the use of an Independent Calibration Verification standard (ICV) for all methods. An ICV was prepared from target analytes obtained from an independent source from those used for calibration standards or as spiking solutions for laboratory control samples and matrix spikes. This provided an indirect independent check of the accuracy of laboratory control and matrix spikes.

Data Handling

All analytical data generated by the analytical laboratory was appropriately reduced and has undergone comprehensive validation prior to reporting. Records and numerical calculations are legible and complete enough to permit reconstruction of the work by a qualified individual other than the originator.

The originating analyst reduced and validated a given data package to ensure that:

- Holding times were met;
- Appropriate standard operating procedures were followed;
- Field sample results were correct and complete (if applicable);
- QC check sample results were correct and complete;
- QC check sample results were within established control limits and data quality objectives; and
- Documentation was complete.

If the originating analyst finds that the validity of data is in doubt due to non-conformance with the above checklist, then the data would be flagged and appropriate corrective procedures initiated.

Once the originating analyst reduced and validated the data package, it was passed onto the Document Control/Quality Assurance Officer, Laboratory Manager, or other appropriately qualified senior personnel for independent review.

A NATA approved signatory signed and released the work reported.

The requirements of the reports include the following:

- The format of the final report is in full accordance with NATA requirements for Chemical Testing, including the provision of a NATA stamp on the covering page if appropriate;
- A summary table of sample no., matrix, date sampled, date received, date prepared/extracted and date analysed is completed;
- All field sample results for each type of sample matrix, as listed on the CoC, are reported collectively on separate tables noting URS sample ID, Laboratory ID and Laboratory sample Batch No;
- All QA check results are reported. Each type of sample matrix, as listed on the CoC, are reported collectively on separate tables;
- All water matrix results are expressed as mg/L or μg/L;
- All solid matrix results are expressed as mg/kg or μg/kg (dry weight);
- Full reference to analytical procedures used are stated;

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- Modifications to procedures performed outside the requirements of this Methodology Section have been stated;
- Non-conformance to any of the analytical requirements of this Methodology Section are clearly stated;
- A key to abbreviations is provided; and
- Analyte nomenclature remains consistent throughout the entire project.

Following completion, the final report was signed by the appropriate NATA signatory and submitted to URS.

Data Validation

The primary objective of the data validation process is to ensure that the data reported can be used to achieve the project objectives.

The validity of all analytical data reported was assessed by URS by critical review of the QC check sample results. This was performed in general accordance with guidance by US EPA guidelines as presented in the document "National Functional Guidelines For Organic Data Review, Multimedia, Multiconcentration (OLMO 1.0) and Low Concentration Water (OLCO 1.0), June 1991", where appropriate (USEPA, 1991).

Six field replicates (QC1 to QC 6) were collected to assess the reproducibility of the geochemical analyses and the sampling and subsampling methodology. The six QC samples represent duplicates of the following primary samples: QC1 = H18; QC2 = H38; QC3 = H39; QC4 = H20; QC5 = H27 and QC6 = H26. Field duplicates were used to measure the precision of the whole sampling and analysis process (sample collection, sample preparation and sample analysis). Significant variation in field duplicate results is often observed (particularly for solid matrix samples) due to sample heterogeneity. Field duplicates were analysed for all analytes listed in Section 1.6.

The data validation summary reports for the three analytical batches of samples are shown in Appendix C and confirm that the analytical sample batches are suitable for environmental interpretive use.

2.2.5 Geographic Information System

Geochemical data was imported into a GIS database (Mapinfo™ Professional) for generation and interpretation of spatial data.

Section 3 Results

3.1 Sediment Texture and Grain size

Sediments were collected in water depths of less than 1 m (e.g. Marramarra Creek) to 24.2 m (Cowan Creek). There was no gravel (>2 mm) present in any sample, although bivalve shell fragments were observed at some locations (e.g. H44 – Hawkesbury River southeast of Prickly Point; H43 – Hawkesbury River southwest of Peat Island; H14 – Hawkesbury River south of Spectacle Island; H34 – Hawkesbury River northwest of Gunyah Point; H27 – Cowan Creek north of Smiths Creek).

Sediment texture varied from grey to dark grey Silty Sand/Sand (1 sample), clayey sand (6 samples), sandy clay (10 samples) to silty clay (35 samples) (Appendix A) (Figure 2). Forty-five of the 52 samples collected contained more than 50% mud (i.e. <62.5 μm fraction). Sandy sediment was present in the Hawkesbury River main channel (e.g. H36 – 27% mud), Marramarra Creek (H12 – 22% mud), upper Sediments at 28 sample locations contained >90% mud in the deeper sections of Berowra Creek, Cowan Creek, Mullet Creek and Mooney Mooney Creek, as well as in sediments of Sandbrook Inlet and in the upper study area of the Lower Hawkesbury River (sample locations H51, H53, H55) (Figure 3).

3.2 Sediment Chemistry

3.2.1 Concentrations of Inorganic Analytes and Nutrients

The concentration ranges of inorganic analytes are summarized in Table 2. The concentrations of some analytes were highly variable, one order of magnitude or greater (i.e. aluminium, cobalt, copper, lead, manganese, strontium, vanadium, zinc, total organic carbon, calcium and TKN).

3.2.2 Distribution of Inorganic Analytes

Aluminium

The distribution of aluminium is generally similar to the distribution of the mud component in surficial sediments (Figure 4). Aluminium concentrations (>15,000 mg/kg) are present in sediments throughout Cowan Creek, the headwaters of Berowra Creek and at two locations in the upper study area of the Lower Hawkesbury River (H53 and H55).

Arsenic

Concentrations of arsenic varied from <5 mg/kg to 28 mg/kg but exceeded of 20 mg/kg only in sediments in Sandbrook Inlet, Refuge Bay, and Coal and Candle Creek (Figure 5). Arsenic concentrations increase downstream in Berowra Creek from <5 mg/kg to 18 mg/kg near the confluence with the Hawkesbury River.

Barium

Barium concentrations varied from 10 to 60 mg/kg and there are no obvious spatial distribution trends for this analyte. However, the highest concentrations (>50 mg/kg) are present in sediments at the marina east of Hawkesbury River marina (Location H37), the marina at Bobbin Head (Cowan Creek) (Sample Location H21) and in the upper study area of the Lower Hawkesbury River (Sample Location H53) (Figure 6).

Beryllium

The concentrations of beryllium are below the limit of reporting (<1 mg/kg) in 16 samples. The concentration of beryllium in the other 36 samples varied from 1 mg/kg to 2 mg/kg. There are no spatial distribution trends for this analyte (Figure 7).

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Chromium

Concentrations of chromium varied from 5 mg/kg to 38 mg/kg and concentrations >30 mg/kg are present in five samples at Locations H9 (Berowra Creek marina), H21 (Cowan Creek Bobbin Head marina), H26 (Akuna Bay marina), H30 (Jerusalem Bay) and H37 (Hawkesbury River marina) (Figure 8).

Cobalt

Concentrations of cobalt in sediments varied from 1 mg/kg to 16 mg/kg, although there are only five sample locations where the concentrations of cobalt exceed 12 mg/kg, i.e. H52, H53, H55 (upper study area of the Lower Hawkesbury River), H2 (Berowra Creek south of Bar Island) and H6 (Berowra Creek north of Oaky Point) (Figure 9). Cobalt concentrations <10 mg/kg are generally present in sediments which contain a relatively high sand component (i.e. sandy clays and clayey sands).

Copper

Copper concentrations are highly variable (<5 mg/kg to 684 mg/kg). However, concentrations of copper >65 mg/kg are only present in sediments at seven locations in headwaters of Cowan Creek, Berowra Creek and at Cottage Point (Figure 10). The concentrations of copper decrease markedly from 82 mg/kg to 15 mg/kg downstream of Berowra Creek and the concentration gradient in Cowan Creek similarly, from 68 mg/kg to 19 mg/kg. The concentrations of copper exceed 65 mg/kg at a number of sample locations in Cowan Creek (i.e. H21 – Bobbin Head marina; H25 and H26 – Akuna Bay marina; H28 – Cottage Point kiosk). In contrast, concentrations of copper in the main Hawkesbury River channel are generally below 20 mg/kg and a spatial concentration gradient is not apparent.

Iron

Concentrations of iron varied from <6,000 mg/kg to 35,700 mg/kg. Although iron concentrations >30,000 mg/kg are present in sediments from a number of locations in the upper study area of the Lower Hawkesbury River, Berowra Creek, Sandbrook Inlet and Cowan Creek, regional spatial concentration gradients are not apparent (Figure 11).

Lead

Concentrations of lead are highly variable and varied from 8 mg/kg to 179 mg/kg. Lead concentrations >50 mg/kg are present in sediments at ten sample locations, i.e. Berowra Creek (H8, H9 and H10), Cowan Creek (including Coal and Candle Creek and Akuna Bay) – H21, H22, H23, H24, H26, H28) and at the marina at Hawkesbury River marina (H37). Similar to the spatial trends in copper, lead concentrations decrease substantially downstream from the headwaters of Berowra and Cowan Creeks towards the main Hawkesbury River channel (Figure 12). Concentrations of lead in sediments of the Hawkesbury River are generally below 30 mg/kg and do not display a spatial trend.

Magnesium

Concentrations of magnesium varied from 1,570 mg/kg to 9,820 mg/kg, with concentrations >7,000 mg/kg present in sediments of Cowan Creek (including Coal and Candle Creek) (7 sample locations) and Berowra Creek (2 sample locations) (Figure 13). In contrast, the concentrations of magnesium in sediments of the main Hawkesbury River Channel are generally below 5,000 mg/kg.

Manganese

Manganese concentrations varied from 35 mg/kg to 9,820 mg/kg, which is one of the largest relative concentration ranges (Cmax/Cmin) of all inorganic analytes investigated in the current study. Manganese concentrations >800 mg/kg are present in sediments in the upper study area of the Lower Hawkesbury River (4 sample locations), Mullet Creek (1 sample location), Cowan Creek (2 sample locations) and Berowra Creek. However, spatial concentration gradients of manganese are generally weak, with the exception of the substantially greater concentrations of manganese in the brackish to freshwater sections of the upper study area of the Lower Hawkesbury River (Figure 14).

Mercury

Concentrations of mercury varied from below the limit of reporting (<0.1 mg/kg) to 0.9 mg/kg and sediments from only eight sample locations exceed the LOR (Locations H21, H22, H23, H26, H28 in Cowan Creek; H37 at Hawkesbury River marina, H15 and H36 in the Hawkesbury River) (Figure 15).

Nickel

Nickel concentrations in sediments varied from 3 mg/kg to 20 mg/kg and the spatial trends are generally similar to the distribution of mud in sediments. The highest concentrations of nickel (>15 mg/kg) are present in the mud flats of Berowra Creek, Cowan Creek and Sandbrook Inlet, as well as in the upper sections of the Hawkesbury River (Figure 16).

Strontium

Strontium concentrations in surficial sediments in the study area varied between 15 mg/kg and 147 mg/kg. Concentrations >80 mg/kg are generally present in sediments of Cowan Creek (including Coal and Candle Creek) (8 sample locations) and upper Berowra Creek (2 sample locations) (Figure 17). The central Hawkesbury River sediments contain a strontium concentration generally <50 mg/kg.

Vanadium

Vanadium concentrations in sediments varied from 8 mg/kg to 74 mg/kg, with the highest vanadium concentrations (>60 mg/kg) almost exclusively present in Cowan Creek (6 sample locations). Sample location H38 (Sandbrook Inlet) and H20 in Mullet Creek also display a concentration of vanadium exceeding 60 mg/kg (Figure 18).

Zinc

Concentrations of zinc in sediments are highly variable and range from 26 mg/kg to 412 mg/kg. The highest concentration of zinc is present in sediment at sample location H21 (Bobbin Head marina), but all other samples contain <200 mg/kg (Figure 19). Similar to the concentration gradients of copper and lead, there is a pronounced decrease in the concentrations of zinc from the headwaters of Berowra and Cowan Creeks downstream towards the main Hawkesbury River channel. In Berowra Creek zinc concentrations decrease from 183 mg/kg to 72 mg/kg. Similarly, the concentrations of zinc in sediments in Cowan Creek decrease from 412 mg/kg to 72 mg/kg. In contrast, the concentrations of zinc in sediments of the main Hawkesbury River channel are generally lower (<90 mg/kg) and similar throughout the study area.

Calcium

Concentrations of calcium varied from 960 mg/kg to 20,700 mg/kg. Although spatial trends are weak, the highest concentrations of calcium (>10,000 mg/kg) in sediments are present in Cowan Creek, Smiths Creek and Coal and Candle Creek (3 sample locations), as well as Berowra Creek (1 sample location). Sediments in the main Hawkesbury River channel generally contain <5,000 mg/kg calcium (Figure 20).

3.2.3 Distribution of Nutrients and Total Organic Carbon

Nitrate and Nitrite

Concentrations of nitrate and nitrite are generally very low, ranging from <0.1 mg/kg to 0.2 mg/kg. The limit of reporting is exceeded at only four sample locations (H19 – Mooney Mooney Creek; H20 – Mullet Creek; H54 – Wisemans Ferry and H38 – Sandbrook Inlet) (Figure 21).

Total Kjeldahl Nitrogen

The concentrations of TKN are highly variable and varied from 330 mg/kg to 9,980 mg/kg. The highest concentrations >3,000 mg/kg of TKN are almost exclusively present in sediments of Cowan Creek (8 sample locations), with two sample locations in Berowra Creek (H10 and H7) also containing in excess of 3,000 mg/kg TKN. Sediments in the main Hawkesbury River Channel generally contain <1,500 mg/kg (Figure 22).

Reactive Phosphorus

Concentrations of reactive phosphorus are highly variable (range: <0.1 mg/kg to 3.29 mg/kg) and only 19 of the 52 samples collected during this investigation exceeded the limit of reporting. The highest concentrations of reactive phosphorus (>0.3 mg/kg) are present in Berowra Creek (4 sample locations) and Cowan Creek (5 sample locations, including Smiths Creek and Jerusalem Bay). In addition, the concentration of reactive phosphorus at location H53 downstream of Wisemans Ferry on the Hawkesbury River also exceeds 0.3 mg/kg (Figure 23).

Total Organic Carbon

The concentrations of total organic carbon (TOC) are variable and varied from 0.9% to 13%. Organic-rich sediments (>10% TOC) are present in Berowra Creek (5 sample locations) and southwest of Milson Island (sample location H44) in the Hawkesbury River. A distinct regional trend in the TOC contents of sediments is present in the Hawkesbury River, where sediments contain between 5% and 10% TOC, decreasing east of Mooney Mooney to <5% TOC (Figure 24).

3.2.4 Distribution of Organic Contaminants

The majority of organic contaminants were below the standard limits of reporting in all or most samples. Regional mapping of the distribution of organic contaminants was therefore not warranted. Individual contaminant groups and a description of exceedences of limits of reporting for individual compounds are reported below:

Total Petroleum Hydrocarbons

Concentrations of total petroleum hydrocarbons (TPH) were below the LOR in all samples and for all fractions (C6-C9, C10-C14, C15-C28 and C29-C36), except at a small number of locations. Volatile TPH (C6-C9) were present at concentrations of 11 mg/kg, 16 mg/kg and 11 mg/kg in samples H23, H24 and H26 from Waratah Bay (Cowan Creek), Smiths Creek and Akuna Bay, respectively. Heavy TPH fractions were present in two samples from upper Berowra Creek (H10: C29-C36 fraction: 220 mg/kg) and Bobbin Head Marina (H21: C15-C28 fraction: 310 mg/kg; C29-C36 fraction: 480 mg/kg).

BTEX Compounds

Of the five BTEX compounds (Benzene, Ethylbenzene, m&p-Xylene, o-Xylene, Toluene) analysed, only Toluene was present above the LOR in any of the sediment samples analysed. Concentrations of 0.6 mg/kg Toluene were present at locations H19 (Mooney Mooney Creek) and H29 (Cowan Creek) and a concentration of 1 mg/kg Toluene was present at location H24 (Smiths Creek).

Polynuclear Aromatic Hydrocarbons (PAH)

PAHs were below the LOR in all samples and for all compounds, except Fluoranthene and Pyrene, which were present at concentrations (normalized to 1% TOC) of 0.19 mg/kg and 0.07-0.08 mg/kg, respectively, in sediments from locations H19 (Mooney Mooney Creek) and H21 (Bobbin Head marina).

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Polychlorinated Biphenyls (PCB)

Concentrations of PCBs were below the LOR in all samples, except H21 (Bobbin Head marina) (0.022 mg/kg).

Organochlorine Pesticides (OC)

Concentrations of OC pesticides were below the limits of reporting for all compounds and in all samples.

Organophosphorus Pesticides (OP)

Concentrations of OP pesticides were below the limits of reporting for all compounds and in all samples.

Section 4 Discussion

4.1 Sediment Quality

The regional sediment geochemical data was screened against ANZECC/ARMCANZ (2000) sediment quality guideline values (ISQG-L (Trigger Value) and ISQG-H) to assess whether sediments may require additional investigations. The general approach outlined in the ANZECC/ARMCANZ (2000) sediment quality guidelines stipulates that if the lower sediment quality guideline values for a contaminant (i.e. ISQG-L – Trigger Value) is not exceeded, it is unlikely that it will result in any biological disturbance for organisms inhabiting that sediment. If the trigger value is exceeded, either management (including remedial) action is taken, or additional site-specific studies may be conducted to determine whether this exceedence poses a risk to the ecosystem.

Four inorganic contaminants (arsenic, copper, lead and mercury) exceeded the ISQG-L sediment quality guideline value in at least one sample, whereas the ISQG-H sediment quality guideline value is exceeded for copper and zinc at only one sample location (H21 – Bobbin Head marina). The number of exceedences of ANZECC/ARMCANZ (2000) sediment quality guideline values ranges from zero exceedences (33 sample locations), one exceedence (13 sample locations), two exceedences (4 sample locations) to three exceedences (2 sample locations).

The largest number of sediment quality guideline value exceedences (maximum of 3) are present at sample locations H21 (Bobbin Head marina) and H26 (Akuna Bay marina), suggesting that anthropogenic contributions from marina activities may have resulted in a contamination of the surficial sediments.

Two sediment quality guideline exceedences are present in sediments at sample location H9 (Berowra Creek marina), H22 (Apple Tree Bay – downstream of Bobbin Head marina), H28 (Cottage Point kiosk) and H37 (Hawkesbury River marina).

Single sediment quality guideline exceedences are present in sediments at H8 and H10 (Berowra Creek near marina), H14 (Hawkesbury River south of Spectacle Island), H17, H18 and H38 (Sandbrook Inlet), H20 (Mullet Creek), H23, H24, H25, H29 and H31 (Cowan Creek) and H36 (Hawkesbury River south of Dangar Island).

The regional distribution of the number of inorganic ANZECC/ARMCANZ (2000) sediment quality guideline value exceedences is shown in Figure 25. There are no exceedences in sediments in the Hawkesbury River between Wisemens Ferry and Mooney Mooney. Sediments in Marramarra Creek and Berowra Creek between Calabash Bay and the confluence with the Hawkesbury River also did not exceed ISQG-L values. However, exceedences of ANZECC/ARMCANZ (2000) sediment quality guideline values are present in sediments in the headwaters of Berowra Creek (H8 to H10), Sandbrook Inlet (H17, H18, H38), Hawkesbury River marina (H37) and in large sections of Cowan Creek, including Bobbin Head (H21), Apple Tree Bay (H22), Waratah Bay (H23), Smiths Creek (H24), Akuna Bay (H25, H26), Cottage Point (H28) and Refuge Bay (H31).

All organic compounds that were present at concentrations above the LOR in the sediments collected within the study area, and for which ANZECC/ARMCANZ (2000) sediment quality guideline values are available, are below the ISQG-L guideline value (based on organic contaminant concentrations normalized to 1% TOC, as prescribed in the ANZECC/ARMCANZ (2000) sediment quality guidelines).

4.2 Correlation Coefficients (Inorganic Analytes and Nutrients)

Correlations between numerous nutrients and inorganic analyte concentrations are significant ($p<0.001$; $n=52$) (Table 3). In particular mud (silt + clay content) and a range of inorganic analytes (Al, As, Cr, Co, Fe, Mg, Ni, V) correlate strongly, which is reflected by the similarity of the spatial distributions of these analytes. The majority of these analytes are generally lithogenic (i.e. non-anthropogenic) and present in clay minerals (Al, Cr) or as coatings as iron- and oxyhydroxydes (Fe, Mn). Similarly, cobalt has previously shown to be a proxy for mud content in marine sediments (Matthai et al., 2001), and the strongly positive correlation between mud and whole sediment concentrations of cobalt also supports the lithogenic origin of cobalt in Hawkesbury River sediments. Nickel and mud content are also strongly corelated in the

sediments in the study area, suggesting a spatial distribution that is characterized by non-anthropogenic factors and controlled mainly by sediment grain size.

4.3 Natural (Grain Size-Dependent) Vs Anthropogenic Concentrations

The strongly positive correlation (r=0.93; p<0.001; n=52) between the concentrations of nickel in whole sediment and the mud content is shown in Figure 26. Based on the available data, the concentration of nickel in whole sediment does not exceed 10 mg/kg if the sediment contains less than 50% mud. Similarly, muddy sediments with more than 80% mud content generally exceed nickel concentrations of 15 mg/kg in whole sediment.

A comparison of the concentrations of nickel and copper in whole sediments (Figure 27) exemplifies the generally poor relationship between these two analytes (r=0.24; p>0.05; n=51). Although grain size-related variations in the concentrations of copper in sediment are clearly present (i.e. concentrations of copper always exceed 15 mg/kg if the mud content exceeds 80%), copper displays a substantially larger concentration range as a result of anthropogenic contributions to the sediments. Figure 28a shows that while an increase in the concentrations of copper may be related to non-anthropogenic factors (i.e. grain-size-dependent) for low concentrations of copper (<20 mg/kg), there is a disproportionate increase in the concentration of copper relative to nickel at higher concentrations as a result of likely anthropogenic contributions to the sediments.

The proportionate increase of the concentrations of copper in whole sediment relative to the concentrations of nickel at low concentrations (<20 mg/kg) signifies regional baseline concentrations. However, the natural grain size-driven “trend” is overprinted by an anthropogenic trend (Figure 28b).

4.3.1 Elemental Normalization of Inorganic Contaminants Using Aluminium

The ratios of As:Al, Cr:Al, Co:Al, Cu:Al, Fe:Al, Pb:Al, Mg:Al, Mn:Al, Ni:Al, and Zn:Al in whole sediments at sampling locations H1 to H55 are shown in Figure 29. A baseline ratio that is similar for locations throughout the study area where anthropogenic influences are unlikely can be estimated from the elemental ratios for each of the inorganic analytes. However, exceedences of the baseline concentration ratio may not necessarily be associated with anthropogenic enrichment, as is the case with nickel, but may indicate a natural range of the aluminium-normalized analyte concentration in whole sediment. However, substantially higher analyte:aluminium ratios compared to the regional baseline ratio are likely to be the result of an anthropogenic enrichment of the contaminant in the surficial sediment. Using an enrichment of two times the regional baseline metal:aluminium ratio as a conservative indicator of anthropogenic enrichment, the sediments at the following sampling locations may be enriched from anthropogenic activities:

- Arsenic: H15-H18, H20, H25, H29, H32, H33, H35, H36, H38, H39, H44;
- Chromium: none
- Cobalt: H36;
- Copper; H8-H11, H16-H18, H21, H22, H25, H26, H28, H36, H37;
- Iron: none;
- Lead: H10; H11; H21-H23, H25, H37;
- Magnesium: none;
- Manganese: H6, H20; H51-H54;
- Nickel: none; and

- Zinc: H10, H11, H21, H22, H25.

Manganese is a redox-sensitive element and the change from seawater to brackish water in the upper sections of the Hawkesbury River (upstream of H51) is likely to result in the higher concentrations of manganese and manganese:aluminium ratios in the sediments.

Locations where sediments contain a greater than two times regional baseline metal:aluminium ratio for the anthropogenic metals copper, lead and zinc include locations that are in close proximity to known potential anthropogenic sources, such as marinas (i.e. sampling locations H9, H17, H21, H25, H26, H37), boat ramp/kiosk (Cottage Point - H28) and near urban areas (Sandbrook Inlet – H18). This suggests a contribution of trace metals and, as shown in Section 3.2.4 some organic compounds, to sediments in the vicinity of these sources.

4.4 Potential Sources of Contaminants to Sediments

The concentrations of inorganic and organic contaminants in sediments within the Hawkesbury River system, including Cowan Creek, Berowra Creek, Mooney Mooney Creek, Mullet Creek and Marramarra Creek are elevated at a number of sampling locations adjacent to potential point sources (e.g. marinas). Normalization of inorganic contaminant concentrations with a lithogenic analyte (aluminium) or mud content of the sediments, results in a pronounced regional contaminant distribution that identifies local point sources within the river system, in particular areas of recreational boating activities. These results are consistent with previous sediment chemistry investigations in the Hawkesbury River system (Birch et al., 1998, 1999) and Port Jackson (Taylor, 2000), which have also highlighted high density boating activities as significant but localized contributors of contaminants to surficial sediments. However, stormwater and urban runoff from diffuse sources within the Berowra and Cowan Creek catchments are overprinted by local sources, such as marinas. For example, the Cu:Al x10,000 ratio in sediments of lower Cowan Creek are <20, increasing to >30 at Waratah Bay. This increase in the upper sections of Cowan Creek represents a likely effect of anthropogenic contributions from diffuse sources. In contrast, the Al:Cu x 10,000 ratio in sediments at Bobbin Head Marina (Location H21) is 350, which is an example of a localized point source contribution to the sediments.

Upper Cowan Creek and Berowra Creek sediments display elevated concentrations of inorganic as well as organic contaminants, thereby demonstrating the potential for water-related recreational facilities to affect pristine environments. Increased urbanisation and industrialisation in the upper Berowra Creek catchment provide a source of heavy metals and nutrients, possibly from sewage treatment plant contributions and stormwater drainage. Sewage effluent discharges from isolated urban areas (Berowra Waters, Brooklyn) on the Hawkesbury River are also likely to contribute to the observed anthropogenic enrichment of inorganic contaminants (i.e. copper, lead, zinc, mercury)

Although the current sediment investigation is not addressing the potential for bioavailability of these contaminants, it is likely that the contaminants are chemically reactive and therefore mobile and bioavailable to aquatic organisms and fish, an aspect that may require further investigations in the future.

The spatial distributions of trace metal contaminants (Section 3.2.2) and the number of elements exceeding sediment quality guideline values (Section 4.1) have established that there is a distinct relationship between proximity to recreational centres (marinas) and urban centres and elevated concentrations of trace metal contaminants and some organic contaminants in surficial sediments.

The use of copper-based antifouling paints in the boating industry provides a useful target analyte in the identification of anthropogenic contamination of sediments in the study area as a result of boating activities, especially in the vicinity of marinas. The Cu:Zn concentration ratio in sediments has previously been used in identifying contributions from copper-based antifouling products of the boating industry (Taylor, 2000). This element concentration ratio may therefore be a useful indicator to establish the relative increase in the concentrations of copper compared to zinc and hence identify potential impacts of boating activities on sediment contamination near marinas in the study area.

Therefore, the concentrations of copper in whole sediments in the study area and the Cu:Zn concentration ratios are compared in the following section.

Section 4 Discussion

4.4.1 Concentration of Copper in Sediments

The concentrations of copper in sediments in Berowra Creek, Cowan Creek, the Hawkesbury River and Sandbrook Inlet are shown in Figure 30. The highest concentrations of copper in sediments of Berowra Creek (>30 mg/kg) are present at locations H9 adjacent to a marina, with concentrations decreasing gradually downstream from H9 to H5 (Bujwa Creek). Similarly, the highest concentrations of copper in Cowan Creek sediments (>50 mg/kg) are present at locations with high boating activity - H21, H25, H26 (marina), H22 (boat ramp), H28 (Cottage Point kiosk). Concentrations of copper in sediments of the main Hawkesbury River are generally all low (<25 mg/kg) and similar throughout the study area, reflecting the generally higher energy sedimentary environment in the Hawkesbury River channel and the generally lower potential for contaminants to accumulate in the sediments. Sediments in Sandbrook Inlet, on the other hand, display higher concentrations (>40 mg/kg), which is the result of a lower energy environment and lower rate of tidal flushing compared to the main Hawkesbury River channel.

4.4.2 Copper:Zinc Concentration Ratios in Sediments

The Cu:Zn concentration ratios in sediments in Berowra Creek, Cowan Creek, the Hawkesbury River and Sandbrook Inlet are shown in Figure 31. The regional Cu:Zn ratio in sediments of the Hawkesbury River is about 0.3, which may be used to establish relative enrichments in sediments at other sampling locations. The Cu:Zn ratio exceeds 0.3 at sampling locations H7 to H11 in Berowra Creek, with the highest ratio of 0.48 in the vicinity of the marina at sampling location H9. Sediments in Cowan Creek exceed a Cu:Zn concentration ratio of 0.3 at a number of locations (H21 to H28), although the highest concentration ratios of >0.5 are located n the vicinity of the marinas at Bobbin Head, Akuna Bay, Cottage Point kiosk and the boat ramp at sampling location H22.

The highest Cu:Zn ratios of >0.5 coincide with sediments in the vicinity of marinas or localized point sources and in urban areas of sediment accumulation (i.e. Sandbrook Inlet). Therefore the Cu:Zn ratio provides a reliable measure of identifying potential sediment contamination from copper-based products, such as antifoulant replacement paints.

4.5 Temporal Changes in Contaminant Concentrations

The temporal changes in the concentrations of contaminants were assessed for selected contaminants at sample locations which have been revisited in the current study (i.e. 19 locations, except location MCAH2 in Marramarra Creek, which was relocated to the mouth of Marramarra Creek). A comparison of sample location MCAH1 and H12 in Marramarra Creek was not possible because the contaminant data for location MCAH1 was not available. Of the remaining 18 sample locations, H16 (formerly Site 7) was sampled further to the southwest of Dangar Island closer to Brooklyn and the resulting sediment texture and chemistry is therefore not directly comparable.

Possible factors that may confound a direct comparison of the previous chemical data with the data obtained in the current investigation include the following:

- Triplicate sediment samples were collected during the 2002 Brooklyn Estuary Process Study compared to the current investigation, where single sediment samples were collected (H14 to H20). Analytical data for the three sediment samples was therefore compared to the data from the single sample obtained in the current investigation; and
- The analytical data for the Berowra Creek Estuary Process Study (1998) was reported for an aqua regia digest as well as a total digest. The aqua regia digest data was compared to the current data because it is more compatible with the data extraction used in this study.

Analytes which have been compared for sediment data obtained during the Brooklyn Estuary Process Study (2002) and the Berowra Creek Estuary Process Study (1998) and the current investigation include silt & clay content, arsenic, chromium, copper, lead, nickel, zinc, total organic carbon and total Kjeldahl nitrogen (Table 4).

Section 4 Discussion

Mud Content

The mud contents were generally similar at many of the locations sampled in 1998/2002 and 2007, except at location H16, which contained a mud content of between 22% and 31% in the previous investigation and 69% in the current investigation (Figure 32). This is the result of the sample location being closer to Brooklyn than Dangar Island, where the sediments are substantially more fine-grained. These two locations are therefore not directly comparable.

Location H17 also contains substantially higher mud contents in the current study (94%) compared to the 1998 study (31% to 51%), which suggests that the small-scale spatial variability of the mud contents in Sandbrook Inlet is generally quite high and that a comparison of the chemical data may only be useful if the data are normalized to their respective mud contents. Differences of more than 10% mud content in the respective 1998/2002 and 2007 studies are also present in samples from locations H1, H9, H10, H11, H14, H15 and H19 (Figure 32).

Arsenic

The concentrations of arsenic in sediments at sampling locations H1 to H20 determined in the current and previous investigations are shown in Figure 33. The concentrations are substantially higher in 2007 at sample locations H17 to H20 and lower at H11. Following normalization of the concentration of arsenic with the silt & clay content in the sediments, the concentrations are generally similar between 1998/2002 and 2007 (except at H16, as discussed above and at H20 (Mullet Creek)) (Figure 34).

Chromium

The concentrations of chromium in sediments at sampling locations H1 to H20 determined in the current and previous investigations are shown in Figure 35. The concentrations are substantially higher in 2007 at sample locations H6 to H10 and H17 to H20. Following normalization of the concentration of chromium with the silt & clay content in the sediments, the concentrations are generally slightly higher in 2007 compared to the previous studies at locations H6 to H11 (upper Berowra Creek to Bobbin Head), H15 and H16 (Hawkesbury River northeast of Dangar Island and south of Spectacle Island) and H20 (Mooney Mooney Creek) (Figure 36).

Copper

The concentrations of copper in sediments at sampling locations H1 to H20 determined in the current and previous investigations are shown in Figure 37. The concentrations are substantially higher in 2007 at sample locations H2 to H11 and H16 to H20. Following normalization of the concentration of copper with the silt & clay content in the sediments, the concentrations are generally substantially higher in 2007 compared to the previous studies at locations H2 to H11 (entire length of Berowra Creek), whereas the normalized concentrations are similar at the other locations (Figure 38).

Nickel

The concentrations of nickel in sediments at sampling locations H1 to H20 determined in the current and previous investigations are shown in Figure 39. The concentrations are higher in 2007 at sample locations H6 to H10, H17 and H19. In contrast, nickel concentrations are lower in 2007 compared to 1998/2002 at locations H11 (Bobbin Head) H14 and H15. Following normalization of the concentration of nickel with the silt & clay content in the sediments, the concentrations are generally similar in 2007 compared to the previous studies at most locations, except at H11 (Bobbin Head) and H16 (Figure 40).

Lead

The concentrations of lead in sediments at sampling locations H1 to H20 determined in the current and previous investigations are shown in Figure 41. The concentrations are higher in 2007 at sample locations H1 to H11 (except H7), H17 and H19 and slightly lower at H14 and H15. Following normalization of the concentration of lead with the silt & clay content in the sediments, the concentrations

of lead are also generally higher in 2007 compared to the previous studies at locations H1 to H11 (except H7) and slightly lower at locations H16 and H17 (Figure 42).

Zinc

The concentrations of zinc in sediments at sampling locations H1 to H20 determined in the current and previous investigations are shown in Figure 43. The concentrations are higher in 2007 at sample locations H1 to H11, H16 and H17 and slightly lower at H14 and H15. Following normalization of the concentration of zinc with the silt & clay content in the sediments, the concentrations of zinc are also generally higher in 2007 compared to the previous studies at locations H1 to H11 and lower at locations H16 and H17 (Figure 44).

Total Kjeldahl Nitrogen

The concentrations of TKN in sediments at sampling locations H1 to H20 determined in the current and previous investigations are shown in Figure 45. The concentrations are higher in 2007 at sample locations H3, H4, H7, H16, H17 and H19 and lower at H8, H9, H11 and H14.

Total Organic Carbon

The concentrations of TOC in sediments at sampling locations H1 to H20 determined in the current and previous investigations are shown in Figure 46. The concentrations are substantially higher in 2007 at sample locations H1-H7, but substantially lower at locations H8 to H11. The spatial trend suggests that TOC concentrations in surficial sediments in Berowra Creek have increased in the lower sections since the 1998 study.

4.5.1 Summary of Temporal Changes in Contaminant Concentrations

The concentrations (whole sediment and normalized to the silt & clay content in the sediment) are substantially greater in 2007 in the upper sections of Berowra Creek from Bobbin Head to Calabash Bay for a number of analytes, including copper, chromium, lead and zinc. In contrast, the relative differences in the concentrations of nickel, arsenic and TKN in upper Berowra Creek are minimal, suggesting no measurable change in the surficial sediment concentrations of these analytes between 1998 and 2007 and confirming a contribution of anthropogenic trace metal contaminants to sediments in the upper sections of Berowra Creek.

In contrast, total organic carbon concentrations have substantially decreased in the upper sections of Berowra Creek between 1998 and 2007, from a range of 7-15% to 3-6%. Sediments downstream of Calabash Bay (H1 to H7) contained between 6-13% TOC in 2007 compared to <3% in 1997, which may be the result of a change in organic carbon contributions to the sediment throughout Berowra Creek.

Section 5 Conclusions

The Sediment Study – Stage 1 has resulted in the following outcomes:

- Sediment texture is generally muddy (>80% mud) in deep waters of the creeks (Cowan Creek, Berowra Creek, Marramarra Creek, Mullet Creek, Mooney Mooney Creek) and sandier in the Main Hawkesbury River channel and the headwaters of the major creeks;
- Normalized contaminant concentrations (using the lithogenic element aluminium) generally decrease from upper Berowra Creek and upper Cowan Creek towards the main Hawkesbury River channel, with locally elevated concentrations in the vicinity of marinas and areas of increased recreational boating activity. Normalized contaminant concentrations in sediments of Sandbrook Inlet (the Gut) are generally higher than in the main Hawkesbury River channel, where normalized contaminant concentrations are low from Wisemans Ferry to the confluence with Cowan Creek;;
- Concentrations of inorganic contaminants (copper, lead, zinc, mercury, arsenic) exceed ANZECC/ARMCANZ (2000) sediment quality guideline values in sediments of upper Berowra Creek, Cowan Creek, Sandbrook Inlet, mainly adjacent to marinas, and at some locations in the Hawkesbury River (southwest of Spectacle Island and south of Dangar Island). Nineteen of the 52 sampling locations exceed at least one sediment quality guideline value;
- Concentrations of organic compounds are below the limits of reporting in sediments at most sample locations and below ANZECC/ARMCANZ (2000) sediment quality guideline values where present above the limits of reporting. Total petroleum hydrocarbons are present at concentrations above the limits of reporting in sediments at Waratah Bay, Mooney Mooney Creek, Cowan Creek and Smiths Creek. Fluoranthene and Pyrene, were detected in sediments in Mooney Mooney Creek and at Bobbin Head marina and PCBs were detected in sediments at Bobbin Head marina;
- Whole sediment concentrations of copper, chromium, lead and zinc are higher in upper Berowra Creek sediments in 2007 compared to 1998, possibly reflecting increased contaminant contributions to receiving waters from the upper Berowra Creek catchment. In contrast, total organic carbon contents in sediments are lower in upper Berowra Creek sediments when compared over the same 9 year period, which suggests that elevated contaminant concentrations in upper Berowra Creek sediments may be related to sources other than stormwater discharge.

Section 6 Recommendations

6.1 Recommendations

The Stage 1 sediment investigation of the Hawkesbury River system has provided an extensive regional geochemical dataset that identifies a number of locations for further assessment in the Stage 2 sediment investigation. The use of antifouling products and potential accumulation of contaminants in sediments should be investigated further at sample locations in the upper sections of Cowan Creek and Berowra Creek, Sandbrook Inlet and at some locations in the Hawkesbury River, where exceedences of ANZECC/ARMCANZ (2000) sediment quality guideline values were found during the Stage 1 sediment investigation.

The following 20 sampling locations are therefore recommended to be revisited during the Stage 2 Antifoul sediment investigation:

- Upper Berowra Creek (H7, H8, H9 - marina, H10, H11);
- Cowan Creek (H21 – Bobbin Head marina, H22 – Apple Tree Bay boat ramp, H23 – Waratah Bay, H24 - Smiths Creek, H25 – Akuna Bay marina slipway, H26 - Akuna Bay marina refuelling station, H28 – Cottage Point kiosk, H29 – Cowan Point, H31 – Refuge Bay);
- Sandbrook Inlet (H17, H18, H37, H38); and
- Lower Hawkesbury River (H14 – southwest of Spectacle Island, H36 – south of Dangar Island).

One homogenized sample from the upper 10 cm of sediment will be analysed for the following:

- TBT; and
- Polychlorinated biphenyls, polycyclic aromatic hydrocarbons, organochlorine pesticides, organophosphate pesticides, total petroleum hydrocarbons and BTEX. Although there are no widespread high concentrations of organic compounds in the sediments, a hierarchical approach including these organic compounds at ultratrace levels of detection is recommended.

During the Stage 2 sampling, TBT is the primary analyte of potential concern, although other trace metals may support the presence of anthropogenic contamination, in particular from the use of antifoul paints. Other antifoul-related analytes may be useful proxy indicators of post-TBT restriction era contamination (e.g. Irgarol 1051, diuron, Sea-nine 211, dichlofluanid, chlorothalonil, zinc pyrithione, TCMS (2,3,3,6-tetrachloro-4-methylsulfonyl) pyridine, TCMTB [2-(thiocyanomethylthio) bezothiazole], and zineb) (Konstantinou, 2004).

Quantitative analysis of all of these compounds is not routinely undertaken by commercial laboratories and the analysis of sediments for the compound diuron is recommended at three sampling locations (H21 – Bobbin Head marina; H26 – Akuna Bay marina refuelling station, H37 – Hawkesbury River marina refuelling station). In addition, a semi-quantitative analysis of some of the above TBT replacement compounds is recommended at these three sampling locations (H21, H26 and H37). The cost of these analyses would have to be confirmed and URS would discuss with Hornsby Shire Council the costs and benefits of undertaking a screening assessment of one or more of these additional paint booster biocide antifoul compounds.

An additional three sampling locations in the main Hawkesbury River Channel north of Long Island (H40, H41 and H42) that were not sampled during the Stage 1 sediment investigation will be included as part of the Stage 2 Antifoul Study.

Section 7 References

ANZECC/ARMCANZ (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council/Agriculture and Resource Management Council of Australia and New Zealand, October 2000.

Barnes, R.K., Batley, G.E. and Sharp, J.H (1982). Heavy metal enrichment in the surface microlayer of the Nepean-Hawkesbury river system. *Australian Journal of Marine and Freshwater Research*, **33**, 917-930.

Birch, G.F., Shotter, N. and Steetsel, P. (1998). The environmental status of Hawkesbury River sediments. *Australian Geographical Studies*, **36**, 37-57.

Birch, G.F., Eyre, B.D. and Taylor, S.E. (1999). The use of environmental impact on a large coastal catchment – the Hawkesbury River system. *AGSO Journal of Australian Geology & Geophysics*, **17**, 175-191.

Bourgues, S., Carpenter, M., Coade, G., Scanes, P. and Koop, K. (1998). Oxygen and nutrient fluxes quantified under experimental conditions on sediment from deep and shallow sites in Berowra Creek. Environmental Protection Authority NSW.

Coastal & Marine Geosciences (1998). Berowra Creek Estuary Process Study Technical Report : Sediment characteristics and processes. Coastal & Marine Geosciences Geological and Environmental Consultant, Sydney.

Hardiman, S. and Pearson, B. (1995). Heavy metals, TBT and DDT in the Sydney Rock Oyster (*Saccostrea commercialis*) sampled from the Hawkesbury River estuary, NSW, Australia. *Marine Pollution Bulletin*, **30**, 563-567.

Hayes, W.J. and Buckney, R.T. (1998). Chemical characteristics of sediments and interstitial waters in some small Hawkesbury Sandstone freshwater streams of the Sydney area. *Lakes & Reservoirs: Research and Management*, **3**, 165-178.

Konstantinou, I.J. and Albanis, T.A. (2004). Worldwide occurrence of antfouling paint booster biocides in the aquatic environment: a review. *Environment International*, **30**, 235-248.

Loring, D.H. (1990). Lithium – a new approach for the granulometric normalization of trace metal data. *Marine Chemistry*, **29**, 155-168.

Loring, D.H. and Rantala, R.T.T. (1992). Manual for the geochemical analyses of marine sediments and suspended particulate matter. *Earth Science Review*, **32**, 235-283.

Mann, R.A., Jung, R.F. and Huang, B. (1996). Contaminants in sediments from Calabash Point, Berowra Creek. CSIRO Division Coal and Energy Technology, Investigation Report CET/IR510.

Markich, S.J. and Brown, P.L. (1998). Relative importance of natural and anthropogenic influences on the fresh surface water chemistry of the Hawkesbury-Nepean River, south-eastern Australia. *Science of the Total Environment*, **217**, 201-230.

Matthai, C. and Birch, G.F. (2001). Detection of anthropogenic Cu, Pb and Zn in continental shelf sediments off Sydney, Australia – a new approach using normalization with cobalt. *Marine Pollution Bulletin*, **42**, 1055-1063.

Matthai, C., Birch, G.F., Jenkinson, A. and Heijnis, H. (2001). Physical resuspension and vertical mixing of sediments on a high energy continental margin (Sydney, Australia). *Journal of Environmental Radioactivity*, **52**, 67-89.

O'Donnell, M. (1995). Heavy metal contamination in the Hawkesbury River between Windsor and Wisemans Ferry. Unpubl. B.Sc. (Hons) thesis, Department of Geology and Geophysics, The University of Sydney, Sydney.

Section 7 References

Parker, C. (1992). Heavy metals in the sediments of the Hawkesbury Valley: an assessment of the spatial and temporal distribution. Unpubl. B.Sc. (Hons) thesis, Department of Geography, The University of Sydney, Sydney.

Pik, A.J., Eckert, J.M. and Williams, K.L. (1982). Speciation of iron, copper and zinc in the Hawkesbury River. *Australian Journal of Marine and Freshwater Research*, **33**, 971-977.

Shotter, N. (1994). Anthropogenic impacts on the central Hawkesbury River, part of a large NSW estuary. Unpubl. B.Sc. (Hons) thesis, Department of Geology and Geophysics, The University of Sydney, Sydney.

Simonovski, J., Owens, C. and Birch, G. (2003). Heavy metals in sediments of the Upper Hawkesbury-Nepean River. *Australian Geographical Studies*, **41**, 196-207.

Taylor, S.E. (2000). The source and remobilisation of contaminated sediment in Port Jackson, Australia. Unpubl. PhD thesis, Department of Geology and Geophysics, The University of Sydney, Sydney

University of New South Wales (UNSW) (2002). School of Civil Engineering, Water Research Laboratory, Brooklyn Estuaries Processes Study – Working Paper 3.

Section 8 Limitations

URS Australia Pty Ltd (URS) has prepared this Final Report in accordance with the usual care and thoroughness of the consulting profession for the use of Hornsby Shire Council and only those third parties who have been authorised in writing by URS to rely on the Final Report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this Final Report. It is prepared in accordance with the Proposal dated 29 August 2006.

The methodology adopted and sources of information used by URS are outlined in this Final Report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this Final Report as provided to URS was false.

This Final Report was prepared between 15 January and 20 September 2007 and is based on the conditions encountered and information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This Final Report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

Tables

Tables

Table 1 – Field and Analytical Data

Sample ID	Location Decription	Easting	Northing	Date Sampled	Time Sampled	Weather	Water Depth (m)	Sample Thickness (cm)	Gravel	Sand	Silt and Clay	0.063mm to 0.3 mm Fraction	0.3mm to 2 mm Fraction	Sediment Type	Colour	Additional Description	Sed Type Code (Silty Clay =1; Sandy Clay=2; Clayey Sand=3; Silty Sand/Sand=4)	Moisture Content	Al	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mg	Mn	Hg	Ni	Sr	V	Zn	ANZECC Exceed. Trace Metals	Ca	NOX	TKN	Reactive P	TOC
H1	Hawkesbury River south of Bar Point	329005	6288761	13/12/2006	12.50pm	Cloudy	5.4	6	0	29	71	28.9	0.5	Sandy Clay	Dark Grey		2	46.8	9670	14	30	1	<1	18	11	15	25200	21	4020	378	<0.1	13	39	39	72	0	2050	<0.1	1250	<0.1	6.6
H2	Berowra Creek south of Bar Island	328389	6287878	13/12/2006	1.05pm	Cloudy	2.0	6	0	3	97	3.0	0.5	Silty Clay	Dark Grey		1	54.6	14200	18	40	2	<1	26	14	23	33700	30	6170	450	<0.1	18	56	58	91	0	2740	<0.1	990	<0.1	6.5
H3	Berowra Creek west of Berowra Point	327506	6287314	13/12/2006	3.50pm	Cloudy	1.9	5	0	4	96	4.0	0.2	Silty Clay	Dark Grey		1	56.1	11900	16	30	1	<1	23	11	22	28600	27	5290	474	<0.1	16	51	52	80	0	2550	<0.1	1860	<0.1	12.4
H4	Berowra Creek south of Berowra Point	328081	6286684	13/12/2006	4.00pm	Cloudy	1.4	6	0	12	88	11.4	0.4	Silty Clay	Dark Grey		1	53.3	12200	15	30	1	<1	22	11	21	27000	26	4790	304	<0.1	16	48	48	80	0	2420	<0.1	1780	<0.1	13
H5	Berowra Creek west of Bujwa Creek	326962	6283927	13/12/2006	4.15pm	Cloudy	4.1	7	0	2	98	2.2	0.2	Silty Clay	Dark Grey		1	59.2	13300	14	30	2	<1	24	12	24	28900	30	5490	436	<0.1	18	52	55	94	0	3100	<0.1	1590	<0.1	13
H6	Berowra Creek north of Oaky Point	326568	6282695	13/12/2006	6.00pm	Cloudy	8.3	10	0	0	100	0.1	0.1	Silty Clay	Dark Grey		1	69.6	15100	18	40	2	<1	28	13	30	32500	32	6400	1220	<0.1	19	61	60	106	0	3030	<0.1	2100	<0.1	12.7
H7	Berowra Creek east of Calabash Bay at monitoring buoy	325530	6282107	13/12/2006	5.45pm	Cloudy	13.0	12	0	2	98	0.9	1.0	Silty Clay	Dark Grey		1	73.3	16700	14	40	2	<1	28	12	44	32700	39	7610	728	<0.1	19	117	58	124	0	8400	<0.1	4130	1.5	12
H8	Berowra Creek east of Crossland Bay	325808	6281083	13/12/2006	5.35pm	Cloudy	7.3	12	0	6	94	4.7	2.2	Silty Clay	Dark Grey		1	68.1	14000	11	40	1	<1	26	8	59	26800	**57**	6290	414	<0.1	16	99	45	132	1	15400	<0.1	900	2.15	5.7
H9	Berowra Creek at Marina	325771	6280706	13/12/2006	5.20pm	Cloudy	7.3	12	0	2	98	1.0	0.9	Silty Clay	Dark Grey		1	74	16400	11	40	1	<1	30	9	**82**	30200	**65**	7900	338	<0.1	18	77	50	171	2	4580	<0.1	2490	3.29	6.2
H10	Berowra Creek	325685	6280026	13/12/2006	5.10pm	Cloudy	4.2	12	0	17	83	14.3	2.9	Silty Clay	Dark Grey	with some sand	1	67.4	12500	8	40	1	<1	26	7	**73**	24100	**69**	6620	154	<0.1	16	65	37	183	1	3630	<0.1	4360	1.23	2.2
H11	Berowra Creek	326003	6279668	13/12/2006	4.55pm	Cloudy	2.0	4	0	92	8	66.0	23.7	Silty Sand/Sand	Dark Grey		4	33.2	2140	<5	<10	<1	<1	5	<2	14	5560	18	1570	35	<0.1	3	23	8	33	0	1410	<0.1	490	0.516	3.1
H12	Marramarra Creek	323833	6289190	13/12/2006	2.55pm	Cloudy	0.7	5	0	78	22	10.0	67.7	Clayey Sand	Dark Grey		3	33.7	4150	<5	10	<1	<1	7	3	6	8680	9	1680	58	<0.1	4	19	16	27	0	960	<0.1	720	0.249	3
H13	Mouth of Marramarra Creek west of Bar Island	327106	6288797	13/12/2006	2.35pm	Cloudy	1.2	7	0	5	95	5.1	0.0	Silty Clay	Dark Grey		1	50.9	11500	15	30	1	<1	22	10	19	26400	25	4730	292	<0.1	15	48	46	74	0	2360	<0.1	1670	<0.1	5.8
H14	Hawkesbury River south of Spectacle Island	333195	6287690	14/12/2006	11.50am	Sunny	1.5	10	0	35	65	25.5	9.9	Sandy Clay	Dark Grey	Shell Fragments	2	49.7	8220	12	20	1	<1	18	10	18	20300	23	4220	154	**0.3**	13	53	38	62	1	5410	<0.1	1340	0.209	3.3
H15	Hawkesbury River northeast of Dangar Island	337165	6288140	14/12/2006	2.30pm	Cloudy	10.1	7	0	44	56	43.1	0.9	Sandy Clay	Dark Grey		2	45.9	7600	13	20	<1	<1	17	8	15	19100	20	4010	251	<0.1	11	64	37	53	0	6840	<0.1	940	<0.1	3.3
H16	Hawkesbury River southwest of Dangar Island	335591	6286753	14/12/2006	3.25pm	Cloudy	1.2	10	0	31	69	22.1	8.6	Sandy Clay	Dark Grey		2	46.7	7120	15	20	<1	<1	17	7	27	19500	27	3920	207	<0.1	10	37	34	74	0	2720	<0.1	1230	<0.1	3.1
H17	Hawkesbury River Sanbrook Inlet West - at Marina	333320	6286561	14/12/2006	10.05am	Sunny	1.6	12	0	6	94	5.2	0.5	Silty Clay	Dark Grey		1	51.8	13000	**20**	40	1	<1	25	11	46	29800	33	5320	486	<0.1	16	52	55	94	1	2810	<0.1	1350	<0.1	3.2
H18	Hawkesbury River Sanbrook Inlet East	335098	6287024	14/12/2006	9.15am	Sunny	1.1	12	0	1	99	0.9	0.2	Silty Clay	Dark Grey		1	60.4	13800	**21**	40	1	<1	25	11	53	30200	37	5760	516	<0.1	16	50	57	109	1	2420	<0.1	1160	0.202	3.2
H19	Mooney Mooney Creek	333314	6294009	14/12/2006	12.25pm	Sunny	2.8	6	0	5	95	4.8	0.2	Silty Clay	Dark Grey		1	57.5	13000	19	30	1	<1	24	11	20	29300	29	5640	464	<0.1	16	50	53	79	0	2540	0.153	1370	<0.1	3.2
H20	Mullet Creek - adjacent to railway track	337402	6292306	14/12/2006	2.00pm	Sunny	3.1	12	0	0	100	0.2	0.0	Silty Clay	Dark Grey		1	64.2	14500	**24**	40	2	<1	28	12	24	33000	32	6900	881	<0.1	19	62	62	88	1	3800	0.196	2060	<0.1	3
H21	Cowan Creek Bobbin Head - at Marina	329680	6273756	21/12/2006	9.45am	Sunny	4.0	8	0	6	94	4	2	Silty Clay	Dark Grey		1	66.8	19500	15	60	<1	<1	38	5	**684**	29600	**179**	7560	68	0.9	17	81	59	**412**	3	6690	<0.1	9290	<0.1	7.6
H22	Cowan Creek Apple Tree Bay	328980	6274926	21/12/2006	10.10am	Sunny	4.8	10	0	58	42	27	31	Clayey Sand	Grey		3	45.3	6960	10	10	<1	<1	22	2	**68**	16700	**94**	4320	88	0.2	7	51	25	130	2	4800	<0.1	2410	<0.1	4.2
H23	Cowan Creek east of Waratah Bay	330452	6277834	21/12/2006	10.30am	Sunny	24.2	12	0	2	98	1	1	Silty Clay	Grey		1	74.7	17300	18	40	<1	<1	29	8	54	28300	**84**	8120	425	0.1	14	87	66	151	1	8980	<0.1	6880	0.533	4.6
H24	Cowan Creek Smiths Creek	332960	6277113	21/12/2006	10.50am	Cloudy	22.0	10	0	1	99	1	0	Silty Clay	Grey		1	75.6	16800	16	40	<1	<1	26	10	42	28200	**53**	8830	513	<0.1	15	105	72	128	1	11900	<0.125	7220	1.47	4.8
H25	Cowan Creek Akuna Bay - at Marina adjacent to slipway	336465	6275815	21/12/2006	12.35pm	Sunny	4.0	4	0	69	31	29	40	Clayey Sand	Dark Grey		3	47.4	5500	9	20	<1	<1	12	2	**84**	11400	32	3560	118	<0.1	5	63	22	86	1	9230	<0.1	2520	<0.1	3
H26	Cowan Creek Akuna Bay - at Marina refueling station	336487	6276077	21/12/2006	12.15pm	Cloudy	12.0	5	0	10	90	5	5	Silty Clay	Dark Grey		1	72.9	19700	**20**	40	1	<1	35	10	**159**	34700	**75**	9820	663	0.3	16	147	74	196	3	20700	<0.1	9980	0.203	6.6
H27	Cowan Creek north of Smiths Creek	333057	6278769	21/12/2006	11.15am	Cloudy	18.6	10	0	17	83	13	4	Silty Clay	Grey	with some sand	1	65.8	16100	15	30	1	<1	27	11	41	30100	43	7460	852	<0.1	16	114	58	115	0	15200	<0.1	4870	0.483	2.8
H28	Cowan Creek Cottage Point - adjacent to kiosk	333768	6278915	21/12/2006	11.50am	Sunny	15.8	4	0	21	79	17	4	Silty Clay	Grey	with some sand	1	64.2	13700	18	30	1	<1	24	9	**75**	27400	**57**	6680	548	0.2	17	74	52	119	2	7470	<0.1	2980	0.6	4.3
H29	Cowan Creek north of Cowan Point	334691	6281184	21/12/2006	2.15pm	Cloudy	9.3	12	0	0	100	0	0	Silty Clay	Dark Grey		1	64.7	16400	**28**	40	1	<1	28	11	28	34500	35	7370	875	<0.1	18	87	64	98	1	7850	<0.1	4620	0.298	3.3
H30	Cowan Creek Jerusalem Bay	333122	6281727	21/12/2006	1.55pm	Sunny	13.5	10	0	1	99	1	0	Silty Clay	Dark Grey		1	69.1	18900	17	40	2	<1	31	11	37	35700	44	8360	647	<0.1	18	86	68	121	0	7810	<0.1	4040	0.534	3.9
H31	Cowan Creek Refuge Bay	337481	6280993	21/12/2006	2.30pm	Fine	4.1	5	0	0	100	0	0	Silty Clay	Dark Grey		1	59.9	16400	**24**	40	1	<1	28	11	25	33800	33	6720	522	<0.1	18	71	64	90	1	5840	<0.1	4170	0.262	3.2
H32	Cowan Creek north of Challenger Head	337698	6282897	21/12/2006	8.30am	Cloudy	10.0	8	0	12	88	12	0	Silty Clay	Dark Grey		1	54.2	11800	19	30	1	<1	22	9	19	26400	27	5500	315	<0.1	14	88	48	72	0	8590	<0.1	2280	<0.1	3
H33	Parsley Bay	335734	6286524	21/12/2006	9.00am	Cloudy	2.1	10	0	13	87	13	0	Silty Clay	Dark Grey		1	43.5	7980	16	20	<1	<1	17	8	15	22900	26	4240	223	<0.1	11	32	36	76	0	2370	<0.1	1460	<0.1	1.8
H34	Hawkesbury River northwest of Gunyah Point	336820	6284267	14/12/2006	4.15pm	Cloudy	20.3	5	0	8	92	5.6	2.5	Silty Clay	Dark Grey		1	51.2	11800	10	30	1	<1	21	12	20	24200	22	4830	246	<0.1	15	64	48	58	0	6570	<0.1	1510	<0.1	2.8
H35	Hawkesbury River east of Flat Rock Point	335841	6286743	14/12/2006	3.35pm	Cloudy	2.1	10	0	34	66	32.3	2.0	Sandy Clay	Dark Grey		2	50.5	8040	17	20	1	<1	18	9	20	22400	23	4440	244	<0.1	11	52	38	78	0	5820	<0.1	1400	<0.1	3.1
H36	Hawkesbury River south of Dangar Island	336703	6287441	14/12/2006	3.00pm	Sunny	0.8	7	0	73	27	59.7	13.0	Clayey Sand	Dark Grey		3	25	3130	9	10	<1	<1	8	5	<5	10800	8	1940	121	**0.7**	4	15	17	33	1	1060	<0.1	330	<0.1	0.9
H37	Hawkesbury River Marina	335462	6286738	14/12/2006	3.15pm	Cloudy	2.6	8	0	10	90	8.9	1.2	Silty Clay	Dark Grey		1	59	13000	17	50	1	<1	30	10	62	26500	**63**	5760	201	**0.2**	18	56	52	128	2	3170	<0.1	1960	<0.1	3.1
H38	Hawkesbury River south of Sanbrook Inlet (centre)	334339	6286858	14/12/2006	9.30am	Sunny	1.6	12	0	5	95	2.5	2.9	Silty Clay	Dark Grey		1	56.6	14600	**22**	40	2	<1	27	12	58	32600	39	5870	734	<0.1	18	56	62	112	1	2780	0.115	1160	<0.1	3.3
H39	Hawkesbury River south Kangaroo Point	332991	6286823	14/12/2006	10.15am	Sunny	1.5	12	0	6	94	5.8	0.1	Silty Clay	Dark Grey		1	57.6	11700	18	30	1	<1	23	10	34	26900	30	5230	457	<0.1	15	54	50	81	0	3480	<0.1	1760	<0.1	2.9
H43	Hawkesbury River southwest of Peat Island	331655	6287910	13/12/2006	7.25pm	Cloudy	0.8	8	0	41	59	24.2	16.5	Sandy Clay	Dark Grey		2	46.8	8220	12	20	<1	<1	15	7	14	17600	18	3680	316	<0.1	10	44	33	48	0	3040	<0.1	1070	<0.1	5.9
H44	Hawkesbury River southeast of Prickly Point	330849	6290033	13/12/2006	6.50pm	Cloudy	0.4	8	0	58	42	49.3	8.6	Clayey Sand	Dark Grey		3	38.6	6070	10	20	<1	<1	13	7	11	15900	14	2960	156	<0.1	8	33	27	42	0	3510	<0.1	880	<0.1	11.9
H45	Hawkesbury River north of Milson Island	330826	6290941	13/12/2006	6.30pm	Cloudy	2.5	6	0	47	53	46.1	0.9	Sandy Clay	Dark Grey		2	47.4	7750	11	30	1	<1	17	10	16	19900	19	3870	178	<0.1	12	40	38	56	0	2760	<0.1	910	<0.1	9.7
H46	Hawkesbury River east of Fishermans Point	328602	6289491	13/12/2006	12.40pm	Sunny	4.8	10	0	5	95	5.1	0.4	Silty Clay	Dark Grey		1	58.2	13500	18	40	2	<1	25	12	24	29800	29	5710	458	<0.1	18	58	54	81	0	3060	<0.1	1340	<0.1	10.4
H47	Hawkesbury River northeast of Pumpkin Point - downstre	328741	6292472	13/12/2006	12.20pm	Sunny	1.3	8	0	44	56	42.4	1.8	Sandy Clay	Dark Grey		2	43.9	8410	12	30	<1	<1	16	9	14	20200	18	3670	259	<0.1	12	35	34	56	0	1790	<0.1	980	<0.1	4.4
H48	Hawkesbury River west of Marlows Creek	329042	6295174	13/12/2006	12.05pm	Cloudy	3.5	8	0	40	60	39.1	0.8	Sandy Clay	Dark Grey		2	44.7	8700	10	30	1	<1	17	9	15	19000	18	3690	197	<0.1	12	35	35	52	0	1870	<0.1	1430	<0.1	4.9
H49	Hawkesbury River south of Triangle (no name)	328042	6295972	13/12/2006	11.35am	Cloudy	1.2	8	0	29	71	26.5	2.7	Sandy Clay	Dark Grey		2	50.5	10600	13	30	1	<1	20	10	18	24300	21	4260	396	<0.1	14	44	42	65	0	2210	<0.1	1370	<0.1	5.5
H50	Hawkesbury River northeast of Haycock Reach	324958	6295225	13/12/2006	11.10am	Cloudy	4.0	8	0	23	77	22.8	0.4	Silty Clay	Dark Grey	with some sand	1	47	9090	13	30	1	<1	18	10	16	22000	18	3820	388	<0.1	13	43	37	57	0	2370	<0.1	1200	<0.1	7.4
H51	Hawkesbury River west of Sentry Box Reach	320359	6296200	13/12/2006	10.30am	Sunny	4.0	10	0	4	96	3.6	0.2	Silty Clay	Dark Grey		1	63.2	10400	14	40	1	<1	21	12	21	26200	22	5070	1210	<0.1	16	58	43	69	0	2870	<0.1	1990	<0.1	7.7
H52	Hawkesbury River (no name)	317628	6299272	13/12/2006	10.00am	Cloudy	7.0	10	0	10	90	10.2	0.3	Silty Clay	Dark Grey		1	66	13100	11	40	2	<1	24	14	23	31800	26	4920	978	<0.1	20	52	50	86	0	2520	<0.1	2090	0.132	6.3
H53	Hawkesbury River (no name)	316542	6302275	13/12/2006	9.50am	Overcast	4.2	10	0	2	98	1.7	0.8	Silty Clay	Dark Grey		1	70	18900	13	50	2	<1	22	16	22	35700	28	6350	2280	<0.1	20	56	52	89	0	3210	<0.1	2530	0.533	8
H54	Hawkesbury River south of Wisemans Ferry	313085	6304478	13/12/2006	9am	Cloudy	3.6	8	0	83	17	47.2	35.8	Clayey Sand	Dark Grey		3	33.5	4960	<5	20	<1	<1	6	5	5	11900	8	1700	806	<0.1	6	20	14	26	0	960	0.143	590	0.143	1.4
H55	Hawkesbury River between H50 and H51	322248	6295431	13/12/2006	10.50am	Cloudy	5.2	10	0	6	94	4.5	1.6	Silty Clay	Dark Grey		1	57.5	20000	14	30	1	<1	22	13	20	33000	26	6420	441	<0.1	16	51	54	68	0	2610	<0.1	930	<0.1	7.8

Sample ID	Location Decription	C6-C9 fraction	C10-C14 fraction	C15-C28 fraction	C29-C36 fraction	Benzene	Ethyl-benzene	m&p-Xylene	o-Xylene	Toluene	Total BTEX	Total Xylenes	Acenaph-thene	Acenaph-thylene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluor-anthene	Benzo(g,h,i)perylene	Benzo(k)-fluor-anthene	Chrysene	Dibenzo-(a,h)anthra-cene	Fluor-anthene	Fluorene	Indeno-(1,2,3,cd)-pyrene	Naphtha-lene	Phenanthrene	Pyrene	Polychlori-nated biphenyls	4,4-DDD	4,4-DDE	4,4-DDT	a-BHC	Aldrin
H1	Hawkesbury River south of Bar Point	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H2	Berowra Creek south of Bar Island	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H3	Berowra Creek west of Berowra Point	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H4	Berowra Creek south of Berowra Point	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H5	Berowra Creek west of Bujwa Creek	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H6	Berowra Creek north of Oaky Point	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H7	Berowra Creek east of Calabash Bay at monitoring buoy	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H8	Berowra Creek east of Crossland Bay	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H9	Berowra Creek at Marina	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H10	Berowra Creek	<10	<50	<100	220	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H11	Berowra Creek	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H12	Marramarra Creek	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H13	Mouth of Marramarra Creek west of Bar Island	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H14	Hawkesbury River south of Spectacle Island	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H15	Hawkesbury River northeast of Dangar Island	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H16	Hawkesbury River southwest of Dangar Island	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H17	Hawkesbury River Sanbrook Inlet West - at Marina	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H18	Hawkesbury River Sanbrook Inlet East	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H19	Mooney Mooney Creek	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	0.6	0.6	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.19	<0.5	<0.5	<0.5	<0.5	0.19	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H20	Mullet Creek - adjacent to railway track	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H21	Cowan Creek Bobbin Head - at Marina	<10	<50	310	480	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.07	<0.5	<0.5	<0.5	<0.5	0.08	0.022	<0.05	<0.05	<0.2	<0.05	<0.05
H22	Cowan Creek Apple Tree Bay	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H23	Cowan Creek east of Waratah Bay	11	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H24	Cowan Creek Smiths Creek	16	<60	<120	<120	<0.2	<0.5	<0.5	<0.5	1	1	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.12	<0.06	<0.06	<0.2	<0.06	<0.06
H25	Cowan Creek Akuna Bay - at Marina adjacent to slipway	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H26	Cowan Creek Akuna Bay - at Marina refueling station	11	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H27	Cowan Creek north of Smiths Creek	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H28	Cowan Creek Cottage Point - adjacent to kiosk	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H29	Cowan Creek north of Cowan Point	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	0.6	0.6	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H30	Cowan Creek Jerusalem Bay	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H31	Cowan Creek Refuge Bay	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H32	Cowan Creek north of Challenger Head	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H33	Parsley Bay	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H34	Hawkesbury River northwest of Gunyah Point	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H35	Hawkesbury River east of Flat Rock Point	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H36	Hawkesbury River south of Dangar Island	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H37	Hawkesbury River east of Long Island Jetty - at Marina	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H38	Hawkesbury River south of Sanbrook Inlet (centre)	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H39	Hawkesbury River south Kangaroo Point	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H43	Hawkesbury River southwest of Peat Island	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H44	Hawkesbury River southeast of Prickly Point	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H45	Hawkesbury River north of Milson Island	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H46	Hawkesbury River east of Fishermans Point	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H47	Hawkesbury River northeast of Pumpkin Point - downstrea	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H48	Hawkesbury River west of Marlows Creek	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H49	Hawkesbury River south of Triangle (no name)	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H50	Hawkesbury River northeast of Haycock Reach	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H51	Hawkesbury River west of Sentry Box Reach	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H52	Hawkesbury River (no name)	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H53	Hawkesbury River (no name)	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H54	Hawkesbury River south of Wisemans Ferry	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05
H55	Hawkesbury River between H50 and H51	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05

b-BHC	Chlordane - cis	Chlordane - trans	d-BHC	Dieldrin	Endosulfan 1	Endosulfan 2	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Azinphos Methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenthion	Malathion	Monocro-tophos	Parathion	Parathion-methyl	Pirimphos-ethyl	Prothiofos
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.2	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.2	<0.2	<0.2	<0.06	<0.06
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05

Tables

Table 2 – Descriptive Statistics of Concentrations of Inorganic Analytes and Nutrients

	Al	As	Ba	Cr	Co	Cu	Fe	Pb	Mg	Mn	Hg	Ni	Sr	V	Zn	TOC	Ca	NOX	TKN	Reactive P
Maximum	20000	28	60	38	16	684	35700	179	9820	2280	0.9	20	147	74	412	13	20700	0.196	9980	3.29
Minimum	2140	<5	10	5	1	2.5	5560	8	1570	35	<0.1	3	15	8	26	0.9	960	<0.1	330	<0.1
Mean	11923	14.5	32	21.9	9.4	45.8	25422	36.2	5328	465	0.10	14.2	59	46	94	5.5	4851	0.06	2345	0.31
SD	4478	5.2	11	6.9	3.1	94.2	7340	27.6	1848	380	0.15	4.4	26	15	58	3.3	3987	0.03	2088	0.60
n	52	52	52	52	52	52	52	52	52	52	53	52	52	52	52	52	52	52	52	52

All concentrations in mg/kg, except TOC (in %)

Table 3 – Correlation Coefficients ® for Inorganic Analytes and Nutrients (n=52)

n=52	Mud	Al	As	Cr	Co	Cu	Fe	Pb	Mg	Mn	Ni	Sr	V	Zn	TOC	Ca	NOX	TKN	P
Mud	1.00																		
Al	**0.85**	1.00																	
As	**0.74**	**0.62**	1.00																
Cr	**0.85**	**0.90**	**0.68**	1.00															
Co	**0.78**	**0.64**	**0.57**	**0.52**	1.00														
Cu	0.15	0.35	0.08	**0.47**	-0.21	1.00													
Fe	**0.94**	**0.92**	**0.76**	**0.87**	**0.82**	0.16	1.00												
Pb	0.31	**0.51**	0.18	**0.67**	-0.18	**0.86**	0.30	1.00											
Mg	**0.80**	**0.93**	**0.63**	**0.92**	**0.49**	0.33	**0.85**	**0.58**	1.00										
Mn	0.43	**0.49**	0.30	0.29	**0.63**	-0.13	**0.57**	-0.10	0.38	1.00									
Ni	**0.93**	**0.86**	**0.66**	**0.85**	**0.84**	0.16	**0.95**	0.28	**0.77**	**0.54**	1.00								
Sr	**0.55**	**0.73**	0.44	**0.74**	0.27	0.30	**0.61**	0.51	**0.86**	0.26	**0.53**	1.00							
V	**0.90**	**0.92**	**0.80**	**0.90**	**0.71**	0.22	**0.94**	0.39	**0.91**	0.43	**0.87**	0.71	1.00						
Zn	0.43	**0.61**	0.25	**0.75**	-0.03	**0.89**	0.43	**0.96**	**0.66**	0.00	0.42	**0.57**	**0.49**	1.00					
TOC	0.27	0.25	0.02	0.21	0.38	0.07	0.29	0.02	0.15	0.21	0.34	0.09	0.23	0.09	1.00				
Ca	0.25	**0.46**	0.24	**0.47**	0.00	0.25	0.30	0.42	**0.63**	0.09	0.20	**0.90**	0.45	0.43	-0.07	1.00			
NOX	0.01	0.00	0.16	0.00	0.06	-0.06	0.07	-0.09	-0.01	0.20	0.06	-0.11	0.05	-0.09	-0.23	-0.15	1.00		
TKN	0.37	**0.63**	0.32	**0.66**	0.01	**0.62**	0.43	**0.74**	**0.75**	0.14	0.33	**0.77**	**0.59**	**0.77**	0.03	**0.69**	-0.12	1.00	
P	0.20	0.30	-0.15	0.27	-0.03	0.05	0.17	0.27	0.42	0.05	0.21	0.44	0.15	0.30	0.02	0.36	-0.11	0.22	1.00

Note: Mud – Silt + Clay content

Tables

Figure 4 – Comparison of Sediment Chemistry at 18 Sample Locations

Previous Sample Location ID	Current Study Location ID	Silt & Clay (prev)	Silt & Clay (2007)	As (prev)	As (2007)	Cr (prev)	Cr (2007)	Cu (prev)	Cu (2007)	Pb (prev)	Pb (2007)	Ni (prev)	Ni (2007)	Zn (prev)	Zn (2007)	TOC (prev)	TOC (2007)	TKN (prev)	TKN (2007)
BCVC1	H1	59.4	71	8.3	14	18	18	14	15	15	21	15	13	40	72	1.82	6.6	1100	1250
BCVC2	H2	99	97	18	18	22	26	11	23	15	30	17	18	61	91	2.11	6.5	1300	990
BCVC3	H3	91.9	96	17	16	22	23	12	22	16	27	19	16	61	80	2	12.4	1200	1860
BCVC4	H4	83.1	88	18	15	20	22	12	21	15	26	18	16	56	80	2.08	13	1300	1780
BCVC5	H5	99	98	15	14	23	24	14	24	17	30	18	18	53	94	2.66	13	1700	1590
BCVC6	H6	99.5	100	15	18	21	28	12	30	17	32	17	19	50	106	2.89	12.7	2000	2100
BCVC7	H7	99.7	98	14	14	20	28	21	44	35	39	16	19	77	124	2.19	12	2000	4130
BCVC8	H8	88.8	94	12	11	17	26	13	59	15	**57**	13	16	39	132	7.96	5.7	3300	900
BCVC9	H9	72.9	98	12	11	12	30	11	**82**	13	**65**	12	18	32	171	14.4	6.2	4200	2490
BCVC10	H10	54.7	83	10	8	11	26	10	73	12	**69**	11	16	27	183	15.9	2.2	4200	4360
BCVC11	H11	27.9	8	7.5	2.5	5.9	5	5	14	7	18	6	3	15	33	7.6	3.1	2100	490
MCAH1	H12		22		2.5		7		6		9		4		27		3		720
C5.1	H14	91.8	65	14.3	12	17.2	18	19.1	18	29.2	23	17.8	13	80.1	62	4.12	3.3	2110	1340
C5.2	H14	89.9		14.1		18.8		19.4		29		20.6		99		3.9		1480	
C5.3	H14	93.2		17.4		22.2		18.7		29.4		17.6		94		4.27		1690	
C6.1	H15	82.2	56	14.6	13	17.8	17	14.9	15	24.2	20	15.5	11	69.4	53	2.74	3.3	1670	940
C6.2	H15	75.8		12.8		16.8		14.9		24.3		15.2		70.8		2.5		875	
C6.3	H15	76.7		12.4		16.7		13.9		22.6		14.7		66.8		2.66		906	
C7.1	H16	29.3	69	18.4	15	11.7	17	10.4	27	20.5	27	10.9	10	57.9	74	2.49	3.1	911	1230
C7.2	H16	22.5		14.8		9.86		8		25.4		9.2		50.2		1.61		782	
C7.3	H16	31.1		**20.3**		14.4		9.3		20.1		12.1		63.6		1.67		922	
C8.1	H17	40.4	94	9.81	**20**	11.7	25	23.8	46	21.3	33	9.4	16	57.3	94	1.81	3.2	710	1350
C8.2	H17	50.8		11.2		14.1		25.9		23.9		11.5		64.5		2.17		884	
C8.3	H17	31.3		7.97		10.3		18.7		17.1		7.9		45.3		1.38		800	
C9.1	H18	94.2	99	17.3	**21**	15.6	25	40.4	53	37.2	37	17.3	16	111	109	2.65	3.2	1600	1160
C9.2	H18	70.6		16		15.9		29.6		28.2		14.2		87.9		1.8		1100	
C9.3	H18	97.8		19.1		19.5		42.9		39.2		19.1		115		2.66		1500	
C1.1	H19	45	95	10.1	19	15.8	24	9.6	20	17.2	29	10.1	16	131	79	1.44	3.2	726	1370
C1.2	H19	49.2		9.65		12.4		8.4		16.1		9.8		44.5		1.36		664	
C1.3	H19	91		12.9		17.3		16.3		29.8		16.5		80.6		3.08		1660	
C3.1	H20	99.7	100	13.9	**24**	18.3	28	18.2	24	27.1	32	18.1	19	80.8	88	2.77	3	2010	2060
C3.2	H20	99.3		17.2		19.9		18.8		28.2		19.8		85		2.83		1580	
C3.3	H20	99.6		16.5		20.9		19.1		29.1		20.9		86.7		2.78		1360	

Note: ANZECC/ARMCANZ (2000) exceedences shown in bold; "Prev" indicates Berowra Creek Estuary Process Study (1998) or Brooklyn Estuary Process Study (2002)

Figures

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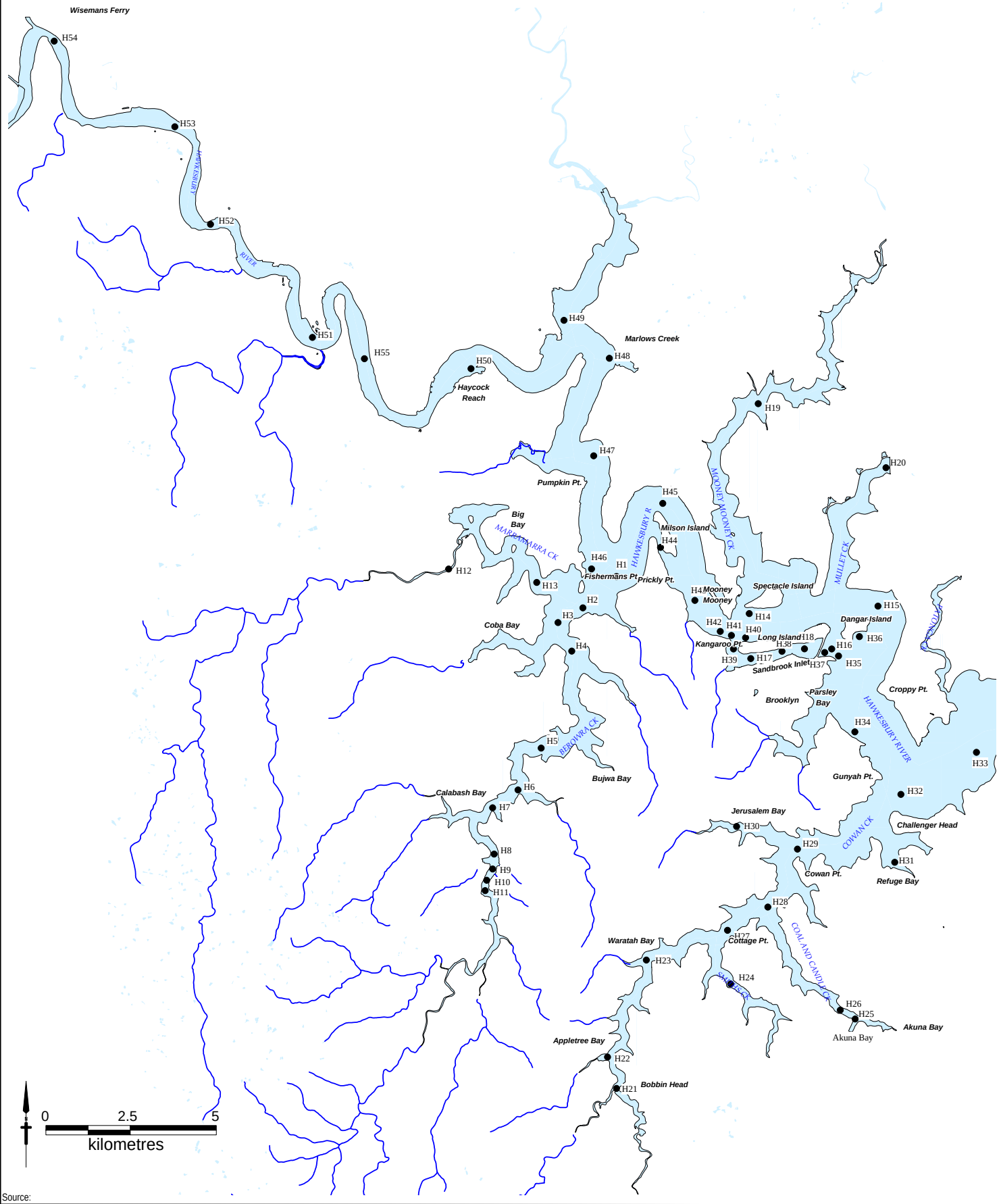

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Client	Project	Title
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URS	Drawn: CM / Approved: DRAFT / Date: 31-01-07	Figure: 1
	Job No: **43217595** / File No: Proposed Sampling 3.wor	Rev: B / **A4**

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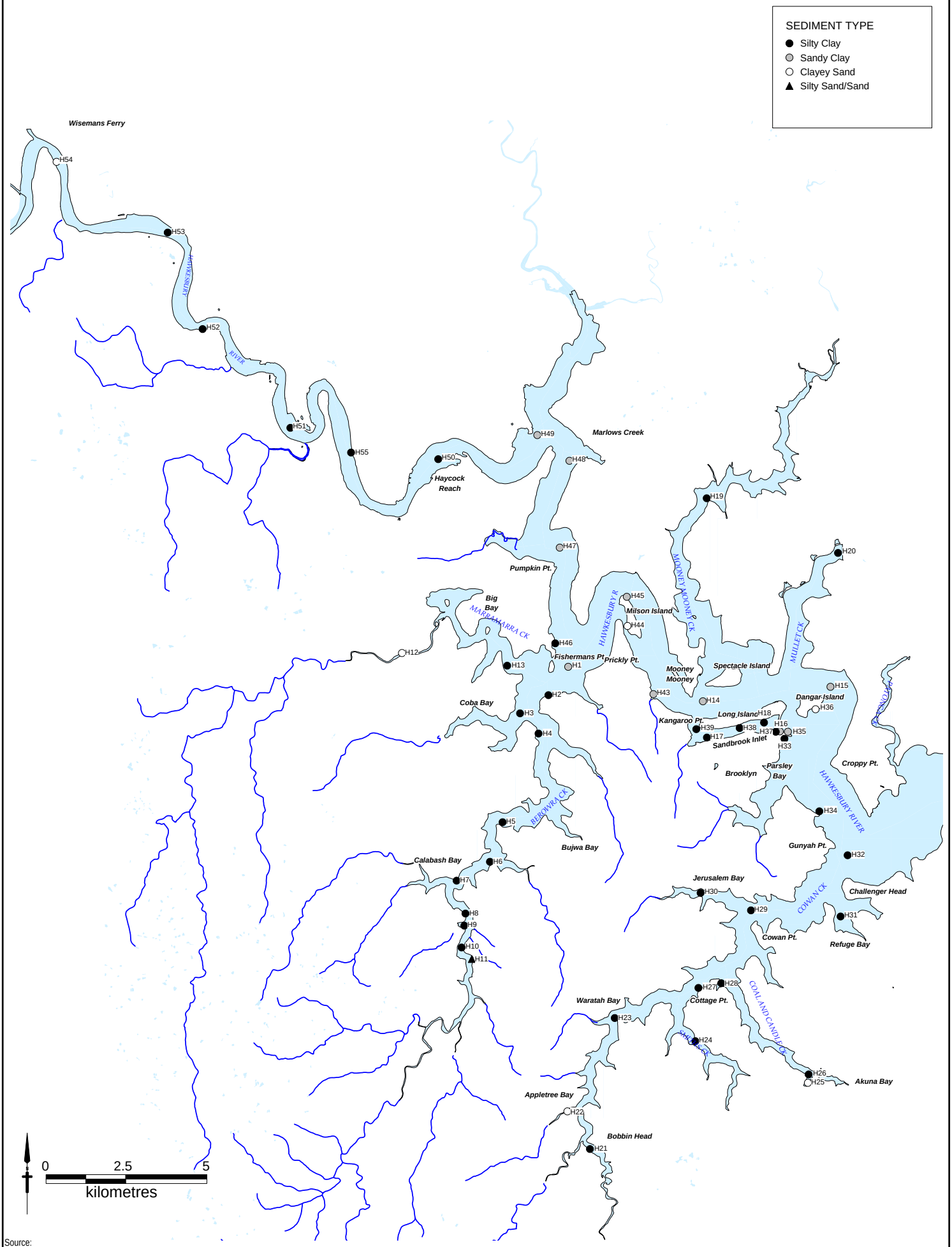

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Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**SEDIMENT TYPE**
URS	Drawn: CM · Approved: DRAFT · Date: 31-01-07	Figure: 2 · Rev: B
	Job No: **43217595** · File No: 43217595.001.wor	A4

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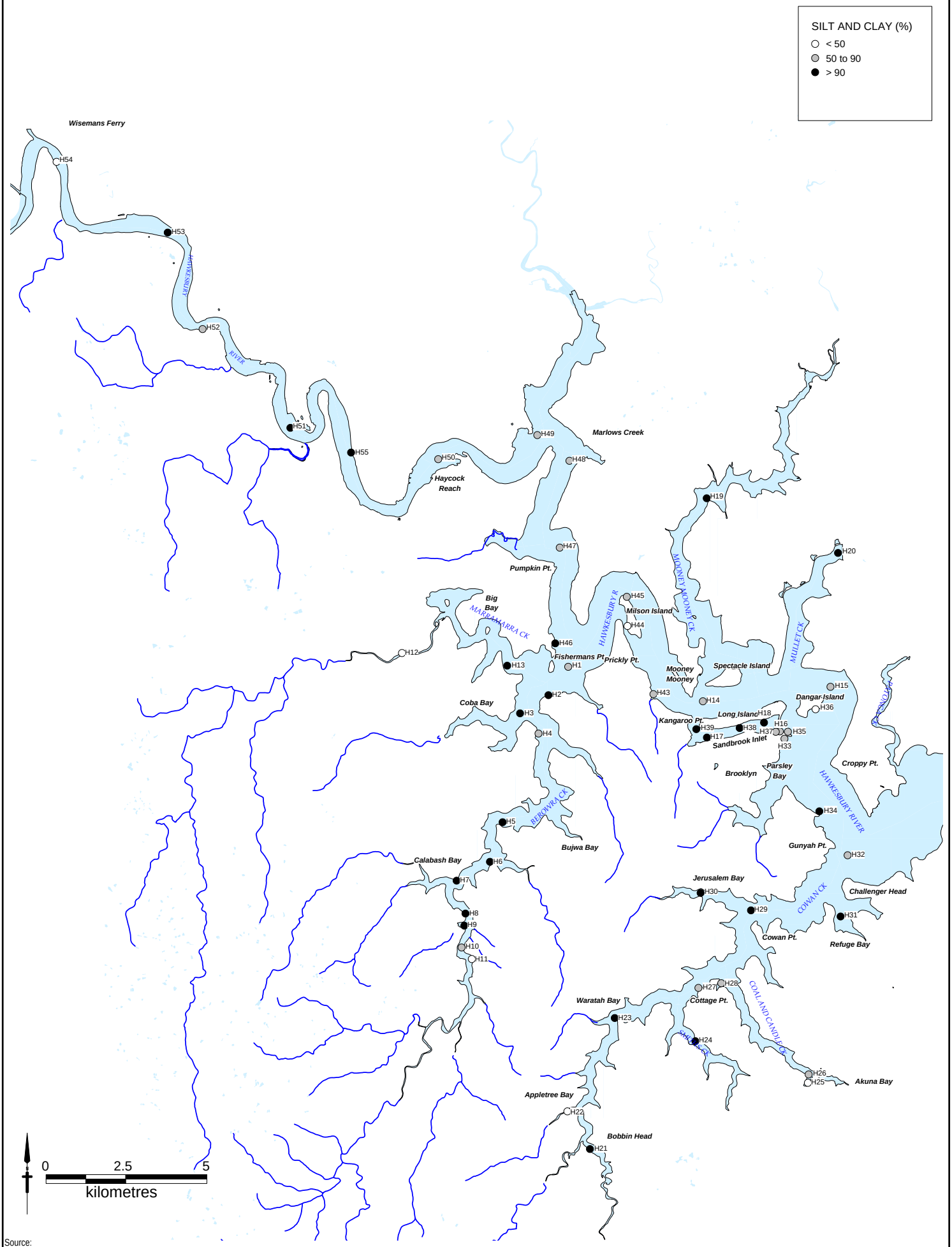

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Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**SILT AND CLAY (%)**
URS	Drawn: CM · Approved: DRAFT · Date: 31-01-07	Figure: 3 · Rev: B
	Job No: **43217595** · File No: 43217595.001.wor	**A4**

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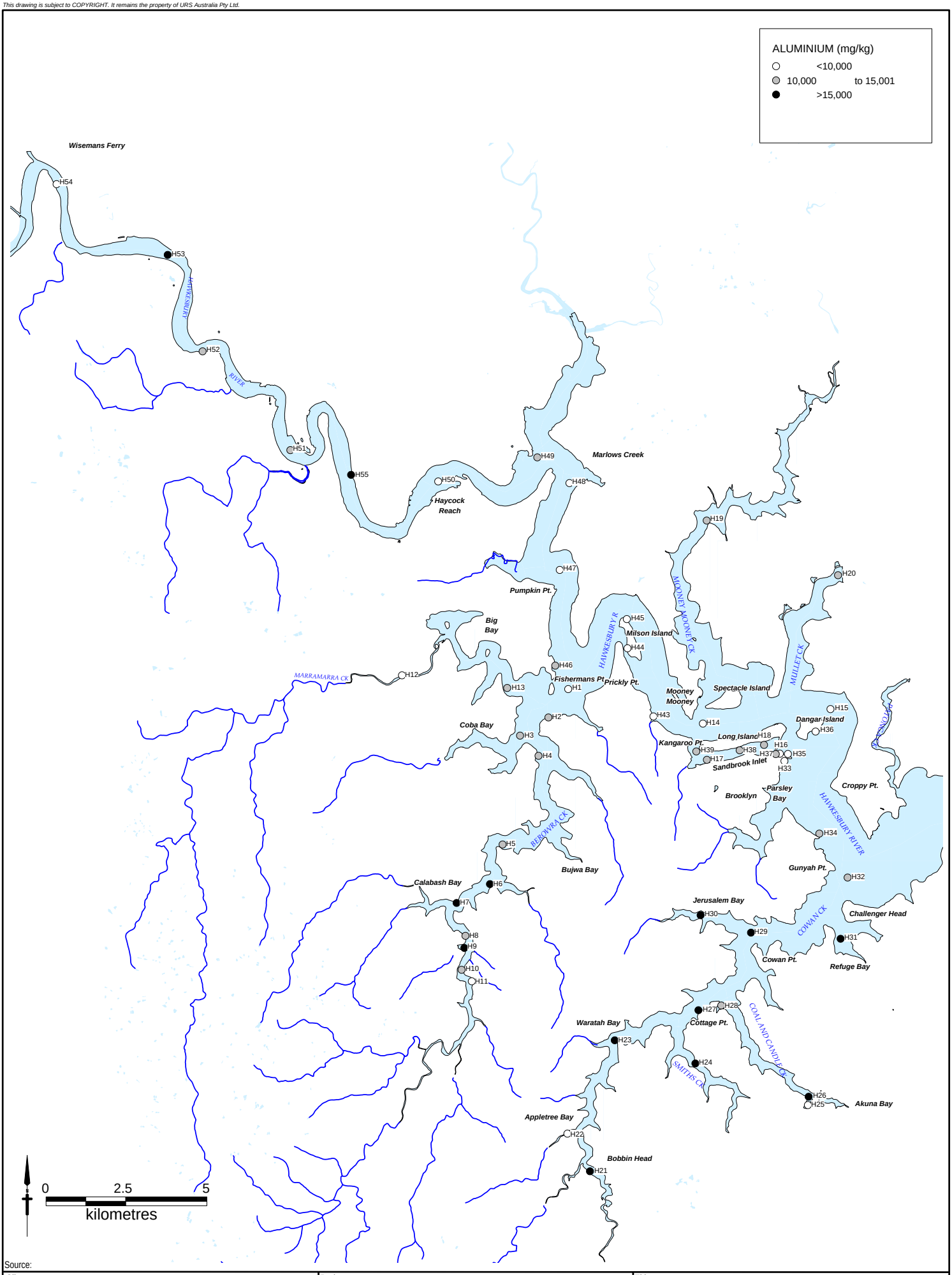

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URS	Drawn: CM / Approved: DRAFT / Date: 31-01-07	Figure: 4
	Job No: **43217595** / File No: 43217595.001.wor	Rev: B / **A4**

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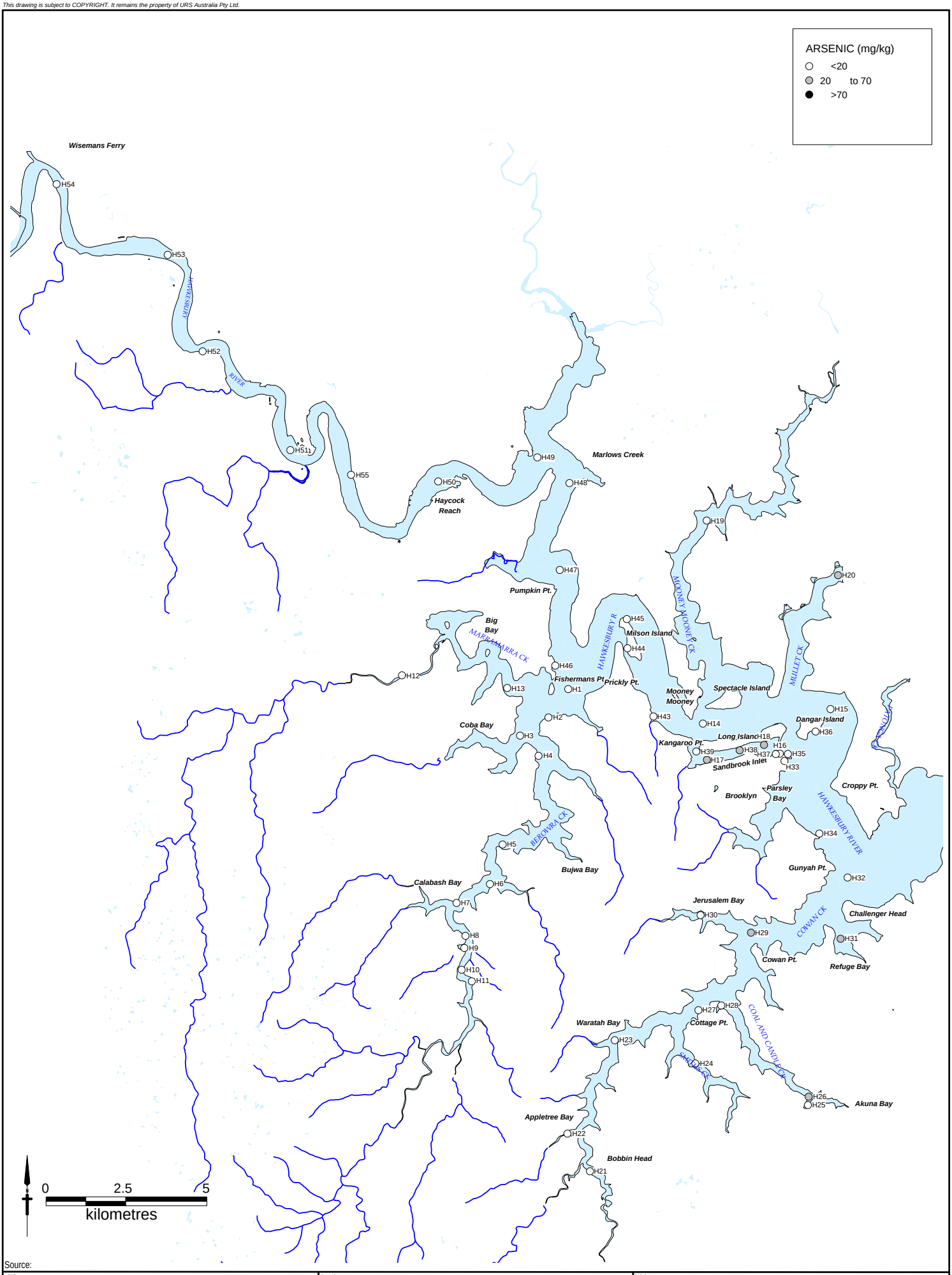

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Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**ARSENIC**
URS	Drawn: CM / Approved: DRAFT / Date: 31-01-07	Figure: 5
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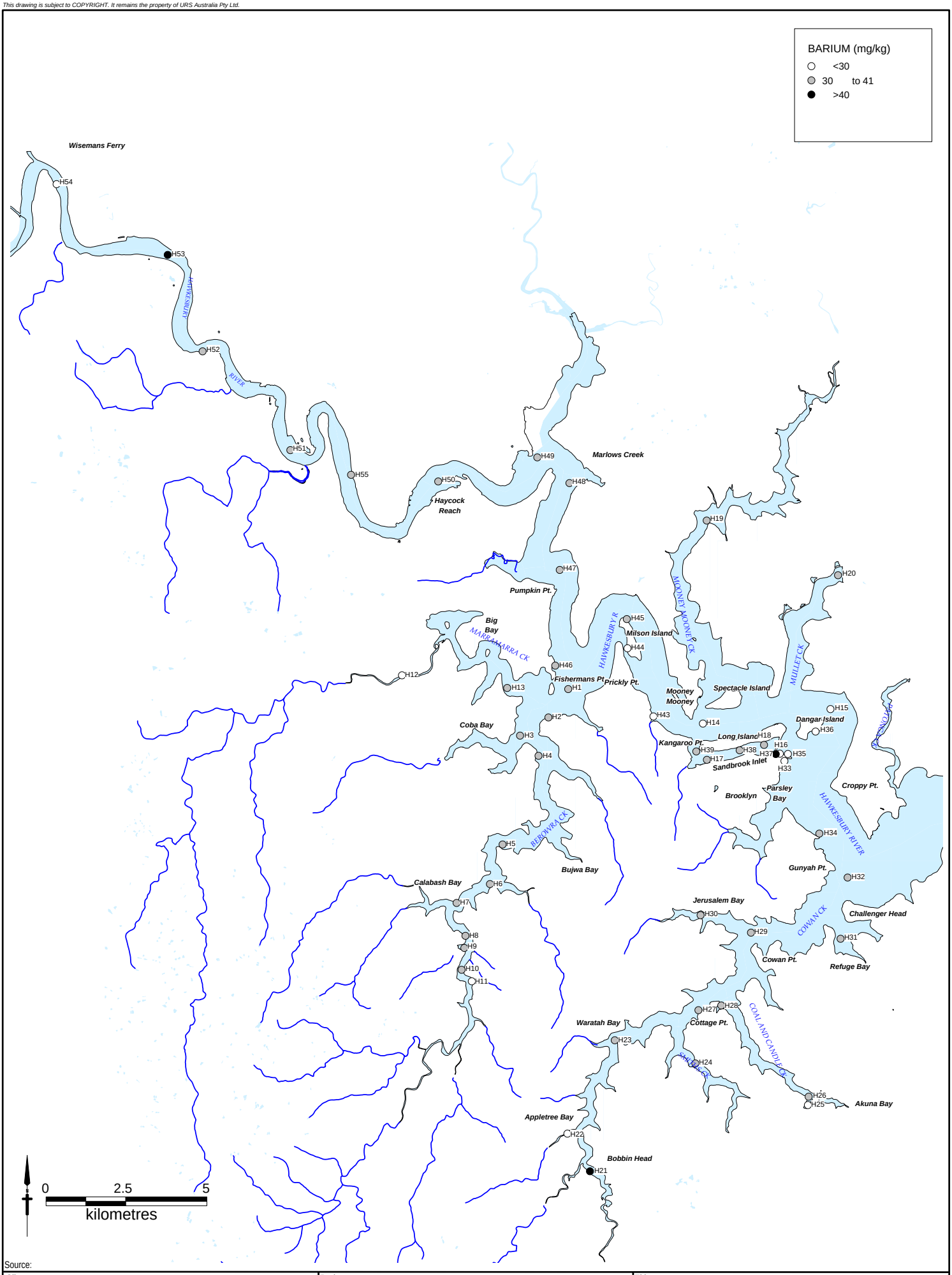

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Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**BARIUM**
URS	Drawn: CM / Approved: DRAFT / Date: 31-01-07	Figure: 6
	Job No: **43217595** / File No: 43217595.001.wor	Rev: B / **A4**

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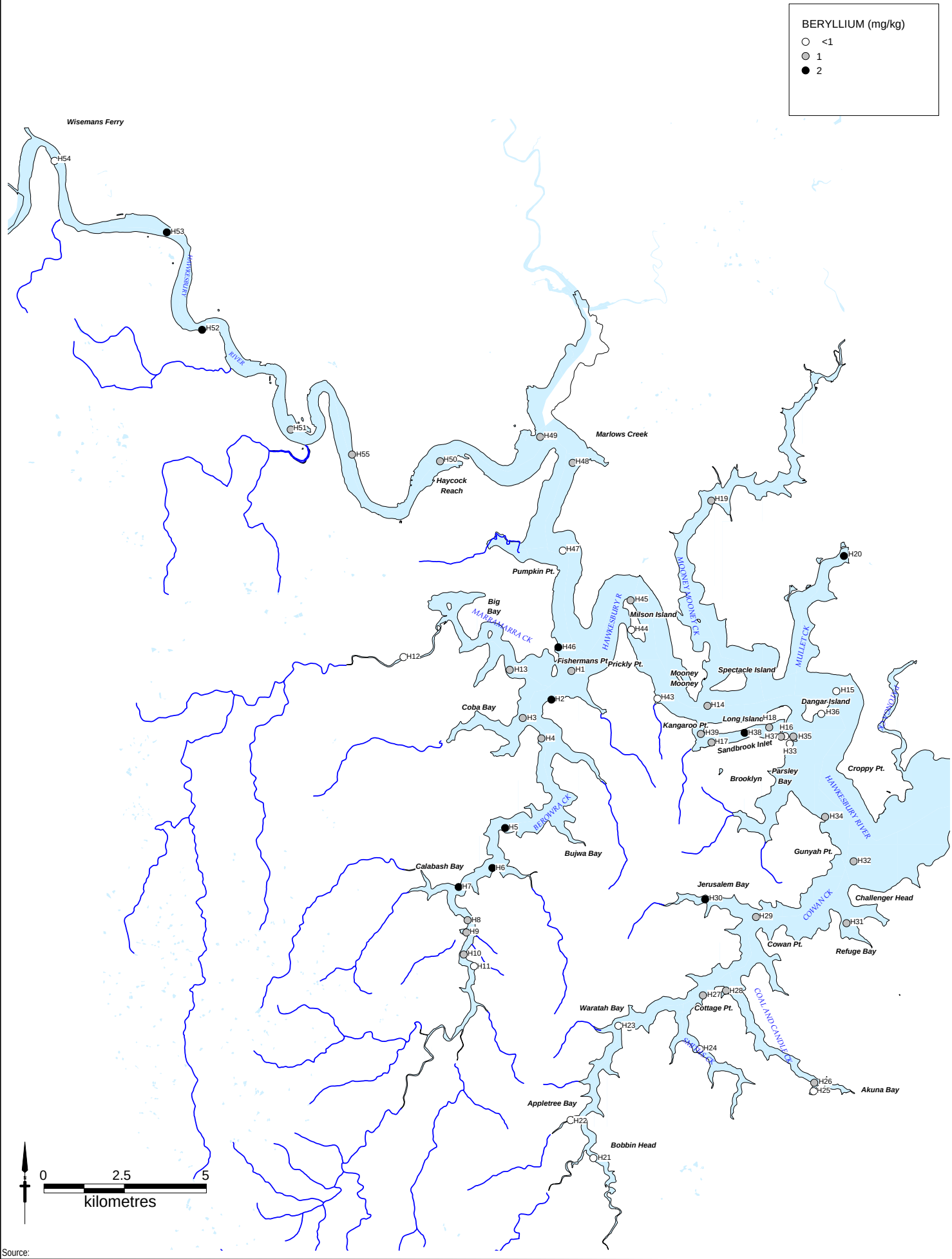

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Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**BERYLLIUM**
URS	Drawn: CM / Approved: DRAFT / Date: 31-01-07	Figure: 7
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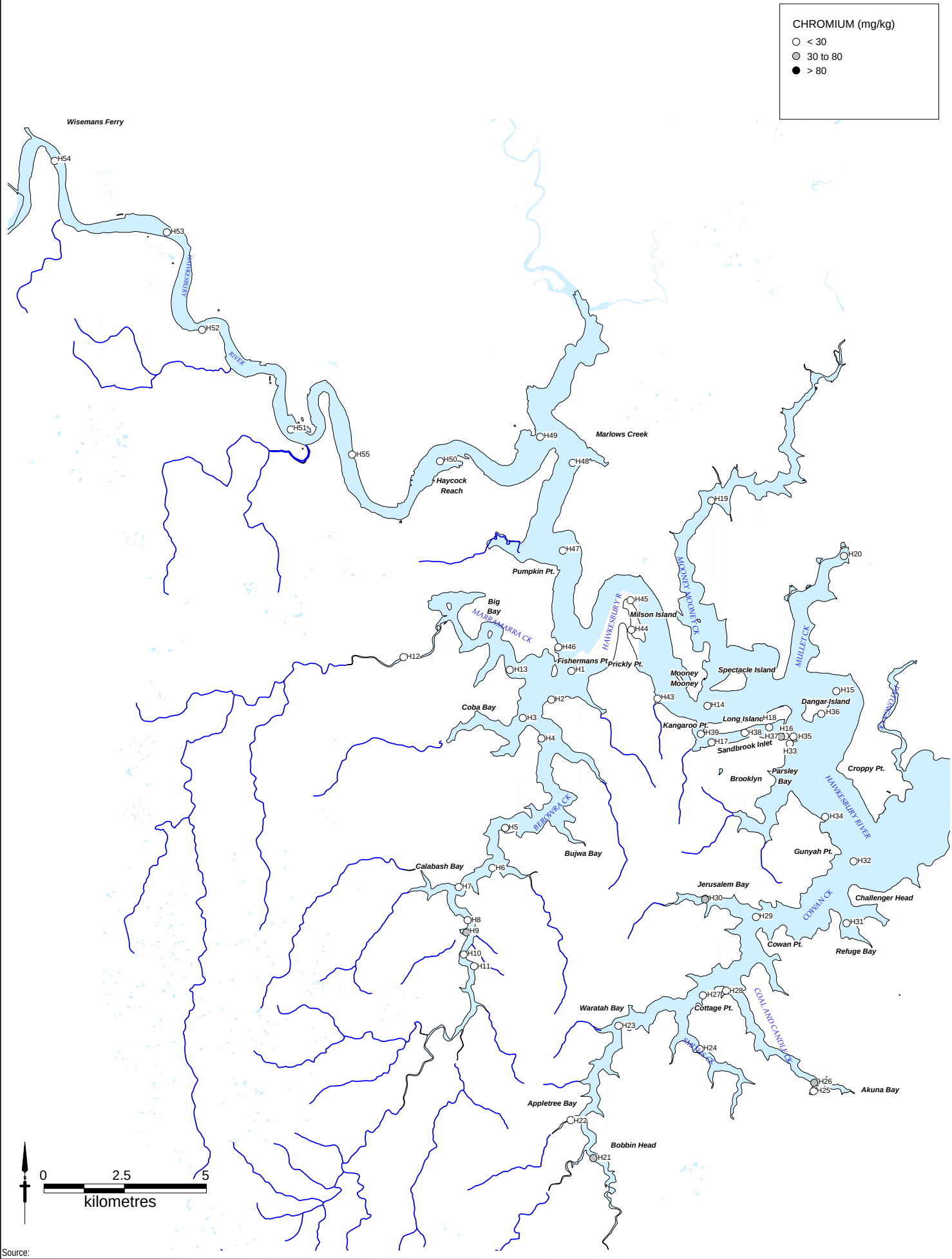

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URS	Drawn: CM · Approved: DRAFT · Date: 31-01-07	Figure: 8 · Rev: B
	Job No: **43217595** · File No: 43217595.001.wor	A4

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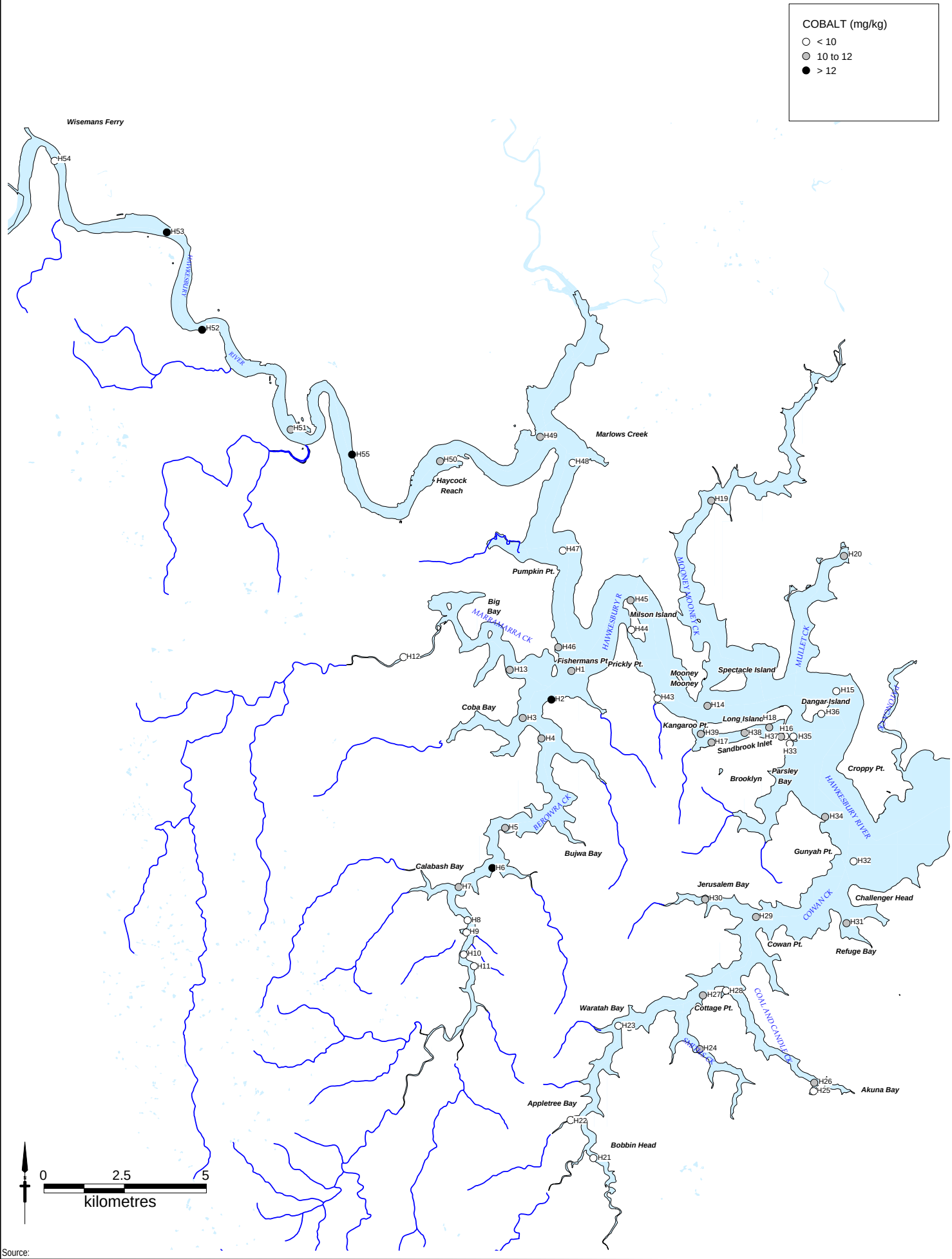

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Client	Project	Title
Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**COBALT**
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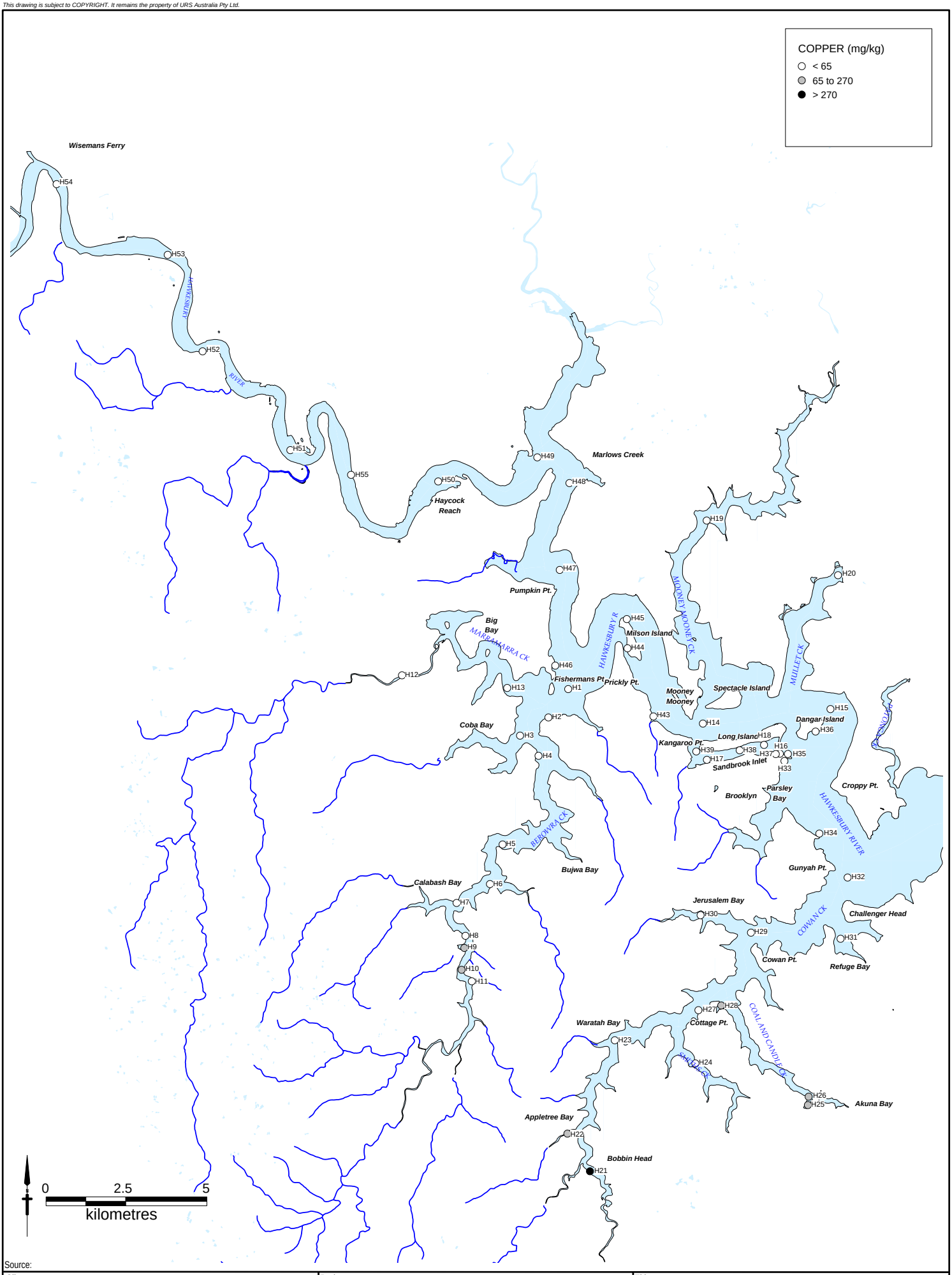

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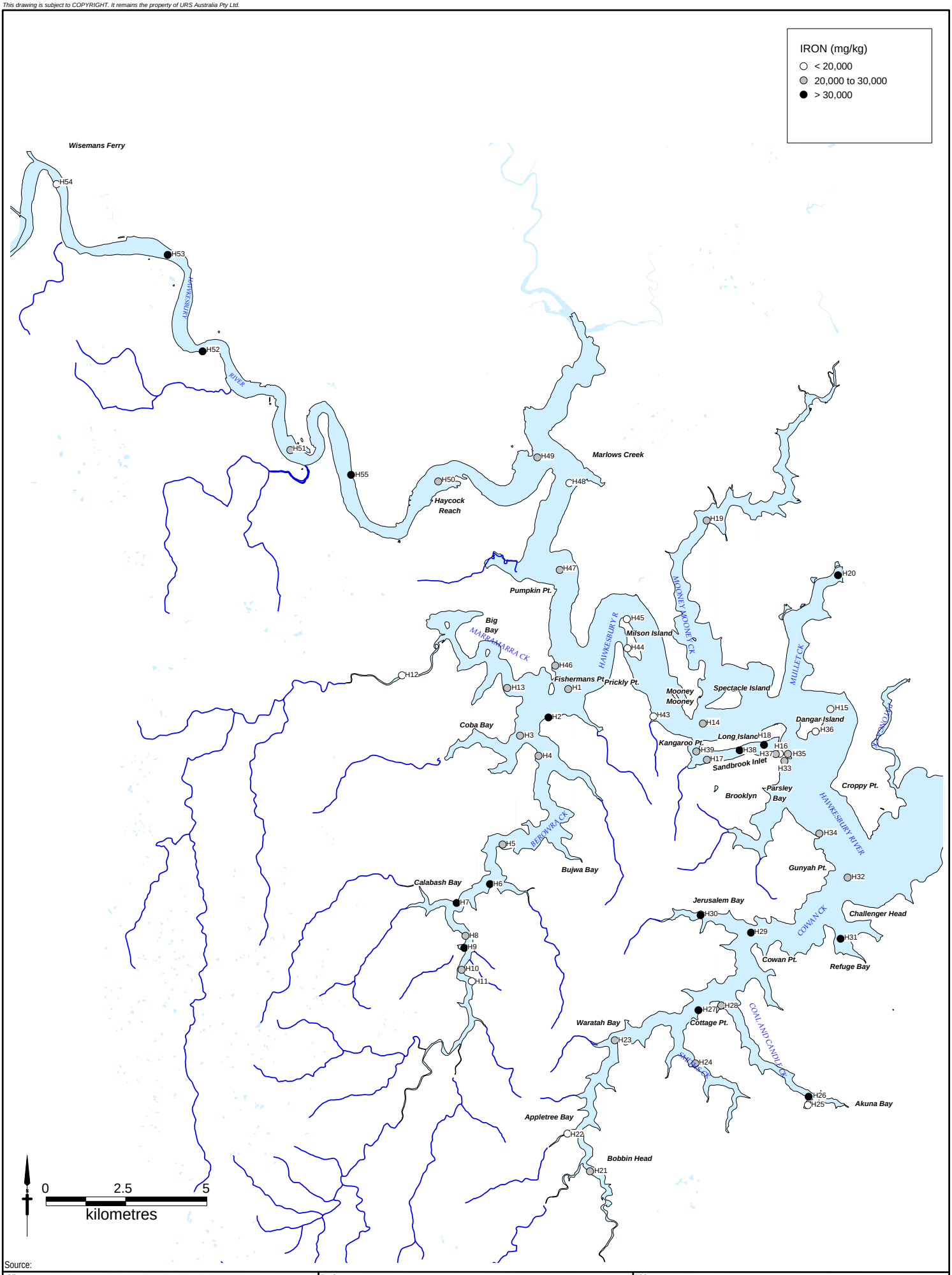

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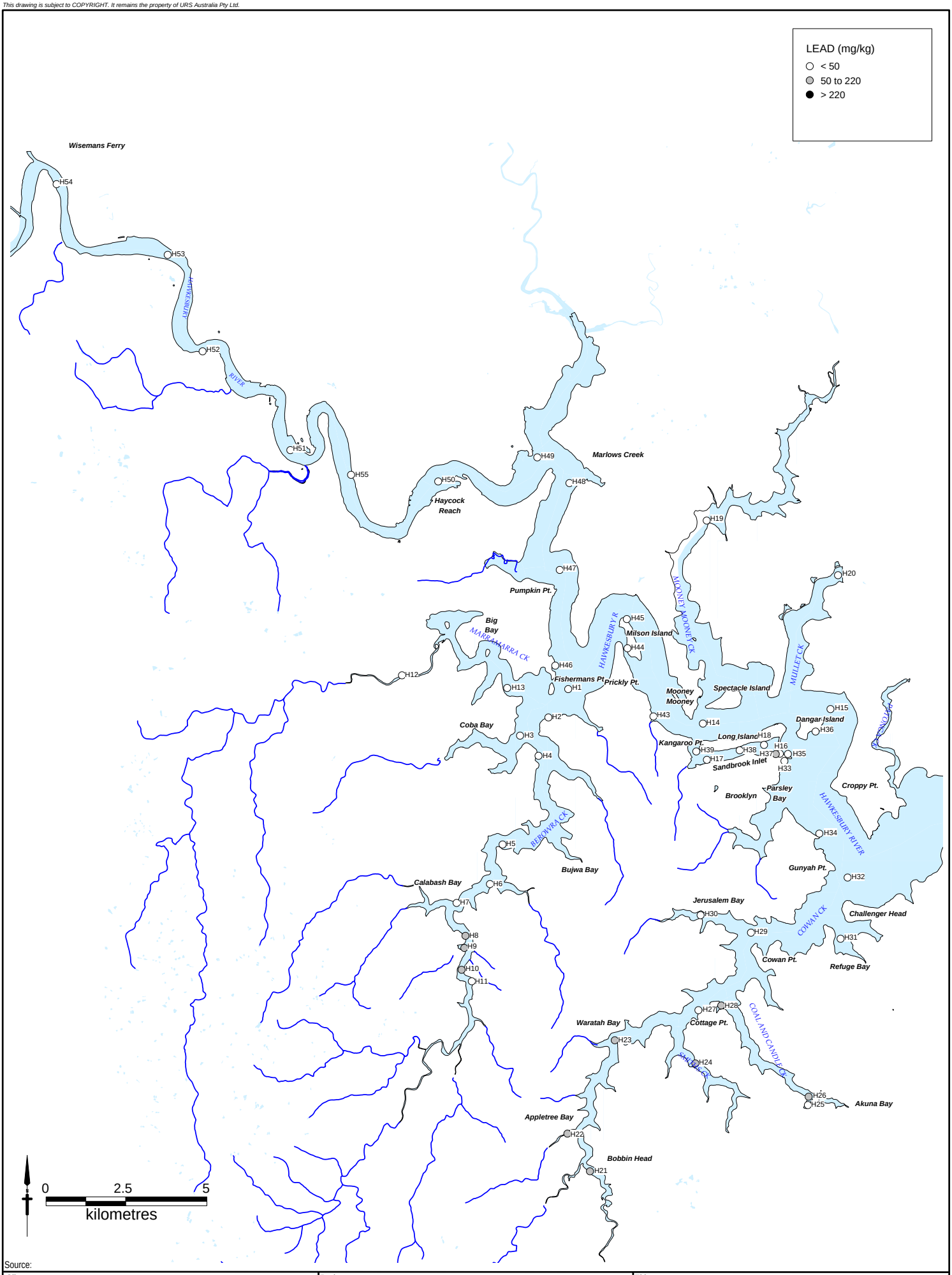

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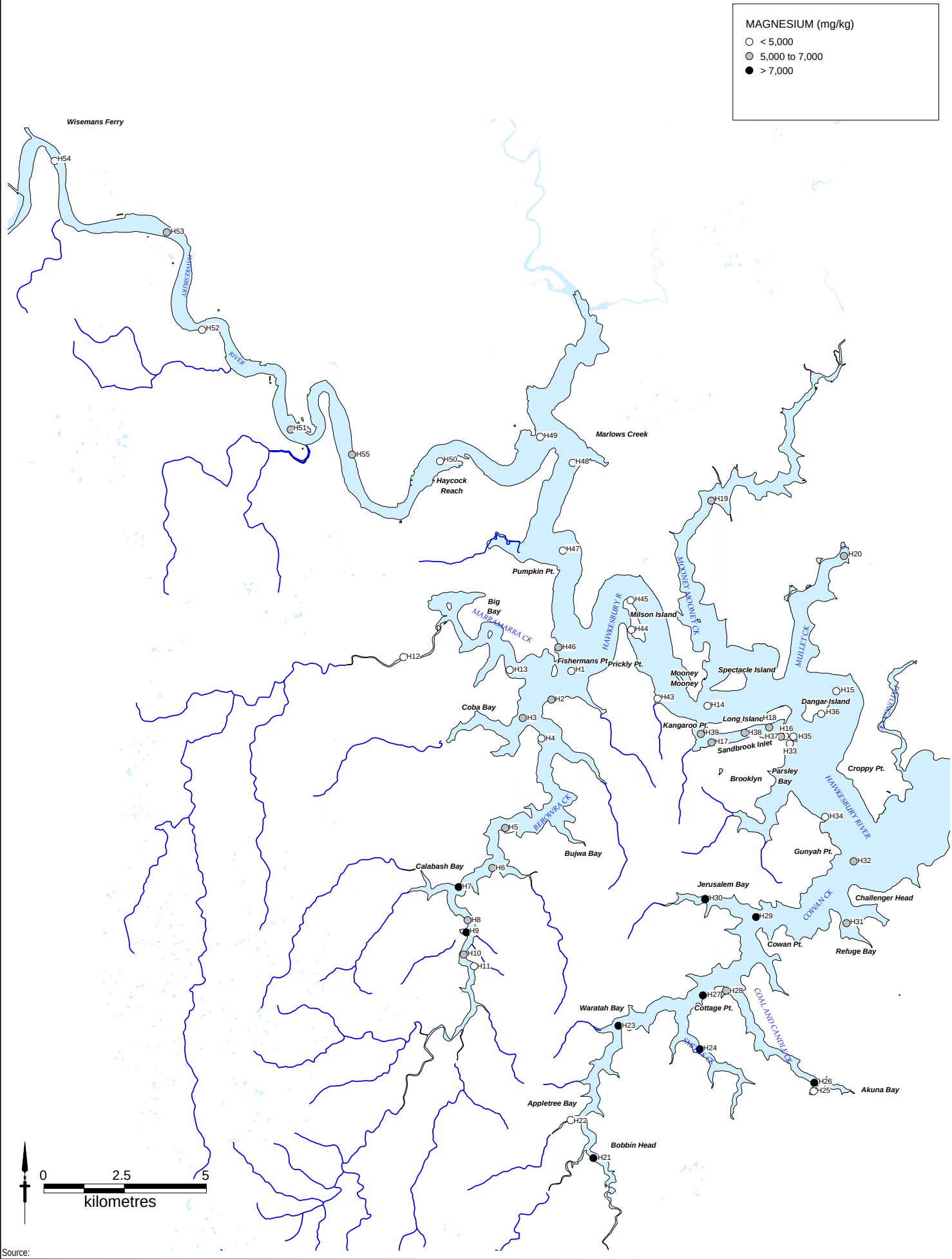

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Client	Project	Title
Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**MAGNESIUM**
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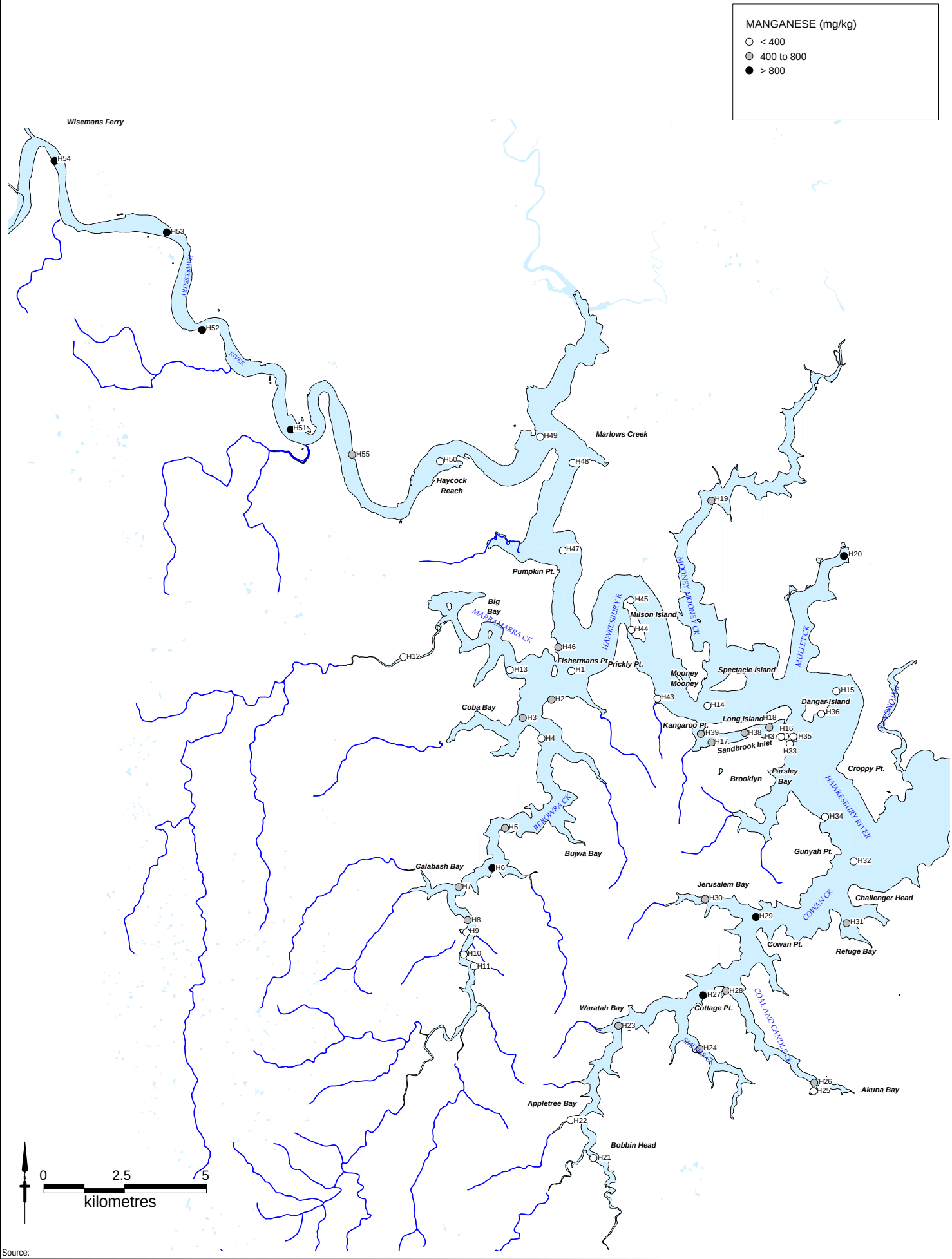

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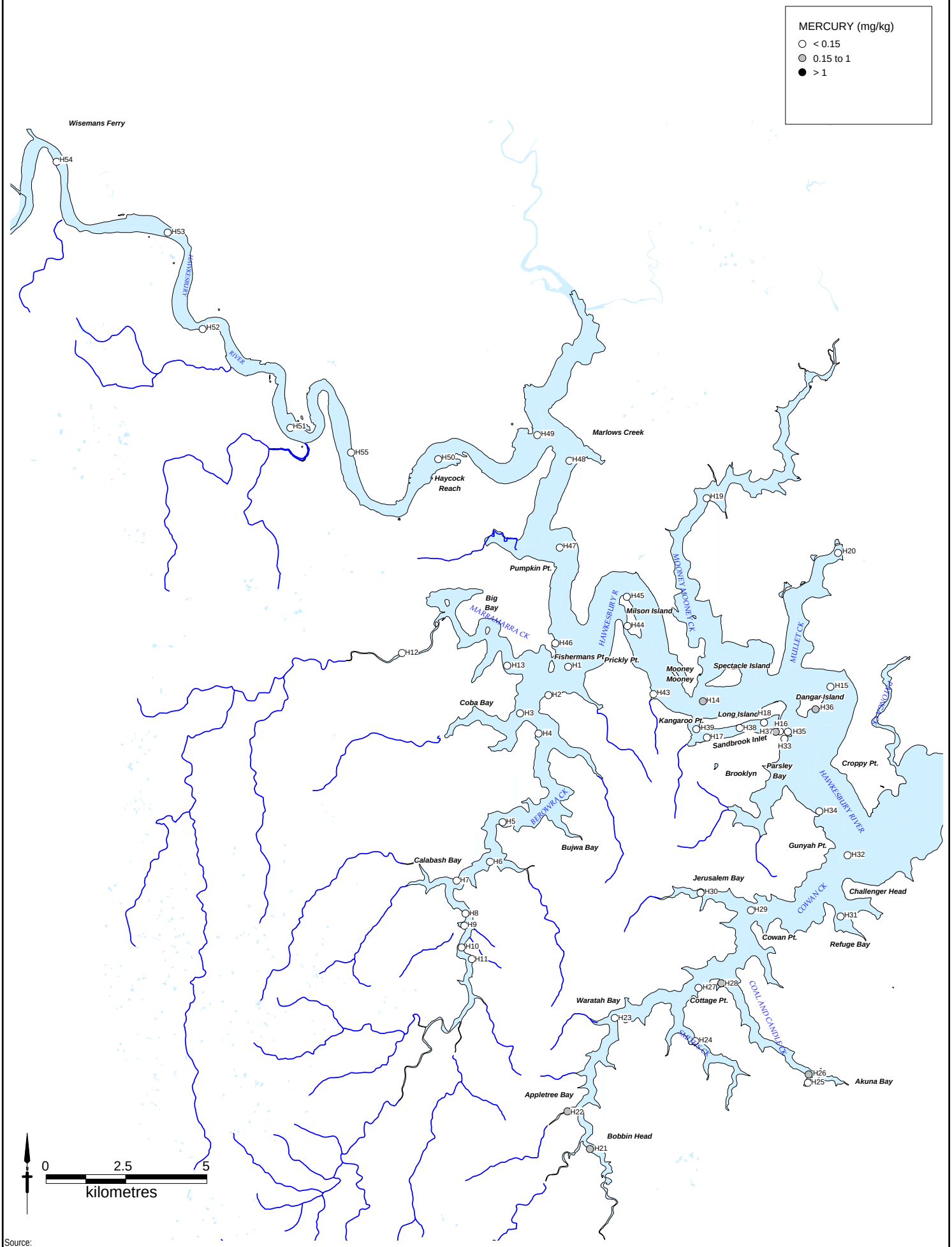

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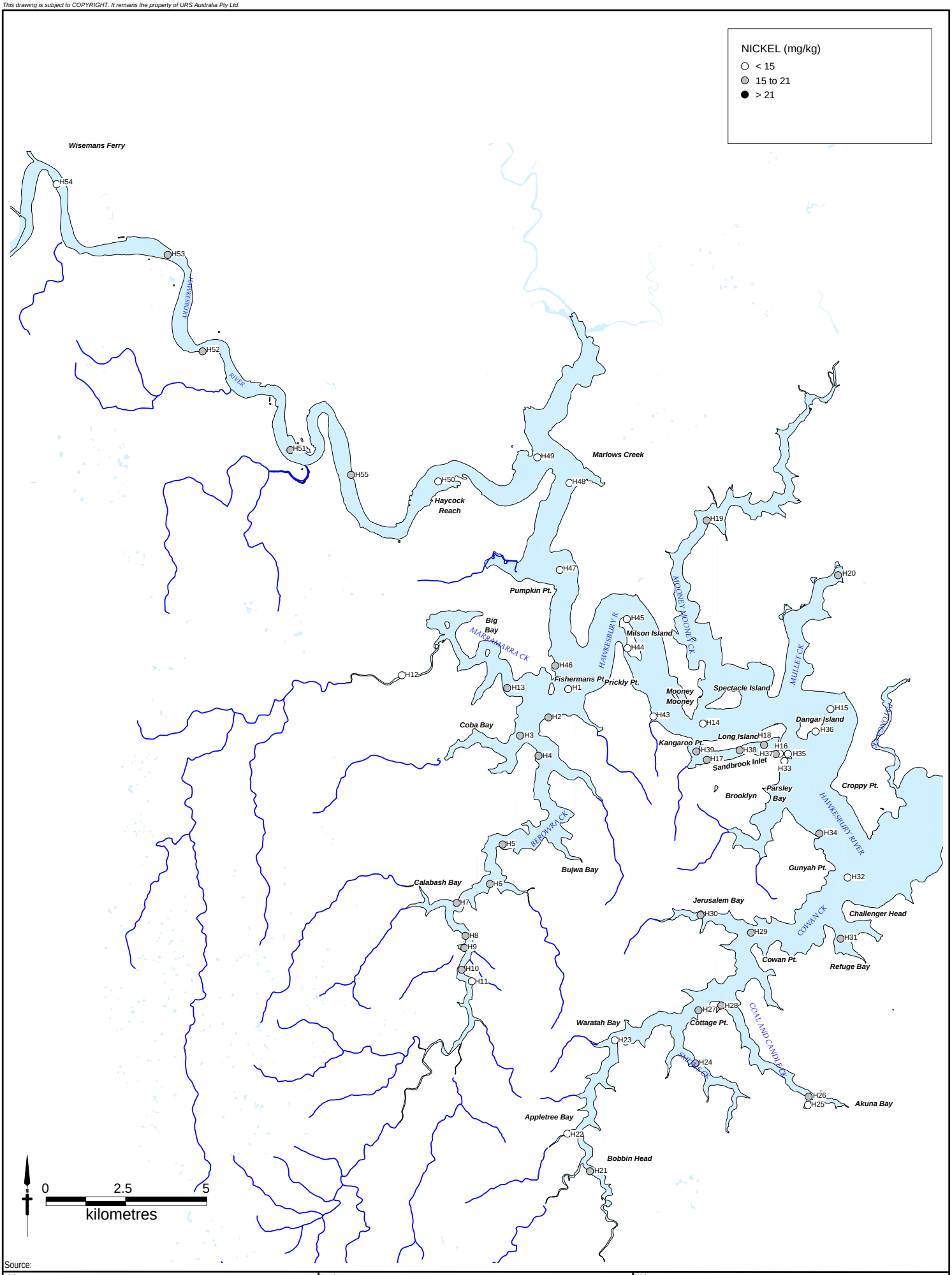

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Client	Project	Title
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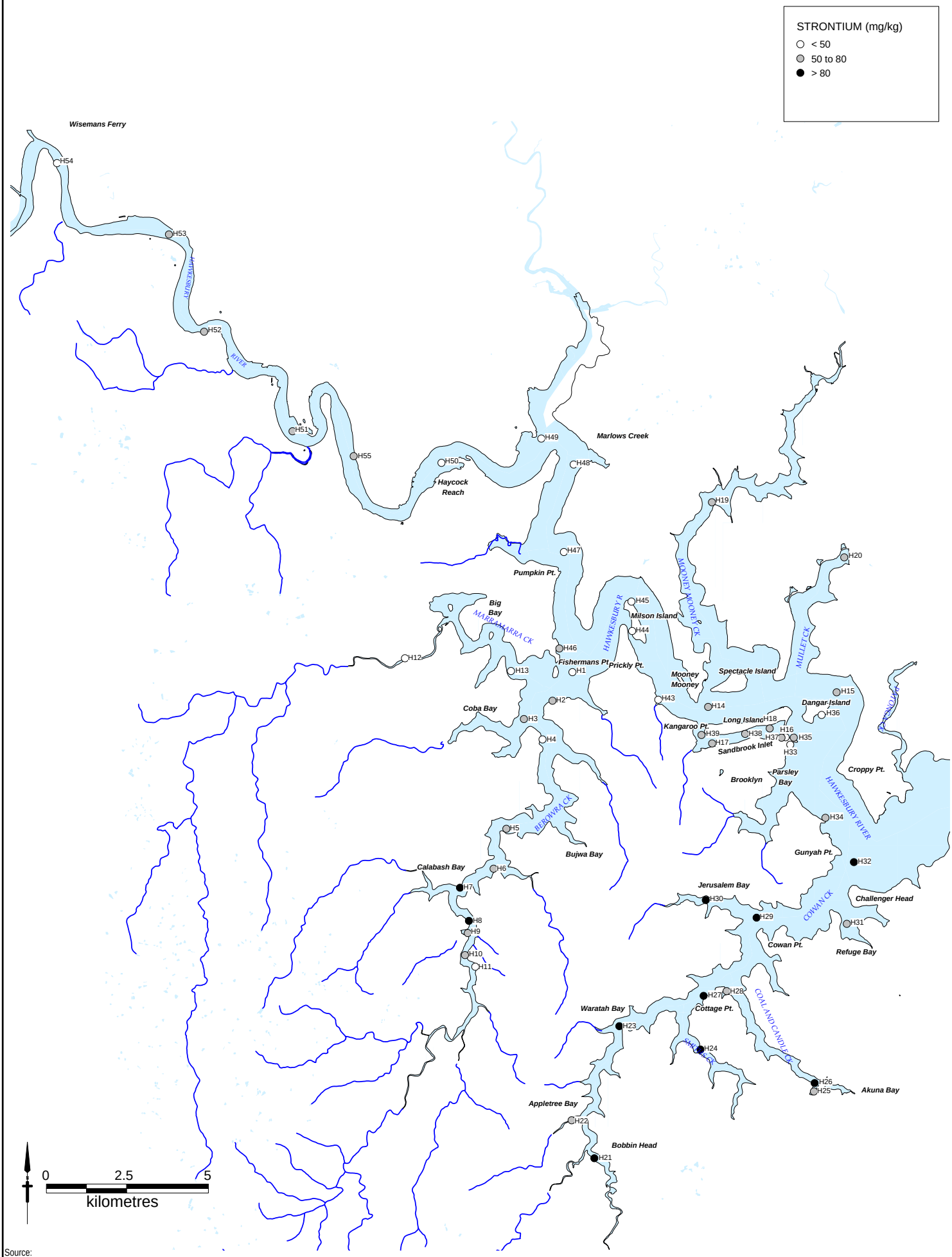

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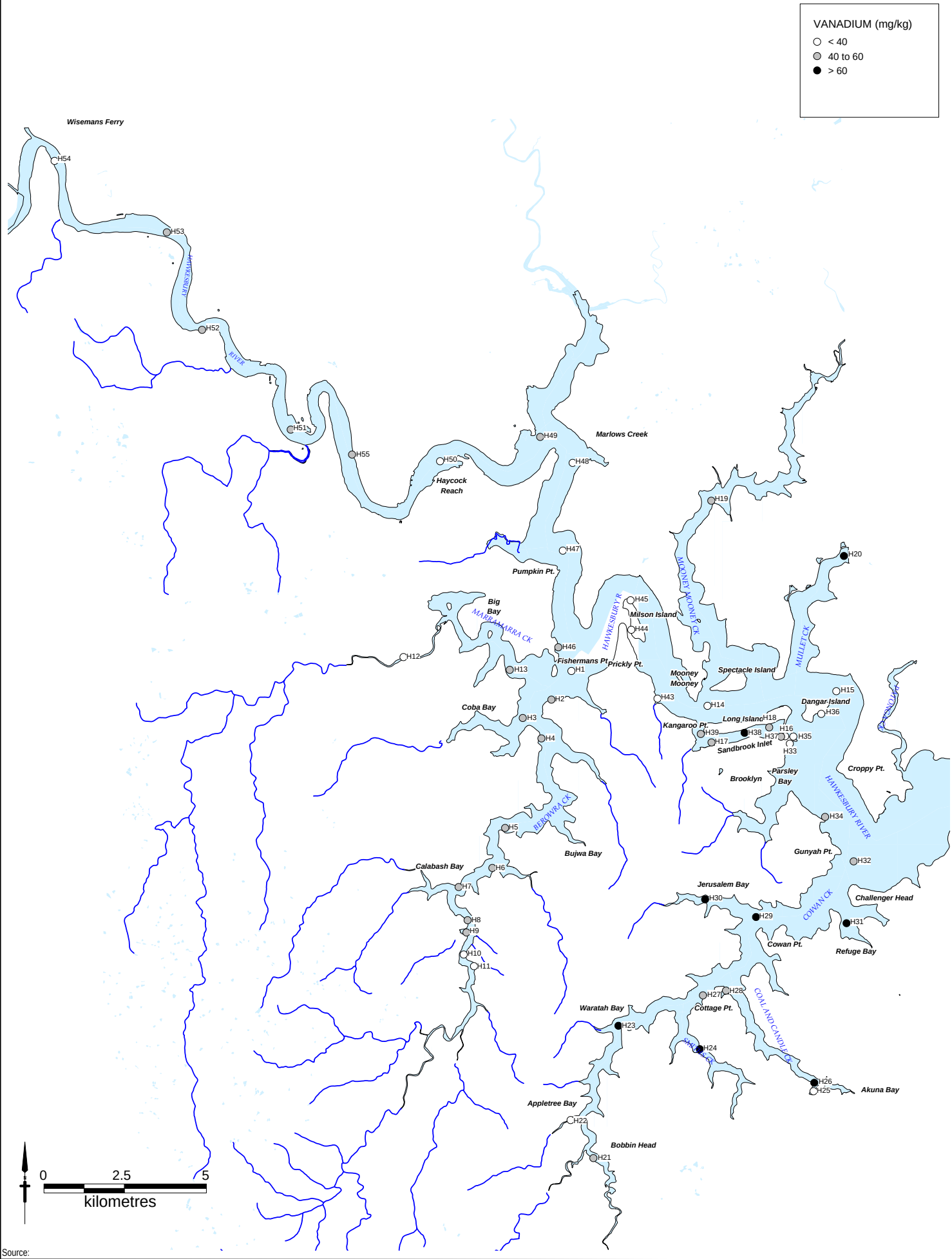

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Client	Project	Title
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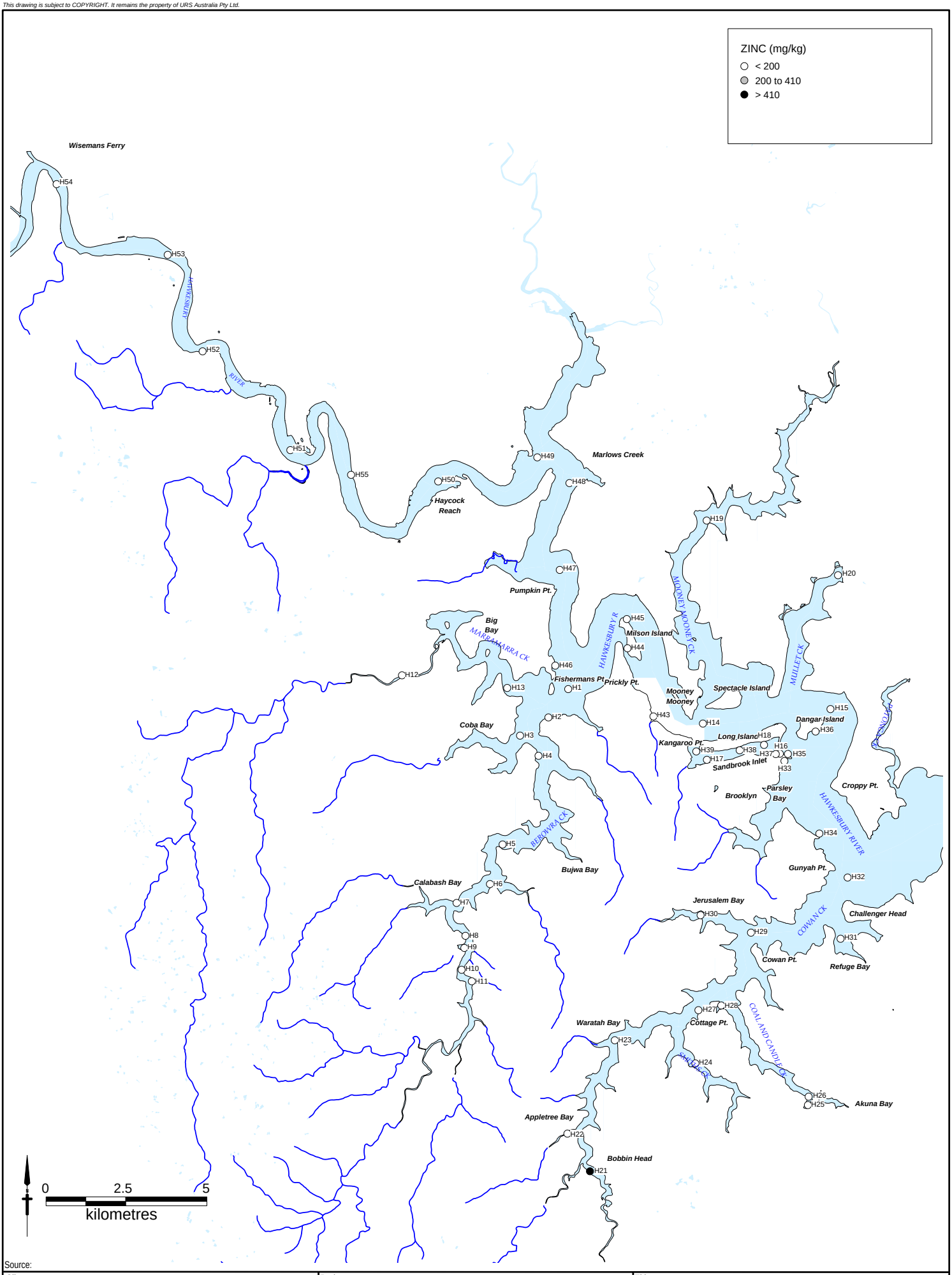

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Client	Project	Title
Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**ZINC**
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	Job No: **43217595** · File No: 43217595.001.wor	A4

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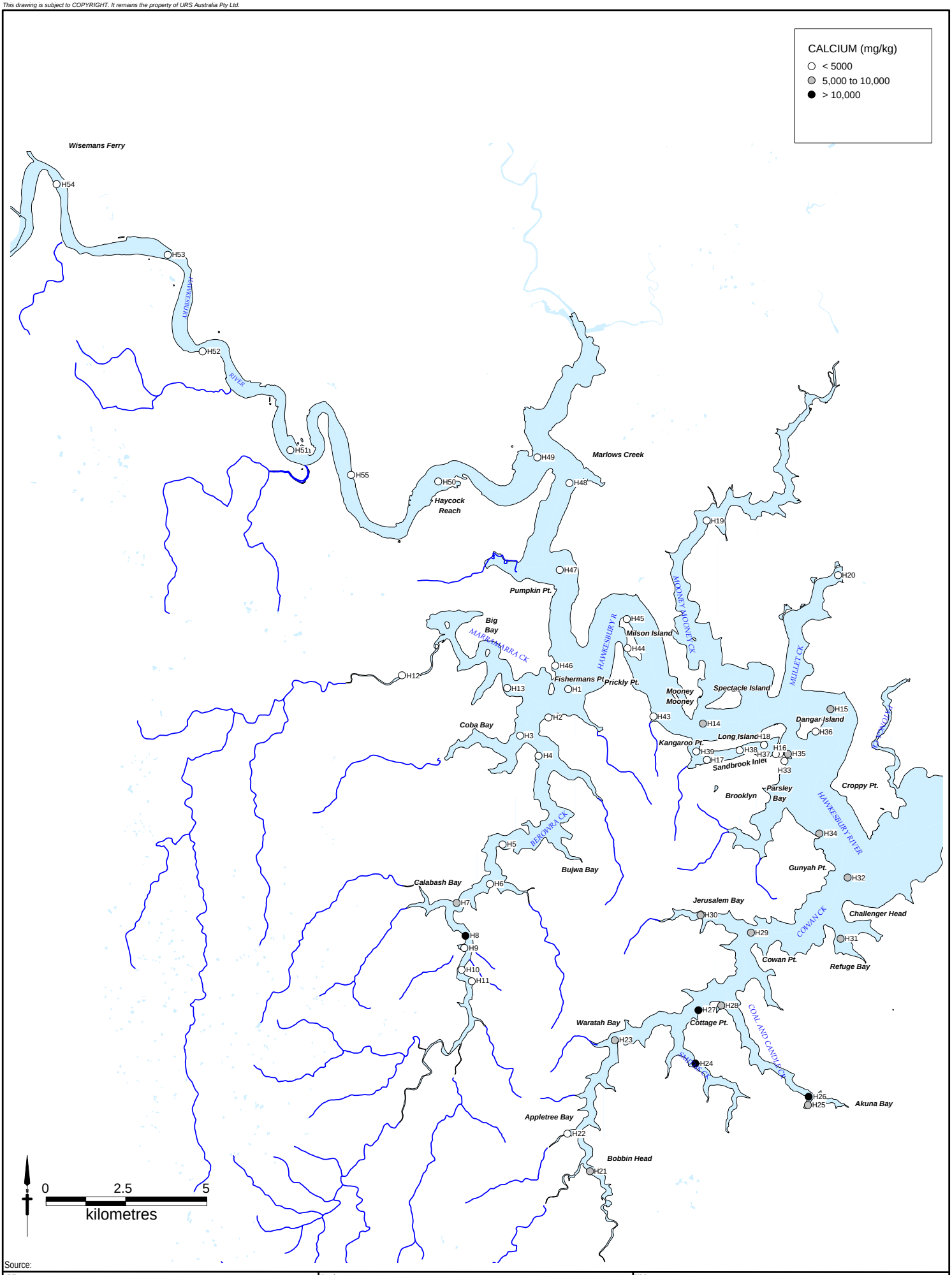

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Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**CALCIUM**
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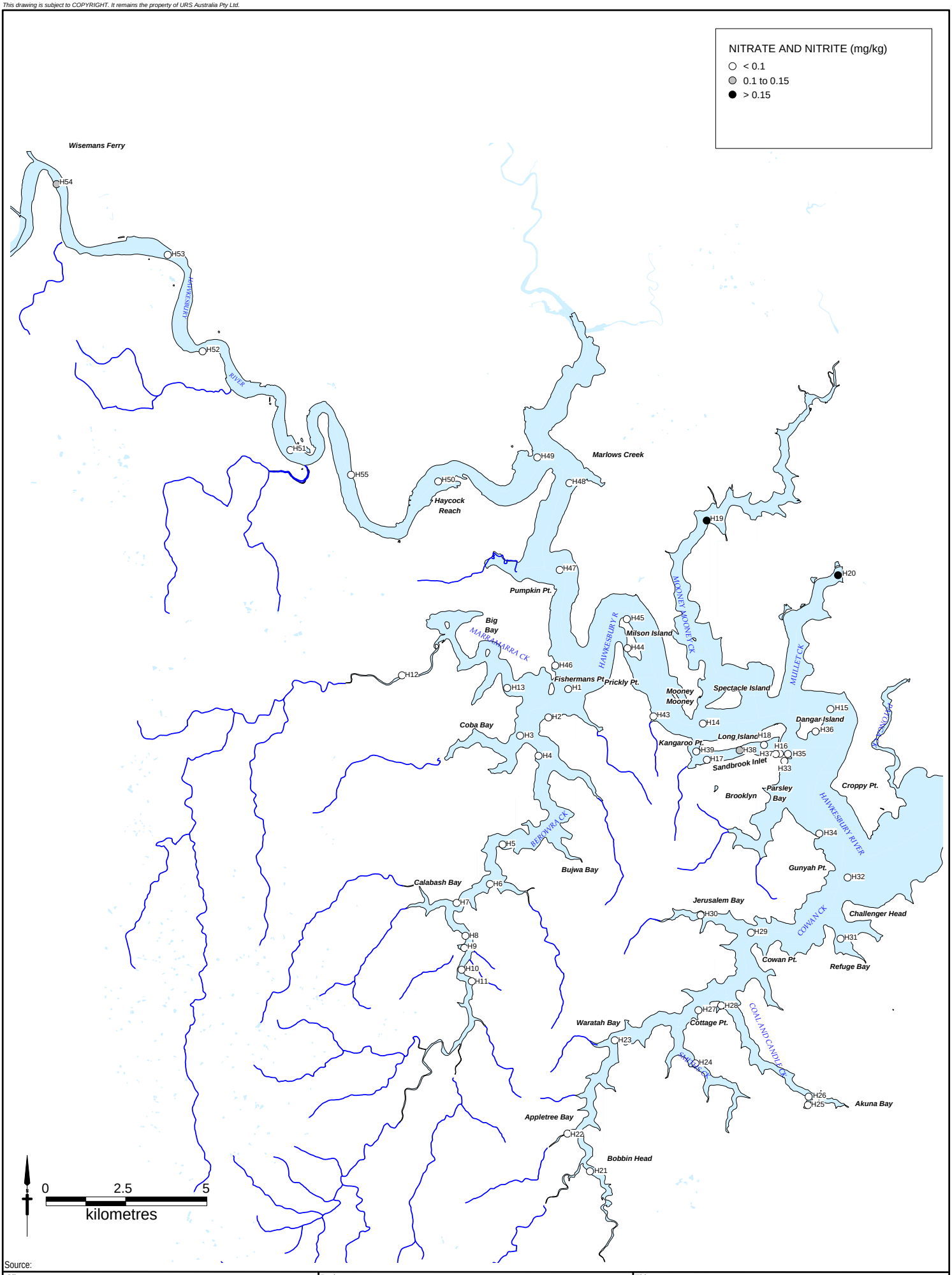

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Client	Project	Title
Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**NITRATE AND NITRITE**
URS	Drawn: CM · Approved: DRAFT · Date: 31-01-07	Figure: 1 · Rev: B
	Job No: **43217595** · File No: 43217595.001.wor	A4

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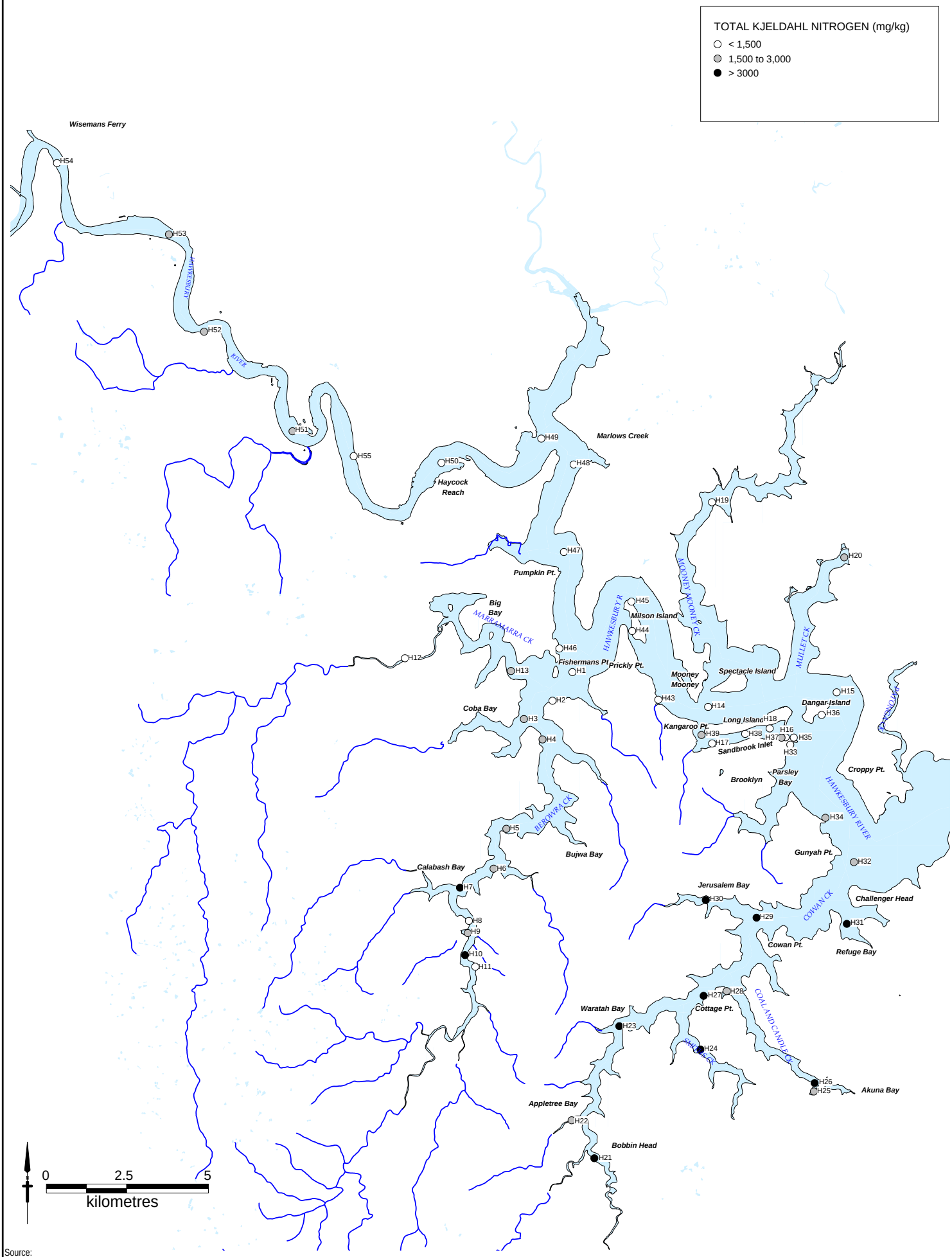

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Client	Project	Title
Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**TOTAL KJELDAHL NITROGEN**
URS	Drawn: CM / Approved: DRAFT / Date: 31-01-07	Figure: 22
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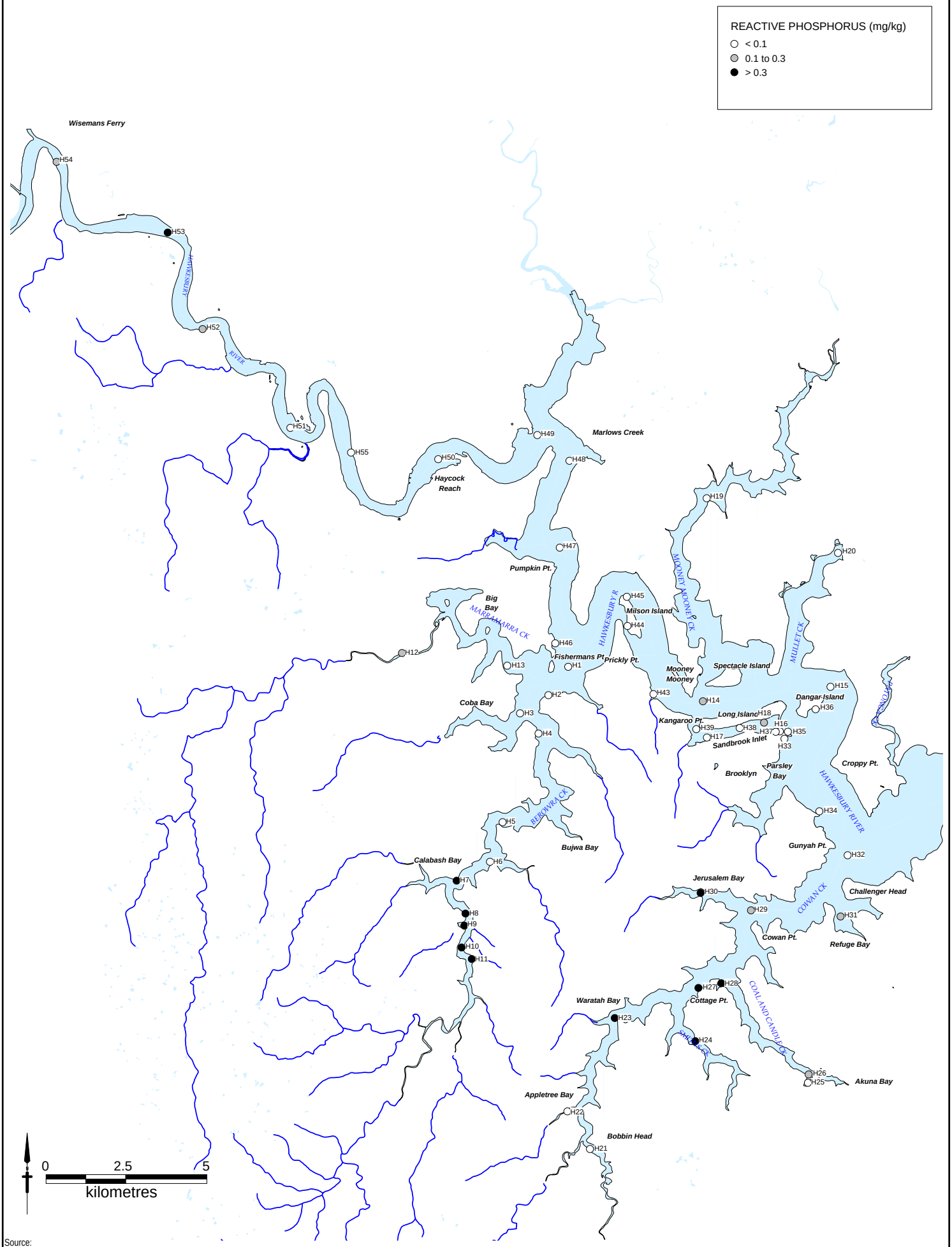

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Client	Project	Title
Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**REACTIVE PHOSPHORUS**
URS	Drawn: CM / Approved: DRAFT / Date: 31-01-07	Figure: 23
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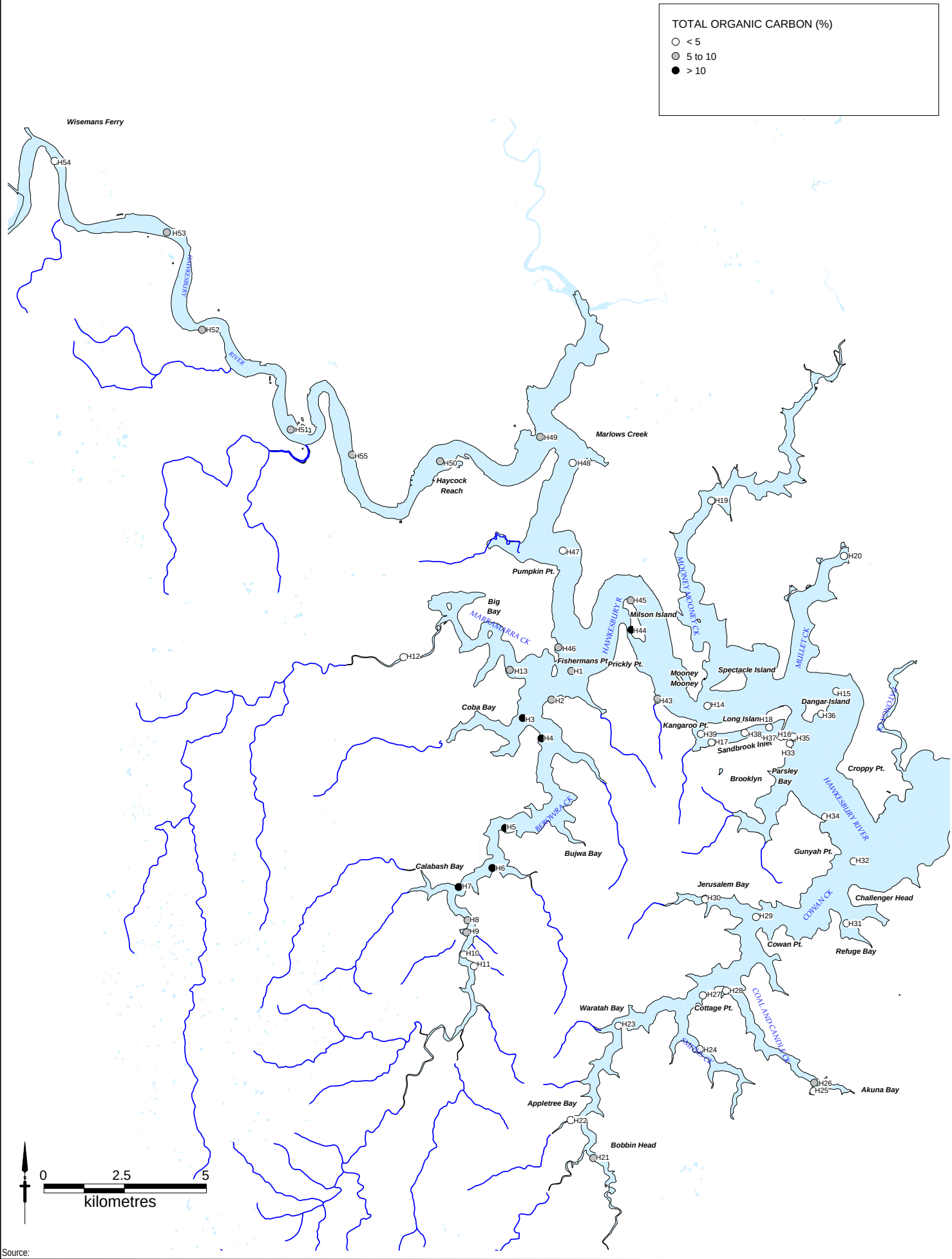

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Client	Project	Title
Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**TOTAL ORGANIC CARBON**
URS	Drawn: CM · Approved: DRAFT · Date: 31-01-07	Figure: 24 · Rev: B
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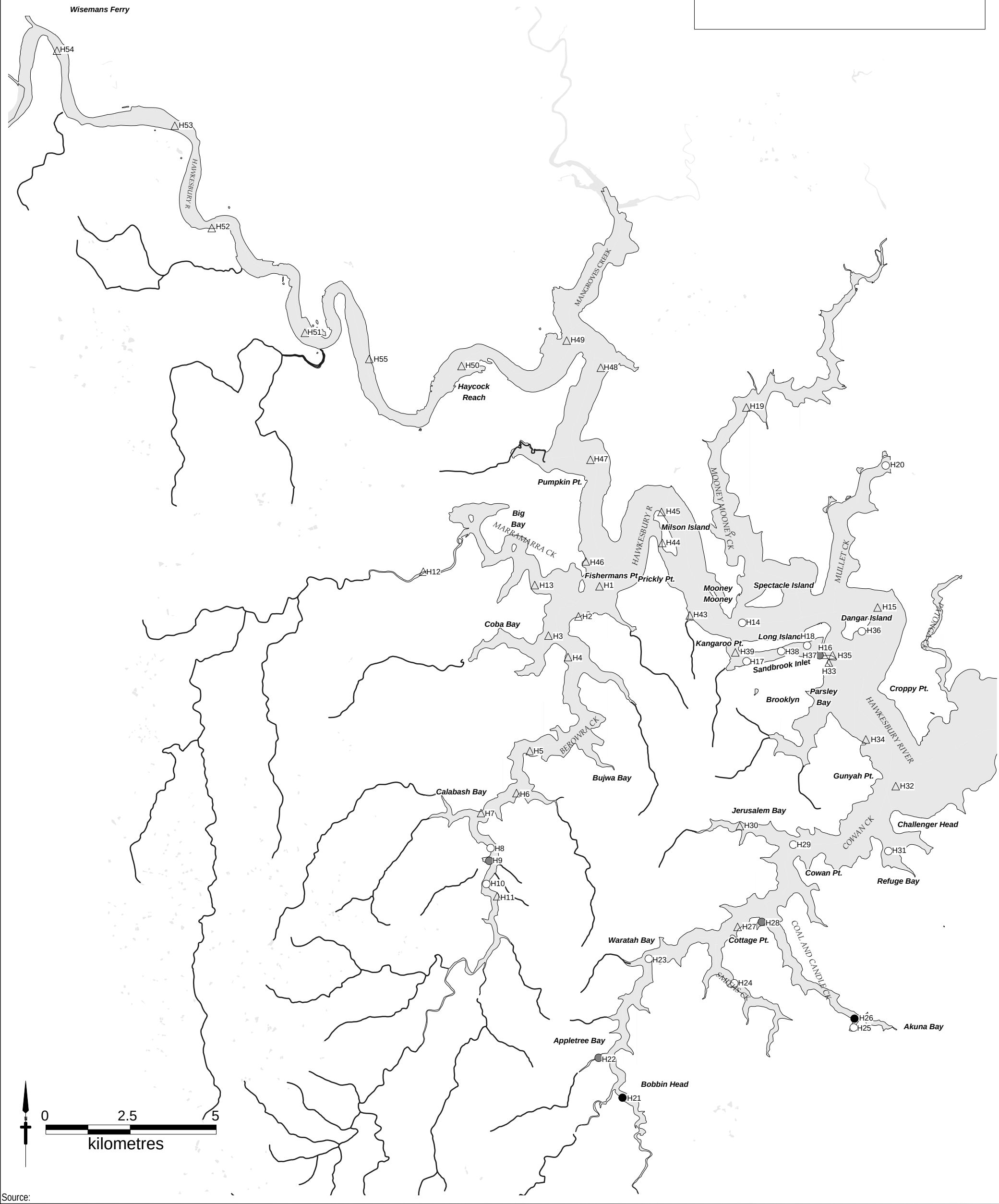

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Client	Project	Title
Hornsby Shire Council	SEDIMENT AND ANTIFOUL MONITORING STUDY (STAGE 1)	**NUMBER OF ELEMENTS EXCEEDING ANZECC/ARMCANZ (2000) SEDIMENT QUALITY GUIDELINE VALUES**

URS

Drawn: CM	Approved: DRAFT	Date: 31-01-07
Job No: **43217595**	File No: 43217595.001.wor	

Figure: 25

Rev: B

A4

Figures

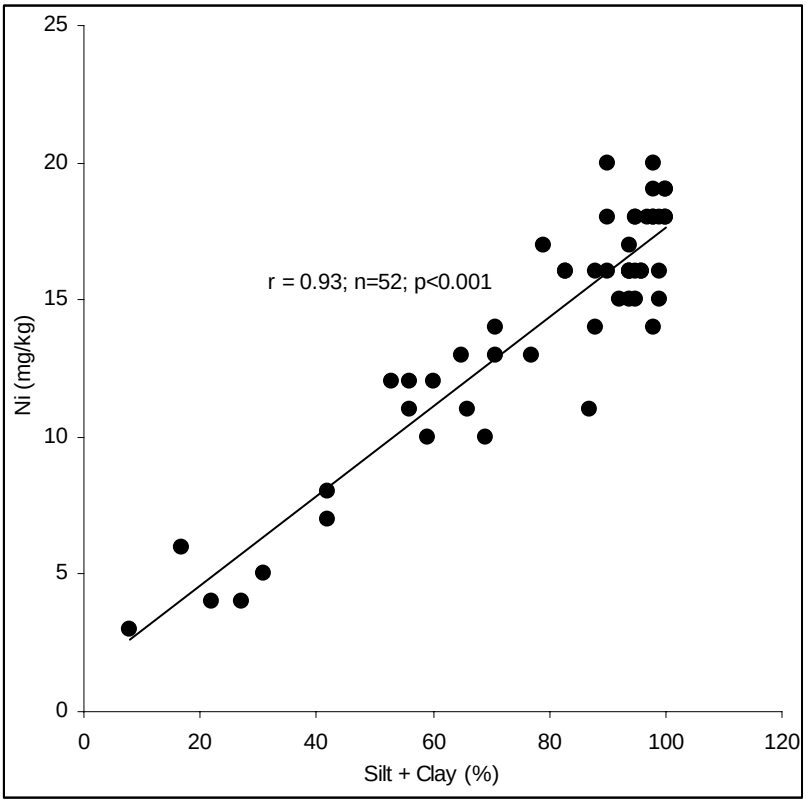


Figure 26 – Silt + Clay content vs. Nickel Concentration in Whole Sediments

Figures

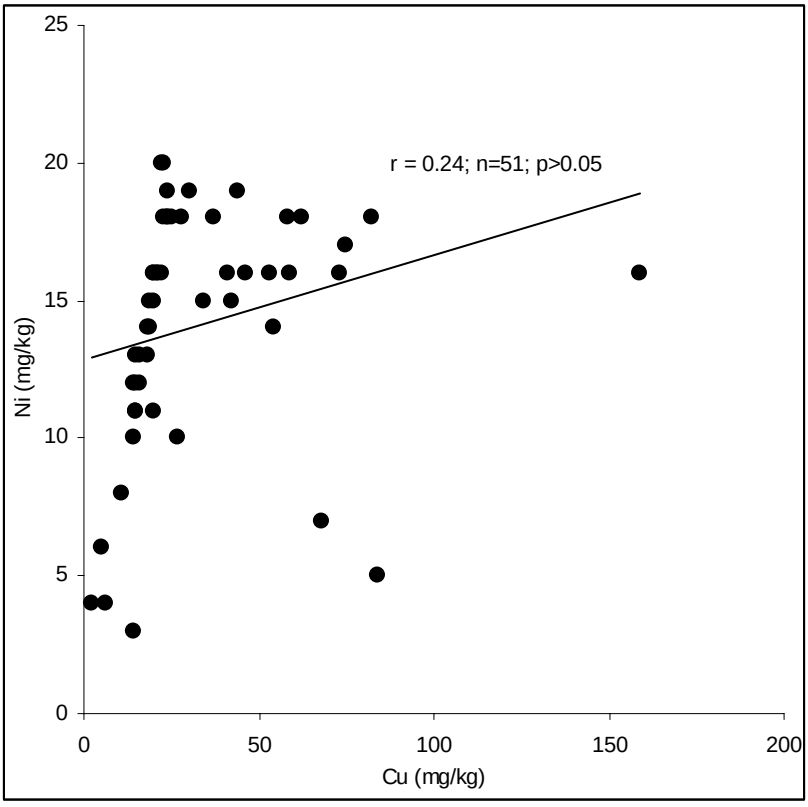


Figure 27. Copper Concentration vs. Nickel Concentration in Sediments (Excluding Sample Location H21).

Figures

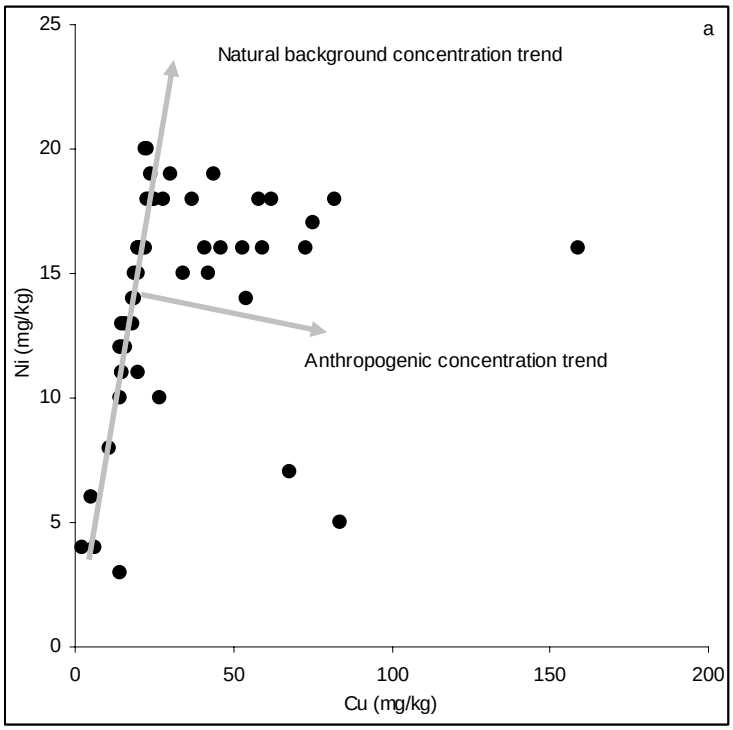


Figure 28a. Anthropogenic vs Natural (Grain Size) Concentrations Using Nickel and Copper.

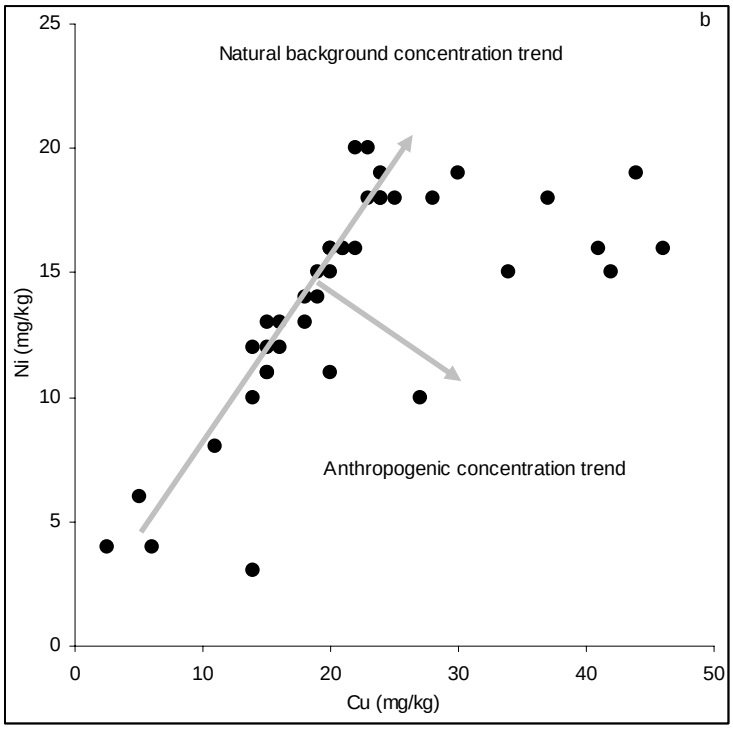


Figure 28b. Anthropogenic vs Natural (Grain Size) Concentrations Using Nickel and Copper (<50 mg/kg).

Figures

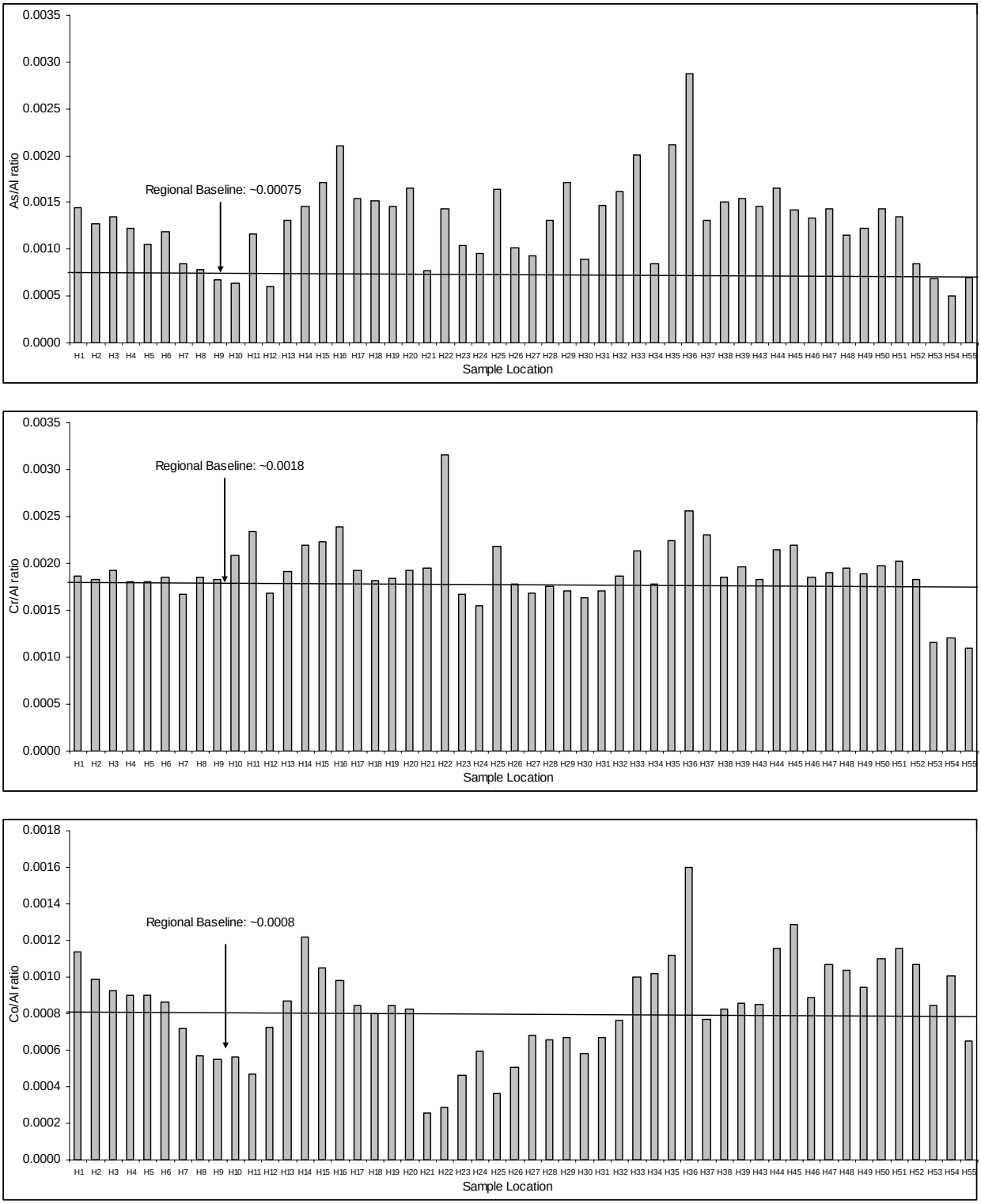
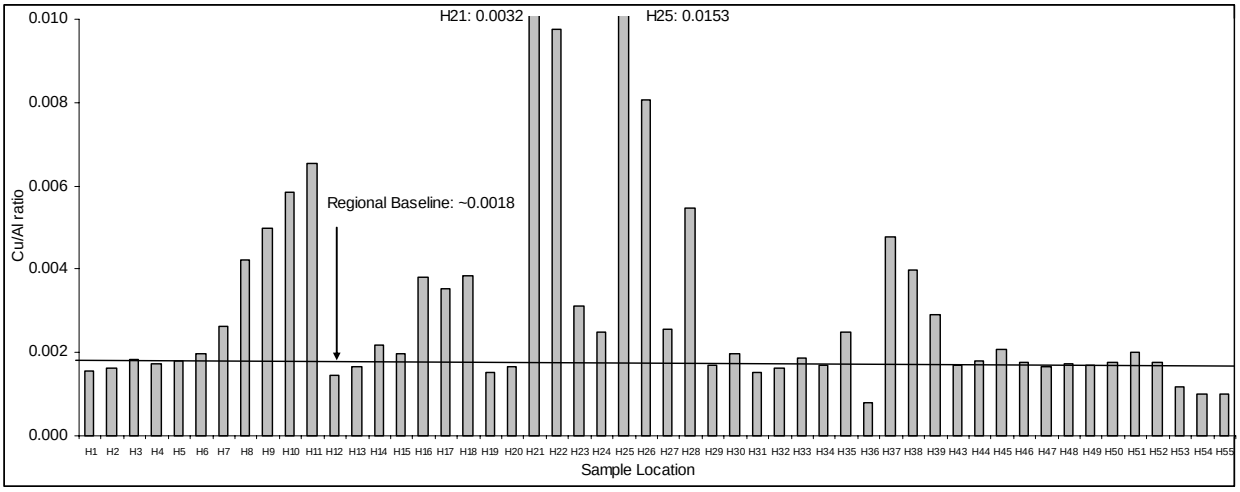
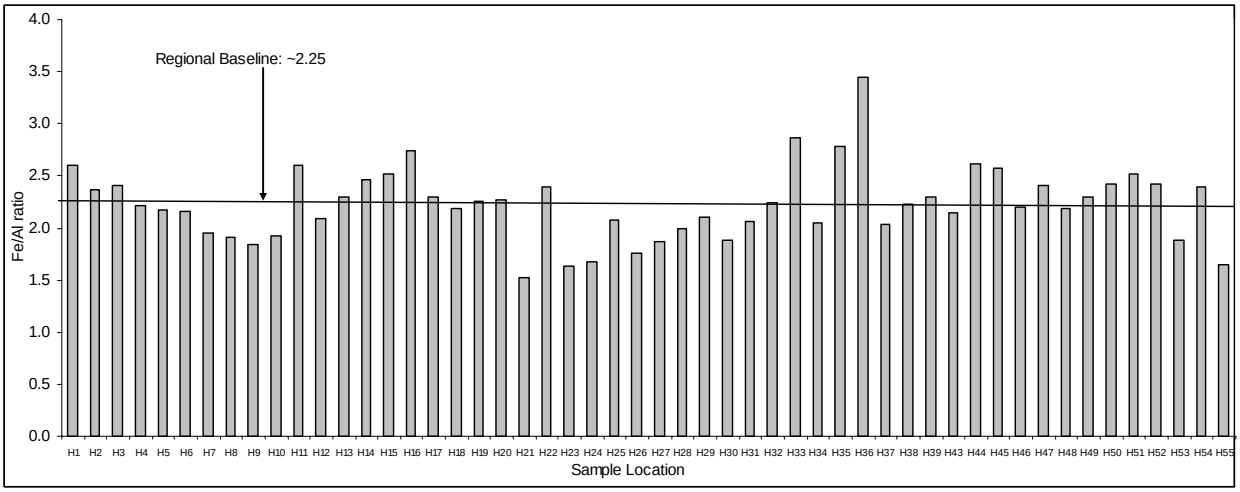


Figure 29. Ratios of As:Al, Cr:Al, Co:Al, Cu:Al, Fe:Al, Pb:Al, Mg:Al, Mn:Al, Ni:Al, and Zn:Al in Sediments at Sampling Locations H1 to H55.

Figures





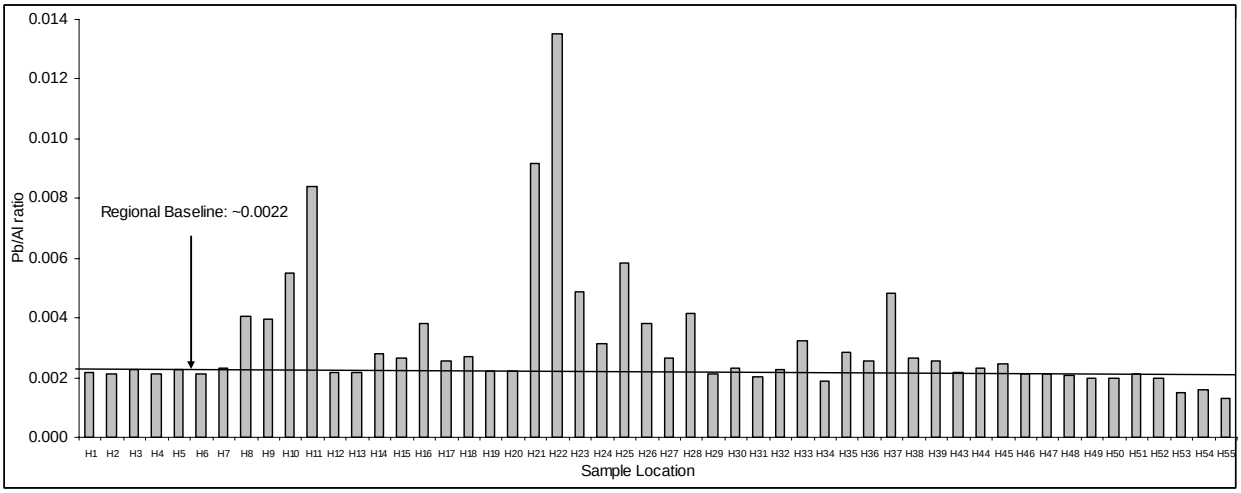
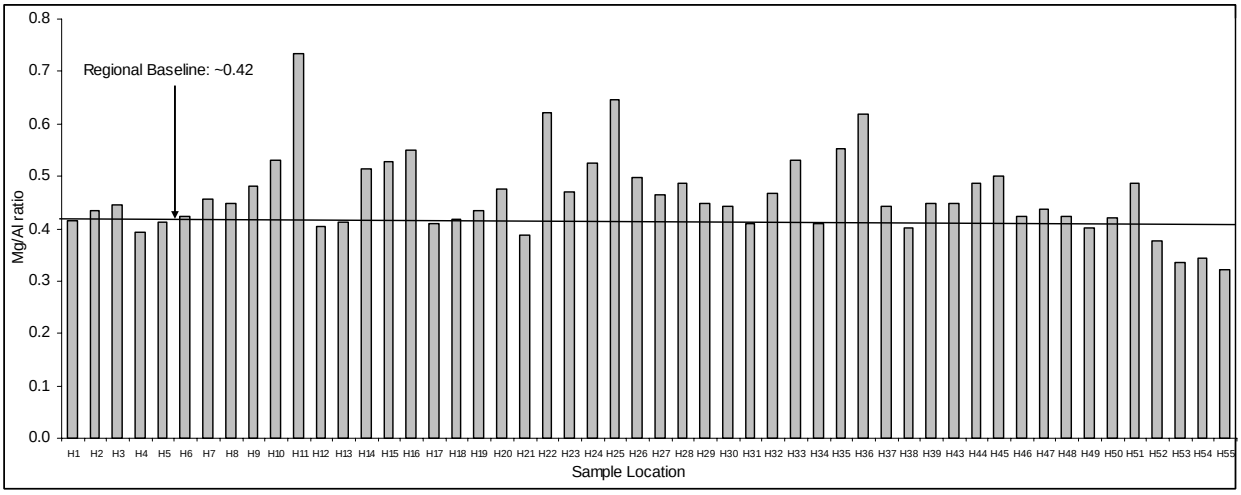
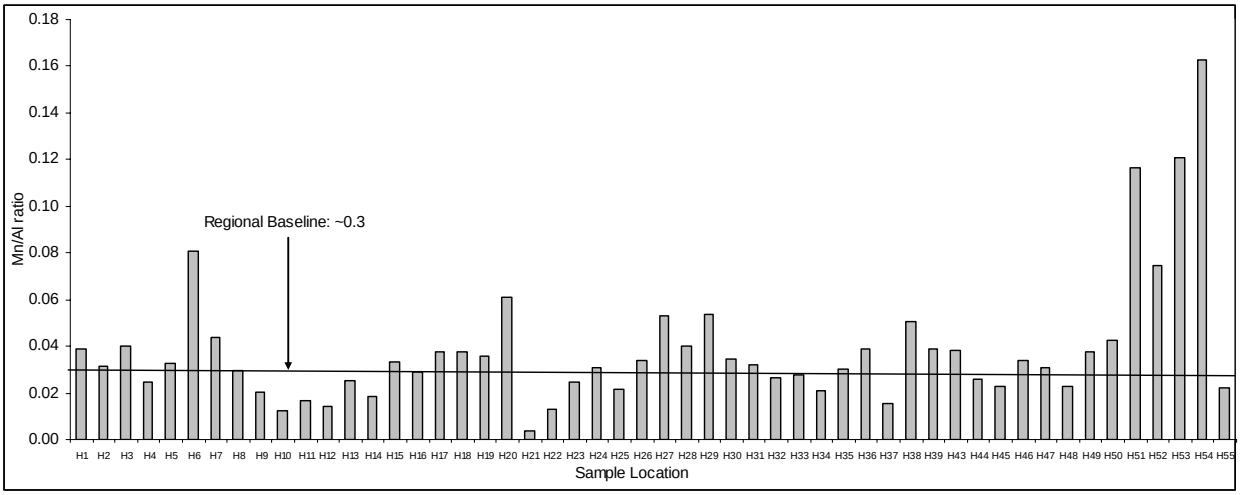


Figure 29 (cont'd). Ratios of As:Al, Cr:Al, Co:Al, Cu:Al, Fe:Al, Pb:Al, Mg:Al, Mn:Al, Ni:Al, and Zn:Al in Sediments at Sampling Locations H1 to H55.

Figures





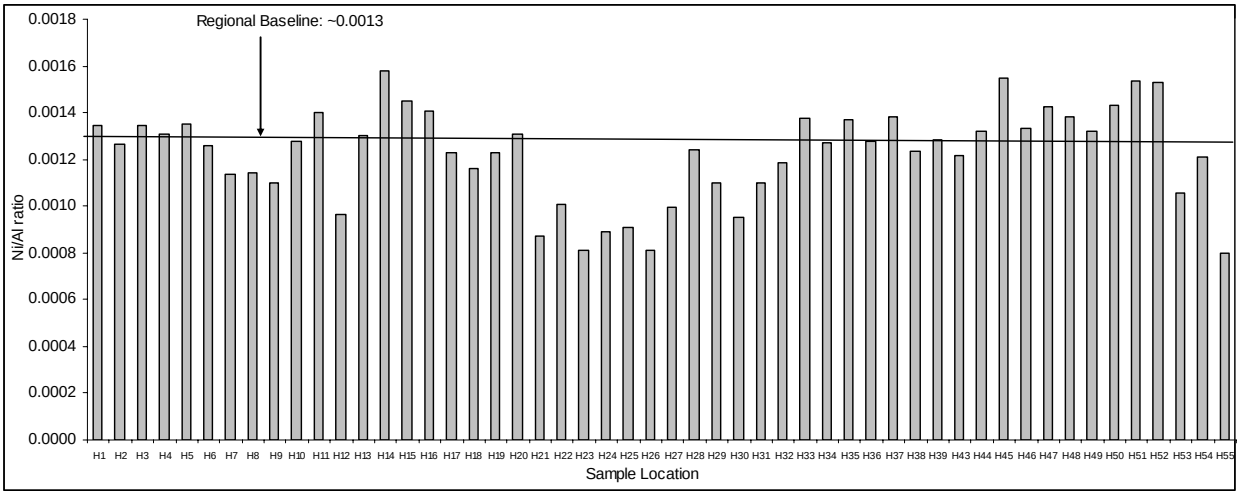


Figure 29 (cont'd). Ratios of As:Al, Cr:Al, Co:Al, Cu:Al, Fe:Al, Pb:Al, Mg:Al, Mn:Al, Ni:Al, and Zn:Al in Sediments at Sampling Locations H1 to H55.

Figures

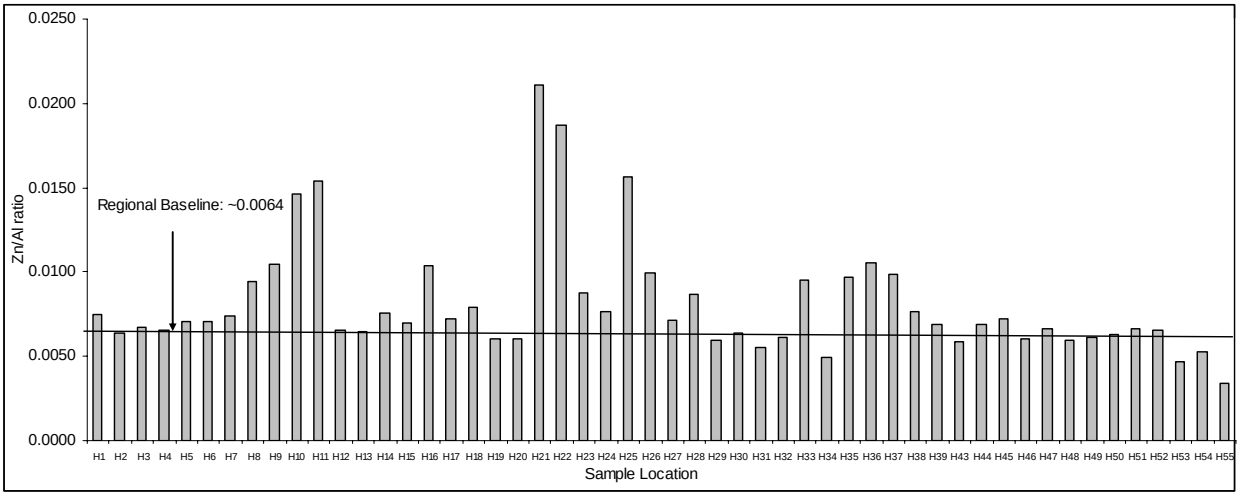
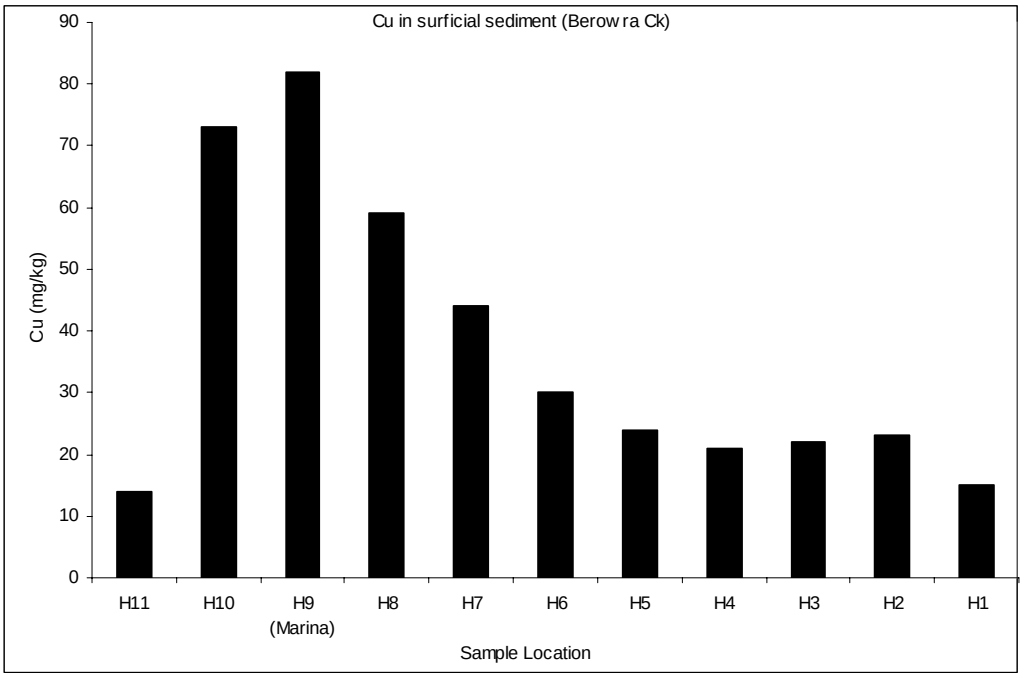


Figure 29 (cont'd). Ratios of As:Al, Cr:Al, Co:Al, Cu:Al, Fe:Al, Pb:Al, Mg:Al, Mn:Al, Ni:Al, and Zn:Al in Sediments at Sampling Locations H1 to H55.

Figures



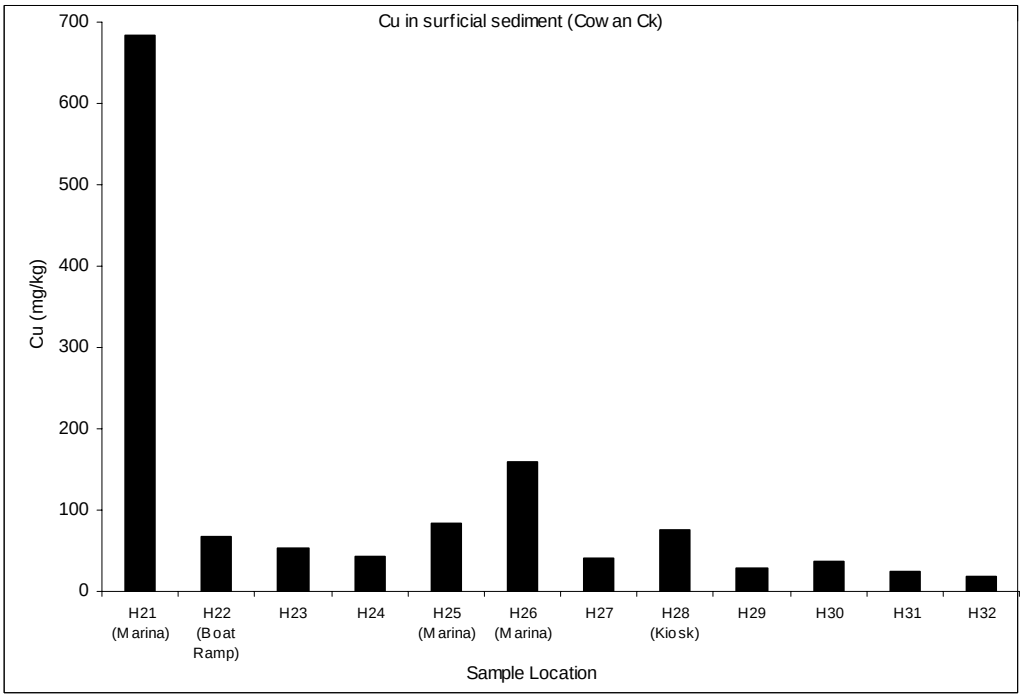
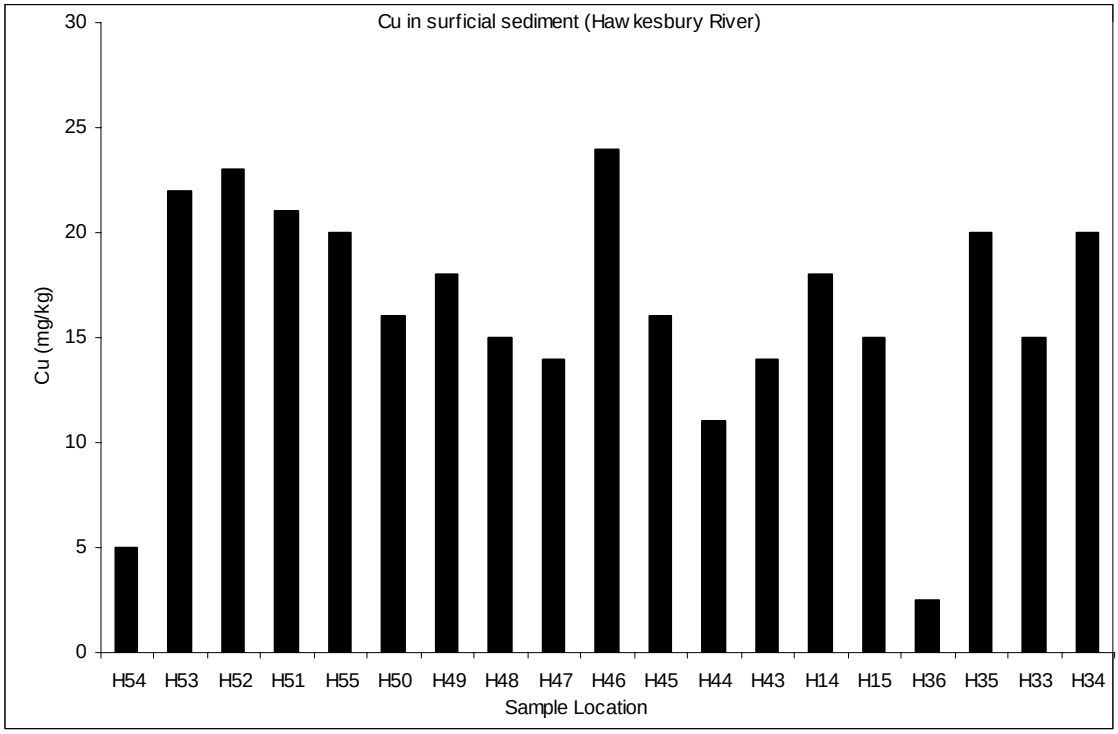


Figure 30. Copper Concentrations in Sediments in Berowra Creek, Cowan Creek, the Hawkesbury River and Sandbrook Inlet.

Figures



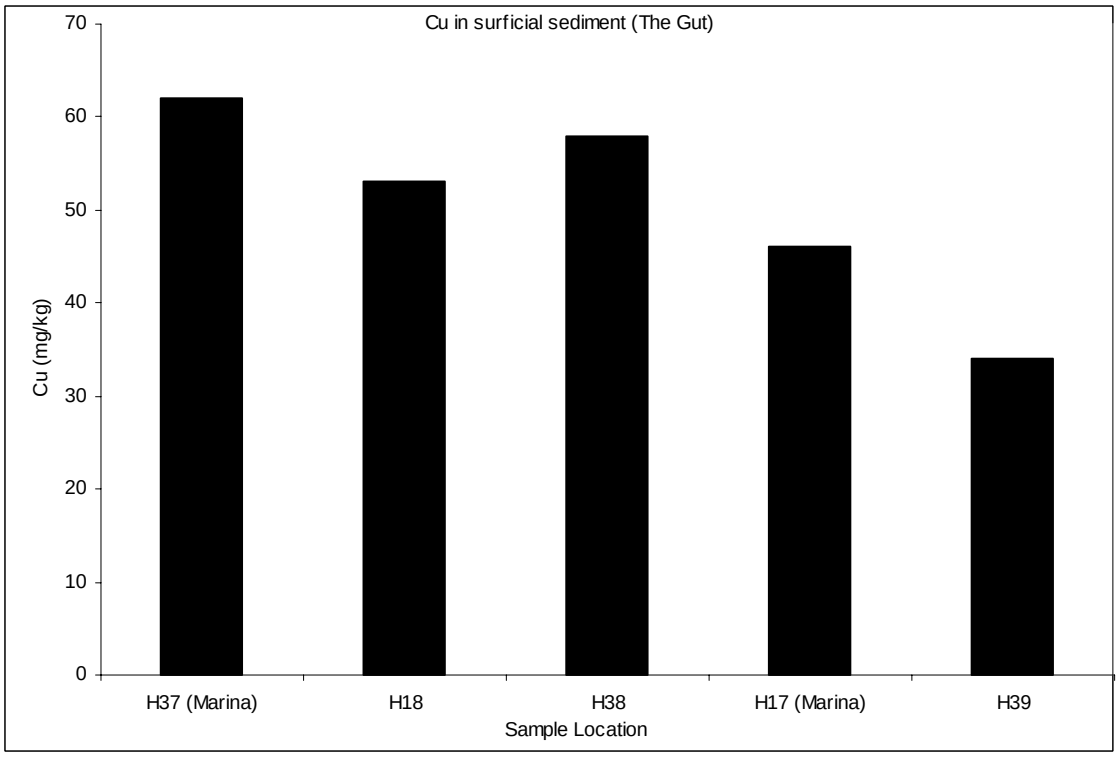
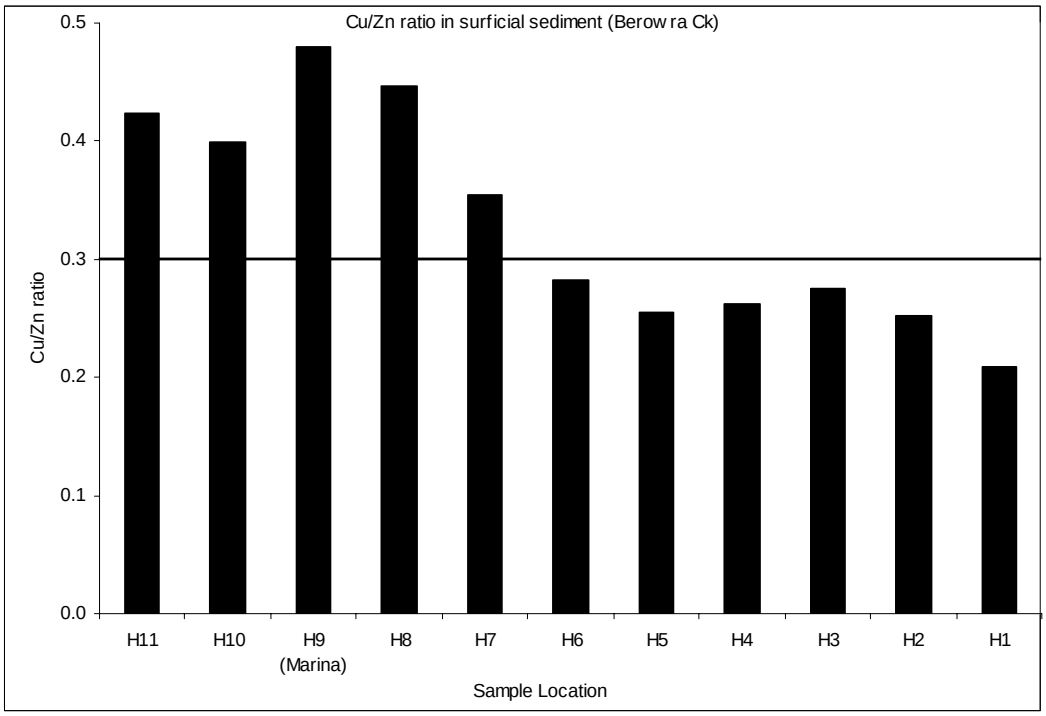


Figure 30 (cont'd). Copper Concentrations in Sediments in Berowra Creek, Cowan Creek, the Hawkesbury River and Sandbrook Inlet.

Figures



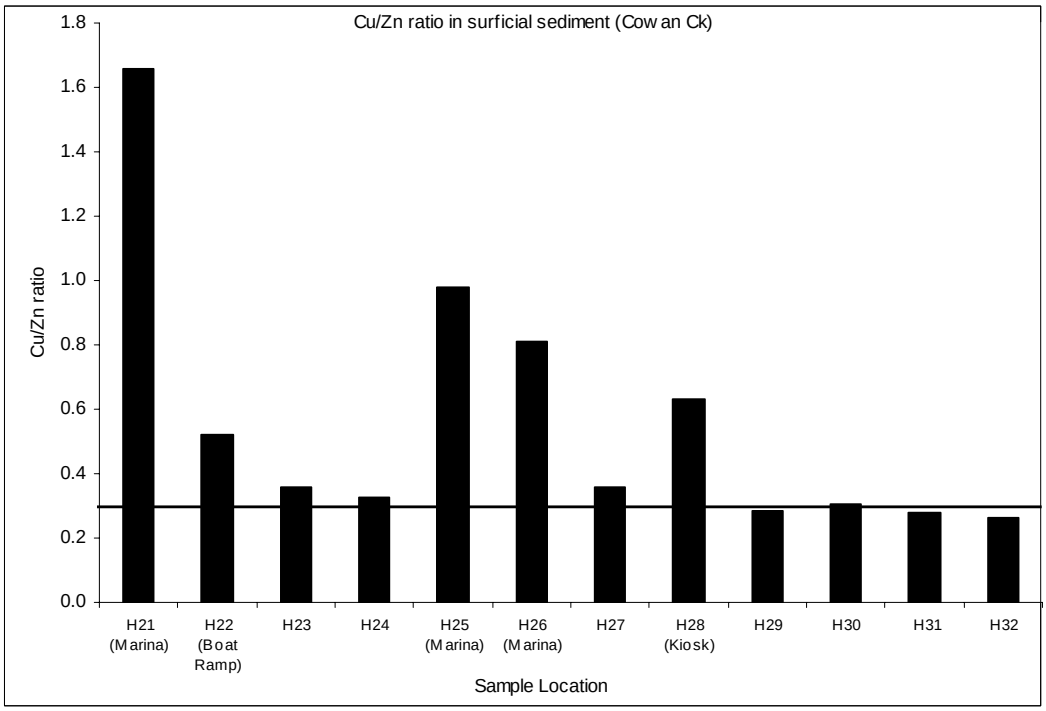
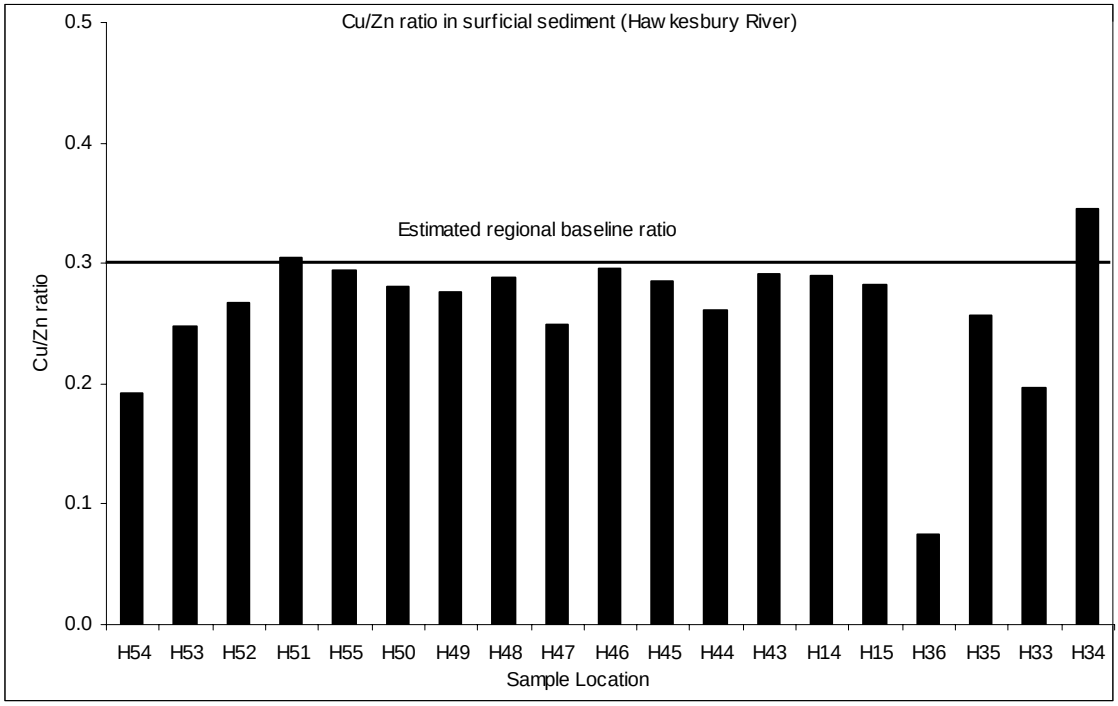


Figure 31. Cu:Zn Concentration Ratio in Sediments in Berowra Creek, Cowan Creek, the Hawkesbury River and Sandrook Inlet (Estimated Regional Baseline Cu:Zn Ratio: 0.3).

Figures



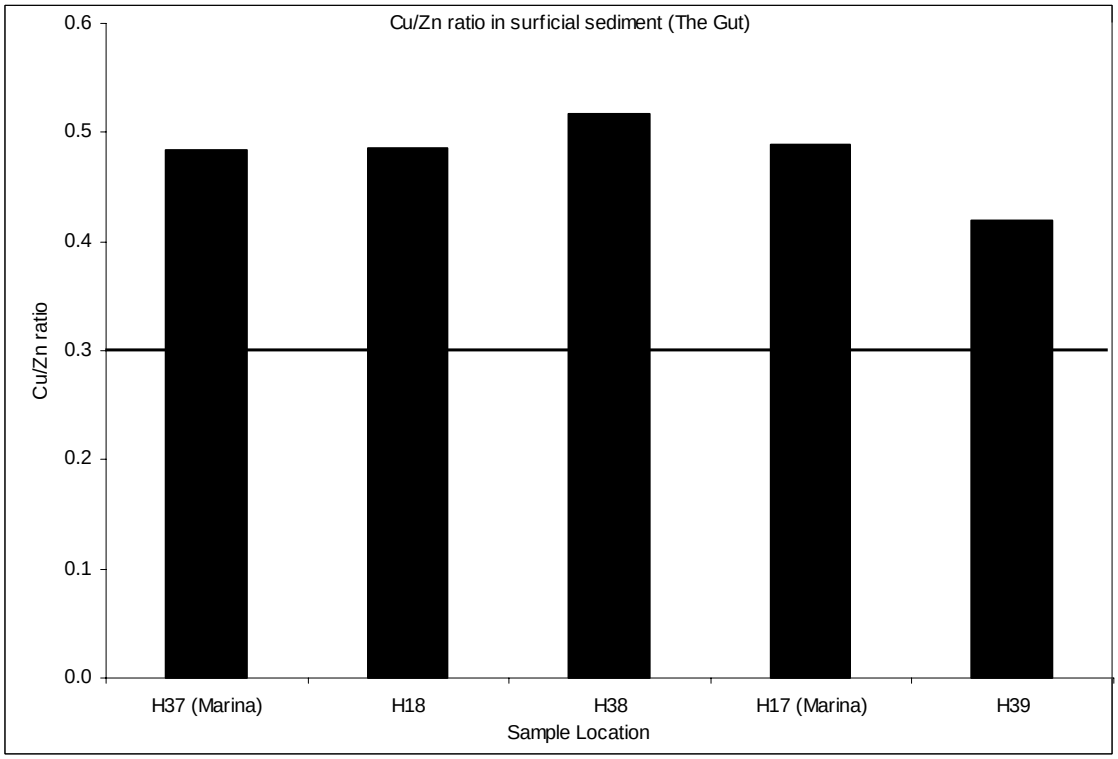


Figure 31 (cont'd). Cu:Zn Concentration Ratio in Sediments in Berowra Creek, Cowan Creek, the Hawkesbury River and Sandrook Inlet (Estimated Regional Baseline Cu:Zn Ratio: 0.3).

Figures

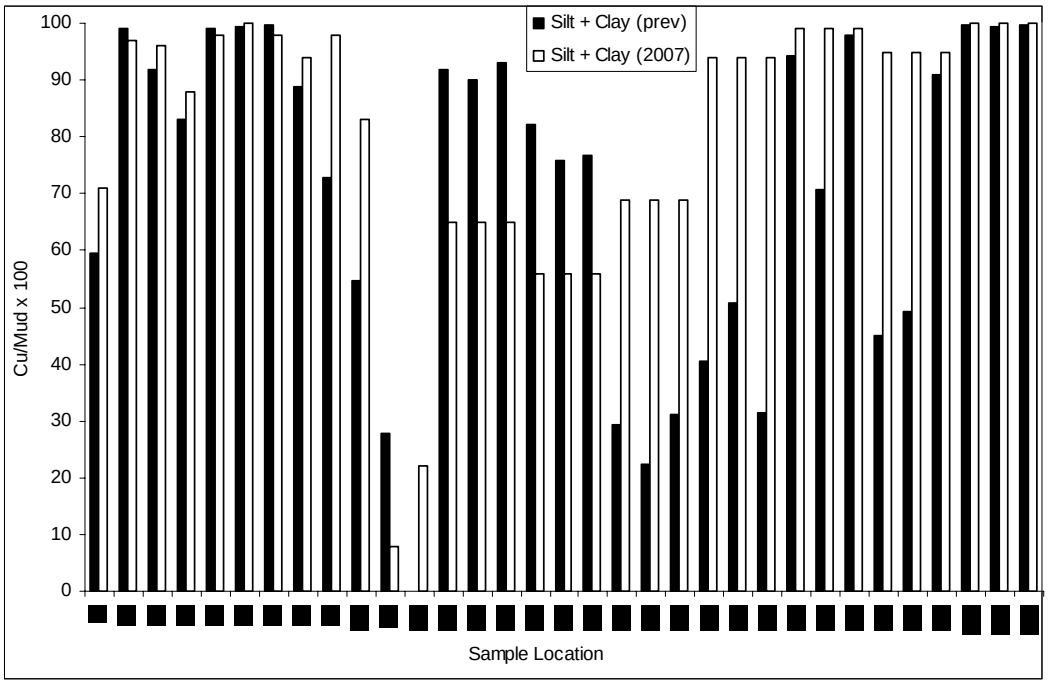


Figure 32. Silt & Clay Contents in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

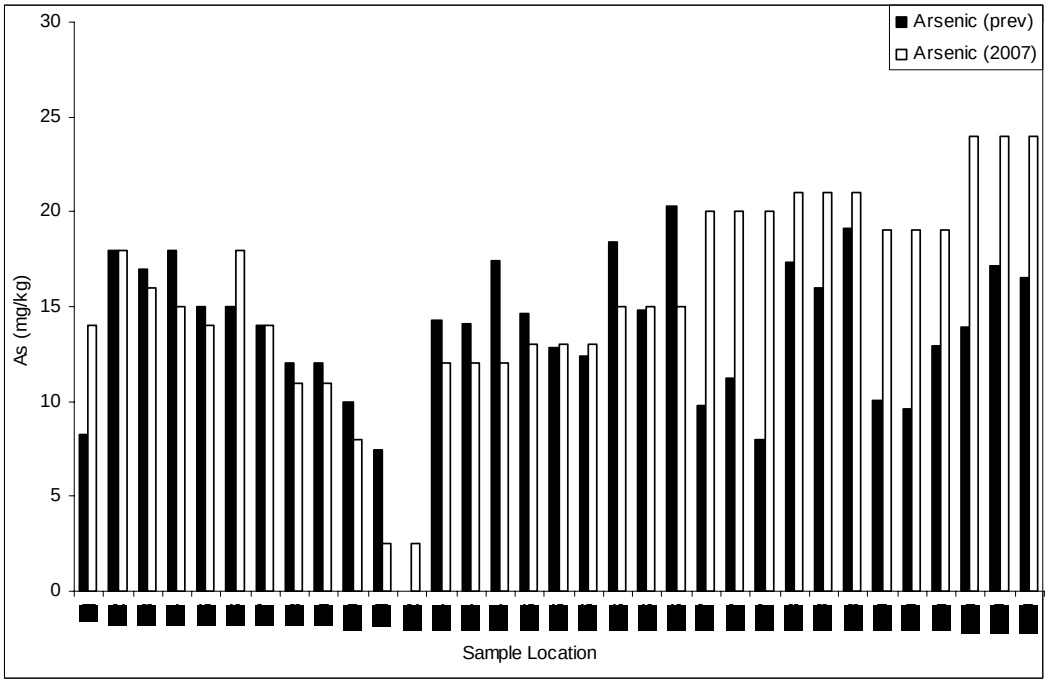


Figure 33. Concentrations of Arsenic in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

Figures

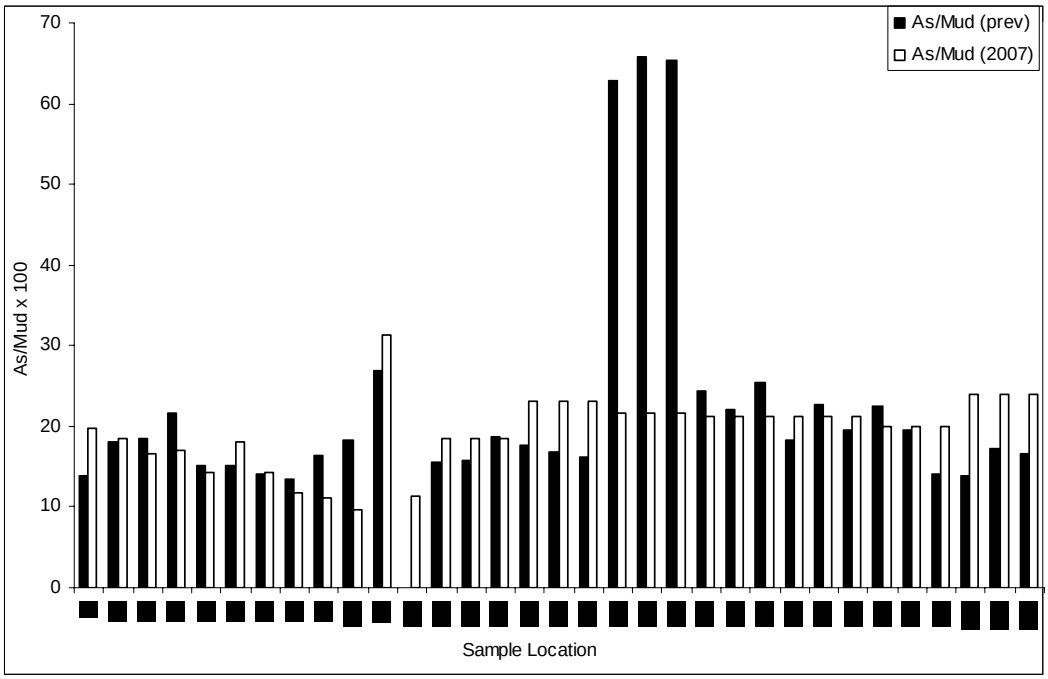


Figure 34. Concentrations of Arsenic (Normalized to Silt & Clay Content – Mud) in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

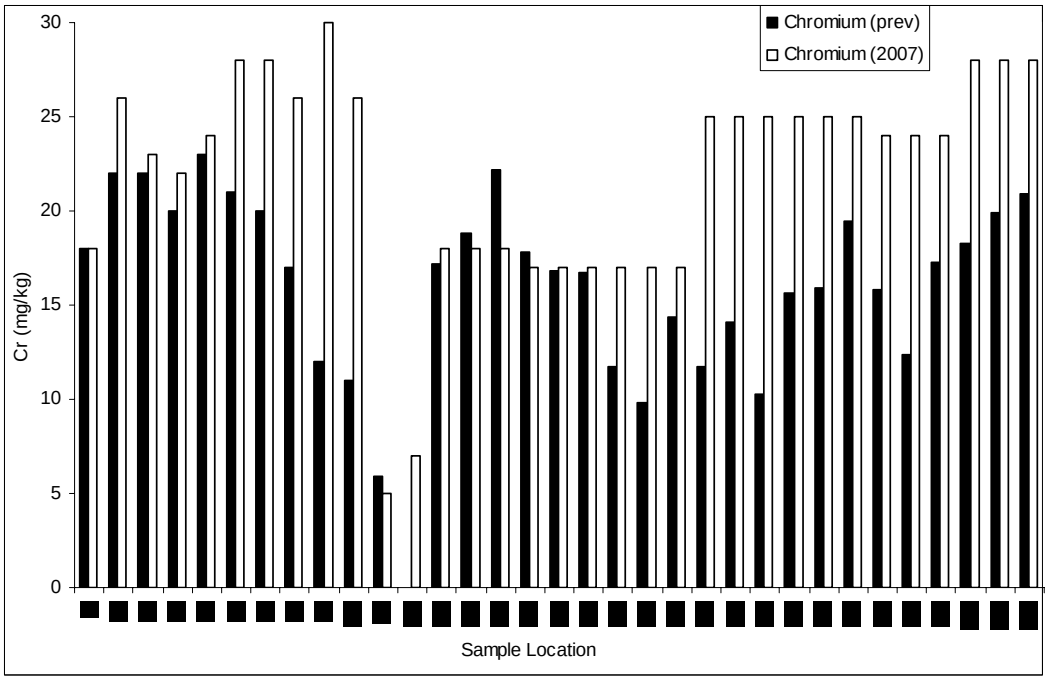


Figure 35. Concentrations of Chromium in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

Figures

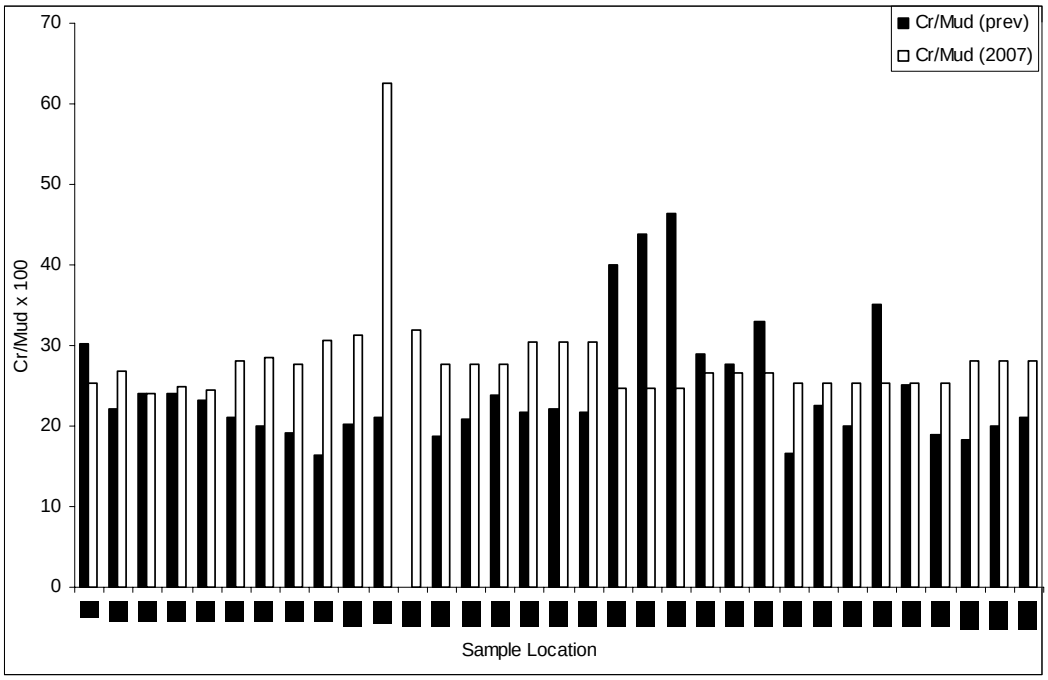


Figure 36. Concentrations of Chromium (Normalized to Silt & Clay Content – Mud) in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

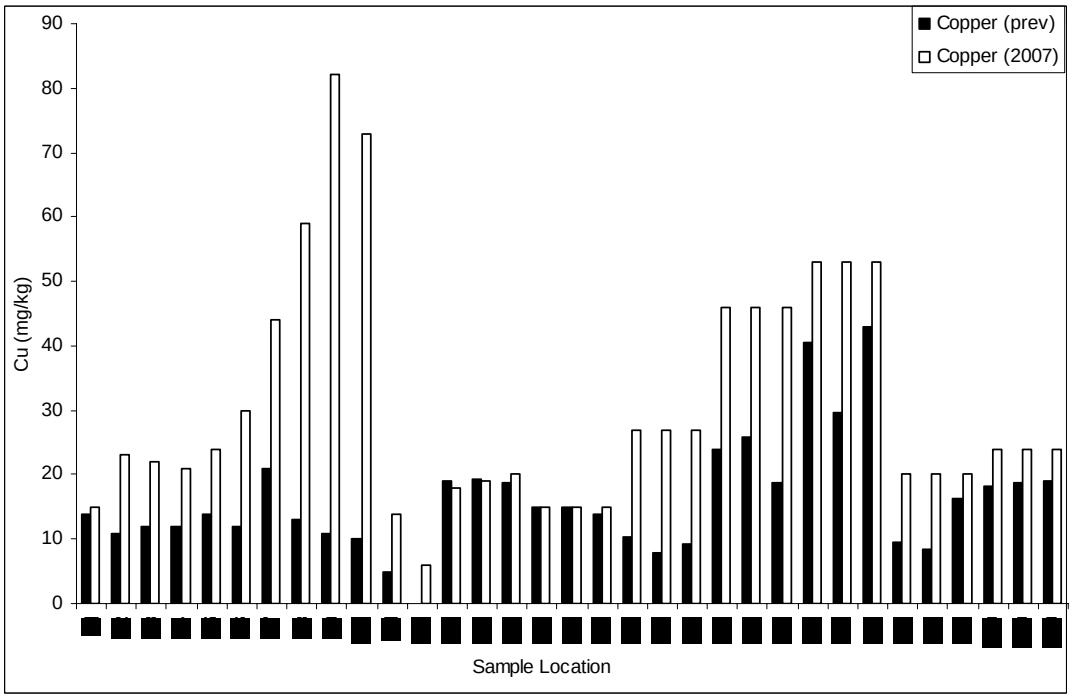


Figure 37. Concentrations of Copper in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

Figures

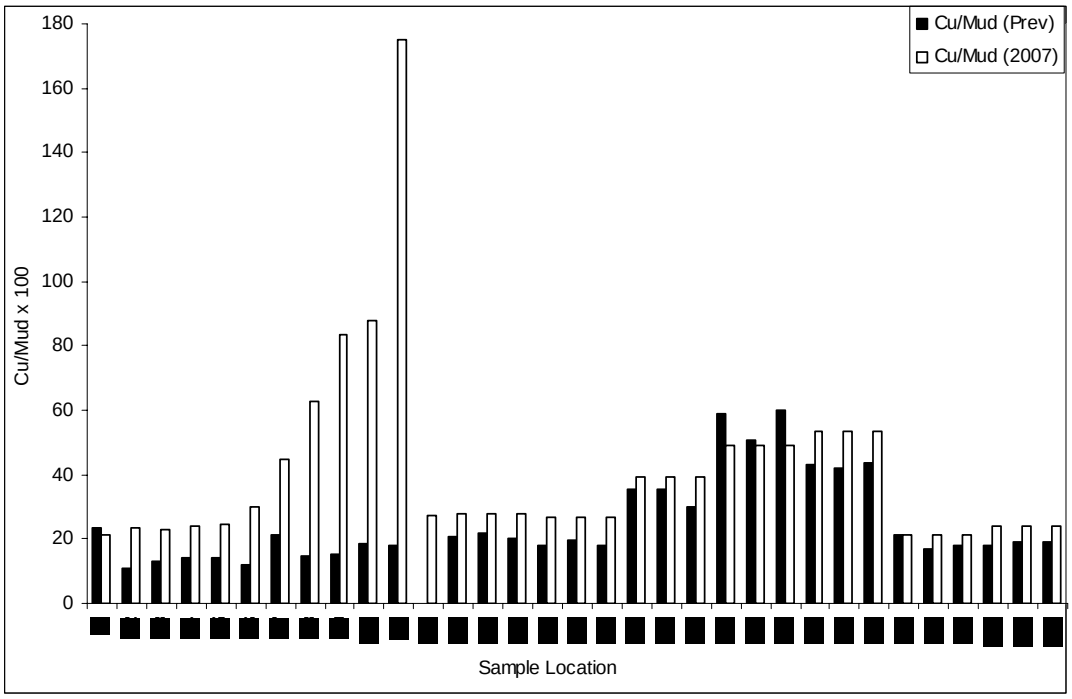


Figure 38. Concentrations of Copper (Normalized to Silt & Clay Content – Mud) in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

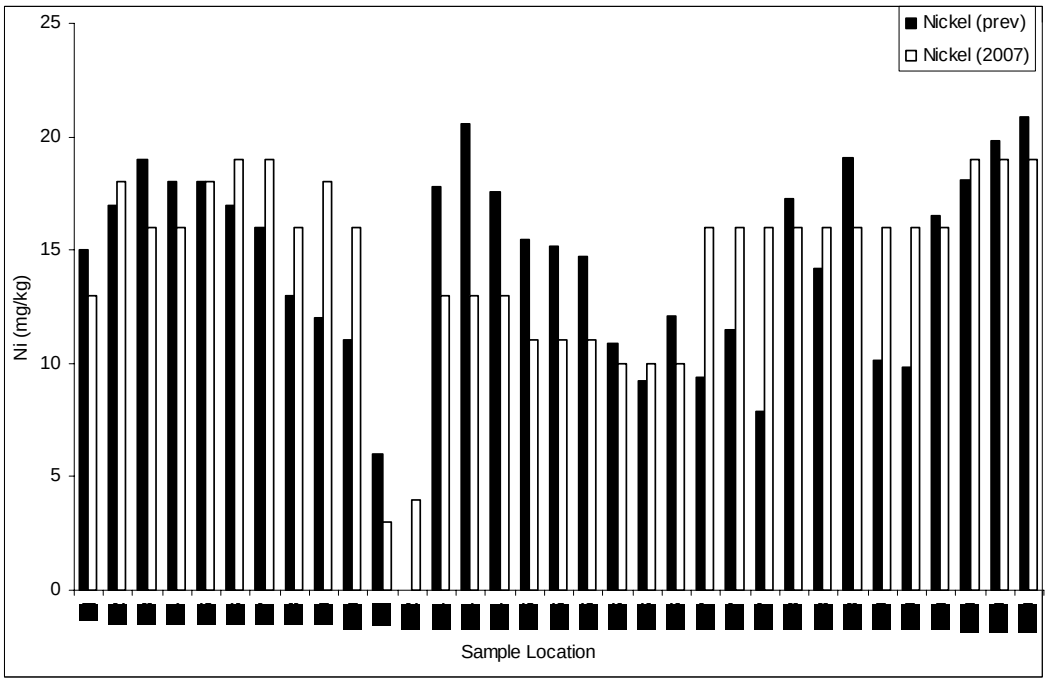


Figure 39. Concentrations of Nickel in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

Figures

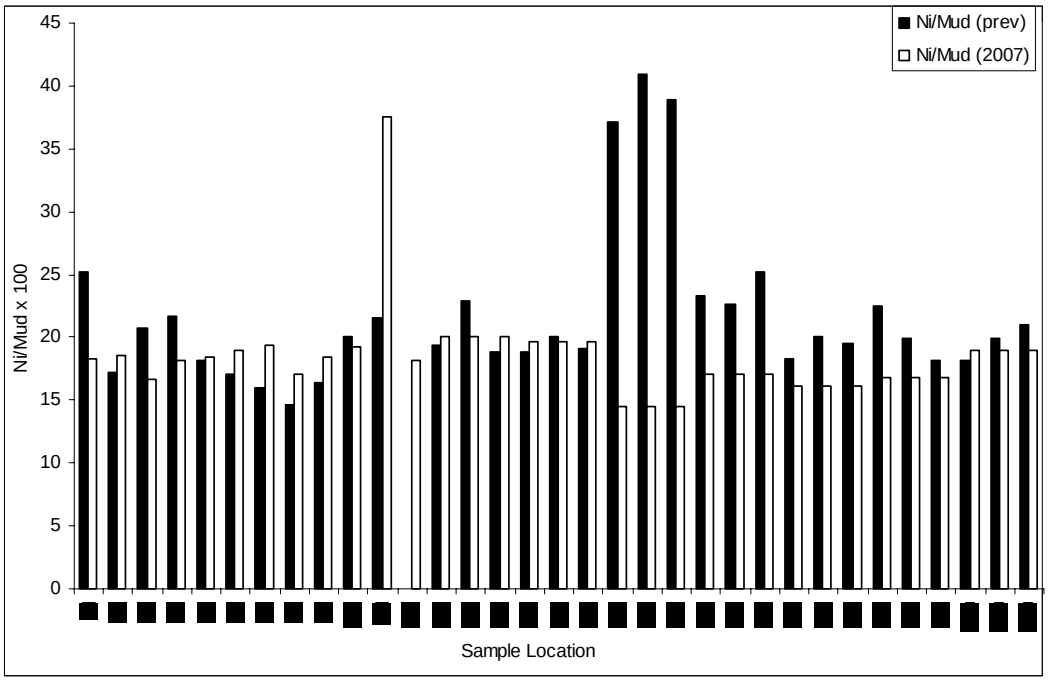


Figure 40. Concentrations of Nickel (Normalized to Silt & Clay Content – Mud) in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

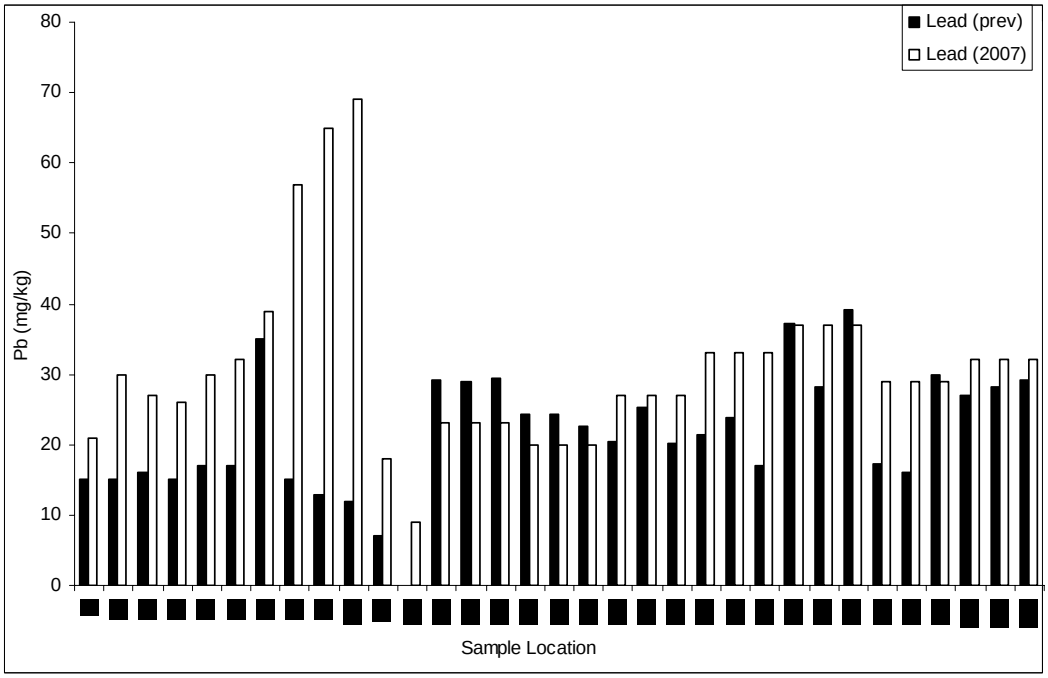


Figure 41. Concentrations of Lead in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

Figures

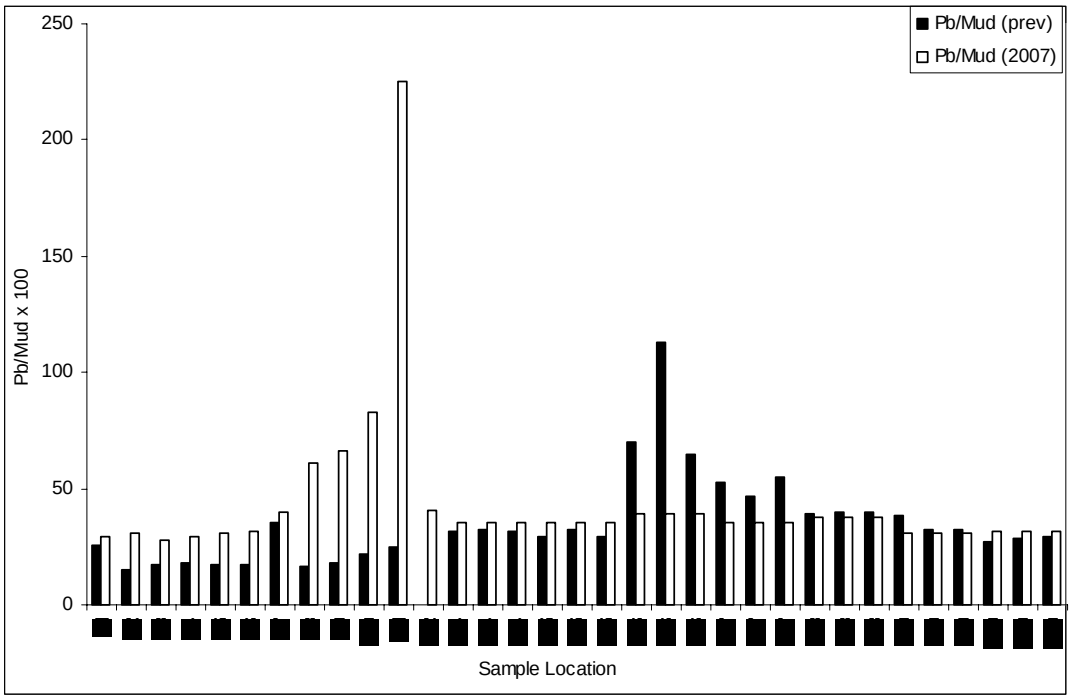


Figure 42. Concentrations of Lead (Normalized to Silt & Clay Content – Mud) in Sediments at Sampling

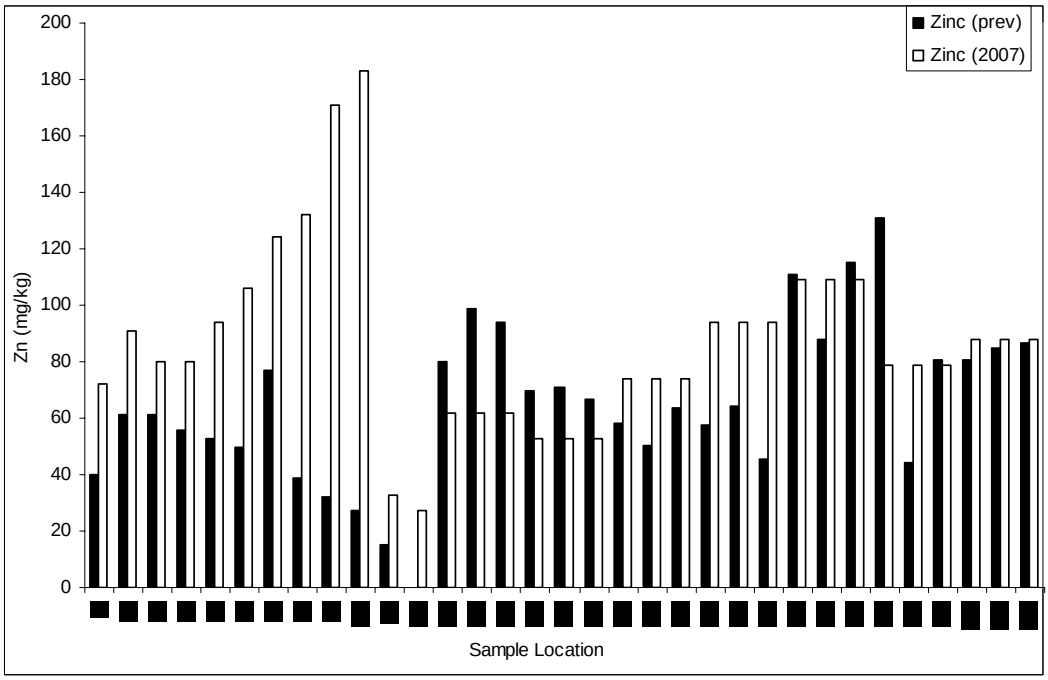


Figure 43. Concentrations of Zinc in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

Figures

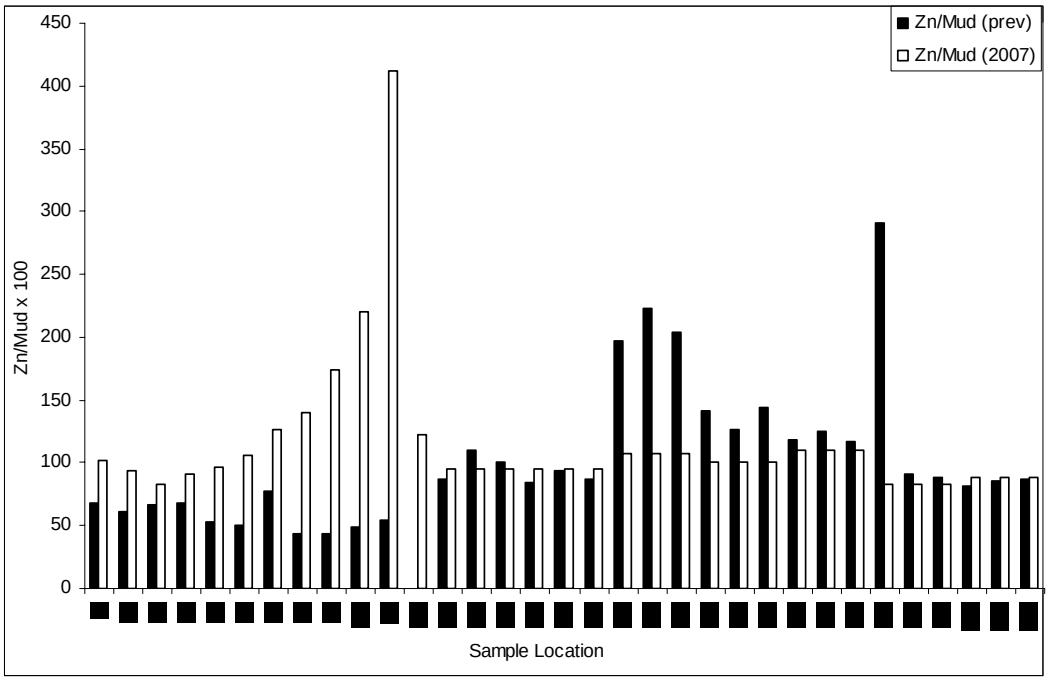


Figure 44. Concentrations of Zinc (Normalized to Silt & Clay Content – Mud) in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

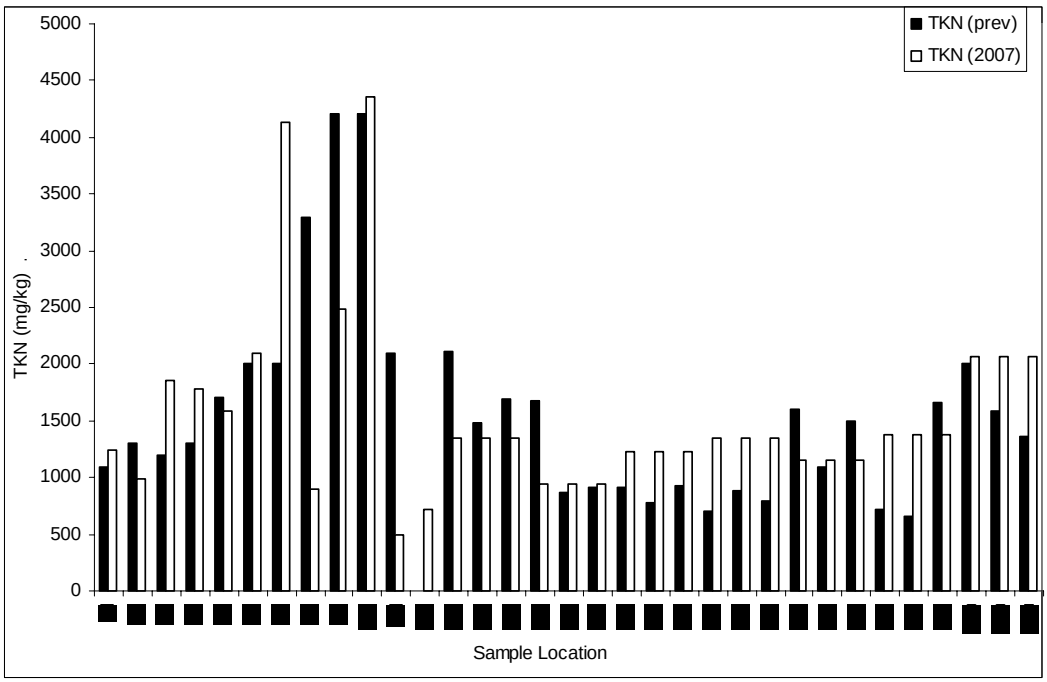


Figure 45. Concentrations of Total Kjeldahl Nitrogen in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

Figures

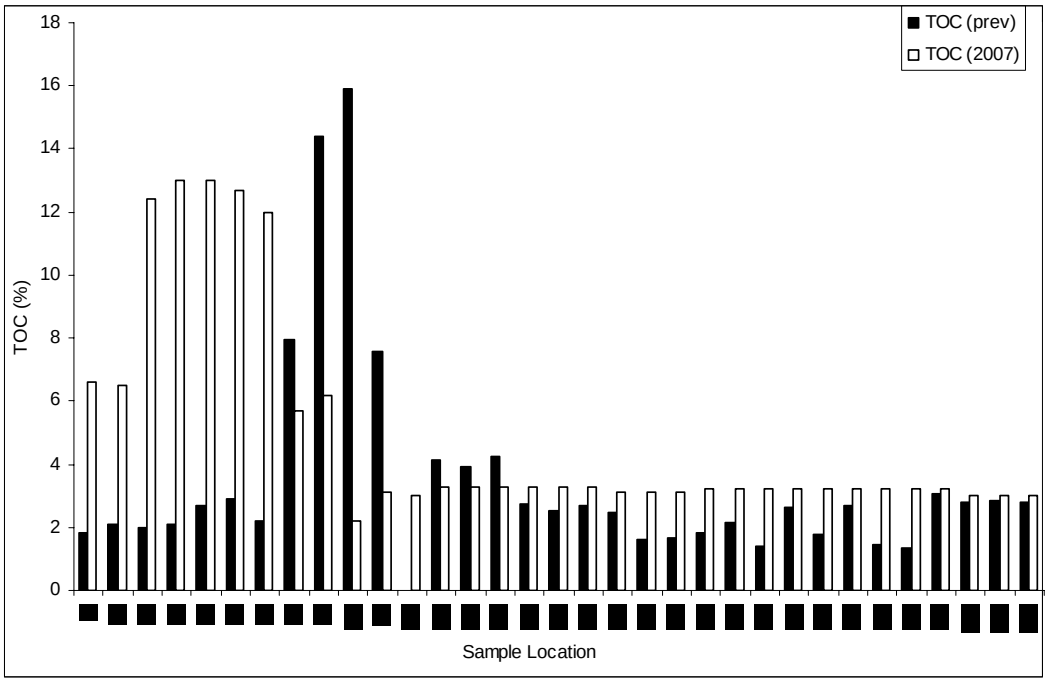


Figure 46. Concentrations of Total Organic Carbon in Sediments at Sampling Locations H1 to H20 in 2007 and Previous Studies.

Appendix A Photographs

Provided electronically only

Appendix B Analytical Data

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	: **URS AUSTRALIA (NSW) PTY LTD**	*Laboratory*	: **ALS Environmental Sydney**	*Page*	: **1 of 27**
Contact	: **MR CARSTEN MATTHAI**	*Contact*	: **Greg Vogel**	*Work Order*	: **ES0615839**
Address	: **LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060**	*Address*	: **277-289 Woodpark Road Smithfield NSW Australia 2164**		
E-mail	: **carsten_matthai@urscorp.com**	*E-mail*	: **Greg.Vogel@alsenviro.com**		
Telephone	: **02 8925 5500**	*Telephone*	: **+61 (02) 8784 8555**		
Facsimile	: **02 8925 5555**	*Facsimile*	: **+61 (02) 8784 8500**		
Project	: **43217595**	*Quote number*	: **----**	*Date received*	: **15 Dec 2006**
Order number	: **- Not provided -**			*Date issued*	: **27 Dec 2006**
C-O-C number	: **- Not provided -**			*No. of samples*	- *Received* : **26**
Site	: **- Not provided -**				*Analysed* : **26**

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory 825

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Accredited for compliance with ISO/IEC 17025.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	*Position*	*Department*
EDWANDY FADJAR	**Senior Organic Chemist**	**Organics - NATA 825 (10911 - Sydney)**
Greg Vogel	**Laboratory Manager**	**Inorganics - NATA 825 (10911 - Sydney)**
PHALAK INTHAKESONE	**Organics Co-ordinator**	**Organics - NATA 825 (10911 - Sydney)**
Sarah Millington	**Senior Inorganic Chemist**	**Inorganics - NATA 825 (10911 - Sydney)**

Comments

This report for the ALSE reference ES0615839 supersedes any previous reports with this reference. Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- **Analytical Results for Samples Submitted**
- **Surrogate Recovery Data**

The analytical procedures used by ALS Environmental have been developed from established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported herein. Reference methods from which ALSE methods are based are provided in parenthesis.

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits). Where LOR of reported result differ from standard LOR, this may be due to high moisture, reduced sample amount or matrix interference. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number, LOR = Limit of Reporting. * Indicates failed Surrogate Recoveries.

ALS Environmental

Analytical Results

			Client Sample ID :	H1	H2	H3	H4	H5
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615839-001	ES0615839-002	ES0615839-003	ES0615839-004	ES0615839-005
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	46.8	54.6	56.1	53.3	59.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	9670	14200	11900	12200	13300
Arsenic	7440-38-2	5	mg/kg	14	18	16	15	14
Barium	7440-39-3	10	mg/kg	30	40	30	30	30
Beryllium	7440-41-7	1	mg/kg	1	2	1	1	2
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	18	26	23	22	24
Cobalt	7440-48-4	2	mg/kg	11	14	11	11	12
Copper	7440-50-8	5	mg/kg	15	23	22	21	24
Iron	7439-89-6	50	mg/kg	25200	33700	28600	27000	28900
Lead	7439-92-1	5	mg/kg	21	30	27	26	30
Manganese	7439-96-5	5	mg/kg	378	450	474	304	436
Nickel	7440-02-0	2	mg/kg	13	18	16	16	18
Strontium	7440-24-6	2	mg/kg	39	56	51	48	52
Vanadium	7440-62-2	5	mg/kg	39	58	52	48	55
Zinc	7440-66-6	5	mg/kg	72	91	80	80	94
Calcium	7440-70-2	50	mg/kg	2050	2740	2550	2420	3100
Magnesium	7439-95-4	50	mg/kg	4020	6170	5290	4790	5490
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: NOX as N by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg	<0.100	<0.100	<0.100	<0.100	<0.100
EK061G: Total Kjeldahl Nitrogen as N								
Total Kjeldahl Nitrogen as N		20	mg/kg	1250	990	1860	1780	1590
EK071G: Reactive Phosphorous as P by discrete analyser								
Reactive Phosphorus as P		0.100	mg/kg	<0.100	<0.100	<0.100	<0.100	<0.100
EP004: Organic Matter								
Organic Matter		0.5	%	6.6	6.5	12.4	13.0	13.0
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

ALS Environmental

Analytical Results

			Client Sample ID :	H1	H2	H3	H4	H5
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615839-001	ES0615839-002	ES0615839-003	ES0615839-004	ES0615839-005
EP068A: Organochlorine Pesticides (OC)								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H1	H2	H3	H4	H5
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615839-001	ES0615839-002	ES0615839-003	ES0615839-004	ES0615839-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	60.0	70.0	64.6	60.0	64.0
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	72.2	82.5	81.9	64.1	82.5
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	80.3	92.2	91.5	72.2	92.3
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	93.3	95.6	89.9	94.9	94.1
2-Chlorophenol-D4	93951-73-6	0.1	%	101	101	97.5	102	98.4

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Analytical Results

				H1	H2	H3	H4	H5
			Client Sample ID :	H1	H2	H3	H4	H5
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*	ES0615839-001	ES0615839-002	ES0615839-003	ES0615839-004	ES0615839-005
EP075(SIM)S: Phenolic Compound Surrogates								
2.4.6-Tribromophenol	118-79-6	0.1	%	90.2	78.7	76.4	82.6	82.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	91.4	93.7	92.6	92.5	92.4
Anthracene-d10	1719-06-8	0.1	%	90.0	93.0	92.6	91.8	91.5
4-Terphenyl-d14	1718-51-0	0.1	%	93.0	94.9	95.2	94.8	94.4
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	92.1	89.0	80.4	96.2	86.8
Toluene-D8	2037-26-5	0.1	%	101	84.4	114	89.6	88.5
4-Bromofluorobenzene	460-00-4	0.1	%	82.2	84.8	78.3	88.4	81.3

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Analytical Results

				Client Sample ID :	H6	H7	H8	H9	H10
				Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
				Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
				Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*		ES0615839-006	ES0615839-007	ES0615839-008	ES0615839-009	ES0615839-010
EA055: Moisture Content									
Moisture Content (dried @ 103°C)		1.0	%		69.6	73.3	68.1	74.0	67.4
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		15100	16700	14000	16400	12500
Arsenic	7440-38-2	5	mg/kg		18	14	11	11	8
Barium	7440-39-3	10	mg/kg		40	40	40	40	40
Beryllium	7440-41-7	1	mg/kg		2	2	1	1	1
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		28	28	26	30	26
Cobalt	7440-48-4	2	mg/kg		13	12	8	9	7
Copper	7440-50-8	5	mg/kg		30	44	59	82	73
Iron	7439-89-6	50	mg/kg		32500	32700	26800	30200	24100
Lead	7439-92-1	5	mg/kg		32	39	57	65	69
Manganese	7439-96-5	5	mg/kg		1220	728	414	338	154
Nickel	7440-02-0	2	mg/kg		19	19	16	18	16
Strontium	7440-24-6	2	mg/kg		61	117	99	77	65
Vanadium	7440-62-2	5	mg/kg		60	58	45	50	37
Zinc	7440-66-6	5	mg/kg		106	124	132	171	183
Calcium	7440-70-2	50	mg/kg		3030	8400	15400	4580	3630
Magnesium	7439-95-4	50	mg/kg		6400	7610	6290	7900	6620
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: NOX as N by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg		<0.100	<0.100	<0.100	<0.100	<0.100
EK061G: Total Kjeldahl Nitrogen as N									
Total Kjeldahl Nitrogen as N		20	mg/kg		2100	4130	900	2490	4360
EK071G: Reactive Phosphorous as P by discrete analyser									
Reactive Phosphorus as P		0.100	mg/kg		<0.100	1.50	2.15	3.29	1.23
EP004: Organic Matter									
Organic Matter		0.5	%		12.7	12.0	5.7	6.2	2.2
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls		0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H6	H7	H8	H9	H10
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615839-006	ES0615839-007	ES0615839-008	ES0615839-009	ES0615839-010
EP068A: Organochlorine Pesticides (OC)								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H6	H7	H8	H9	H10
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :	ES0615839-006	ES0615839-007	ES0615839-008	ES0615839-009	ES0615839-010
Analyte	*CAS number*	*LOR*	*Units*					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	220
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	60.0	62.0	52.8	63.5	68.3
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	56.3	78.4	94.6	58.2	88.3
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	60.1	66.7	82.4	79.8	71.3
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	90.1	96.2	92.9	94.1	96.3
2-Chlorophenol-D4	93951-73-6	0.1	%	94.6	104	100	97.0	103

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Analytical Results

			Client Sample ID :	H6	H7	H8	H9	H10
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :	ES0615839-006	ES0615839-007	ES0615839-008	ES0615839-009	ES0615839-010
Analyte	*CAS number*	*LOR*	*Units*					
EP075(SIM)S: Phenolic Compound Surrogates								
2.4.6-Tribromophenol	118-79-6	0.1	%	83.4	85.6	87.7	85.4	95.1
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	90.2	94.2	92.2	90.9	94.8
Anthracene-d10	1719-06-8	0.1	%	89.5	94.5	92.5	90.6	94.5
4-Terphenyl-d14	1718-51-0	0.1	%	92.3	96.9	91.9	92.8	96.3
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	94.1	87.2	91.2	81.6	98.2
Toluene-D8	2037-26-5	0.1	%	83.0	86.6	85.5	118	89.0
4-Bromofluorobenzene	460-00-4	0.1	%	80.4	85.4	79.7	79.0	84.5

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Analytical Results

				Client Sample ID :	H11	H12	H13	H43	H44
				Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
				Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
				Laboratory Sample ID :					
Analyte	CAS number	LOR	Units		ES0615839-011	ES0615839-012	ES0615839-013	ES0615839-014	ES0615839-015
EA055: Moisture Content									
Moisture Content (dried @ 103°C)		1.0	%		33.2	33.7	50.9	46.8	38.6
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		2140	4150	11500	8220	6070
Arsenic	7440-38-2	5	mg/kg		<5	<5	15	12	10
Barium	7440-39-3	10	mg/kg		<10	10	30	20	20
Beryllium	7440-41-7	1	mg/kg		<1	<1	1	<1	<1
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		5	7	22	15	13
Cobalt	7440-48-4	2	mg/kg		<2	3	10	7	7
Copper	7440-50-8	5	mg/kg		14	6	19	14	11
Iron	7439-89-6	50	mg/kg		5560	8680	26400	17600	15900
Lead	7439-92-1	5	mg/kg		18	9	25	18	14
Manganese	7439-96-5	5	mg/kg		35	58	292	316	156
Nickel	7440-02-0	2	mg/kg		3	4	15	10	8
Strontium	7440-24-6	2	mg/kg		23	19	48	44	33
Vanadium	7440-62-2	5	mg/kg		8	16	46	33	27
Zinc	7440-66-6	5	mg/kg		33	27	74	48	42
Calcium	7440-70-2	50	mg/kg		1410	960	2360	3040	3510
Magnesium	7439-95-4	50	mg/kg		1570	1680	4730	3680	2960
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: NOX as N by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg		<0.100	<0.100	<0.100	<0.100	<0.100
EK061G: Total Kjeldahl Nitrogen as N									
Total Kjeldahl Nitrogen as N		20	mg/kg		490	720	1670	1070	880
EK071G: Reactive Phosphorous as P by discrete analyser									
Reactive Phosphorus as P		0.100	mg/kg		0.516	0.249	<0.100	<0.100	<0.100
EP004: Organic Matter									
Organic Matter		0.5	%		3.1	3.0	5.8	5.9	11.9
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls		0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H11	H12	H13	H43	H44
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615839-011	ES0615839-012	ES0615839-013	ES0615839-014	ES0615839-015
EP068A: Organochlorine Pesticides (OC)								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H11	H12	H13	H43	H44
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :	ES0615839-011	ES0615839-012	ES0615839-013	ES0615839-014	ES0615839-015
Analyte	CAS number	LOR	Units					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	63.7	60.0	68.0	71.0	60.8
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	82.4	81.7	64.9	57.9	52.6
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	70.0	76.0	68.4	60.6	54.5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	93.2	98.1	87.1	90.1	89.8
2-Chlorophenol-D4	93951-73-6	0.1	%	104	102	92.8	99.9	92.9

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Analytical Results

			Client Sample ID :	H11	H12	H13	H43	H44
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615839-011	ES0615839-012	ES0615839-013	ES0615839-014	ES0615839-015
EP075(SIM)S: Phenolic Compound Surrogates								
2.4.6-Tribromophenol	118-79-6	0.1	%	94.8	92.3	76.4	76.6	76.4
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	92.3	94.9	86.4	89.4	87.4
Anthracene-d10	1719-06-8	0.1	%	93.0	96.0	86.2	89.8	87.4
4-Terphenyl-d14	1718-51-0	0.1	%	91.7	95.9	86.6	91.8	90.1
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	97.4	100	84.2	94.8	104
Toluene-D8	2037-26-5	0.1	%	97.9	107	83.4	89.7	87.5
4-Bromofluorobenzene	460-00-4	0.1	%	94.6	102	82.5	87.9	88.0

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Analytical Results

			Client Sample ID :	H45	H46	H47	H48	H49
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615839-016	ES0615839-017	ES0615839-018	ES0615839-019	ES0615839-020
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	47.4	58.2	43.9	44.7	50.5
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	7750	13500	8410	8700	10600
Arsenic	7440-38-2	5	mg/kg	11	18	12	10	13
Barium	7440-39-3	10	mg/kg	30	40	30	30	30
Beryllium	7440-41-7	1	mg/kg	1	2	<1	1	1
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	17	25	16	17	20
Cobalt	7440-48-4	2	mg/kg	10	12	9	9	10
Copper	7440-50-8	5	mg/kg	16	24	14	15	18
Iron	7439-89-6	50	mg/kg	19900	29800	20200	19000	24300
Lead	7439-92-1	5	mg/kg	19	29	18	18	21
Manganese	7439-96-5	5	mg/kg	178	458	259	197	396
Nickel	7440-02-0	2	mg/kg	12	18	12	12	14
Strontium	7440-24-6	2	mg/kg	40	58	35	35	44
Vanadium	7440-62-2	5	mg/kg	38	54	34	35	42
Zinc	7440-66-6	5	mg/kg	56	81	56	52	65
Calcium	7440-70-2	50	mg/kg	2760	3060	1790	1870	2210
Magnesium	7439-95-4	50	mg/kg	3870	5710	3670	3690	4260
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: NOX as N by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg	<0.100	<0.100	<0.100	<0.100	<0.100
EK061G: Total Kjeldahl Nitrogen as N								
Total Kjeldahl Nitrogen as N		20	mg/kg	910	1340	980	1430	1370
EK071G: Reactive Phosphorous as P by discrete analyser								
Reactive Phosphorus as P		0.100	mg/kg	<0.100	<0.100	<0.100	<0.100	<0.100
EP004: Organic Matter								
Organic Matter		0.5	%	9.7	10.4	4.4	4.9	5.5
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H45	H46	H47	H48	H49
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615839-016	ES0615839-017	ES0615839-018	ES0615839-019	ES0615839-020
EP068A: Organochlorine Pesticides (OC)								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

ALS Environmental

Analytical Results

			Client Sample ID :	H45	H46	H47	H48	H49
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :	ES0615839-016	ES0615839-017	ES0615839-018	ES0615839-019	ES0615839-020
Analyte	*CAS number*	*LOR*	*Units*					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	90.7	78.3	71.4	77.9	62.0
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	78.2	76.6	68.8	71.9	61.0
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	81.6	78.3	72.3	77.3	63.3
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	96.0	101	96.6	101	94.2
2-Chlorophenol-D4	93951-73-6	0.1	%	93.8	96.9	91.6	95.8	91.5

ALS Environmental

Analytical Results

			Client Sample ID :	H45	H46	H47	H48	H49
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :	ES0615839-016	ES0615839-017	ES0615839-018	ES0615839-019	ES0615839-020
Analyte	*CAS number*	*LOR*	*Units*					
EP075(SIM)S: Phenolic Compound Surrogates								
2.4.6-Tribromophenol	118-79-6	0.1	%	76.5	75.0	71.2	86.5	75.1
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	88.7	90.7	87.0	94.2	85.4
Anthracene-d10	1719-06-8	0.1	%	87.1	88.4	85.2	91.9	83.7
4-Terphenyl-d14	1718-51-0	0.1	%	90.7	93.4	90.2	96.3	87.3
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	107	92.0	102	110	101
Toluene-D8	2037-26-5	0.1	%	105	106	108	108	94.6
4-Bromofluorobenzene	460-00-4	0.1	%	119	108	110	95.3	85.6

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Analytical Results

			Client Sample ID :	H50	H51	H52	H53	H54
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615839-021	ES0615839-022	ES0615839-023	ES0615839-024	ES0615839-025
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	47.0	63.2	66.0	70.0	33.5
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	9090	10400	13100	18900	4960
Arsenic	7440-38-2	5	mg/kg	13	14	11	13	<5
Barium	7440-39-3	10	mg/kg	30	40	40	50	20
Beryllium	7440-41-7	1	mg/kg	1	1	2	2	<1
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	18	21	24	22	6
Cobalt	7440-48-4	2	mg/kg	10	12	14	16	5
Copper	7440-50-8	5	mg/kg	16	21	23	22	5
Iron	7439-89-6	50	mg/kg	22000	26200	31800	35700	11900
Lead	7439-92-1	5	mg/kg	18	22	26	28	8
Manganese	7439-96-5	5	mg/kg	388	1210	978	2280	806
Nickel	7440-02-0	2	mg/kg	13	16	20	20	6
Strontium	7440-24-6	2	mg/kg	43	58	52	56	20
Vanadium	7440-62-2	5	mg/kg	37	43	50	52	14
Zinc	7440-66-6	5	mg/kg	57	69	86	89	26
Calcium	7440-70-2	50	mg/kg	2370	2870	2520	3210	960
Magnesium	7439-95-4	50	mg/kg	3820	5070	4920	6350	1700
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK059G: NOX as N by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg	<0.100	<0.100	<0.100	<0.100	0.143
EK061G: Total Kjeldahl Nitrogen as N								
Total Kjeldahl Nitrogen as N		20	mg/kg	1200	1990	2090	2530	590
EK071G: Reactive Phosphorous as P by discrete analyser								
Reactive Phosphorus as P		0.100	mg/kg	<0.100	<0.100	0.132	0.533	0.143
EP004: Organic Matter								
Organic Matter		0.5	%	7.4	7.7	6.3	8.0	1.4
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H50	H51	H52	H53	H54
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615839-021	ES0615839-022	ES0615839-023	ES0615839-024	ES0615839-025
EP068A: Organochlorine Pesticides (OC)								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H50	H51	H52	H53	H54
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :	ES0615839-021	ES0615839-022	ES0615839-023	ES0615839-024	ES0615839-025
Analyte	*CAS number*	*LOR*	*Units*					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	81.8	71.5	73.5	86.5	67.8
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	91.8	80.9	81.4	102	79.2
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	110	94.9	88.8	88.3	81.0
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	78.7	71.2	84.5	87.0	83.0
2-Chlorophenol-D4	93951-73-6	0.1	%	84.6	75.8	92.2	97.3	91.1

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Analytical Results

			Client Sample ID :	H50	H51	H52	H53	H54
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00	13 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615839-021	ES0615839-022	ES0615839-023	ES0615839-024	ES0615839-025
EP075(SIM)S: Phenolic Compound Surrogates								
2.4.6-Tribromophenol	118-79-6	0.1	%	67.0	59.0	72.3	81.0	75.1
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	81.2	74.6	85.9	84.0	85.8
Anthracene-d10	1719-06-8	0.1	%	80.9	72.7	85.2	82.2	83.4
4-Terphenyl-d14	1718-51-0	0.1	%	87.4	78.2	90.6	90.1	89.3
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	84.2	83.0	83.9	86.2	93.0
Toluene-D8	2037-26-5	0.1	%	99.6	86.6	98.8	88.6	108
4-Bromofluorobenzene	460-00-4	0.1	%	76.8	84.0	79.4	87.2	77.9

ALS Environmental

Analytical Results

			Client Sample ID :	H55				
			Sample Matrix Type / Description :	SEDIMENT				
			Sample Date / Time :	13 Dec 2006 15:00				
			Laboratory Sample ID :	ES0615839-026				
Analyte	CAS number	LOR	Units					
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	57.5				
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	20000				
Arsenic	7440-38-2	5	mg/kg	14				
Barium	7440-39-3	10	mg/kg	30				
Beryllium	7440-41-7	1	mg/kg	1				
Cadmium	7440-43-9	1	mg/kg	<1				
Chromium	7440-47-3	2	mg/kg	22				
Cobalt	7440-48-4	2	mg/kg	13				
Copper	7440-50-8	5	mg/kg	20				
Iron	7439-89-6	50	mg/kg	33000				
Lead	7439-92-1	5	mg/kg	26				
Manganese	7439-96-5	5	mg/kg	441				
Nickel	7440-02-0	2	mg/kg	16				
Strontium	7440-24-6	2	mg/kg	51				
Vanadium	7440-62-2	5	mg/kg	54				
Zinc	7440-66-6	5	mg/kg	68				
Calcium	7440-70-2	50	mg/kg	2610				
Magnesium	7439-95-4	50	mg/kg	6420				
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1				
EK059G: NOX as N by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg	<0.100				
EK061G: Total Kjeldahl Nitrogen as N								
Total Kjeldahl Nitrogen as N		20	mg/kg	930				
EK071G: Reactive Phosphorous as P by discrete analyser								
Reactive Phosphorus as P		0.100	mg/kg	<0.100				
EP004: Organic Matter								
Organic Matter		0.5	%	7.8				
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		0.10	mg/kg	<0.10				
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05				
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05				
beta-BHC	319-85-7	0.05	mg/kg	<0.05				
gamma-BHC	58-89-9	0.05	mg/kg	<0.05				
delta-BHC	319-86-8	0.05	mg/kg	<0.05				

ALS Environmental

Analytical Results

			Client Sample ID :	H55				
			Sample Matrix Type / Description :	SEDIMENT				
			Sample Date / Time :	13 Dec 2006 15:00				
			Laboratory Sample ID :	ES0615839-026				
Analyte	**CAS number**	**LOR**	**Units**					
EP068A: Organochlorine Pesticides (OC)								
Heptachlor	76-44-8	0.05	mg/kg	<0.05				
Aldrin	309-00-2	0.05	mg/kg	<0.05				
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05				
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05				
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05				
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05				
Dieldrin	60-57-1	0.05	mg/kg	<0.05				
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05				
Endrin	72-20-8	0.05	mg/kg	<0.05				
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05				
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05				
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05				
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05				
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2				
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05				
Methoxychlor	72-43-5	0.2	mg/kg	<0.2				
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05				
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05				
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2				
Dimethoate	60-51-5	0.05	mg/kg	<0.05				
Diazinon	333-41-5	0.05	mg/kg	<0.05				
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05				
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2				
Malathion	121-75-5	0.05	mg/kg	<0.05				
Fenthion	55-38-9	0.05	mg/kg	<0.05				
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05				
Parathion	56-38-2	0.2	mg/kg	<0.2				
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05				
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05				
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05				
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05				
Prothiofos	34643-46-4	0.05	mg/kg	<0.05				
Ethion	563-12-2	0.05	mg/kg	<0.05				
Carbophenothion	786-19-6	0.05	mg/kg	<0.05				
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05				

ALS Environmental

Analytical Results

			Client Sample ID :	H55				
			Sample Matrix Type / Description :	SEDIMENT				
			Sample Date / Time :	13 Dec 2006 15:00				
			Laboratory Sample ID :	ES0615839-026				
Analyte	**CAS number**	**LOR**	**Units**					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5				
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5				
Acenaphthene	83-32-9	0.5	mg/kg	<0.5				
Fluorene	86-73-7	0.5	mg/kg	<0.5				
Phenanthrene	85-01-8	0.5	mg/kg	<0.5				
Anthracene	120-12-7	0.5	mg/kg	<0.5				
Fluoranthene	206-44-0	0.5	mg/kg	<0.5				
Pyrene	129-00-0	0.5	mg/kg	<0.5				
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5				
Chrysene	218-01-9	0.5	mg/kg	<0.5				
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5				
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5				
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5				
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5				
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5				
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5				
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10				
C10 - C14 Fraction		50	mg/kg	<50				
C15 - C28 Fraction		100	mg/kg	<100				
C29 - C36 Fraction		100	mg/kg	<100				
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2				
Toluene	108-88-3	0.5	mg/kg	<0.5				
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5				
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5				
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5				
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	90.0				
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	99.5				
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	98.9				
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	83.8				
2-Chlorophenol-D4	93951-73-6	0.1	%	91.0				

ALS Environmental

Analytical Results

			Client Sample ID :	H55				
			Sample Matrix Type / Description :	SEDIMENT				
			Sample Date / Time :	13 Dec 2006 15:00				
			Laboratory Sample ID :	ES0615839-026				
Analyte	**CAS number**	**LOR**	**Units**					
EP075(SIM)S: Phenolic Compound Surrogates								
2.4.6-Tribromophenol	118-79-6	0.1	%	73.1				
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	87.3				
Anthracene-d10	1719-06-8	0.1	%	85.2				
4-Terphenyl-d14	1718-51-0	0.1	%	85.5				
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	84.2				
Toluene-D8	2037-26-5	0.1	%	95.5				
4-Bromofluorobenzene	460-00-4	0.1	%	75.3				

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Surrogate Control Limits

Matrix Type: SOIL - Surrogate Control Limits ***Surrogate Control Limits***

Method name	*Analyte name*	*Lower Limit*	*Upper Limit*
EP066: Polychlorinated Biphenyls (PCB)			
EP066S: PCB Surrogate	Decachlorobiphenyl	10	164
EP068: Pesticides by GCMS			
EP068S: Organochlorine Pesticide Surrogate	Dibromo-DDE	10	136
EP068T: Organophosphorus Pesticide Surrogate	DEF	10	136
EP075(SIM): PAH/Phenols (SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	24	113
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	19	122
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	30	115
	Anthracene-d10	27	133
	4-Terphenyl-d14	18	137
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	81	117
	4-Bromofluorobenzene	74	121

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TEST RESULTS

Client : ALS Environmental Sydney
Project : Delivered Samples
Batch No. : ES0615839

Job No. : 06634002/1
Date Received : 19/12/2006
Sampled by : Client

PARTICLE SIZE SUMMARY

Reg'n No.	Sample ID	Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2.0 mm - 0.063 mm)	Percent Silt & Clay (-0.063 mm)
L12057	H1	1	0	29	71
L12058	H2	2	0	3	97
L12059	H3	3	0	4	96
L12060	H4	4	0	12	88
L12061	H5	5	0	2	98
L12062	H6	6	0	0	100
L12063	H7	7	0	2	98
L12064	H8	8	0	6	94
L12065	H9	9	0	2	98
L12066	H10	10	0	17	83
L12067	H11	11	0	92	8
L12068	H12	12	0	78	22
L12069	H13	13	0	5	95
L12070	H43	14	0	41	59
L12071	H44	15	0	58	42
L12072	H45	16	0	47	53
L12073	H46	17	0	5	95
L12074	H47	18	0	44	56
L12075	H48	19	0	40	60
L12076	H49	20	0	29	71
L12077	H50	21	0	23	77
L12078	H51	22	0	4	96
L12079	H52	23	0	10	90
L12080	H53	24	0	2	98
L12081	H54	25	0	83	17
L12082	H55	26	0	6	94

Test Procedure : AS 1289 3.6.1

Prepared by NL Checked by JA

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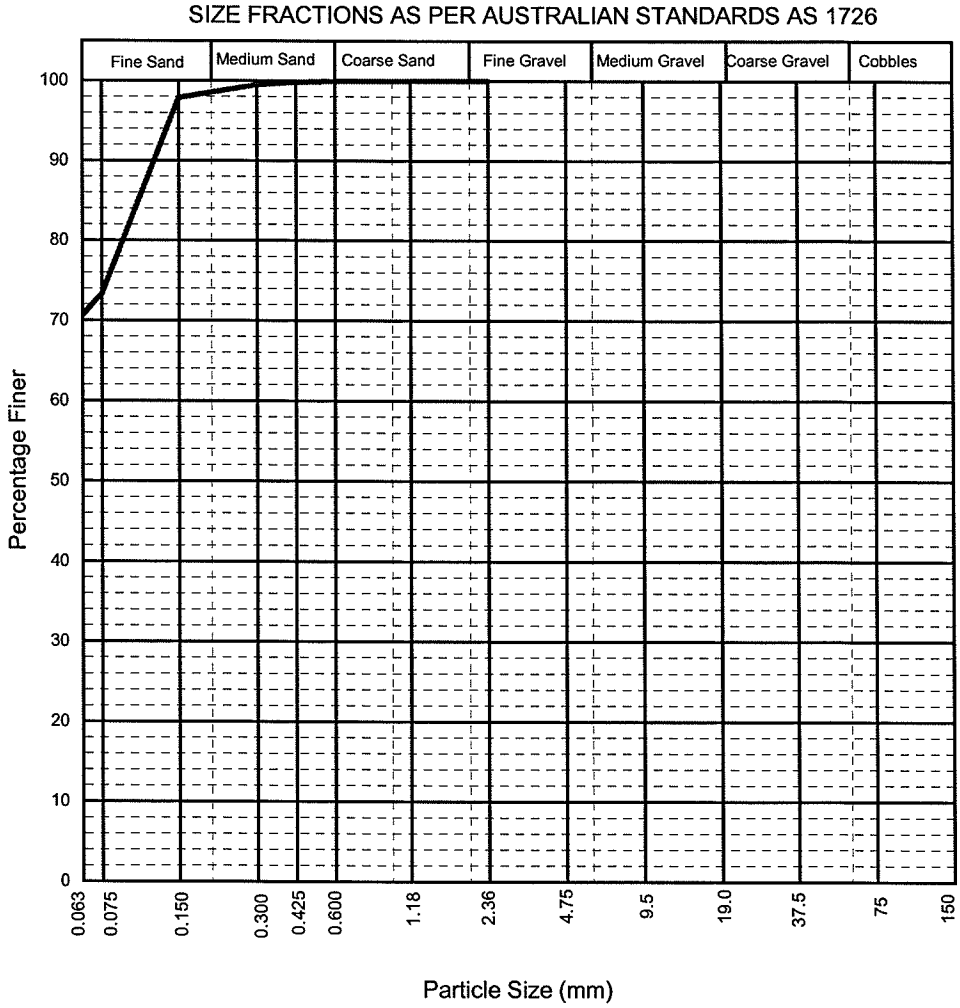
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12057
Sample ID :	H1	Batch No. :	ES 0615839 - 1
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.9
0.425	99.8
0.300	99.5
0.150	97.9
0.075	73.3
0.063	70.6

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :	
Material Description :	Sandy CLAY (CH) dark grey
Test Procedure :	AS 1289 3.6.1
Prepared by : NF	Checked by : JA

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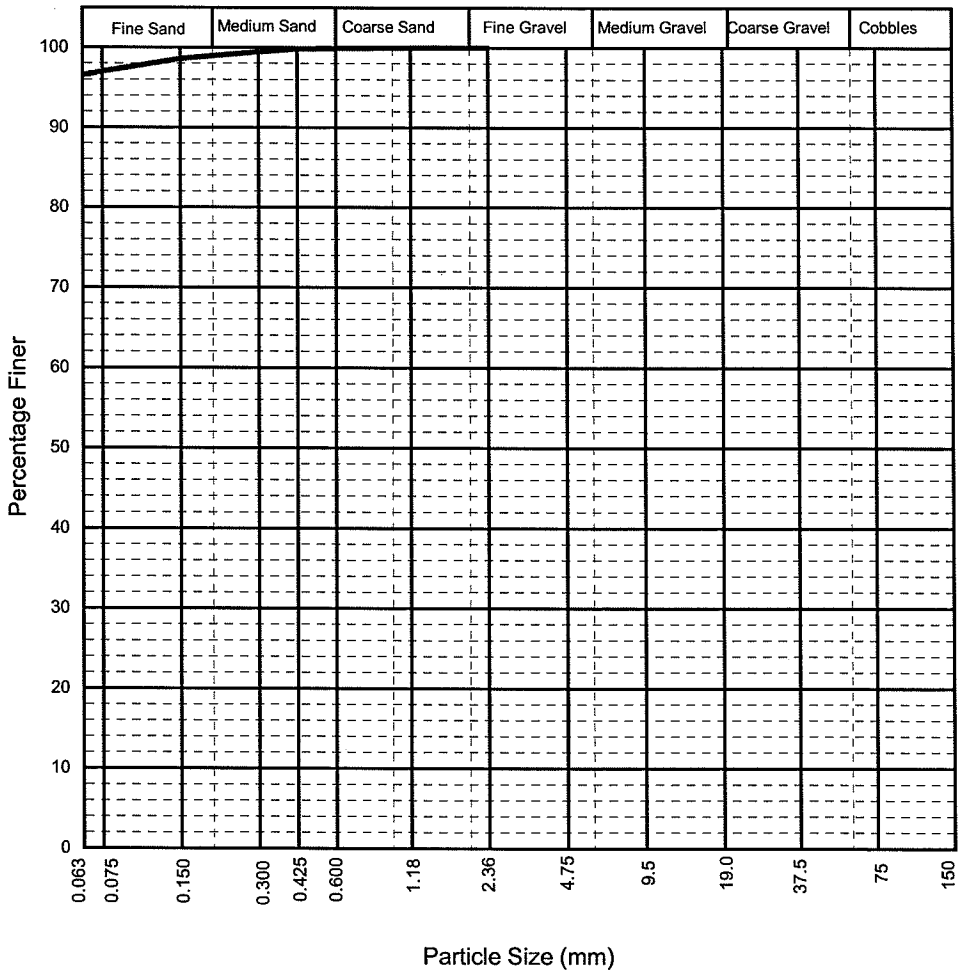
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12058
Sample ID :	H2	Batch No. :	ES 0615839 - 2
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.9
0.425	99.8
0.300	99.5
0.150	98.6
0.075	97.0
0.063	96.5

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :	
Material Description :	Silty CLAY (CH) dark grey
Test Procedure :	AS 1289 3.6.1
Prepared by : N/-	Checked by : JA

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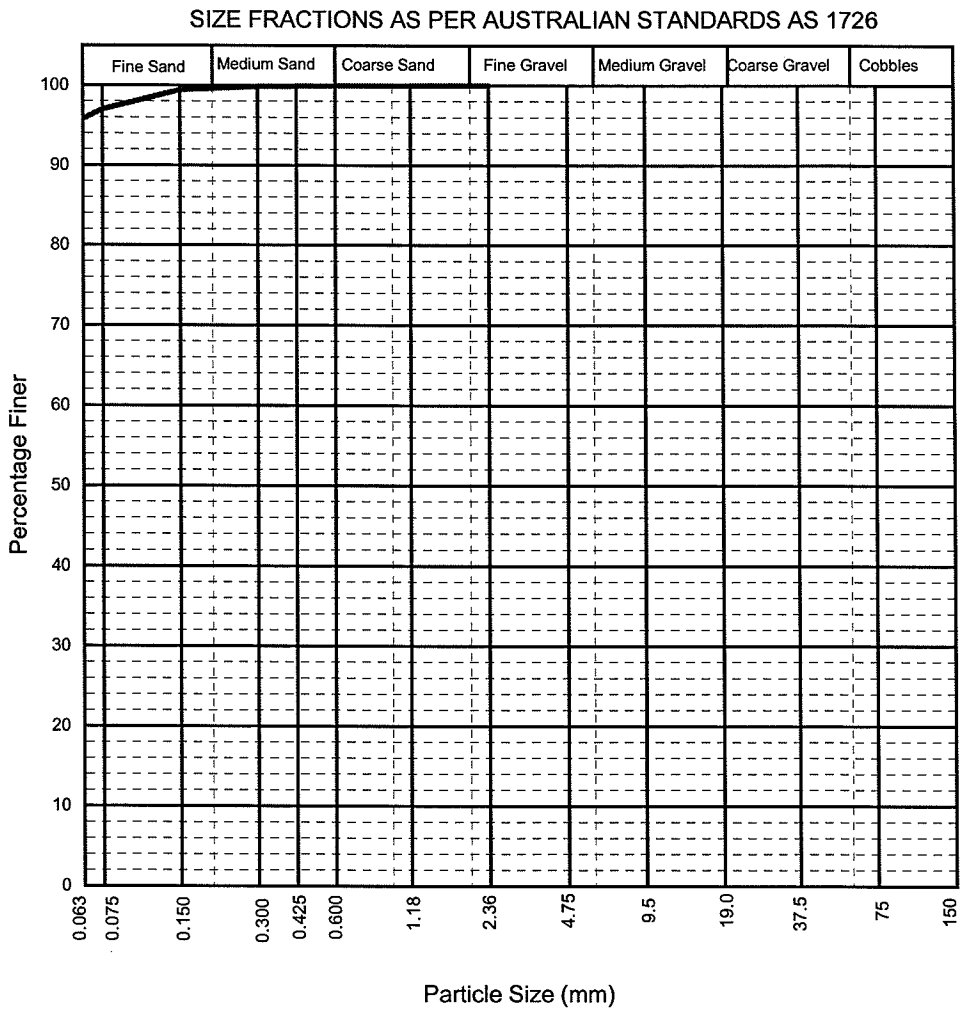
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12059
Sample ID :	H3	Batch No. :	ES 0615839 - 3
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.9
0.425	99.9
0.300	99.8
0.150	99.4
0.075	97.0
0.063	95.8



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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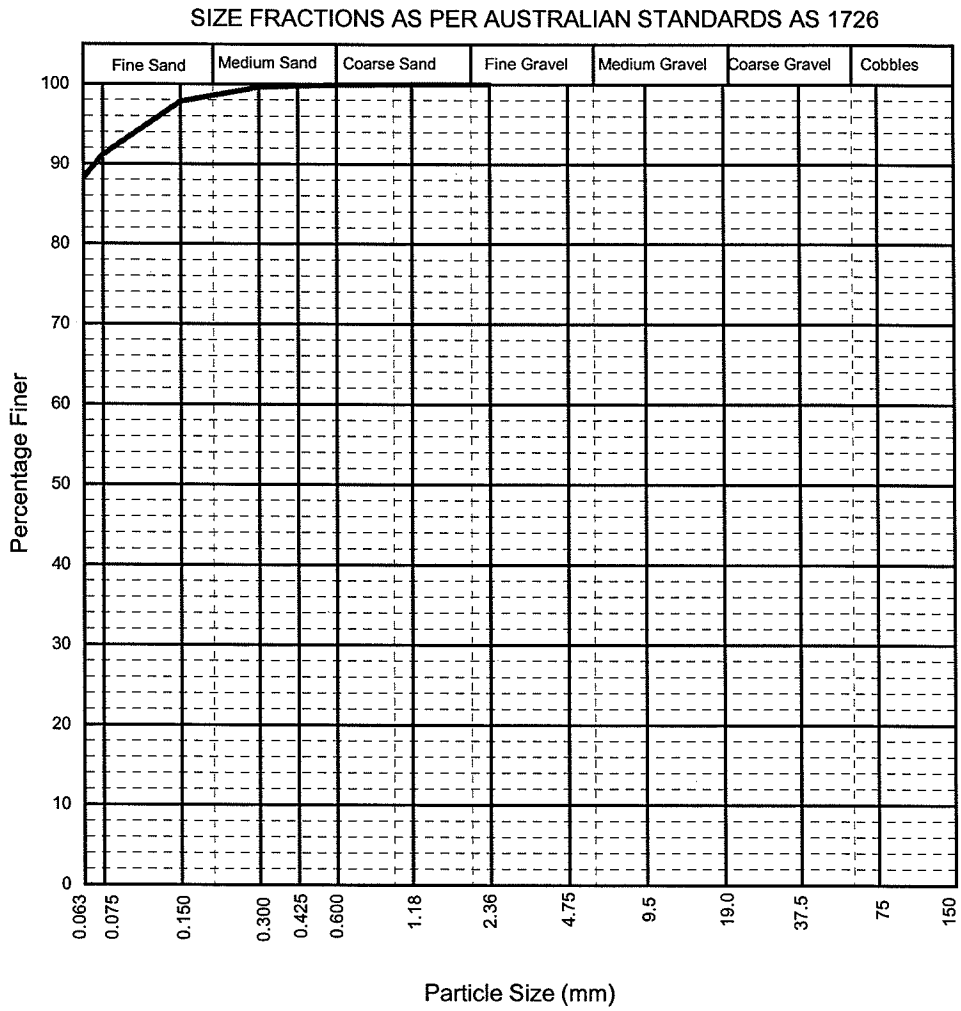
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12060
Sample ID :	H4	Batch No. :	ES 0615839 - 4
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.9
0.425	99.8
0.300	99.6
0.150	97.8
0.075	91.1
0.063	88.2



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NP

Checked by : JA

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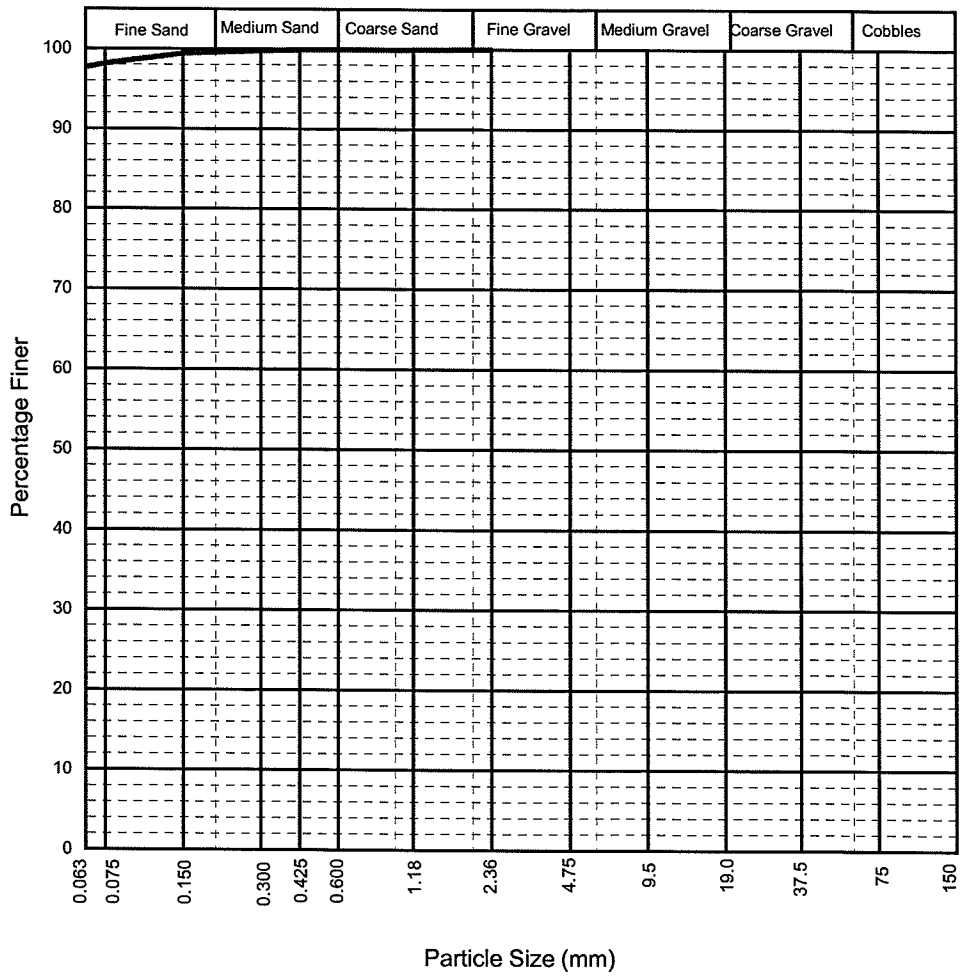
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12061
Sample ID :	H5	Batch No. :	ES 0615839 - 5
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.9
0.425	99.9
0.300	99.8
0.150	99.4
0.075	98.1
0.063	97.6

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NK

Checked by : JA

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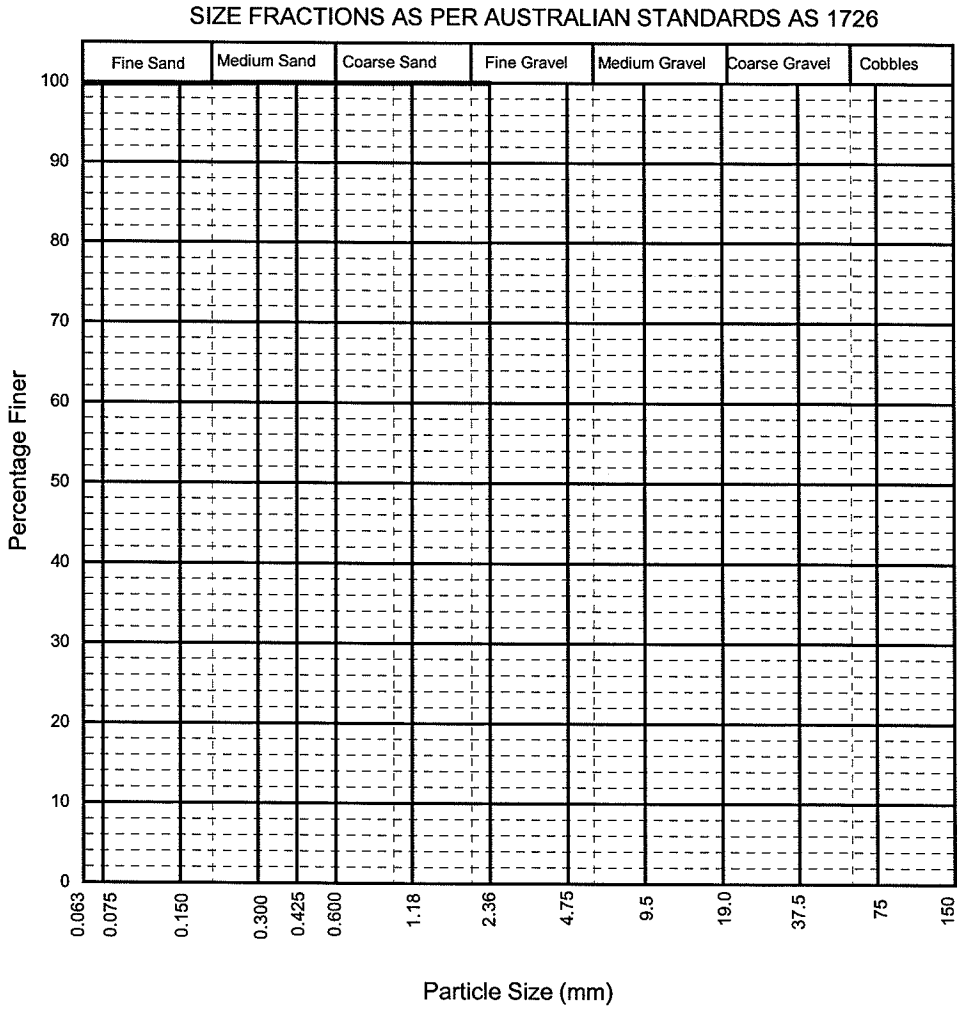
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12062
Sample ID :	H6	Batch No. :	ES 0615839 - 6
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	100.0
0.425	100.0
0.300	99.9
0.150	99.8
0.075	99.8
0.063	99.8



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NL

Checked by : JA

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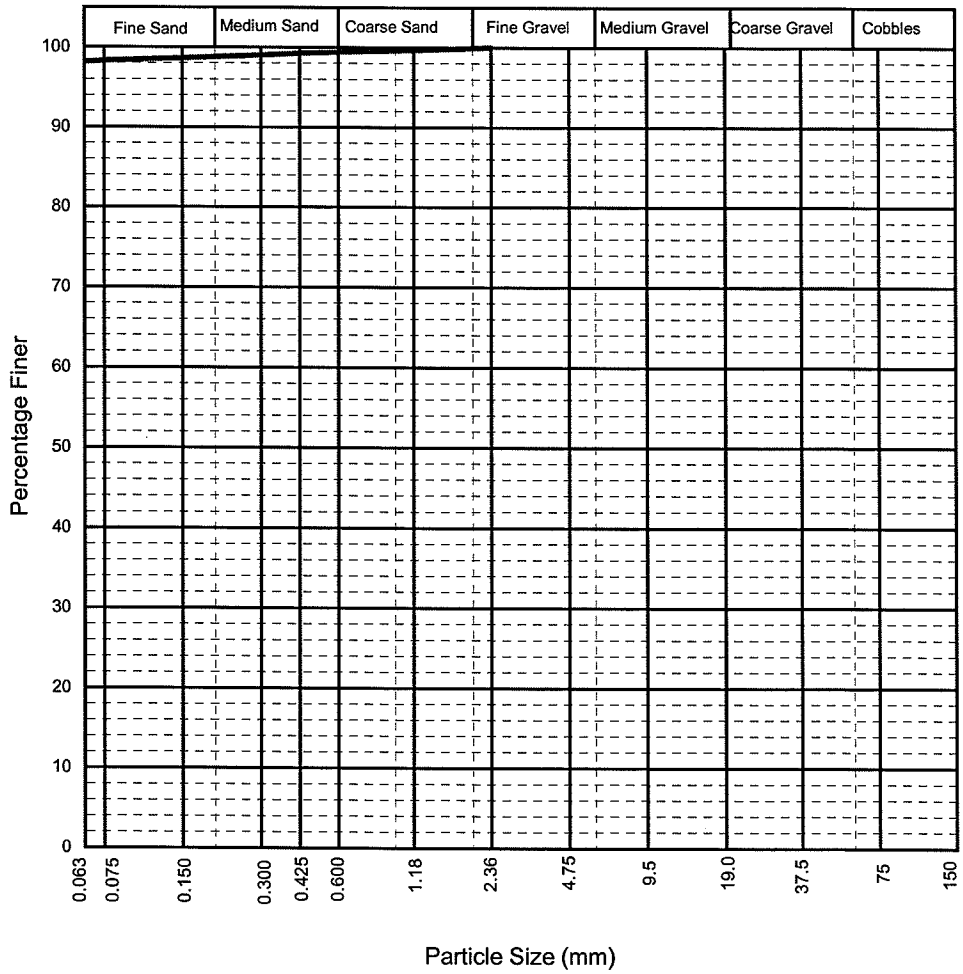
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12063
Sample ID :	H7	Batch No. :	ES 0615839 - 7
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.7
0.600	99.4
0.425	99.3
0.300	99.0
0.150	98.6
0.075	98.3
0.063	98.1

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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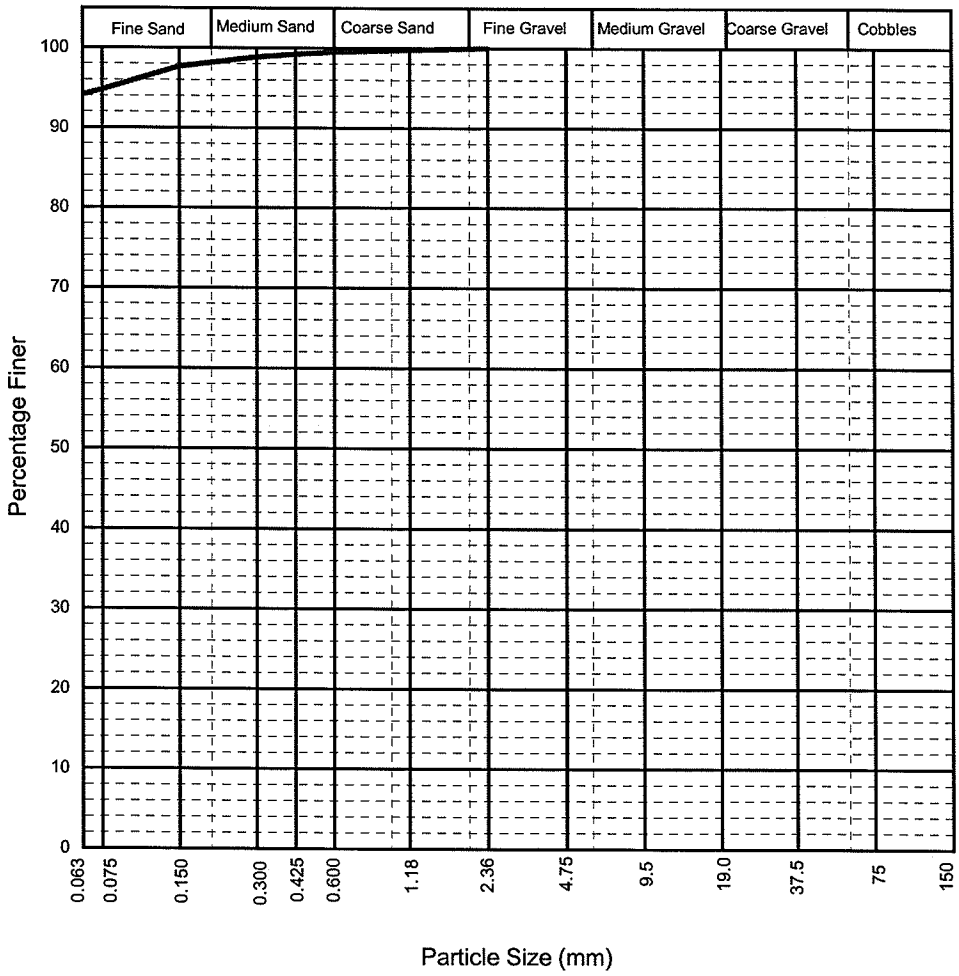
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12064
Sample ID :	H8	Batch No. :	ES 0615839 - 8
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.8
0.600	99.5
0.425	99.2
0.300	98.8
0.150	97.7
0.075	94.7
0.063	94.1

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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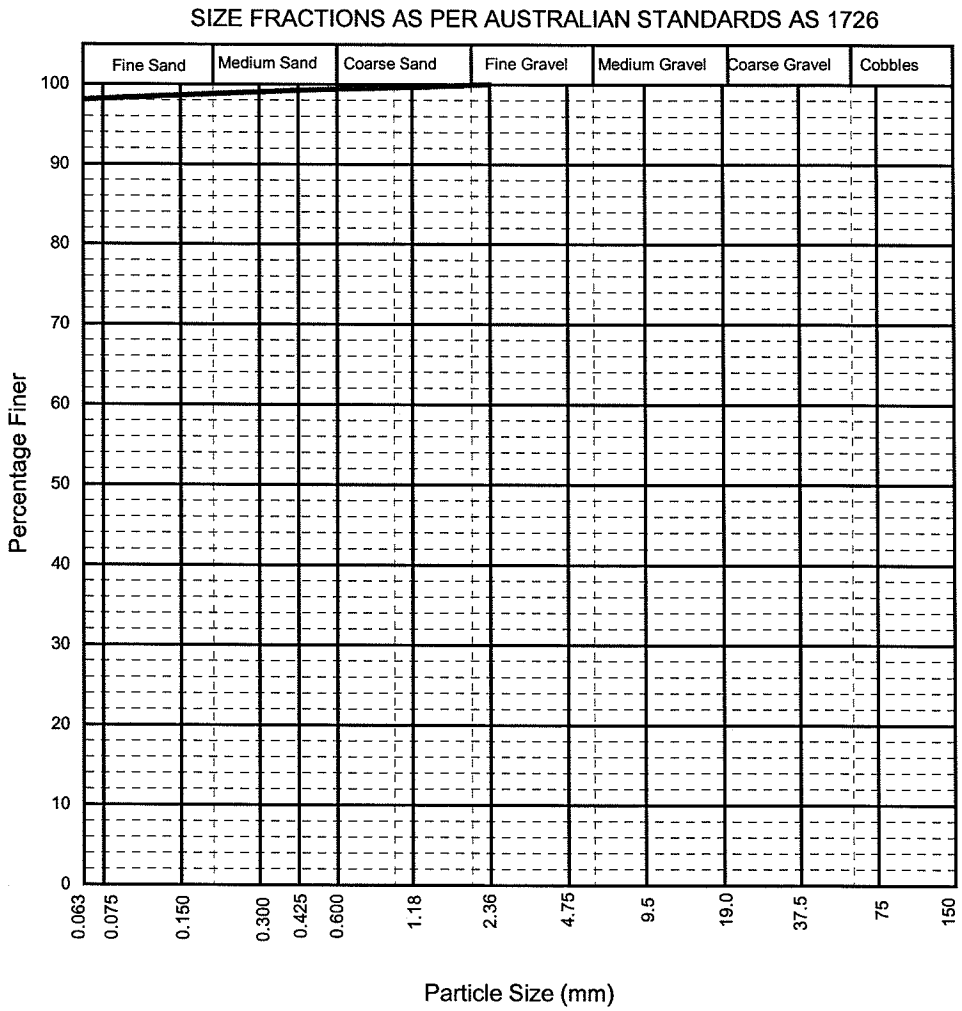
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12065
Sample ID :	H9	Batch No. :	ES 0615839 - 9
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.6
0.600	99.4
0.425	99.3
0.300	99.1
0.150	98.6
0.075	98.2
0.063	98.1



Remarks :	
Material Description :	Silty CLAY (CH) dark grey
Test Procedure :	AS 1289 3.6.1
Prepared by : NG	Checked by : JA

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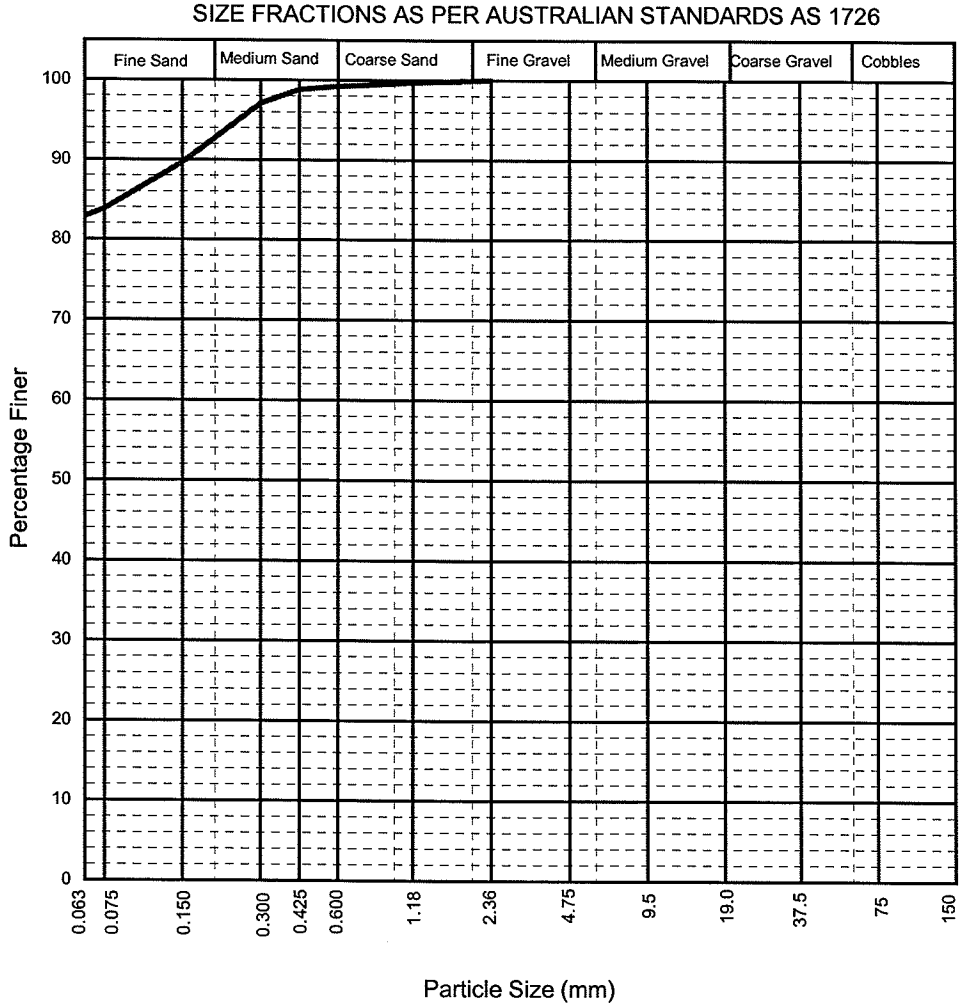
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12066
Sample ID :	H10	Batch No. :	ES 0615839 - 10
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.7
0.600	99.2
0.425	98.8
0.300	97.1
0.150	89.6
0.075	83.8
0.063	82.8



Remarks :

Material Description : Silty CLAY (CH) dark grey, with some sand

Test Procedure : AS 1289 3.6.1

Prepared by : NL | Checked by : JA

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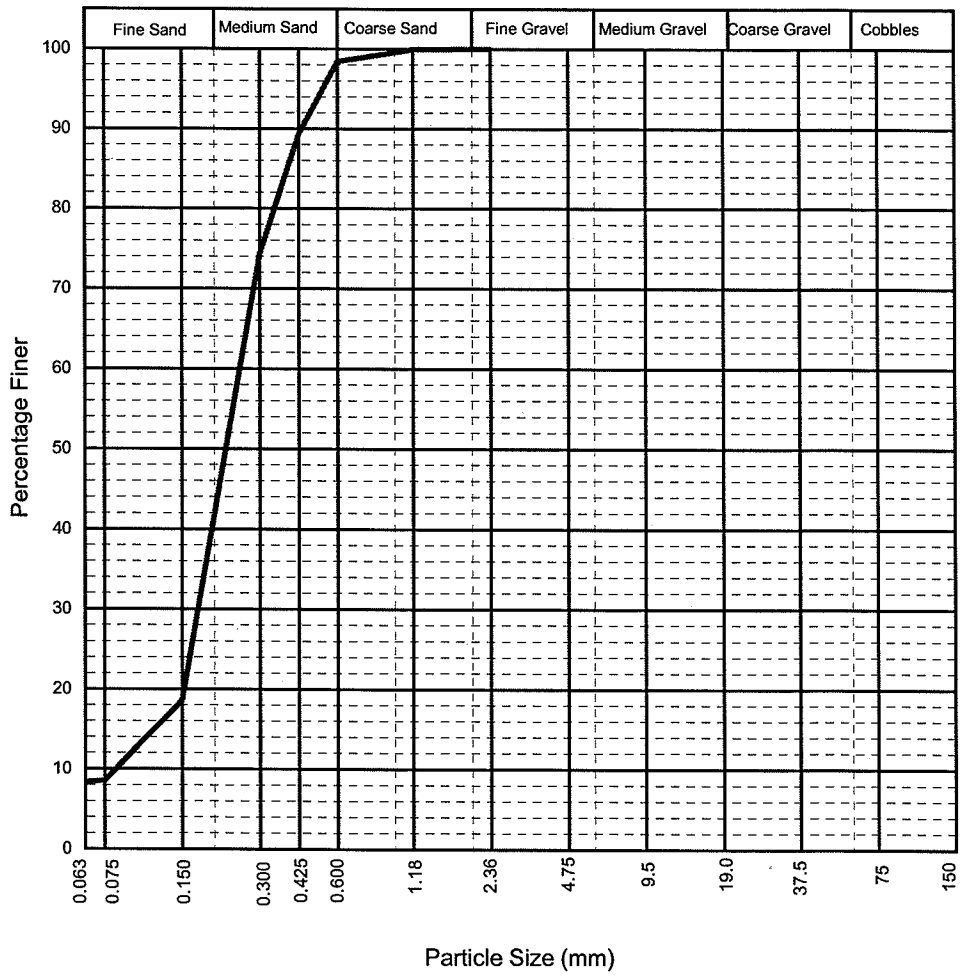
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12067
Sample ID :	H11	Batch No. :	ES 0615839 - 11
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	98.4
0.425	89.3
0.300	74.3
0.150	18.6
0.075	8.5
0.063	8.3

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty SAND/SAND (SM/SP) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NK

Checked by : JA

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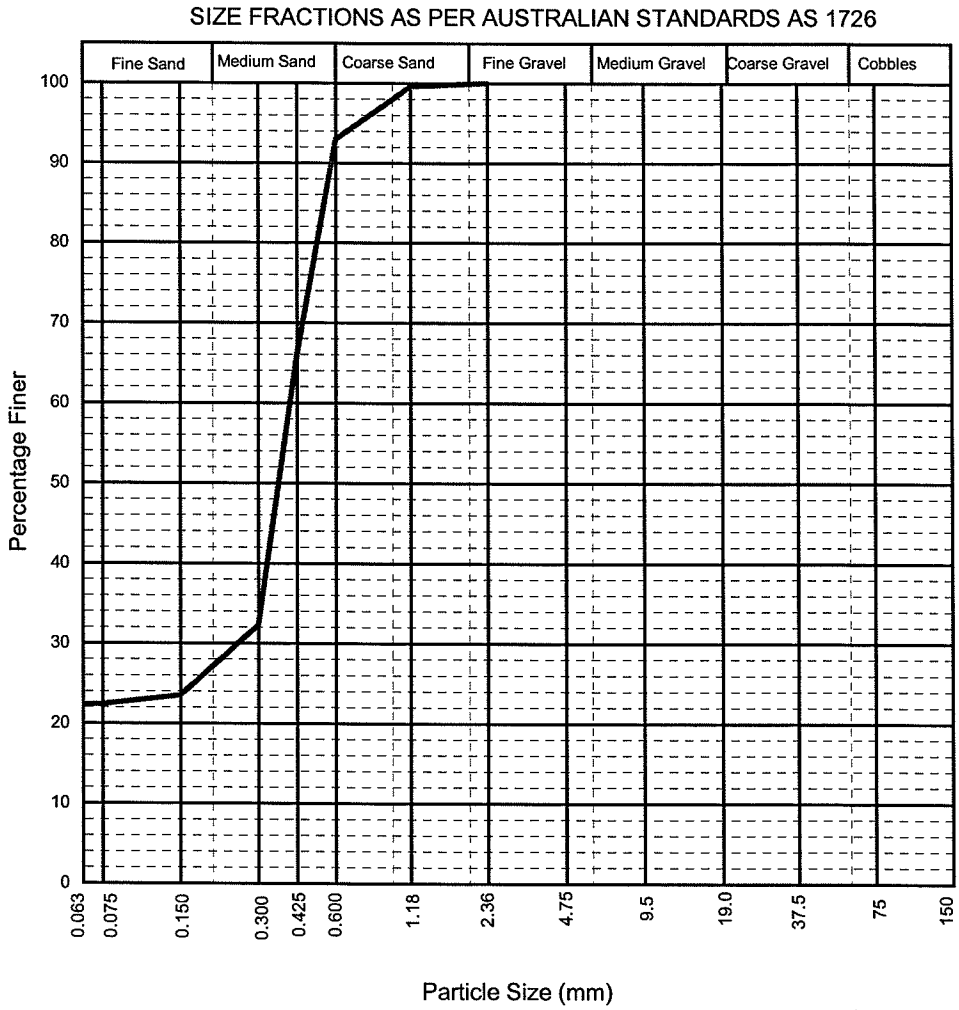
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12068
Sample ID :	H12	Batch No. :	ES 0615839 - 12
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.6
0.600	93.0
0.425	66.1
0.300	32.3
0.150	23.5
0.075	22.4
0.063	22.3



Remarks :

Material Description : Clayey SAND (SC) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NL

Checked by : JA

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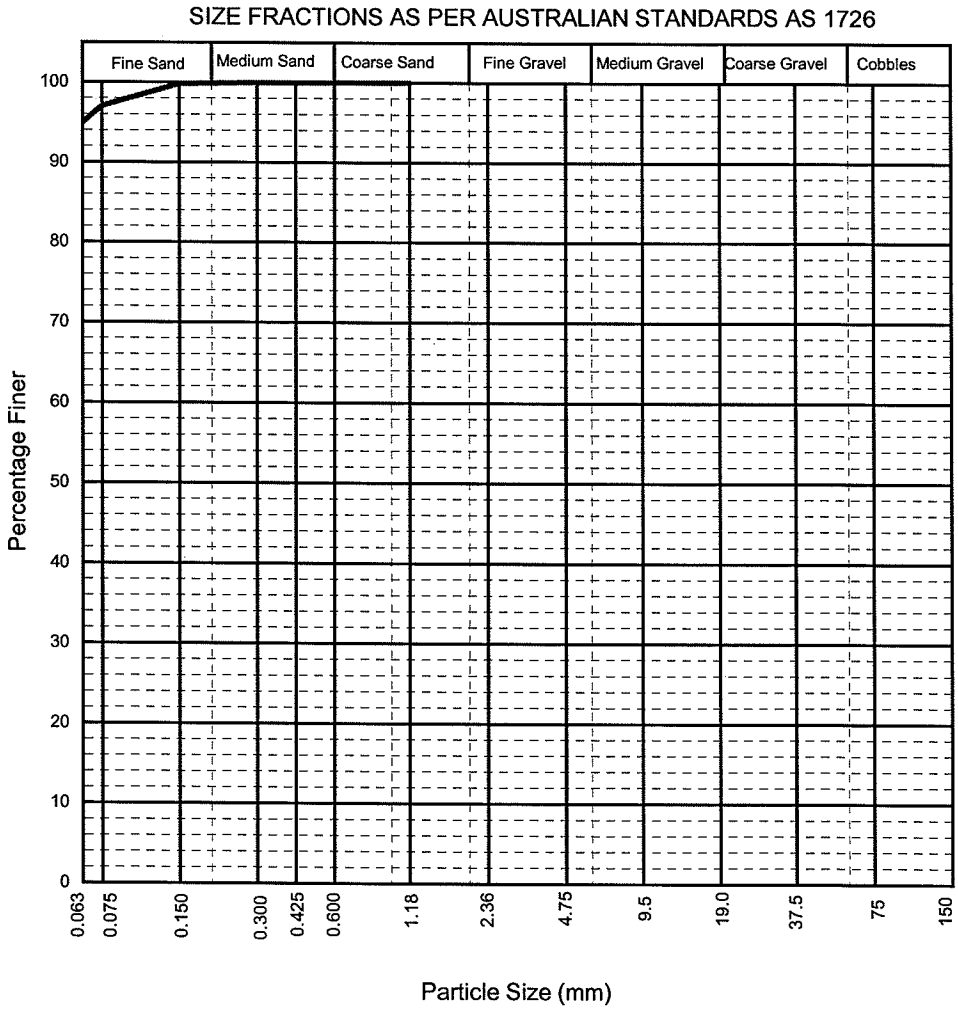
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12069
Sample ID :	H13	Batch No. :	ES 0615839 - 13
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	100.0
0.600	100.0
0.425	100.0
0.300	100.0
0.150	99.8
0.075	97.0
0.063	94.9



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NL

Checked by : JA

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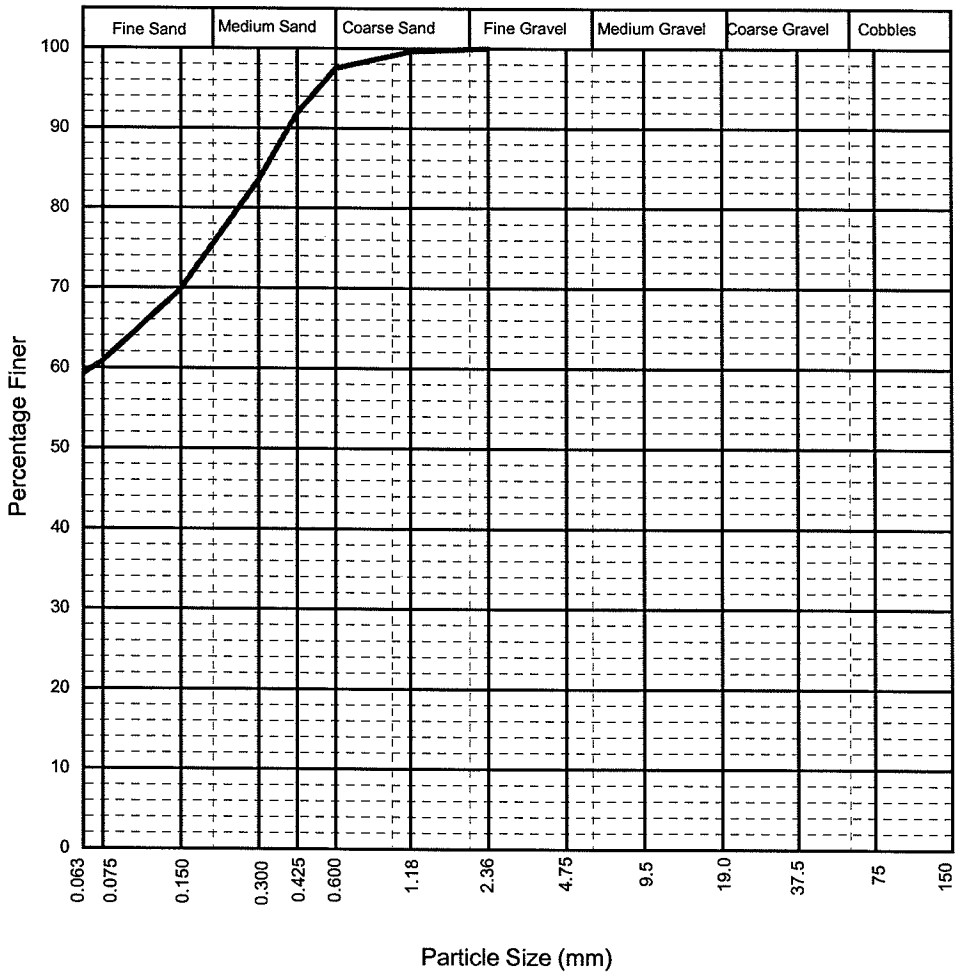
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12070
Sample ID :	H43	Batch No. :	ES 0615839 - 14
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.6
0.600	97.5
0.425	91.9
0.300	83.5
0.150	69.8
0.075	60.8
0.063	59.3

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Sandy CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NW

Checked by : JA

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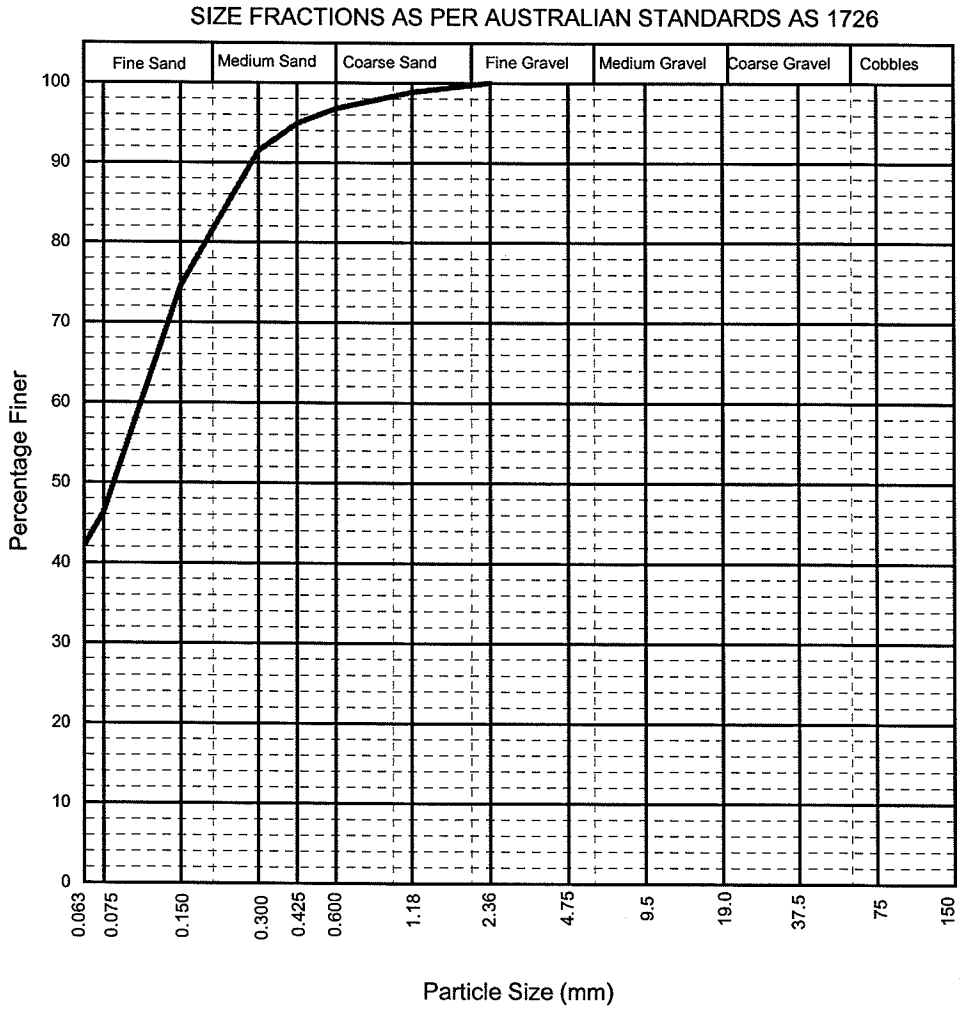
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12071
Sample ID :	H44	Batch No. :	ES 0615839 - 15
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	98.9
0.600	96.8
0.425	94.9
0.300	91.4
0.150	74.5
0.075	46.3
0.063	42.1



Remarks :

Material Description : Clayey SAND (SC) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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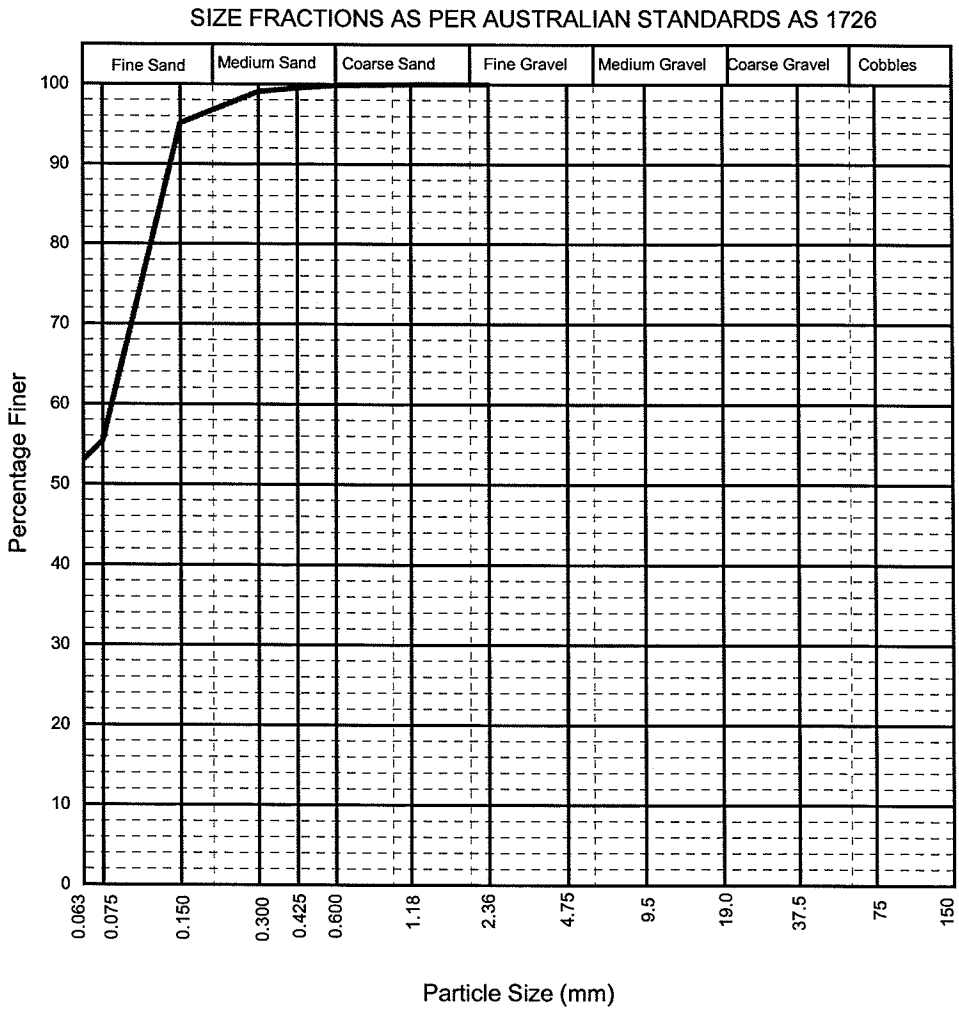
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12072
Sample ID :	H45	Batch No. :	ES 0615839 - 16
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.8
0.425	99.5
0.300	99.1
0.150	95.1
0.075	55.3
0.063	53.0



Remarks :

Material Description : Sandy CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : mk

Checked by : JA

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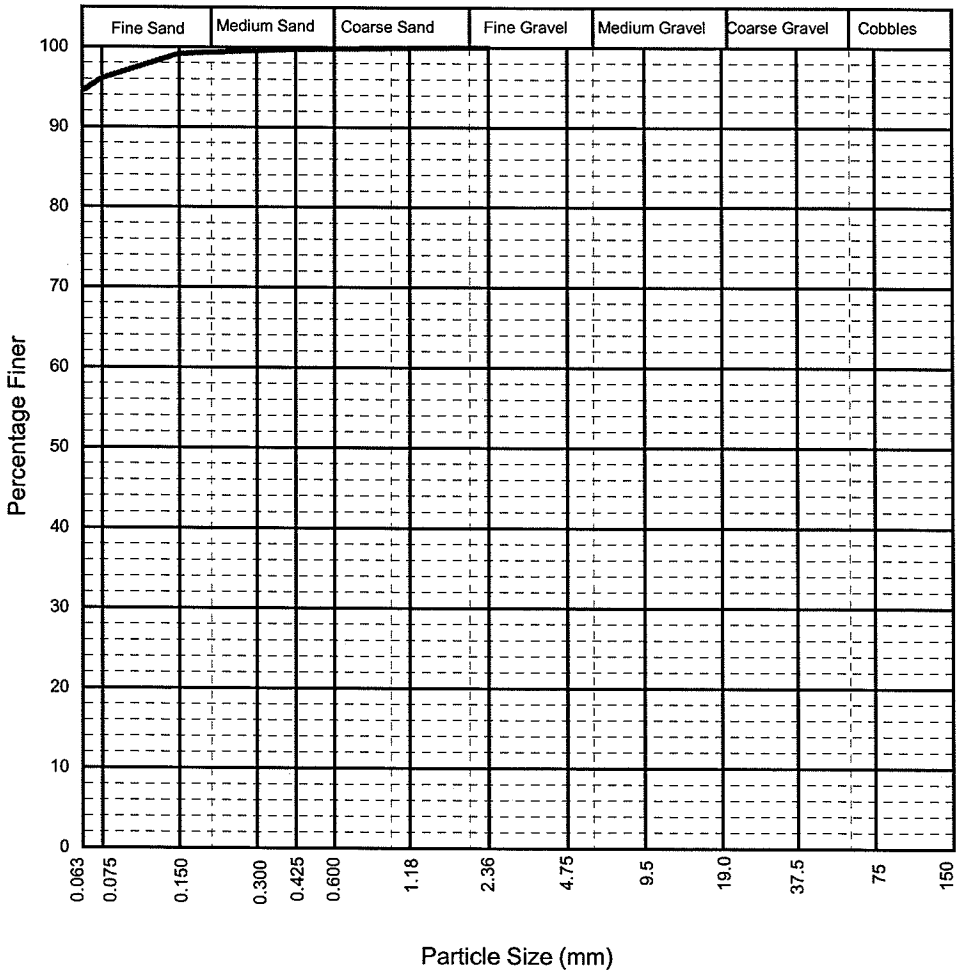
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12073
Sample ID :	H46	Batch No. :	ES 0615839 - 17
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.8
0.425	99.7
0.300	99.6
0.150	99.2
0.075	96.1
0.063	94.5

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NV

Checked by : JA

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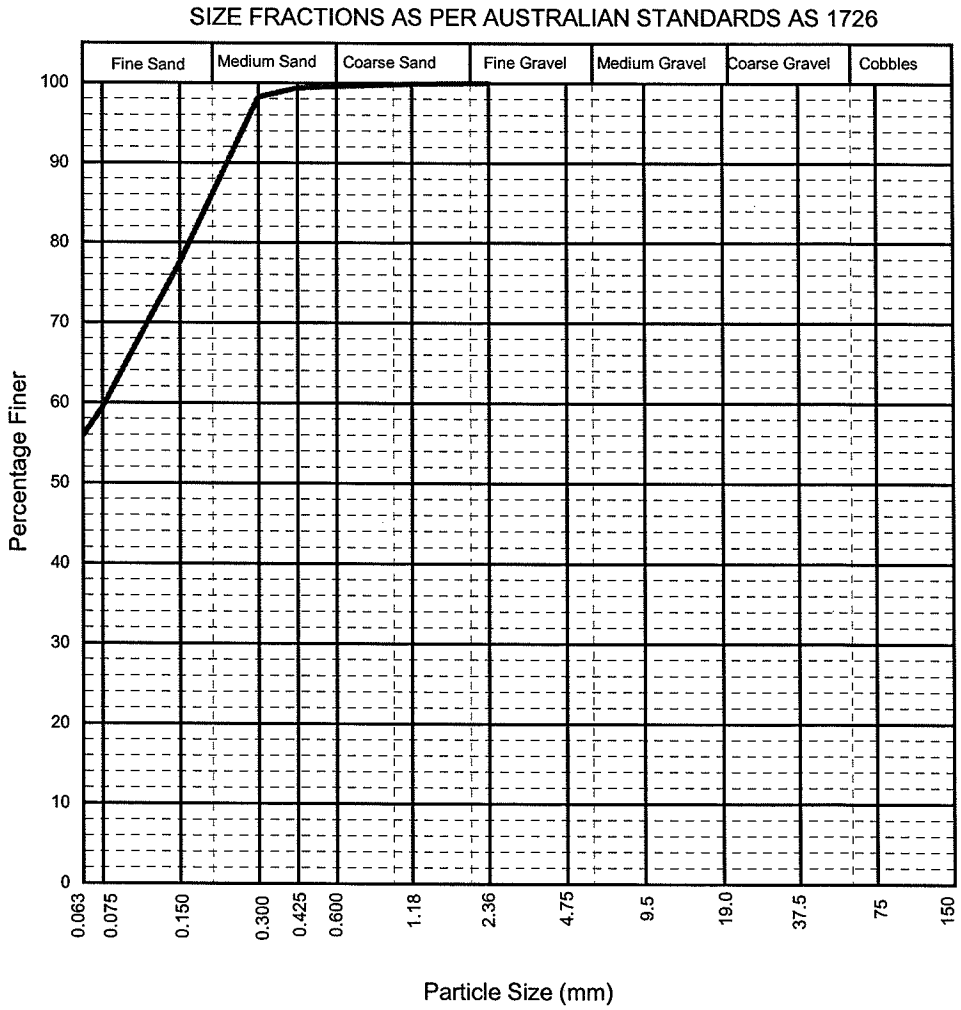
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12074
Sample ID :	H47	Batch No. :	ES 0615839 - 18
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.6
0.425	99.4
0.300	98.2
0.150	77.5
0.075	59.4
0.063	55.8



Remarks :

Material Description : Sandy CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NT

Checked by : JA

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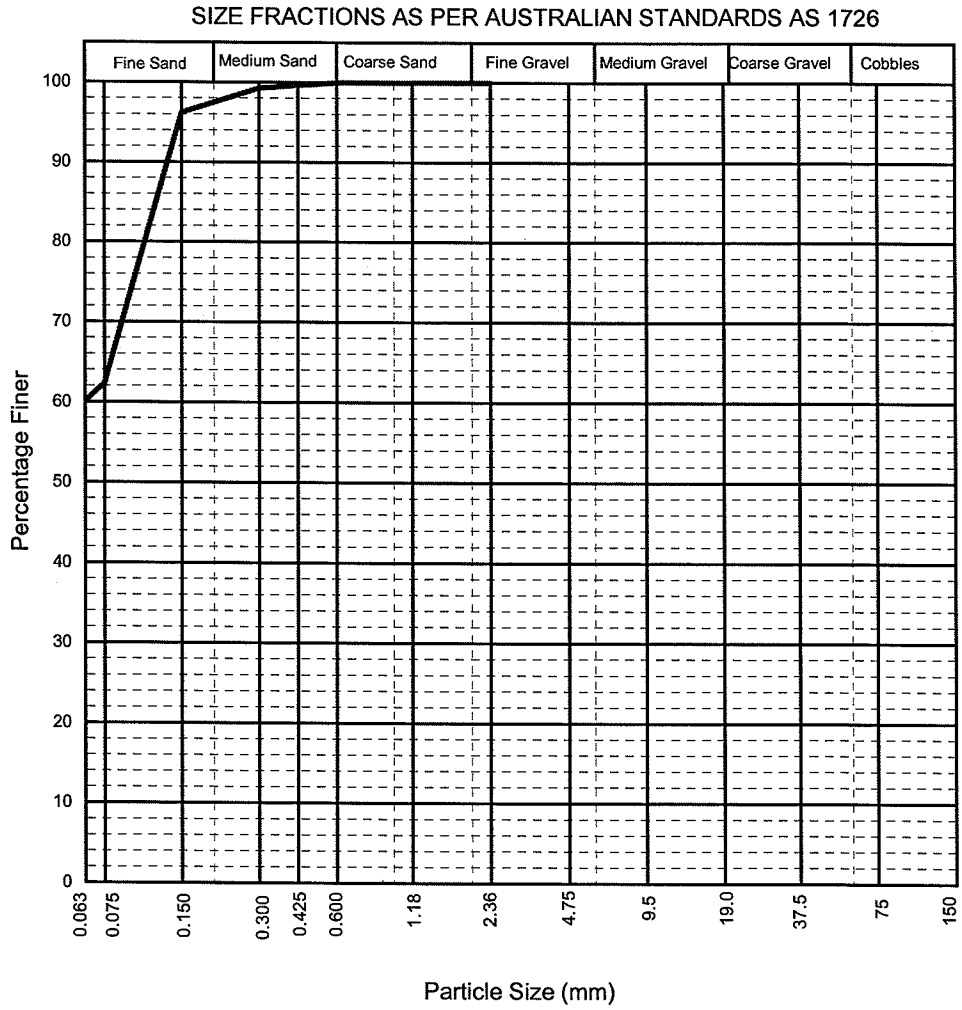
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12075
Sample ID :	H48	Batch No. :	ES 0615839 - 19
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.9
0.425	99.6
0.300	99.2
0.150	96.2
0.075	62.3
0.063	60.1



Remarks :

Material Description : Sandy CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : MF

Checked by : JA

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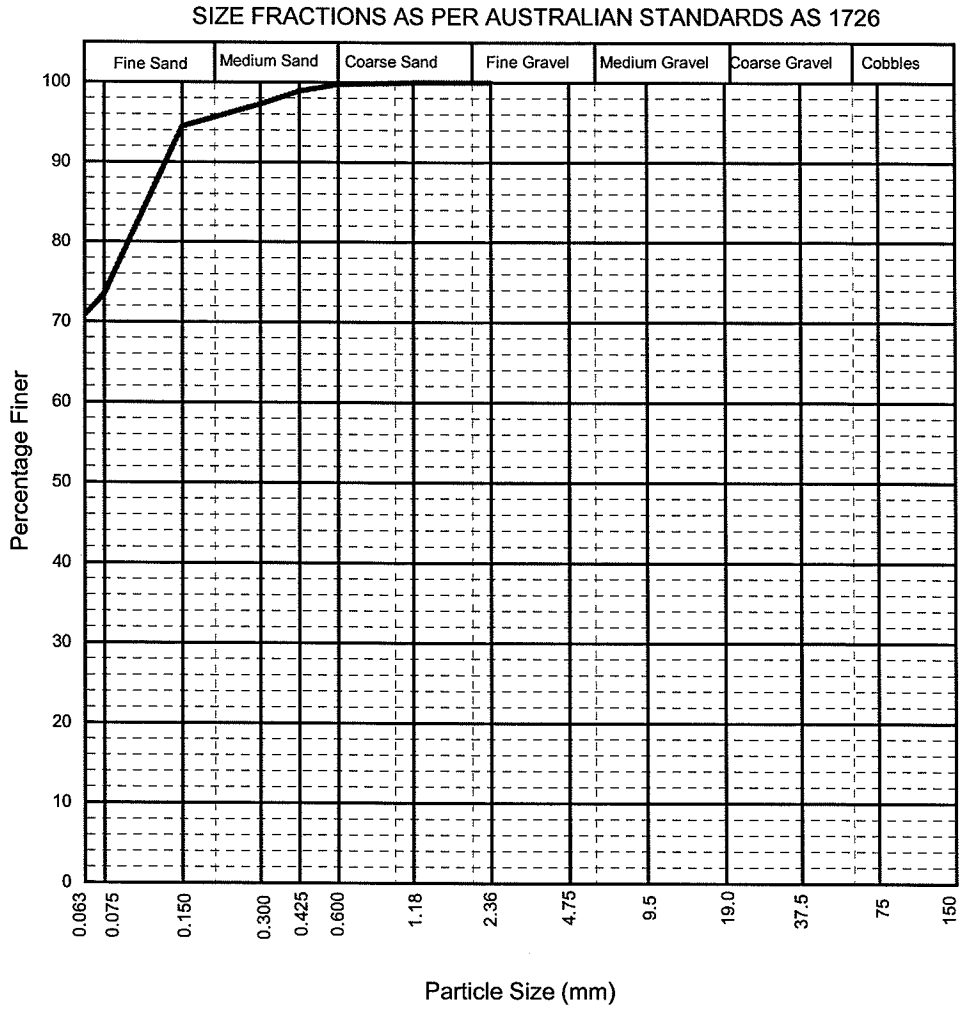
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12076
Sample ID :	H49	Batch No. :	ES 0615839 - 20
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.7
0.425	98.9
0.300	97.3
0.150	94.5
0.075	73.5
0.063	70.8



Remarks :

Material Description : Sandy CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NK

Checked by : JA

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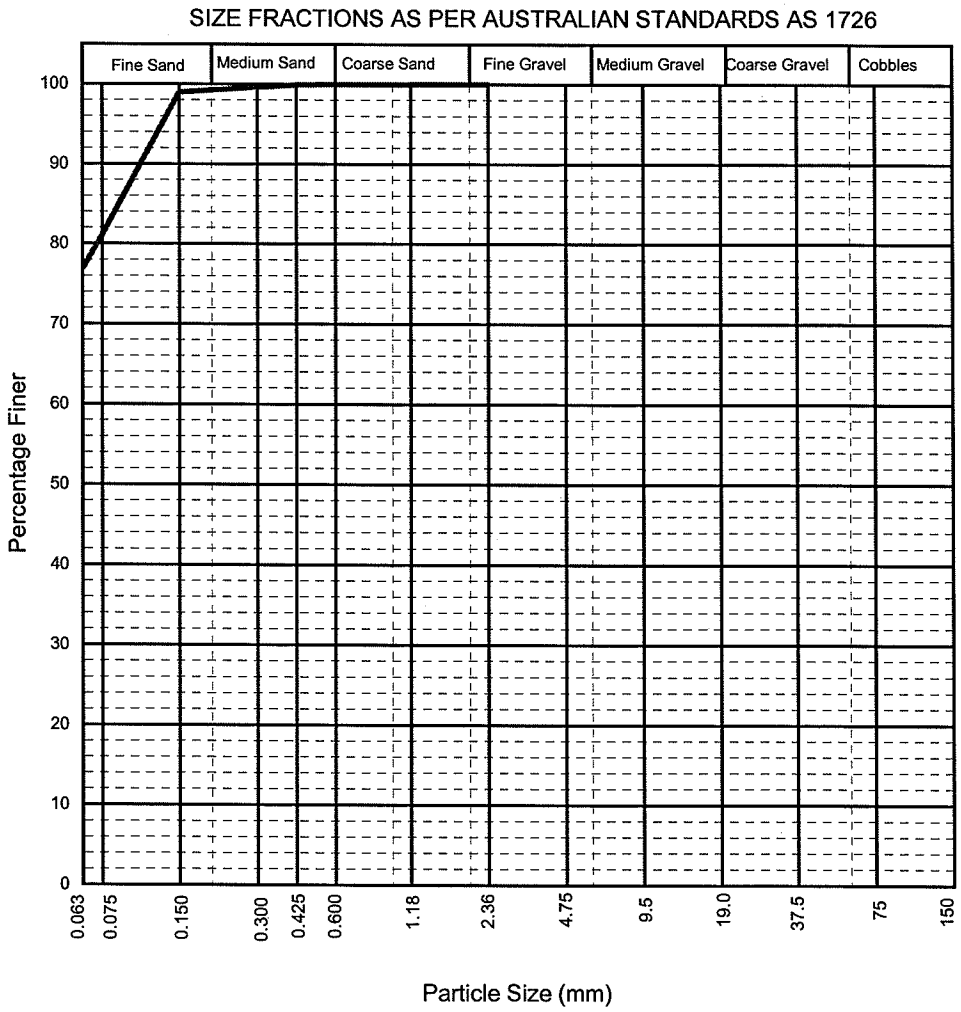
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12077
Sample ID :	H50	Batch No. :	ES 0615839 - 21
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	100.0
0.425	99.9
0.300	99.6
0.150	99.0
0.075	81.1
0.063	76.8



Remarks :

Material Description : Silty CLAY (CH) dark grey, with some sand

Test Procedure : AS 1289 3.6.1

Prepared by : NL

Checked by : JA

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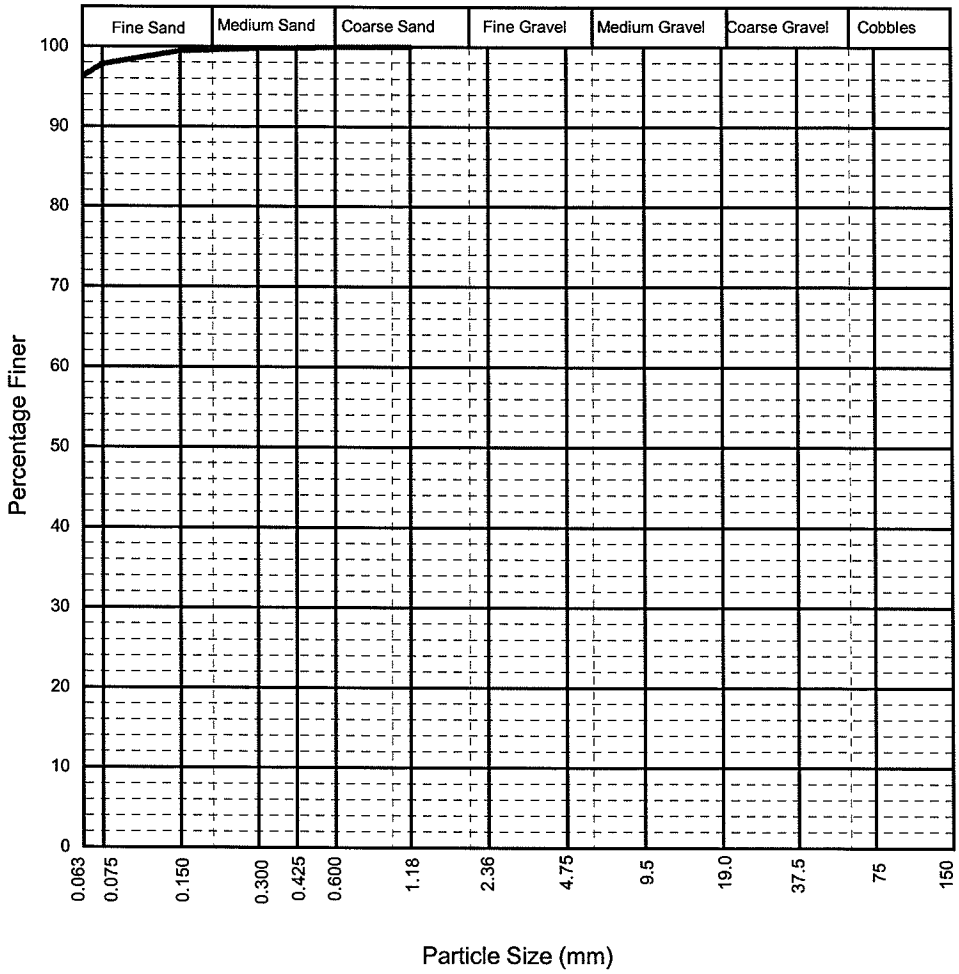
Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12078
Sample ID :	H51	Batch No. :	ES 0615839 - 22
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	100.0
0.600	99.9
0.425	99.9
0.300	99.8
0.150	99.5
0.075	97.8
0.063	96.2

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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NATA 1446

R Farrar 22/12/06
Authorised Signatory

Golder Associates

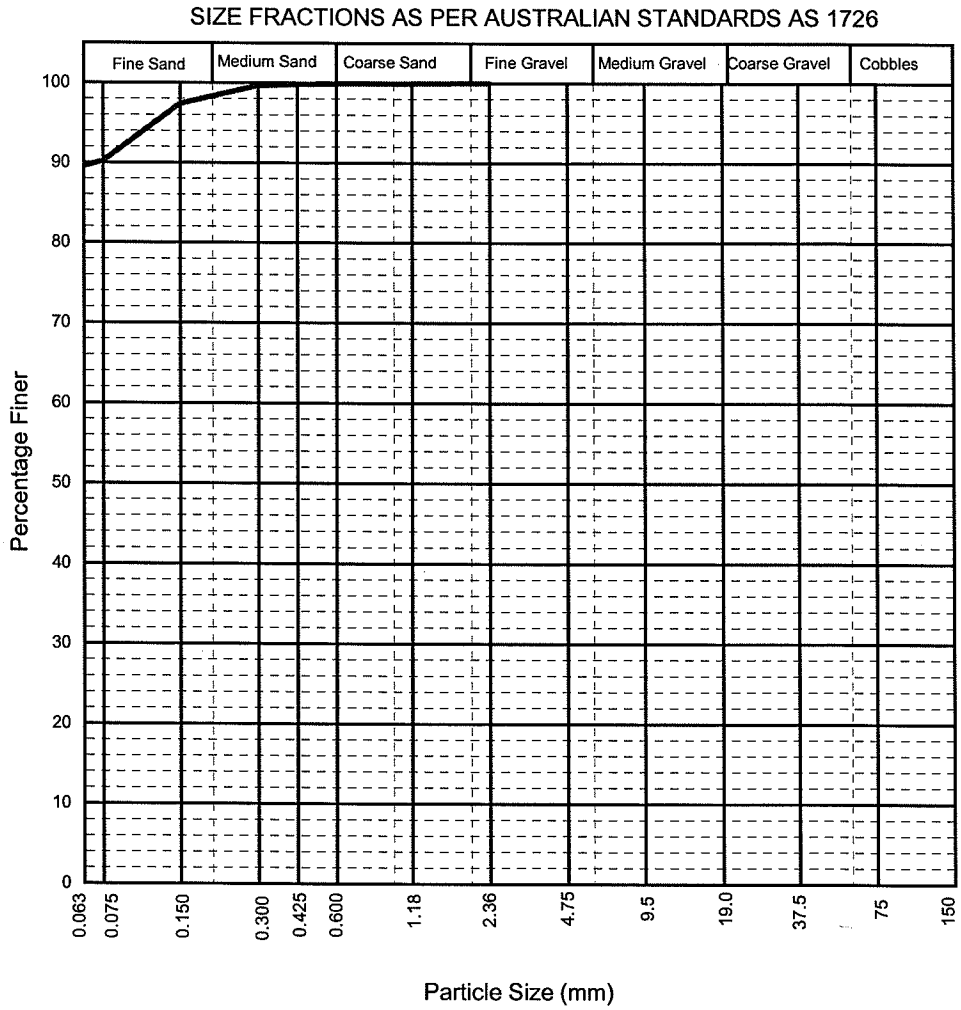
MANSFIELD LABORATORY

1/51 Secam Street Mansfield Qld 4122
PO Box 2034 Mansfield DC Qld 4122
Ph : (07) 3343 3166 Fax : (07) 3343 4705
www.golder.com.au

PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12079
Sample ID :	H52	Batch No. :	ES 0615839 - 23
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.9
0.425	99.8
0.300	99.7
0.150	97.4
0.075	90.2
0.063	89.5



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : MV

Checked by : JA

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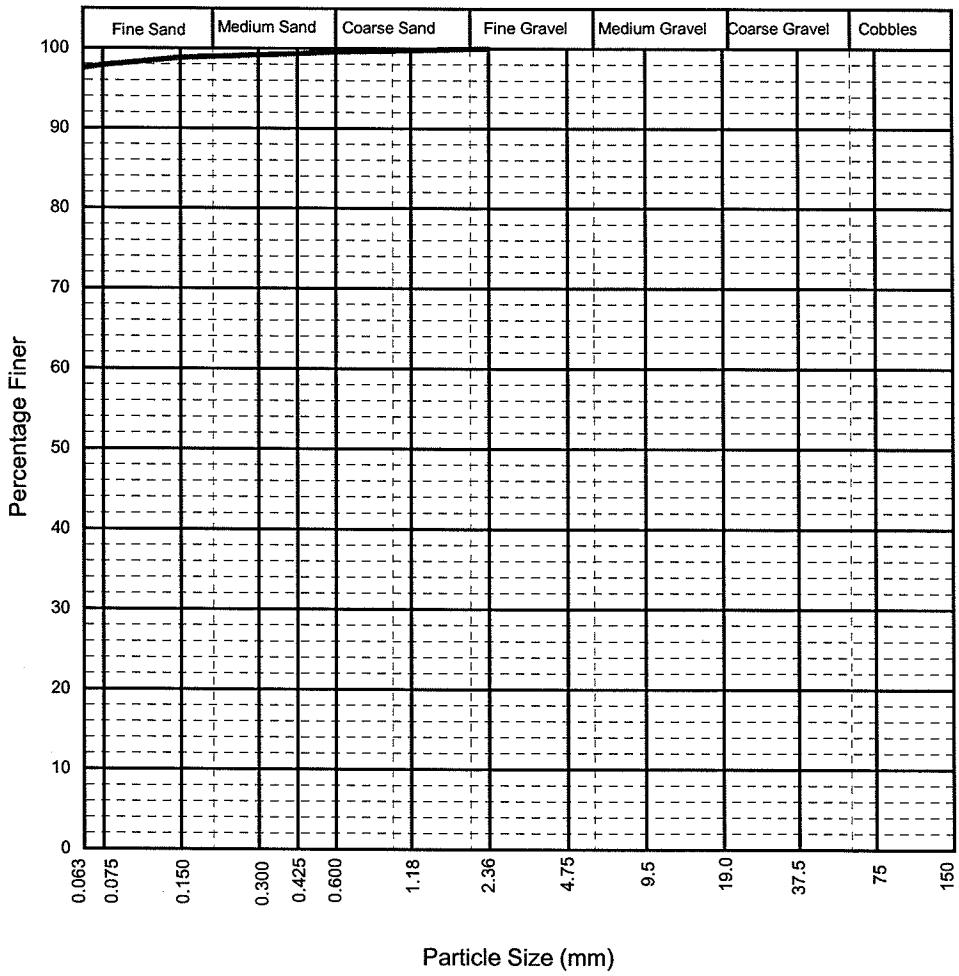
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12080
Sample ID :	H53	Batch No. :	ES 0615839 - 24
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.8
0.600	99.6
0.425	99.3
0.300	99.2
0.150	98.8
0.075	97.9
0.063	97.5

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :	
Material Description :	Silty CLAY (CH) dark grey
Test Procedure :	AS 1289 3.6.1
Prepared by : NV	Checked by : JA

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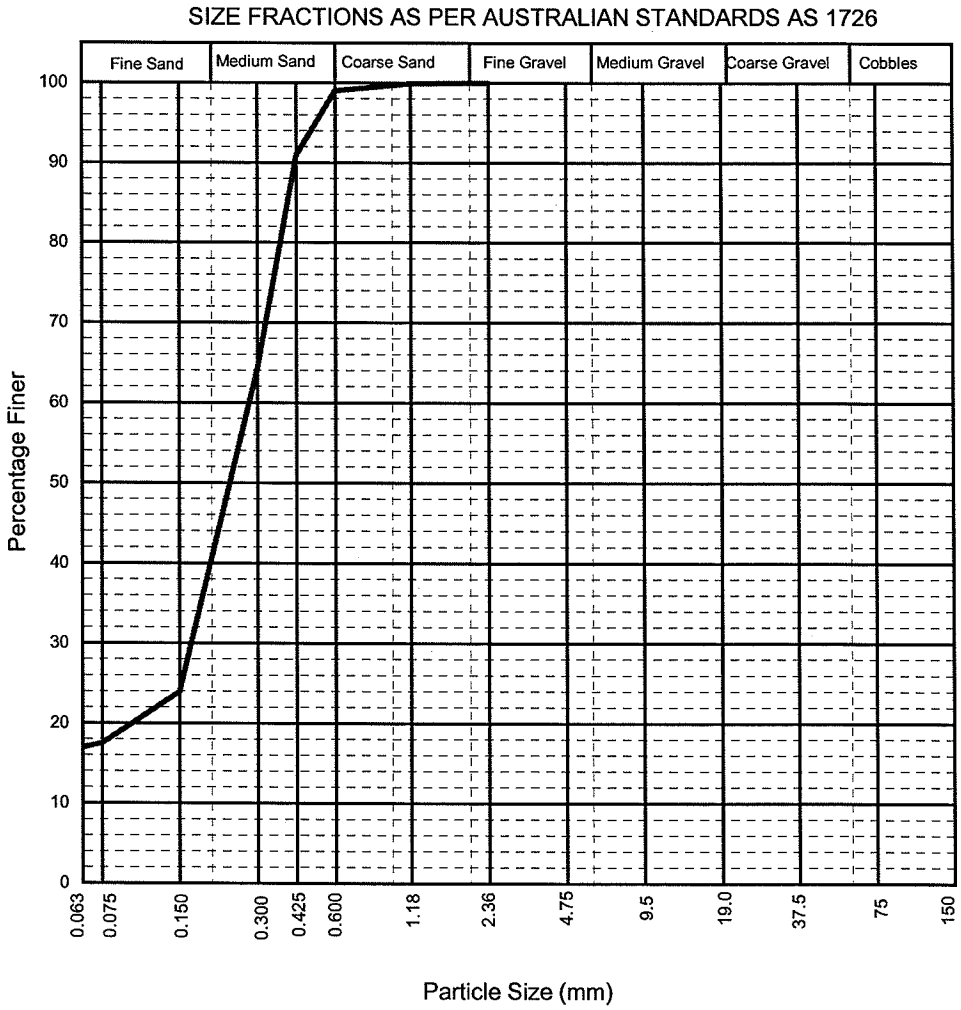
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12081
Sample ID :	H54	Batch No. :	ES 0615839 - 25
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.0
0.425	90.9
0.300	64.2
0.150	23.9
0.075	17.5
0.063	17.0



Remarks :

Material Description : Clayey SAND (SC) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NW

Checked by : JA

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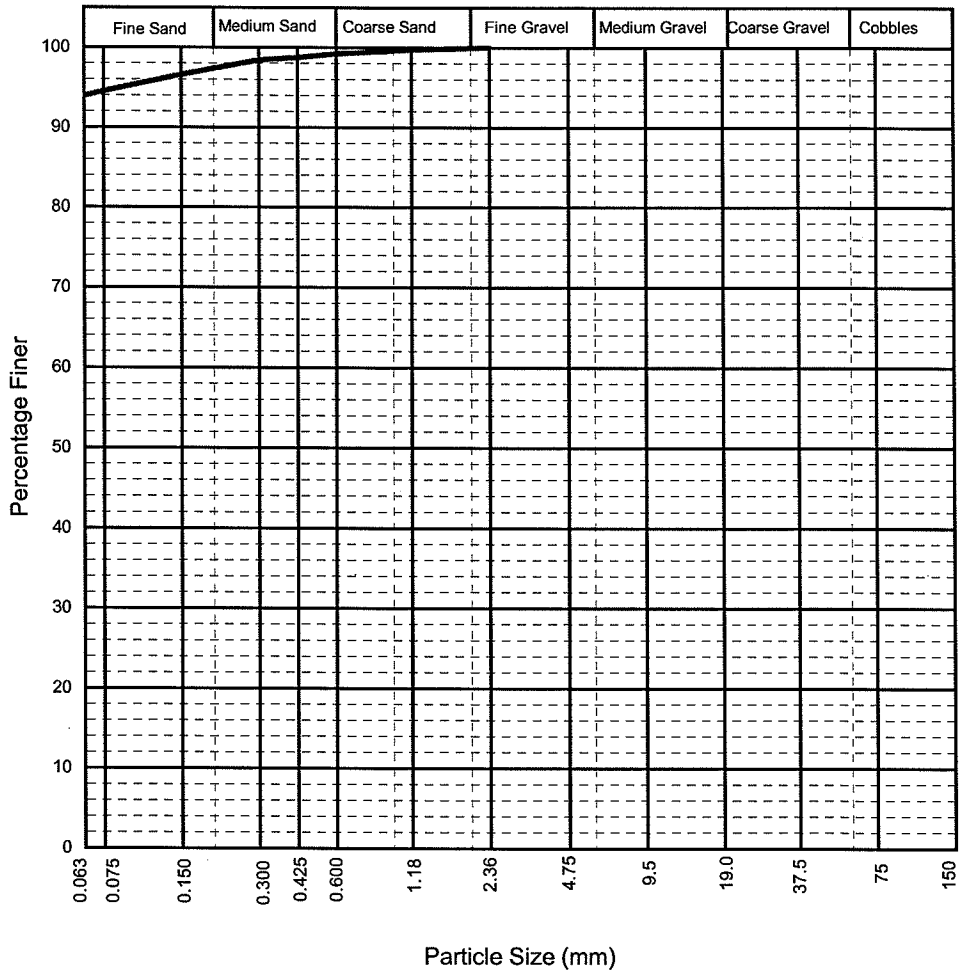
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6420
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12082
Sample ID :	H55	Batch No. :	ES 0615839 - 26
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.8
0.600	99.2
0.425	98.8
0.300	98.4
0.150	96.6
0.075	94.5
0.063	93.9



Remarks :	
Material Description :	Silty CLAY (CH) dark grey
Test Procedure :	AS 1289 3.6.1
Prepared by : MF	Checked by : JA

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ALS Environmental

QUALITY CONTROL REPORT

Client	:	**URS AUSTRALIA (NSW) PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 36**
Contact	:	MR CARSTEN MATTHAI	**Contact**	:	Greg Vogel		
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0615839**
						Amendment No.	:
Project	:	43217595	**Quote number**	:	----	**Date received**	: 15 Dec 2006
Order number	:	- Not provided -				**Date issued**	: 27 Dec 2006
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	carsten_matthai@urscorp.com	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	02 8925 5500	**Telephone**	:	+61 (02) 8784 8555	**Received**	: 26
Facsimile	:	02 8925 5555	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	: 26

This final report for the ALSE work order reference ES0615839 supersedes any previous reports with this reference.
Results apply to the samples as submitted. All pages of this report have been checked and approved for release.
This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
EDWANDY FADJAR	Organics - NATA 825 (10911 - Sydney)
Greg Vogel	Inorganics - NATA 825 (10911 - Sydney)
PHALAK INTHAKESONE	Organics - NATA 825 (10911 - Sydney)
Sarah Millington	Inorganics - NATA 825 (10911 - Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting:- Result < 10 times LOR, no limit - Result between 10 and 20 times LOR, 0% - 50% - Result > 20 times LOR, 0% - 20%

Matrix Type: SOIL ***Laboratory Duplicates (DUP) Report***

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EA055: Moisture Content						
EA055: Moisture Content - (QC Lot: 325778)				%	%	%
ES0615839-001	H1	Moisture Content (dried @ 103°C)	1.0 %	46.8	46.8	0.0
ES0615839-010	H10	Moisture Content (dried @ 103°C)	1.0 %	67.4	66.8	0.9
EA055: Moisture Content - (QC Lot: 326289)				%	%	%
ES0615761-004	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	3.6	3.8	6.6
ES0615769-039	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	2.9	3.5	17.7
EA055: Moisture Content - (QC Lot: 326428)				%	%	%
ES0615835-005	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	60.4	60.1	0.6
ES0615835-014	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	61.3	60.4	1.5
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 326690)				mg/kg	mg/kg	%
ES0615835-001	Anonymous	Aluminium	50 mg/kg	8220	8160	0.8
		Arsenic	5 mg/kg	12	11	0.0
		Barium	10 mg/kg	20	20	0.0
		Beryllium	1 mg/kg	1	1	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	18	18	0.0
		Cobalt	2 mg/kg	10	10	0.0
		Copper	5 mg/kg	18	18	0.0
		Iron	50 mg/kg	20300	20100	1.1
		Lead	5 mg/kg	23	23	0.0
		Manganese	5 mg/kg	154	153	0.9
		Nickel	2 mg/kg	13	13	0.0
		Strontium	2 mg/kg	53	50	5.6
		Vanadium	5 mg/kg	38	38	0.0
		Zinc	5 mg/kg	62	62	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EG005T: Total Metals by ICP-AES - continued						
EG005T: Total Metals by ICP-AES - (QC Lot: 326690) - continued				mg/kg	mg/kg	%
ES0615835-001	Anonymous	Calcium	50 mg/kg	5410	4420	20.2
		Magnesium	50 mg/kg	4220	4290	1.7
ES0615835-011	Anonymous	Aluminium	50 mg/kg	13000	13000	0.0
		Arsenic	5 mg/kg	17	17	0.0
		Barium	10 mg/kg	50	40	0.0
		Beryllium	1 mg/kg	1	1	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	30	26	13.4
		Cobalt	2 mg/kg	10	10	0.0
		Copper	5 mg/kg	62	62	0.0
		Iron	50 mg/kg	26500	26400	0.4
		Lead	5 mg/kg	63	54	15.5
		Manganese	5 mg/kg	201	207	3.1
		Nickel	2 mg/kg	18	17	0.0
		Strontium	2 mg/kg	56	57	0.0
		Vanadium	5 mg/kg	52	52	0.0
		Zinc	5 mg/kg	128	124	2.9
		Calcium	50 mg/kg	3170	3280	3.6
		Magnesium	50 mg/kg	5760	5750	0.0
EG005T: Total Metals by ICP-AES - (QC Lot: 326692)				mg/kg	mg/kg	%
ES0615839-004	H4	Aluminium	50 mg/kg	12200	12200	0.0
		Arsenic	5 mg/kg	15	15	0.0
		Barium	10 mg/kg	30	30	0.0
		Beryllium	1 mg/kg	1	1	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	22	23	0.0
		Cobalt	2 mg/kg	11	11	0.0
		Copper	5 mg/kg	21	21	0.0
		Iron	50 mg/kg	27000	27000	0.3

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EG005T: Total Metals by ICP-AES - continued						
EG005T: Total Metals by ICP-AES - (QC Lot: 326692) - continued				mg/kg	mg/kg	%
ES0615839-004	H4	Lead	5 mg/kg	26	27	4.1
		Manganese	5 mg/kg	304	314	3.5
		Nickel	2 mg/kg	16	16	0.0
		Strontium	2 mg/kg	48	49	0.0
		Vanadium	5 mg/kg	48	48	0.0
		Zinc	5 mg/kg	80	81	1.6
		Calcium	50 mg/kg	2420	2470	2.2
		Magnesium	50 mg/kg	4790	4860	1.4
ES0615839-014	H43	Aluminium	50 mg/kg	8220	8220	0.0
		Arsenic	5 mg/kg	12	13	10.2
		Barium	10 mg/kg	20	20	0.0
		Beryllium	1 mg/kg	<1	<1	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	15	16	0.0
		Cobalt	2 mg/kg	7	9	21.0
		Copper	5 mg/kg	14	14	0.0
		Iron	50 mg/kg	17600	18200	3.6
		Lead	5 mg/kg	18	19	0.0
		Manganese	5 mg/kg	316	323	2.2
		Nickel	2 mg/kg	10	12	11.5
		Strontium	2 mg/kg	44	44	0.0
		Vanadium	5 mg/kg	33	34	3.3
		Zinc	5 mg/kg	48	51	6.7
		Calcium	50 mg/kg	3040	2970	2.4
		Magnesium	50 mg/kg	3680	3710	0.9
EG005T: Total Metals by ICP-AES - (QC Lot: 326771)				mg/kg	mg/kg	%
ES0615879-002	Anonymous	Aluminium	50 mg/kg	16600	19000	13.4
		Arsenic	5 mg/kg	16	18	10.7
		Barium	10 mg/kg	280	330	16.3

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EG005T: Total Metals by ICP-AES - continued						
EG005T: Total Metals by ICP-AES - (QC Lot: 326771) - continued				mg/kg	mg/kg	%
ES0615879-002	Anonymous	Beryllium	1 mg/kg	2	2	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	3	3	0.0
		Cobalt	2 mg/kg	<2	<2	0.0
		Copper	5 mg/kg	11	20	56.6
		Iron	50 mg/kg	13700	11500	17.5
		Lead	5 mg/kg	60	84	31.9
		Manganese	5 mg/kg	64	134	69.6
		Nickel	2 mg/kg	<2	2	0.0
		Strontium	2 mg/kg	12	19	41.4
		Vanadium	5 mg/kg	16	12	31.7
		Zinc	5 mg/kg	83	100	18.3
		Calcium	50 mg/kg	1060	1530	36.8
		Magnesium	50 mg/kg	900	1020	13.0
ES0615879-009	Anonymous	Aluminium	50 mg/kg	570	490	15.6
		Arsenic	5 mg/kg	<5	<5	0.0
		Barium	10 mg/kg	<10	<10	0.0
		Beryllium	1 mg/kg	<1	<1	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	<2	<2	0.0
		Cobalt	2 mg/kg	<2	<2	0.0
		Copper	5 mg/kg	<5	<5	0.0
		Iron	50 mg/kg	1610	1410	13.5
		Lead	5 mg/kg	<5	<5	0.0
		Manganese	5 mg/kg	12	11	0.0
		Nickel	2 mg/kg	<2	<2	0.0
		Strontium	2 mg/kg	144	130	10.0
		Vanadium	5 mg/kg	<5	<5	0.0
		Zinc	5 mg/kg	<5	<5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EG005T: Total Metals by ICP-AES - continued						
EG005T: Total Metals by ICP-AES - (QC Lot: 326771) - continued				mg/kg	mg/kg	%
ES0615879-009	Anonymous	Calcium	50 mg/kg	24600	22600	8.6
		Magnesium	50 mg/kg	1050	940	11.9
EG035T: Total Mercury by FIMS						
EG035T: Total Mercury by FIMS - (QC Lot: 326691)				mg/kg	mg/kg	%
ES0615835-001	Anonymous	Mercury	0.1 mg/kg	0.3	<0.1	94.5
ES0615835-011	Anonymous	Mercury	0.1 mg/kg	0.2	<0.1	78.6
EG035T: Total Mercury by FIMS - (QC Lot: 326693)				mg/kg	mg/kg	%
ES0615839-004	H4	Mercury	0.1 mg/kg	<0.1	0.6	141
ES0615839-014	H43	Mercury	0.1 mg/kg	<0.1	<0.1	0.0
EG035T: Total Mercury by FIMS - (QC Lot: 326772)				mg/kg	mg/kg	%
ES0615879-002	Anonymous	Mercury	0.1 mg/kg	0.2	0.2	0.0
ES0615879-009	Anonymous	Mercury	0.1 mg/kg	<0.1	0.2	82.9
EK059G: NOX as N by Discrete Analyser						
EK059G: NOX as N by Discrete Analyser - (QC Lot: 325775)				mg/kg	mg/kg	%
ES0615839-001	H1	Nitrite + Nitrate as N (Sol.)	0.100 mg/kg	<0.100	<0.100	0.0
ES0615839-010	H10	Nitrite + Nitrate as N (Sol.)	0.100 mg/kg	<0.100	<0.100	0.0
EK059G: NOX as N by Discrete Analyser - (QC Lot: 325776)				mg/kg	mg/kg	%
ES0615839-021	H50	Nitrite + Nitrate as N (Sol.)	0.100 mg/kg	<0.100	<0.100	0.0
EK061G: Total Kjeldahl Nitrogen as N						
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 326481)				mg/kg	mg/kg	%
ES0615839-001	H1	Total Kjeldahl Nitrogen as N	20 mg/kg	1250	1190	4.6
ES0615839-010	H10	Total Kjeldahl Nitrogen as N	20 mg/kg	4360	3830	12.8
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 326482)				mg/kg	mg/kg	%
ES0615839-022	H51	Total Kjeldahl Nitrogen as N	20 mg/kg	1990	2070	3.9
EK071G: Reactive Phosphorous as P by discrete analyser						
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326528)				mg/kg	mg/kg	%
ES0615835-001	Anonymous	Reactive Phosphorus as P	0.100 mg/kg	0.209	0.269	25.0
ES0615835-010	Anonymous	Reactive Phosphorus as P	0.100 mg/kg	<0.100	<0.100	0.0
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326529)				mg/kg	mg/kg	%

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EK071G: Reactive Phosphorous as P by discrete analyser - continued						
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326529) - continued				mg/kg	mg/kg	%
ES0615839-004	H4	Reactive Phosphorus as P	0.100 mg/kg	<0.100	<0.100	0.0
ES0615839-013	H13	Reactive Phosphorus as P	0.100 mg/kg	<0.100	<0.100	0.0
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326530)				mg/kg	mg/kg	%
ES0615839-024	H53	Reactive Phosphorus as P	0.100 mg/kg	0.533	0.517	3.2
EP004: Organic Matter						
EP004: Organic Matter - (QC Lot: 325695)				%	%	%
ES0615839-001	H1	Organic Matter	0.5 %	6.6	6.6	0.0
ES0615839-011	H11	Organic Matter	0.5 %	3.1	3.2	0.0
EP004: Organic Matter - (QC Lot: 325696)				%	%	%
ES0615839-021	H50	Organic Matter	0.5 %	7.4	7.5	0.0
EP066: Polychlorinated Biphenyls (PCB)						
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 325764)				mg/kg	mg/kg	%
ES0615839-001	H1	Total Polychlorinated biphenyls	0.10 mg/kg	<0.10	<0.10	0.0
ES0615839-011	H11	Total Polychlorinated biphenyls	0.10 mg/kg	<0.10	<0.10	0.0
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 326544)				mg/kg	mg/kg	%
ES0615839-021	H50	Total Polychlorinated biphenyls	0.10 mg/kg	<0.10	<0.10	0.0
EP068A: Organochlorine Pesticides (OC)						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325763)				mg/kg	mg/kg	%
ES0615839-001	H1	alpha-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	<0.05	0.0
		beta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		gamma-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		delta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor	0.05 mg/kg	<0.05	<0.05	0.0
		Aldrin	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor epoxide	0.05 mg/kg	<0.05	<0.05	0.0
		trans-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		alpha-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		cis-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325763) - continued				mg/kg	mg/kg	%
ES0615839-001	H1	Dieldrin	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDE	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin	0.05 mg/kg	<0.05	<0.05	0.0
		beta-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDD	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin aldehyde	0.05 mg/kg	<0.05	<0.05	0.0
		Endosulfan sulfate	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDT	0.2 mg/kg	<0.2	<0.2	0.0
		Endrin ketone	0.05 mg/kg	<0.05	<0.05	0.0
		Methoxychlor	0.2 mg/kg	<0.2	<0.2	0.0
ES0615839-011	H11	alpha-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	<0.05	0.0
		beta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		gamma-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		delta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor	0.05 mg/kg	<0.05	<0.05	0.0
		Aldrin	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor epoxide	0.05 mg/kg	<0.05	<0.05	0.0
		trans-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		alpha-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		cis-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		Dieldrin	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDE	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin	0.05 mg/kg	<0.05	<0.05	0.0
		beta-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDD	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin aldehyde	0.05 mg/kg	<0.05	<0.05	0.0
		Endosulfan sulfate	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDT	0.2 mg/kg	<0.2	<0.2	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325763) - continued				mg/kg	mg/kg	%
ES0615839-011	H11	Endrin ketone	0.05 mg/kg	<0.05	<0.05	0.0
		Methoxychlor	0.2 mg/kg	<0.2	<0.2	0.0
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 326543)				mg/kg	mg/kg	%
ES0615839-021	H50	alpha-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	<0.05	0.0
		beta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		gamma-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		delta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor	0.05 mg/kg	<0.05	<0.05	0.0
		Aldrin	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor epoxide	0.05 mg/kg	<0.05	<0.05	0.0
		trans-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		alpha-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		cis-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		Dieldrin	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDE	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin	0.05 mg/kg	<0.05	<0.05	0.0
		beta-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDD	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin aldehyde	0.05 mg/kg	<0.05	<0.05	0.0
		Endosulfan sulfate	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDT	0.2 mg/kg	<0.2	<0.2	0.0
		Endrin ketone	0.05 mg/kg	<0.05	<0.05	0.0
		Methoxychlor	0.2 mg/kg	<0.2	<0.2	0.0
ES0615839-025	H54	alpha-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	<0.05	0.0
		beta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		gamma-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		delta-BHC	0.05 mg/kg	<0.05	<0.05	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 326543) - continued				mg/kg	mg/kg	%
ES0615839-025	H54	Heptachlor	0.05 mg/kg	<0.05	<0.05	0.0
		Aldrin	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor epoxide	0.05 mg/kg	<0.05	<0.05	0.0
		trans-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		alpha-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		cis-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		Dieldrin	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDE	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin	0.05 mg/kg	<0.05	<0.05	0.0
		beta-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDD	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin aldehyde	0.05 mg/kg	<0.05	<0.05	0.0
		Endosulfan sulfate	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDT	0.2 mg/kg	<0.2	<0.2	0.0
		Endrin ketone	0.05 mg/kg	<0.05	<0.05	0.0
		Methoxychlor	0.2 mg/kg	<0.2	<0.2	0.0
EP068B: Organophosphorus Pesticides (OP)						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 325763)				mg/kg	mg/kg	%
ES0615839-001	H1	Dichlorvos	0.05 mg/kg	<0.05	<0.05	0.0
		Demeton-S-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Monocrotophos	0.2 mg/kg	<0.2	<0.2	0.0
		Dimethoate	0.05 mg/kg	<0.05	<0.05	0.0
		Diazinon	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion-methyl	0.2 mg/kg	<0.2	<0.2	0.0
		Malathion	0.05 mg/kg	<0.05	<0.05	0.0
		Fenthion	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion	0.2 mg/kg	<0.2	<0.2	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 325763) - continued				mg/kg	mg/kg	%
ES0615839-001	H1	Pirimphos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorfenvinphos	0.05 mg/kg	<0.05	<0.05	0.0
		Bromophos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Fenamiphos	0.05 mg/kg	<0.05	<0.05	0.0
		Prothiofos	0.05 mg/kg	<0.05	<0.05	0.0
		Ethion	0.05 mg/kg	<0.05	<0.05	0.0
		Carbophenothion	0.05 mg/kg	<0.05	<0.05	0.0
		Methyl Azinphos	0.05 mg/kg	<0.05	<0.05	0.0
ES0615839-011	H11	Dichlorvos	0.05 mg/kg	<0.05	<0.05	0.0
		Demeton-S-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Monocrotophos	0.2 mg/kg	<0.2	<0.2	0.0
		Dimethoate	0.05 mg/kg	<0.05	<0.05	0.0
		Diazinon	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion-methyl	0.2 mg/kg	<0.2	<0.2	0.0
		Malathion	0.05 mg/kg	<0.05	<0.05	0.0
		Fenthion	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion	0.2 mg/kg	<0.2	<0.2	0.0
		Pirimphos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorfenvinphos	0.05 mg/kg	<0.05	<0.05	0.0
		Bromophos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Fenamiphos	0.05 mg/kg	<0.05	<0.05	0.0
		Prothiofos	0.05 mg/kg	<0.05	<0.05	0.0
		Ethion	0.05 mg/kg	<0.05	<0.05	0.0
		Carbophenothion	0.05 mg/kg	<0.05	<0.05	0.0
		Methyl Azinphos	0.05 mg/kg	<0.05	<0.05	0.0
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 326543)				mg/kg	mg/kg	%
ES0615839-021	H50	Dichlorvos	0.05 mg/kg	<0.05	<0.05	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 326543) - continued				mg/kg	mg/kg	%
ES0615839-021	H50	Demeton-S-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Monocrotophos	0.2 mg/kg	<0.2	<0.2	0.0
		Dimethoate	0.05 mg/kg	<0.05	<0.05	0.0
		Diazinon	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion-methyl	0.2 mg/kg	<0.2	<0.2	0.0
		Malathion	0.05 mg/kg	<0.05	<0.05	0.0
		Fenthion	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion	0.2 mg/kg	<0.2	<0.2	0.0
		Pirimphos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorfenvinphos	0.05 mg/kg	<0.05	<0.05	0.0
		Bromophos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Fenamiphos	0.05 mg/kg	<0.05	<0.05	0.0
		Prothiofos	0.05 mg/kg	<0.05	<0.05	0.0
		Ethion	0.05 mg/kg	<0.05	<0.05	0.0
		Carbophenothion	0.05 mg/kg	<0.05	<0.05	0.0
		Methyl Azinphos	0.05 mg/kg	<0.05	<0.05	0.0
ES0615839-025	H54	Dichlorvos	0.05 mg/kg	<0.05	<0.05	0.0
		Demeton-S-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Monocrotophos	0.2 mg/kg	<0.2	<0.2	0.0
		Dimethoate	0.05 mg/kg	<0.05	<0.05	0.0
		Diazinon	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion-methyl	0.2 mg/kg	<0.2	<0.2	0.0
		Malathion	0.05 mg/kg	<0.05	<0.05	0.0
		Fenthion	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion	0.2 mg/kg	<0.2	<0.2	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 326543) - continued				mg/kg	mg/kg	%
ES0615839-025	H54	Pirimphos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorfenvinphos	0.05 mg/kg	<0.05	<0.05	0.0
		Bromophos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Fenamiphos	0.05 mg/kg	<0.05	<0.05	0.0
		Prothiofos	0.05 mg/kg	<0.05	<0.05	0.0
		Ethion	0.05 mg/kg	<0.05	<0.05	0.0
		Carbophenothion	0.05 mg/kg	<0.05	<0.05	0.0
		Methyl Azinphos	0.05 mg/kg	<0.05	<0.05	0.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 325768)				mg/kg	mg/kg	%
ES0615839-002	H2	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
ES0615839-011	H11	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 325768) - continued				mg/kg	mg/kg	%
ES0615839-011	H11	Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 326542)				mg/kg	mg/kg	%
ES0615741-021	Anonymous	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 326542) - continued				mg/kg	mg/kg	%
ES0615741-021	Anonymous	Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
ES0615839-024	H53	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325761)				mg/kg	mg/kg	%
ES0615839-001	H1	C6 - C9 Fraction	10 mg/kg	<10	<10	0.0
ES0615839-011	H11	C6 - C9 Fraction	10 mg/kg	<10	<10	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325767)				mg/kg	mg/kg	%
ES0615839-002	H2	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
ES0615839-011	H11	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 326043)				mg/kg	mg/kg	%

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP080/071: Total Petroleum Hydrocarbons - continued						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 326043) - continued				**mg/kg**	**mg/kg**	**%**
ES0615828-004	Anonymous	C6 - C9 Fraction	10 mg/kg	<10	<10	0.0
ES0615851-004	Anonymous	C6 - C9 Fraction	10 mg/kg	<10	<10	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 326541)				**mg/kg**	**mg/kg**	**%**
ES0615741-021	Anonymous	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
ES0615839-024	H53	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
EP080: BTEX						
EP080: BTEX - (QC Lot: 325761)				**mg/kg**	**mg/kg**	**%**
ES0615839-001	H1	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
ES0615839-011	H11	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
EP080: BTEX - (QC Lot: 326043)				**mg/kg**	**mg/kg**	**%**
ES0615828-004	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
ES0615851-004	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EP080: BTEX - continued						
EP080: BTEX - (QC Lot: 326043) - continued				**mg/kg**	**mg/kg**	**%**
ES0615851-004	Anonymous	Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC type is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. Abbreviations: LOR = Limit of reporting.

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

		Method blank result	Actual Results		Recovery Limits	
			Spike concentration	Spike Recovery	Dynamic Recovery Limits	
Analyte name	LOR			LCS	Low	High
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 326690)		mg/kg	mg/kg	%	%	%
Aluminium	50 mg/kg	<50	----	----	----	----
Arsenic	5 mg/kg	----	13.1	91.5	86.6	123
	5 mg/kg	<5	----	----	----	----
Barium	10 mg/kg	<10	----	----	----	----
Beryllium	1 mg/kg	<1	----	----	----	----
Cadmium	1 mg/kg	----	2.76	95.4	79.9	120
	1 mg/kg	<1	----	----	----	----
Calcium	50 mg/kg	<50	----	----	----	----
Chromium	2 mg/kg	----	60.9	94.6	87.1	119
	2 mg/kg	<2	----	----	----	----
Cobalt	2 mg/kg	<2	----	----	----	----
Copper	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	54.7	99.3	85.2	117
Iron	50 mg/kg	<50	----	----	----	----
Lead	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	55.2	87.6	82.1	117
Magnesium	50 mg/kg	<50	----	----	----	----
Manganese	5 mg/kg	<5	----	----	----	----
Nickel	2 mg/kg	----	54.8	101	88	122
	2 mg/kg	<2	----	----	----	----
Strontium	2 mg/kg	<2	----	----	----	----
Vanadium	5 mg/kg	<5	----	----	----	----
Zinc	5 mg/kg	----	104	90.6	79	116
	5 mg/kg	<5	----	----	----	----
EG005T: Total Metals by ICP-AES - (QC Lot: 326692)		mg/kg	mg/kg	%	%	%

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EG005T: Total Metals by ICP-AES - continued						
EG005T: Total Metals by ICP-AES - (QC Lot: 326692) - continued		mg/kg	mg/kg	%	%	%
Aluminium	50 mg/kg	<50	----	----	----	----
Arsenic	5 mg/kg	----	13.1	89.8	86.6	123
	5 mg/kg	<5	----	----	----	----
Barium	10 mg/kg	<10	----	----	----	----
Beryllium	1 mg/kg	<1	----	----	----	----
Cadmium	1 mg/kg	----	2.76	93.0	79.9	120
	1 mg/kg	<1	----	----	----	----
Calcium	50 mg/kg	<50	----	----	----	----
Chromium	2 mg/kg	----	60.9	94.7	87.1	119
	2 mg/kg	<2	----	----	----	----
Cobalt	2 mg/kg	<2	----	----	----	----
Copper	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	54.7	97.1	85.2	117
Iron	50 mg/kg	<50	----	----	----	----
Lead	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	55.2	85.9	82.1	117
Magnesium	50 mg/kg	<50	----	----	----	----
Manganese	5 mg/kg	<5	----	----	----	----
Nickel	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	54.8	93.9	88	122
Strontium	2 mg/kg	<2	----	----	----	----
Vanadium	5 mg/kg	<5	----	----	----	----
Zinc	5 mg/kg	----	104	89.1	79	116
	5 mg/kg	<5	----	----	----	----
EG005T: Total Metals by ICP-AES - (QC Lot: 326771)		mg/kg	mg/kg	%	%	%
Aluminium	50 mg/kg	<50	----	----	----	----
Arsenic	5 mg/kg	----	13.1	94.4	86.6	123
	5 mg/kg	<5	----	----	----	----
Barium	10 mg/kg	<10	----	----	----	----
Beryllium	1 mg/kg	<1	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EG005T: Total Metals by ICP-AES - continued						
EG005T: Total Metals by ICP-AES - (QC Lot: 326771) - continued		mg/kg	mg/kg	%	%	%
Cadmium	1 mg/kg	----	2.76	86.0	79.9	120
	1 mg/kg	<1	----	----	----	----
Calcium	50 mg/kg	<50	----	----	----	----
Chromium	2 mg/kg	----	60.9	91.2	87.1	119
	2 mg/kg	<2	----	----	----	----
Cobalt	2 mg/kg	<2	----	----	----	----
Copper	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	54.7	94.9	85.2	117
Iron	50 mg/kg	<50	----	----	----	----
Lead	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	55.2	89.8	82.1	117
Magnesium	50 mg/kg	<50	----	----	----	----
Manganese	5 mg/kg	<5	----	----	----	----
Nickel	2 mg/kg	----	54.8	88.0	88	122
	2 mg/kg	<2	----	----	----	----
Strontium	2 mg/kg	<2	----	----	----	----
Vanadium	5 mg/kg	<5	----	----	----	----
Zinc	5 mg/kg	----	104	84.7	79	116
	5 mg/kg	<5	----	----	----	----
EG035T: Total Mercury by FIMS						
EG035T: Total Mercury by FIMS - (QC Lot: 326691)		mg/kg	mg/kg	%	%	%
Mercury	0.1 mg/kg	----	1.4	106	73.7	108
	0.1 mg/kg	<0.1	----	----	----	----
EG035T: Total Mercury by FIMS - (QC Lot: 326693)		mg/kg	mg/kg	%	%	%
Mercury	0.1 mg/kg	<0.1	----	----	----	----
	0.1 mg/kg	----	1.4	98.4	73.7	108
EG035T: Total Mercury by FIMS - (QC Lot: 326772)		mg/kg	mg/kg	%	%	%
Mercury	0.1 mg/kg	<0.1	----	----	----	----
	0.1 mg/kg	----	1.4	99.9	73.7	108

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EK059G: NOX as N by Discrete Analyser						
EK059G: NOX as N by Discrete Analyser - (QC Lot: 325775)		mg/kg	mg/kg	%	%	%
Nitrite + Nitrate as N (Sol.)	0.100 mg/kg	<0.100	----	----	----	----
	0.1 mg/kg	----	4.8	92.8	70	130
EK059G: NOX as N by Discrete Analyser - (QC Lot: 325776)		mg/kg	mg/kg	%	%	%
Nitrite + Nitrate as N (Sol.)	0.100 mg/kg	<0.100	----	----	----	----
	0.1 mg/kg	----	4.8	84.6	70	130
EK061G: Total Kjeldahl Nitrogen as N						
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 326481)		mg/kg	mg/kg	%	%	%
Total Kjeldahl Nitrogen as N	20 mg/kg	<20	----	----	----	----
	20 mg/kg	----	1000	90.2	70	130
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 326482)		mg/kg	mg/kg	%	%	%
Total Kjeldahl Nitrogen as N	20 mg/kg	----	1000	95.3	70	130
	20 mg/kg	<20	----	----	----	----
EK071G: Reactive Phosphorous as P by discrete analyser						
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326528)		mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	0.1 mg/kg	----	2.5	104	70	130
	0.100 mg/kg	<0.100	----	----	----	----
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326529)		mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	0.100 mg/kg	<0.100	----	----	----	----
	0.1 mg/kg	----	2.5	122	70	130
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326530)		mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	0.1 mg/kg	----	2.5	100	70	130
	0.100 mg/kg	<0.100	----	----	----	----
EP004: Organic Matter						
EP004: Organic Matter - (QC Lot: 325695)		%	%	%	%	%
Organic Matter	0.5 %	----	4.58	106	86	111
	0.5 %	<0.5	----	----	----	----
EP004: Organic Matter - (QC Lot: 325696)		%	%	%	%	%

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP004: Organic Matter - continued						
EP004: Organic Matter - (QC Lot: 325696) - continued		%	%	%	%	%
Organic Matter	0.5 %	----	4.58	104	86	111
	0.5 %	<0.5	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)						
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 325764)		mg/kg	mg/kg	%	%	%
Total Polychlorinated biphenyls	0.1 mg/kg	----	0.5	80.6	57.4	117
	0.10 mg/kg	<0.10	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 326544)		mg/kg	mg/kg	%	%	%
Total Polychlorinated biphenyls	0.1 mg/kg	----	0.5	94.7	57.4	117
	0.10 mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC)						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325763)		mg/kg	mg/kg	%	%	%
4,4'-DDD	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	78.6	65.3	116
4,4'-DDE	0.05 mg/kg	----	0.25	84.1	67.5	114
	0.05 mg/kg	<0.05	----	----	----	----
4,4'-DDT	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	84.1	58.4	127
Aldrin	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	81.2	67	113
alpha-BHC	0.05 mg/kg	----	0.25	80.2	60.8	116
	0.05 mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	0.05 mg/kg	----	0.25	83.0	65.8	116
	0.05 mg/kg	<0.05	----	----	----	----
beta-BHC	0.05 mg/kg	----	0.25	82.2	59.8	117
	0.05 mg/kg	<0.05	----	----	----	----
beta-Endosulfan	0.05 mg/kg	----	0.25	72.4	66.1	117
	0.05 mg/kg	<0.05	----	----	----	----
cis-Chlordane	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	82.1	57.3	120

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325763) - continued		mg/kg	mg/kg	%	%	%
delta-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	84.1	65.8	114
Dieldrin	0.05 mg/kg	----	0.25	81.8	67.4	116
	0.05 mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	82.8	63.6	119
Endrin	0.05 mg/kg	----	0.25	75.7	63	121
	0.05 mg/kg	<0.05	----	----	----	----
Endrin aldehyde	0.05 mg/kg	----	0.25	74.4	57.3	115
	0.05 mg/kg	<0.05	----	----	----	----
Endrin ketone	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	88.4	63.6	117
gamma-BHC	0.05 mg/kg	----	0.25	81.9	59.8	118
	0.05 mg/kg	<0.05	----	----	----	----
Heptachlor	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	80.4	65.6	115
Heptachlor epoxide	0.05 mg/kg	----	0.25	81.6	65.6	113
	0.05 mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	74.7	59.4	115
Methoxychlor	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	91.5	50.4	132
trans-Chlordane	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	80.6	60.7	113
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 326543)		mg/kg	mg/kg	%	%	%
4,4'-DDD	0.05 mg/kg	----	0.25	90.3	65.3	116
	0.05 mg/kg	<0.05	----	----	----	----
4,4'-DDE	0.05 mg/kg	----	0.25	91.4	67.5	114
	0.05 mg/kg	<0.05	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 326543) - continued		mg/kg	mg/kg	%	%	%
4,4'-DDT	0.2 mg/kg	----	0.25	107	58.4	127
	0.2 mg/kg	<0.2	----	----	----	----
Aldrin	0.05 mg/kg	----	0.25	92.4	67	113
	0.05 mg/kg	<0.05	----	----	----	----
alpha-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	91.2	60.8	116
alpha-Endosulfan	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	91.8	65.8	116
beta-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	90.8	59.8	117
beta-Endosulfan	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	92.5	66.1	117
cis-Chlordane	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	92.6	57.3	120
delta-BHC	0.05 mg/kg	----	0.25	95.2	65.8	114
	0.05 mg/kg	<0.05	----	----	----	----
Dieldrin	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	95.3	67.4	116
Endosulfan sulfate	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	93.9	63.6	119
Endrin	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	109	63	121
Endrin aldehyde	0.05 mg/kg	----	0.25	81.7	57.3	115
	0.05 mg/kg	<0.05	----	----	----	----
Endrin ketone	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	92.7	63.6	117
gamma-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	89.9	59.8	118
Heptachlor	0.05 mg/kg	----	0.25	98.9	65.6	115
	0.05 mg/kg	<0.05	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 326543) - continued		mg/kg	mg/kg	%	%	%
Heptachlor epoxide	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	91.6	65.6	113
Hexachlorobenzene (HCB)	0.05 mg/kg	----	0.25	88.4	59.4	115
	0.05 mg/kg	<0.05	----	----	----	----
Methoxychlor	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	119	50.4	132
trans-Chlordane	0.05 mg/kg	----	0.25	92.7	60.7	113
	0.05 mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 325763)		mg/kg	mg/kg	%	%	%
Methyl Azinphos	0.05 mg/kg	----	0.25	71.6	29.8	137
	0.05 mg/kg	<0.05	----	----	----	----
Bromophos-ethyl	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	82.2	64.3	114
Carbophenothion	0.05 mg/kg	----	0.25	84.1	59.5	119
	0.05 mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	0.05 mg/kg	----	0.25	90.4	61.4	123
	0.05 mg/kg	<0.05	----	----	----	----
Chlorpyrifos	0.05 mg/kg	----	0.25	82.6	64.2	111
	0.05 mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	0.05 mg/kg	----	0.25	81.8	65.1	111
	0.05 mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	0.05 mg/kg	----	0.25	63.2	10.1	159
	0.05 mg/kg	<0.05	----	----	----	----
Diazinon	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	81.6	64.9	111
Dichlorvos	0.05 mg/kg	----	0.25	65.2	25.5	124
	0.05 mg/kg	<0.05	----	----	----	----
Dimethoate	0.05 mg/kg	----	0.25	77.7	48.6	126
	0.05 mg/kg	<0.05	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 325763) - continued		mg/kg	mg/kg	%	%	%
Ethion	0.05 mg/kg	----	0.25	84.9	62	116
	0.05 mg/kg	<0.05	----	----	----	----
Fenamiphos	0.05 mg/kg	----	0.25	76.8	45.5	128
	0.05 mg/kg	<0.05	----	----	----	----
Fenthion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	72.5	64.7	110
Malathion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	85.1	60.4	127
Monocrotophos	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	60.1	2.88	149
Parathion	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	68.6	60	116
Parathion-methyl	0.2 mg/kg	----	0.25	83.4	61.4	113
	0.2 mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	0.05 mg/kg	----	0.25	77.1	64.8	111
	0.05 mg/kg	<0.05	----	----	----	----
Prothiofos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	84.5	65.4	111
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 326543)		mg/kg	mg/kg	%	%	%
Methyl Azinphos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	88.0	29.8	137
Bromophos-ethyl	0.05 mg/kg	----	0.25	93.6	64.3	114
	0.05 mg/kg	<0.05	----	----	----	----
Carbophenothion	0.05 mg/kg	----	0.25	92.8	59.5	119
	0.05 mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	106	61.4	123
Chlorpyrifos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	93.7	64.2	111

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 326543) - continued		mg/kg	mg/kg	%	%	%
Chlorpyrifos-methyl	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	93.0	65.1	111
Demeton-S-methyl	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	73.1	10.1	159
Diazinon	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	94.1	64.9	111
Dichlorvos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	76.4	25.5	124
Dimethoate	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	89.5	48.6	126
Ethion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	93.3	62	116
Fenamiphos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	105	45.5	128
Fenthion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	90.5	64.7	110
Malathion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	96.6	60.4	127
Monocrotophos	0.2 mg/kg	----	0.25	89.4	2.88	149
	0.2 mg/kg	<0.2	----	----	----	----
Parathion	0.2 mg/kg	----	0.25	97.8	60	116
	0.2 mg/kg	<0.2	----	----	----	----
Parathion-methyl	0.2 mg/kg	----	0.25	95.7	61.4	113
	0.2 mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	0.05 mg/kg	----	0.25	91.4	64.8	111
	0.05 mg/kg	<0.05	----	----	----	----
Prothiofos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	93.3	65.4	111
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 325768)		mg/kg	mg/kg	%	%	%

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 325768) - continued		mg/kg	mg/kg	%	%	%
Acenaphthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	91.7	81.5	112
Acenaphthylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	91.3	79.6	113
Anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	90.8	81.1	112
Benz(a)anthracene	0.5 mg/kg	----	4	89.3	77.2	112
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	89.4	76.4	113
Benzo(b)fluoranthene	0.5 mg/kg	----	4	91.2	71.8	118
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	94.4	72.4	114
Benzo(k)fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	91.8	74.2	117
Chrysene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	91.6	79.8	114
Dibenz(a,h)anthracene	0.5 mg/kg	----	4	95.2	71.7	113
	0.5 mg/kg	<0.5	----	----	----	----
Fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	92.4	78.8	113
Fluorene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	92.0	79.9	112
Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	91.1	71	113
Naphthalene	0.5 mg/kg	----	4	98.7	81.9	113
	0.5 mg/kg	<0.5	----	----	----	----
Phenanthrene	0.5 mg/kg	----	4	92.2	79.4	114
	0.5 mg/kg	<0.5	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 325768) - continued		mg/kg	mg/kg	%	%	%
Pyrene	0.5 mg/kg	----	4	93.7	78.9	113
	0.5 mg/kg	<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 326542)		mg/kg	mg/kg	%	%	%
Acenaphthene	0.5 mg/kg	----	4	94.8	81.5	112
	0.5 mg/kg	<0.5	----	----	----	----
Acenaphthylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	81.8	79.6	113
Anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	76.8	81.1	112
Benz(a)anthracene	0.5 mg/kg	----	4	82.3	77.2	112
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	78.1	76.4	113
Benzo(b)fluoranthene	0.5 mg/kg	----	4	81.9	71.8	118
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	80.0	72.4	114
Benzo(k)fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	81.8	74.2	117
Chrysene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	81.7	79.8	114
Dibenz(a,h)anthracene	0.5 mg/kg	----	4	80.5	71.7	113
	0.5 mg/kg	<0.5	----	----	----	----
Fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	79.5	78.8	113
Fluorene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	79.8	79.9	112
Indeno(1,2,3,cd)pyrene	0.5 mg/kg	----	4	78.1	71	113
	0.5 mg/kg	<0.5	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 326542) - continued		mg/kg	mg/kg	%	%	%
Naphthalene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	82.8	81.9	113
Phenanthrene	0.5 mg/kg	----	4	80.0	79.4	114
	0.5 mg/kg	<0.5	----	----	----	----
Pyrene	0.5 mg/kg	----	4	94.0	78.9	113
	0.5 mg/kg	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325761)		mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	10 mg/kg	----	26	107	68.4	128
	10 mg/kg	<10	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325767)		mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	50 mg/kg	<50	----	----	----	----
	50 mg/kg	----	200	107	75.2	116
C15 - C28 Fraction	100 mg/kg	----	200	101	75.3	113
	100 mg/kg	<100	----	----	----	----
C29 - C36 Fraction	100 mg/kg	----	200	101	72.6	117
	100 mg/kg	<100	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 326043)		mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	10 mg/kg	<10	----	----	----	----
	10 mg/kg	----	26	91.3	68.4	128
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 326541)		mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	50 mg/kg	<50	----	----	----	----
	50 mg/kg	----	200	106	75.2	116
C15 - C28 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	105	75.3	113
C29 - C36 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	88.0	72.6	117
EP080: BTEX						

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	*LOR*	*Method blank result*	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
				LCS	*Low*	*High*
EP080: BTEX - continued						
EP080: BTEX - (QC Lot: 325761)		mg/kg	mg/kg	%	%	%
Benzene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	88.7	67.5	125
Ethylbenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	96.0	65.3	126
meta- & para-Xylene	0.5 mg/kg	----	2	91.8	66.5	124
	0.5 mg/kg	<0.5	----	----	----	----
ortho-Xylene	0.5 mg/kg	----	1	92.1	66.7	123
	0.5 mg/kg	<0.5	----	----	----	----
Toluene	0.5 mg/kg	----	1	101	69	122
	0.5 mg/kg	<0.5	----	----	----	----
EP080: BTEX - (QC Lot: 326043)		mg/kg	mg/kg	%	%	%
Benzene	0.2 mg/kg	----	1	86.1	67.5	125
	0.2 mg/kg	<0.2	----	----	----	----
Ethylbenzene	0.5 mg/kg	----	1	92.4	65.3	126
	0.5 mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	2	92.1	66.5	124
ortho-Xylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	89.3	66.7	123
Toluene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	89.3	69	122

Quality Control Report - Matrix Spikes (MS)

The quality control term **Matrix Spike (MS)** refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EG005T: Total Metals by ICP-AES								
EG005T: Total Metals by ICP-AES - (QC Lot: 326690)				mg/kg	mg/kg	%	%	%
Arsenic	ES0615835-001	Anonymous	5 mg/kg	50	12	99.4	70	130
Cadmium			1 mg/kg	50	<1	105	70	130
Chromium			2 mg/kg	50	18	103	70	130
Copper			5 mg/kg	250	18	112	70	130
Lead			5 mg/kg	250	23	98.1	70	130
Nickel			2 mg/kg	50	13	97.5	70	130
Zinc			5 mg/kg	250	62	98.7	70	130
EG005T: Total Metals by ICP-AES - (QC Lot: 326692)				mg/kg	mg/kg	%	%	%
Arsenic	ES0615839-004	H4	5 mg/kg	50	15	93.3	70	130
Cadmium			1 mg/kg	50	<1	102	70	130
Chromium			2 mg/kg	50	22	99.1	70	130
Copper			5 mg/kg	250	21	108	70	130
Lead			5 mg/kg	250	26	95.8	70	130
Nickel			2 mg/kg	50	16	93.4	70	130
Zinc			5 mg/kg	250	80	93.1	70	130
EG005T: Total Metals by ICP-AES - (QC Lot: 326771)				mg/kg	mg/kg	%	%	%
Arsenic	ES0615879-009	Anonymous	5 mg/kg	50	<5	107	70	130
Cadmium			1 mg/kg	50	<1	92.5	70	130
Chromium			2 mg/kg	50	<2	103	70	130
Copper			5 mg/kg	250	<5	112	70	130
Lead			5 mg/kg	250	<5	105	70	130
Nickel			2 mg/kg	50	<2	91.6	70	130
Zinc			5 mg/kg	250	<5	93.7	70	130
EG035T: Total Mercury by FIMS								
EG035T: Total Mercury by FIMS - (QC Lot: 326691)				mg/kg	mg/kg	%	%	%

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration		MS	Low	High
EG035T: Total Mercury by FIMS - continued								
EG035T: Total Mercury by FIMS - (QC Lot: 326691) - continued				mg/kg	mg/kg	%	%	%
Mercury	ES0615835-001	Anonymous	0.1 mg/kg	5	0.3	109	70	130
EG035T: Total Mercury by FIMS - (QC Lot: 326693)				mg/kg	mg/kg	%	%	%
Mercury	ES0615839-004	H4	0.1 mg/kg	5	<0.1	108	70	130
EG035T: Total Mercury by FIMS - (QC Lot: 326772)				mg/kg	mg/kg	%	%	%
Mercury	ES0615879-009	Anonymous	0.1 mg/kg	5	<0.1	119	70	130
EK059G: NOX as N by Discrete Analyser								
EK059G: NOX as N by Discrete Analyser - (QC Lot: 325775)				mg/kg	mg/kg	%	%	%
Nitrite + Nitrate as N (Sol.)	ES0615839-001	H1	0.1 mg/kg	3.0	<0.100	95.5	70	130
EK059G: NOX as N by Discrete Analyser - (QC Lot: 325776)				mg/kg	mg/kg	%	%	%
Nitrite + Nitrate as N (Sol.)	ES0615839-021	H50	0.1 mg/kg	3.0	<0.100	84.5	70	130
EK061G: Total Kjeldahl Nitrogen as N								
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 326481)				mg/kg	mg/kg	%	%	%
Total Kjeldahl Nitrogen as N	ES0615839-001	H1	20 mg/kg	500	1250	96.4	70	130
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 326482)				mg/kg	mg/kg	%	%	%
Total Kjeldahl Nitrogen as N	ES0615839-022	H51	20 mg/kg	500	1990	121	70	130
EK071G: Reactive Phosphorous as P by discrete analyser								
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326528)				mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	ES0615835-001	Anonymous	0.1 mg/kg	2.5	0.209	110	70	130
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326529)				mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	ES0615835-001	Anonymous	0.1 mg/kg	2.5	0.209	100	70	130
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326530)				mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	ES0615839-024	H53	0.1 mg/kg	2.5	0.533	108	70	130
EP066: Polychlorinated Biphenyls (PCB)								
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 325764)				mg/kg	mg/kg	%	%	%
Total Polychlorinated biphenyls	ES0615839-001	H1	0.1 mg/kg	0.5	<0.10	94.2	70	130
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 326544)				mg/kg	mg/kg	%	%	%

Matrix Type: SOIL

Matrix Spike (MS) Report

Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration	Actual Results: Sample Result	Actual Results: Spike Recovery MS	Recovery Limits: Static Limits Low	Recovery Limits: Static Limits High
EP066: Polychlorinated Biphenyls (PCB) - continued								
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 326544) - continued				mg/kg	mg/kg	%	%	%
Total Polychlorinated biphenyls	ES0615839-021	H50	0.1 mg/kg	0.5	<0.10	102	70	130
EP068A: Organochlorine Pesticides (OC)								
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325763)				mg/kg	mg/kg	%	%	%
gamma-BHC	ES0615839-001	H1	0.05 mg/kg	0.25	<0.05	106	75.65	110.44
Heptachlor			0.05 mg/kg	0.25	<0.05	107	72.2	106.71
Aldrin			0.05 mg/kg	0.25	<0.05	97.4	77.54	107.0
Dieldrin			0.05 mg/kg	0.25	<0.05	101	76.37	109.7
Endrin			0.05 mg/kg	1	<0.05	130	68.51	119.47
4,4'-DDT			0.2 mg/kg	1	<0.2	123	67.12	118.10
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 326543)				mg/kg	mg/kg	%	%	%
gamma-BHC	ES0615808-001	Anonymous	0.05 mg/kg	0.25	<0.05	92.5	75.65	110.44
Heptachlor			0.05 mg/kg	0.25	<0.05	107	72.2	106.71
Aldrin			0.05 mg/kg	0.25	<0.05	93.1	77.54	107.0
Dieldrin			0.05 mg/kg	0.25	<0.05	95.0	76.37	109.7
Endrin			0.05 mg/kg	1	<0.05	112	68.51	119.47
4,4'-DDT			0.20 mg/kg	1	2.0	88.9	67.12	118.10
EP068B: Organophosphorus Pesticides (OP)								
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 325763)				mg/kg	mg/kg	%	%	%
Diazinon	ES0615839-001	H1	0.05 mg/kg	0.25	<0.05	106	75.85	107.06
Chlorpyrifos-methyl			0.05 mg/kg	0.25	<0.05	112	74.84	107.91
Pirimphos-ethyl			0.05 mg/kg	0.25	<0.05	116	67.98	109.42
Bromophos-ethyl			0.05 mg/kg	0.25	<0.05	80.2	74.94	107.37
Prothiofos			0.05 mg/kg	0.25	<0.05	99.8	75.45	106.05
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 326543)				mg/kg	mg/kg	%	%	%
Diazinon	ES0615808-001	Anonymous	0.05 mg/kg	0.25	<0.05	96.2	75.85	107.06
Chlorpyrifos-methyl			0.05 mg/kg	0.25	<0.05	97.9	74.84	107.91
Pirimphos-ethyl			0.05 mg/kg	0.25	<0.05	98.0	67.98	109.42
Bromophos-ethyl			0.05 mg/kg	0.25	<0.05	73.5	74.94	107.37

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EP068B: Organophosphorus Pesticides (OP) - continued								
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 326543) - continued				mg/kg	mg/kg	%	%	%
Prothiofos	ES0615808-001	Anonymous	0.05 mg/kg	0.25	<0.05	96.5	75.45	106.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 325768)				mg/kg	mg/kg	%	%	%
Acenaphthene	ES0615839-002	H2	0.5 mg/kg	10	<0.5	89.2	70	130
Pyrene			0.5 mg/kg	10	<0.5	91.0	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 326542)				mg/kg	mg/kg	%	%	%
Acenaphthene	ES0615741-021	Anonymous	0.5 mg/kg	10	<0.5	73.9	70	130
Pyrene			0.5 mg/kg	10	<0.5	74.7	70	130
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325761)				mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	ES0615839-001	H1	10 mg/kg	26	<10	77.3	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325767)				mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	ES0615839-002	H2	50 mg/kg	700	<50	101	70	130
C15 - C28 Fraction			100 mg/kg	3400	<100	107	70	130
C29 - C36 Fraction			100 mg/kg	3600	<100	82.7	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 326043)				mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	ES0615828-004	Anonymous	10 mg/kg	26	<10	81.3	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 326541)				mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	ES0615741-021	Anonymous	50 mg/kg	700	<50	106	70	130
C15 - C28 Fraction			100 mg/kg	3400	<100	111	70	130
C29 - C36 Fraction			100 mg/kg	3600	<100	84.3	70	130
EP080: BTEX								
EP080: BTEX - (QC Lot: 325761)				mg/kg	mg/kg	%	%	%
Benzene	ES0615839-001	H1	0.2 mg/kg	2.5	<0.2	76.0	70	130
Toluene			0.5 mg/kg	2.5	<0.5	70.4	70	130
Ethylbenzene			0.5 mg/kg	2.5	<0.5	72.9	70	130
meta- & para-Xylene			0.5 mg/kg	2.5	<0.5	73.8	70	130
ortho-Xylene			0.5 mg/kg	2.5	<0.5	72.6	70	130

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	***Laboratory Sample ID***	***Client Sample ID***	***LOR***	***Spike Concentration***		***MS***	***Low***	***High***
EP080: BTEX - continued								
EP080: BTEX - (QC Lot: 326043)				mg/kg	mg/kg	%	%	%
Benzene	ES0615828-004	Anonymous	0.2 mg/kg	2.5	<0.2	84.4	70	130
Toluene			0.5 mg/kg	2.5	<0.5	80.3	70	130
Ethylbenzene			0.5 mg/kg	2.5	<0.5	94.2	70	130
meta- & para-Xylene			0.5 mg/kg	2.5	<0.5	92.3	70	130
ortho-Xylene			0.5 mg/kg	2.5	<0.5	85.4	70	130

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**URS AUSTRALIA (NSW) PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	:	**1 of 12**
Contact	:	MR CARSTEN MATTHAI	**Contact**	:	Greg Vogel			
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060	**Address**	:	Smithfield NSW Australia 2164	**Work order**	:	**ES0615839**
						Amendment No.	:	
Project	:	43217595	**Quote number**	:	----	**Date received**	:	15 Dec 2006
Order number	:	- Not provided -				**Date issued**	:	27 Dec 2006
C-O-C number	:	- Not provided -						
Site	:	- Not provided -						
E-mail	:	carsten_matthai@urscorp.com	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	02 8925 5500	**Telephone**	:	+61 (02) 8784 8555	**Received**	:	26
Facsimile	:	02 8925 5555	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	:	26

This Interpretive Quality Control Report was issued on 27 Dec 2006 for the ALS work order reference ES0615839 and supersedes any previous reports with this reference.
This report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Type Frequency Compliance
- Summary of all Quality Control Outliers
- Brief Method Summaries

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL ***Analysis Holding Time and Preservation***

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	----	----	----	**18 Dec 2006**	20 Dec 2006	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49							
Soil Glass Jar - Unpreserved								
H50,	H51,	**13 Dec 2006**	----	----	----	**19 Dec 2006**	20 Dec 2006	Pass
H52,	H53,							
H54,	H55							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	**20 Dec 2006**	11 Jun 2007	Pass	**20 Dec 2006**	11 Jun 2007	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49,							
H50,	H51,							
H52,	H53,							
H54,	H55							
EG035T: Total Mercury by FIMS								

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EG035T: Total Mercury by FIMS **- continued**								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	**20 Dec 2006**	10 Jan 2007	Pass	**20 Dec 2006**	10 Jan 2007	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49,							
H50,	H51,							
H52								
Soil Glass Jar - Unpreserved								
H53,	H54,	**13 Dec 2006**	**20 Dec 2006**	10 Jan 2007	Pass	**21 Dec 2006**	10 Jan 2007	Pass
H55								
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	**18 Dec 2006**	11 Jun 2007	Pass	**20 Dec 2006**	11 Jun 2007	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49,							
H50,	H51,							
H52,	H53,							
H54,	H55							
EK061G: TKN as N By Discrete Analyser								

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EK061G: TKN as N By Discrete Analyser **- continued**								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	**19 Dec 2006**	11 Jun 2007	Pass	**19 Dec 2006**	11 Jun 2007	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49,							
H50,	H51,							
H52,	H53,							
H54,	H55							
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	**19 Dec 2006**	11 Jun 2007	Pass	**20 Dec 2006**	11 Jun 2007	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49,							
H50,	H51,							
H52,	H53,							
H54,	H55							
EP004: Organic Matter								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	----	----	----	**18 Dec 2006**	20 Dec 2006	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49,							
H50,	H51,							
H52,	H53,							
H54,	H55							
EP066: Polychlorinated Biphenyls (PCB)								

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EP066: Polychlorinated Biphenyls (PCB) **- continued**								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	**19 Dec 2006**	27 Dec 2006	Pass	**20 Dec 2006**	28 Jan 2007	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49,							
H50,	H51,							
H52,	H53,							
H54,	H55							
EP068: Pesticides by GCMS								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	**19 Dec 2006**	27 Dec 2006	Pass	**20 Dec 2006**	28 Jan 2007	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49,							
H50,	H51,							
H52,	H53,							
H54,	H55							
EP071: TPH - Semivolatile Fraction								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	**19 Dec 2006**	27 Dec 2006	Pass	**20 Dec 2006**	28 Jan 2007	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49,							
H50,	H51,							
H52,	H53,							
H54,	H55							
EP075(SIM): PAH/Phenols (SIM)								

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EP075(SIM): PAH/Phenols (SIM) **- continued**								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	**19 Dec 2006**	27 Dec 2006	Pass	**20 Dec 2006**	28 Jan 2007	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49,							
H50,	H51,							
H52,	H53,							
H54,	H55							
EP080: TPH Volatiles/BTEX								
Soil Glass Jar - Unpreserved								
H1,	H2,	**13 Dec 2006**	**18 Dec 2006**	27 Dec 2006	Pass	**20 Dec 2006**	27 Dec 2006	Pass
H3,	H4,							
H5,	H6,							
H7,	H8,							
H9,	H10,							
H11,	H12,							
H13,	H43,							
H44,	H45,							
H46,	H47,							
H48,	H49,							
H50,	H51,							
H52,	H53,							
H54,	H55							

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: SOIL ***Frequency of Quality Control Samples***

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	**Actual**	**Expected**	
Laboratory Duplicates (DUP)					
EA055-103: Moisture Content	6	60	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG005T: Total Metals by ICP-AES	6	60	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	6	60	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	3	26	**11.5**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	3	26	**11.5**	**9.5**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	5	43	**11.6**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	3	26	**11.5**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	3	27	**11.1**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	4	37	**10.8**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	4	40	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	4	40	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	4	36	**11.1**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EG005T: Total Metals by ICP-AES	3	60	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	3	60	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	2	26	**7.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	2	26	**7.7**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	3	43	**7.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	2	26	**7.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	2	27	**7.4**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	2	37	**5.4**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	2	40	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	2	40	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	36	**5.6**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EG005T: Total Metals by ICP-AES	3	60	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	3	60	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	2	26	**7.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	2	26	**7.7**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	3	43	**7.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	2	26	**7.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	2	27	**7.4**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	2	37	**5.4**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	2	40	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	2	40	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	36	**5.6**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Matrix Type: SOIL

Frequency of Quality Control Samples

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	**Actual**	**Expected**	
Matrix Spikes (MS)					
EG005T: Total Metals by ICP-AES	3	60	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	3	60	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	2	26	**7.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	2	26	**7.7**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	3	43	**7.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	2	27	**7.4**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	2	37	**5.4**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	2	40	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	2	40	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	36	**5.6**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Laboratory Duplicates (DUP)							
EG005T: Total Metals by ICP-AES	SOIL	ES0615835-001	Anonymous	Calcium	20.2 %	0-20 %	RPD exceeds LOR based limits
EG005T: Total Metals by ICP-AES	SOIL	ES0615879-002	Anonymous	Manganese	69.6 %	0-20 %	RPD exceeds LOR based limits
				Calcium	36.8 %	0-20 %	RPD exceeds LOR based limits
Laboratory Control Samples (LCS)							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	SOIL	361112-007	----	Fluorene	79.8 %	79.9-112 %	Recovery less than lower control limit
				Anthracene	76.8 %	81.1-112 %	Recovery less than lower control limit
Matrix Spikes (MS)							
EP068A: Organochlorine Pesticides (OC)	SOIL	ES0615839-001	H1	Heptachlor	107 %	72.2-106.71 %	Recovery greater than upper data quality objective
				Endrin	130 %	68.51-119.47 %	Recovery greater than upper data quality objective
				4,4'-DDT	123 %	67.12-118.10 %	Recovery greater than upper data quality objective
EP068B: Organophosphorus Pesticides (OP)	SOIL	ES0615839-001	H1	Chlorpyrifos-methyl	112 %	74.84-107.91 %	Recovery greater than upper data quality objective
				Pirimphos-ethyl	116 %	67.98-109.42 %	Recovery greater than upper data quality objective
EP068A: Organochlorine Pesticides (OC)	SOIL	ES0615808-001	Anonymous	Heptachlor	107 %	72.2-106.71 %	Recovery greater than upper data quality objective
EP068B: Organophosphorus Pesticides (OP)	SOIL	ES0615808-001	Anonymous	Bromophos-ethyl	73.5 %	74.94-107.37 %	Recovery less than lower data quality objective

- **For all matrices, no method blank result outliers occur.**

Surrogates

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Surrogates							
EP080S: TPH(V)/BTEX Surrogates	SOIL	ES0615839-009	H9	Toluene-D8	118 %	81-117 %	Recovery greater than upper data quality objective

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

- **No holding time outliers occur.**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SEDIMENT ***Method Reference Summary***

Preparation Methods

EK061/EK067 : TKN/TP Digestion - APHA 20th ed., 4500 Norg- D; APHA 20th ed., 4500 P - H. Macro Kjeldahl digestion.

EN34 : 1:5 solid / water leach for soluble analytes - 10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

EN69 : Hot Block Digest for metals in soils sediments and sludges - USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)

ORG16 : Methanolic Extraction of Soils for Purge and Trap - (USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

ORG17A : Tumbler Extraction of Solids (Option A - Concentrating) - In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

ORG17B : Tumbler Extraction of Solids (Option B - Non-concentrating) - In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Analytical Methods

EA055-103 : Moisture Content - A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)

EG005T : Total Metals by ICP-AES - (APHA 20th ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)

EG035T : Total Mercury by FIMS - AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)

EK059G : Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser - APHA 20th ed., 4500 NO3- F. SEAL Method 2-018-1-L February 2003. Combined oxidised Nitrogen (NO2+NO3) in a water extract is determined by Cadmium Reduction, and direct colourimetry by SEAL.

EK061G : TKN as N By Discrete Analyser - APHA 20th ed., 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Seal Discrete Analyser.

EK071G : Reactive Phosphorus as P-Soluble By Discrete Analyser - APHA 20th ed., 4500 P-F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by SEAL. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2

EP004 : Organic Matter - AS1289.4.4.4 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (1999) Schedule B(3) (Method 105)

EP066 : Polychlorinated Biphenyls (PCB) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 504)

Matrix Type: SEDIMENT

Method Reference Summary

Analytical Methods

EP068 : Pesticides by GCMS - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 504,505)

EP071 : TPH - Semivolatile Fraction - (USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)

EP075(SIM) : PAH/Phenols (SIM) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)

EP080 : TPH Volatiles/BTEX - (USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

PSA-SOL : Particle Size Analysis (Solid) - Particle Size Analysis of solid matrices conducted by Subcontracting Laboratory

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: +61 (02) 8784 8555 Facsimile: +61 (02) 8784 8500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive report

Client Details

Client	:	**URS AUSTRALIA (NSW) PTY LTD**
Contact	:	**MR CARSTEN MATTHAI**
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060
Project	:	**43217595**
Order number	:	**- Not provided -**
C-O-C Number	:	**- Not provided -**
Site	:	**- Not provided -**
Sampler	:	**- Not provided -**
E-mail	:	carsten_matthai@urscorp.com
Telephone	:	02 8925 5500
Facsimile	:	02 8925 5555

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0615839**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	+61 (02) 8784 8555
Facsimile	:	+61 (02) 8784 8500

Dates

Date Samples Received	:	15 Dec 2006	**SRA Issue Date**	:	18 Dec 2006
Scheduled Reporting Date	:	**27 Dec 2006**	**Client Requested Date**	:	27 Dec 2006

Delivery Details

Mode of Delivery	:	Carrier.	**Temperature**		:	12.8' C
No. of coolers/boxes	:	2 HARD	**No. of samples**	**- Received**		26
Security Seal	:	Intact.		**- Analysed**		26

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Particle Size Distribution analysis to be conducted by Golder Associates.**

- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.

Client	: URS AUSTRALIA (NSW) PTY LTD	**Work Order**	: ES0615839
Project	: 43217595	**ALS Quote Reference**	: ----

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		EA055-103 - SOIL Moisture Content	**EG005T (solids) - SOIL** Total Metals by ICP-AES	**EK059G (solids) - SOIL** Nitrite plus Nitrate as N (NOx) - soluble by Discrete Analys	**EK061G (Solids) - SOIL** Total Kjeldahl Nitrogen as N (TKN) By Discrete Analyser	**EK071G (solids) - SOIL** Reactive Phosphorus as P By Discrete Analyser	**EP004 (Carbon) - SOIL** Total Organic Carbon (Calc.)	**PSA-SOL - SOIL** Particle Size Analysis (Solid)	**S-03 - SOIL** 13 Metals (NEPM Suite - incl. Digestion)	**S-07 - SOIL** TPH/BTEX/PAH (SIM)	**S-13 - SOIL** OC/OP/PCB
ES0615839-001	**H1 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-002	**H2 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-003	**H3 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-004	**H4 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-005	**H5 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-006	**H6 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-007	**H7 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-008	**H8 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-009	**H9 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-010	**H10 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-011	**H11 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-012	**H12 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-013	**H13 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-014	**H43 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-015	**H44 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-016	**H45 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-017	**H46 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-018	**H47 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-019	**H48 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-020	**H49 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-021	**H50 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-022	**H51 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-023	**H52 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-024	**H53 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-025	**H54 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615839-026	**H55 - 13 Dec 2006**	]	]	]	]	]	]	]	]	]	]
	Total(s) :	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**	**26**

Client	: URS AUSTRALIA (NSW) PTY LTD	**Work Order**	: ES0615839
Project	: 43217595	**ALS Quote Reference**	: ----

Requested Reports

l **ACCOUNTS PAYABLE**

- Invoice	Email	sydney_accounts@urscorp.com

l **MR CARSTEN MATTHAI**

- A4 - Quality Control Report - NEPM format	Email	carsten_matthai@urscorp.com
- A4 - Certificate of Analysis - NEPM format	Email	carsten_matthai@urscorp.com
- Subcontracted Reports	Email	carsten_matthai@urscorp.com
- A4 - Interpretive Quality Control Report - NEPM format	Email	carsten_matthai@urscorp.com
- MRED Export Format	Email	carsten_matthai@urscorp.com
- A4 - Sample Receipt Notification - Comprehensive format	Email	carsten_matthai@urscorp.com
- Chain of Custody Acknowledgement	Email	carsten_matthai@urscorp.com

Sample Container(s) / Preservation Non-Compliance Log

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

l **No sample container / preservation non-compliance exist.**

CHAIN OF CUSTODY FORM

Sheet 1 of 1

THIS COLUMN FOR LAB USE ONLY

Job Code: 43217595

Due Date: 23-12-06

FROM:
URS (AUSTRALIA)
ACN 000 691 690
North Sydney
Level 3 116 Miller Street

Ph: 8925 5500

DATE: 15-12-06

Fax: 8925 5555

TO:
ALS Smithfield
277 Woodpark Rd
Smithfield 2164

Project No: 43217595
Project Manager: Carsten Matthai
Agreement No: SY-215-06 URS V3

Sampler(s): Carsten Matthai
Signature(s): Matthai
Checked:

Custody seal intact? YES / NO
Sample cold? YES / NO

Released for URS by: Carsten Matthai
Date: 15-12-06 Time: 10:00am

Received for Laboratory by: [signature]
Date: 15/12/06 Time: 4-15pm

Container Size, Type, Preservative and Analysis

Container Identification

Size mL	250	500 g
Type*	Glass	Plastic Bag
Preservative Code		
Analytes	Analytes per SY-215-06 URS V3 (Metals - As, Ba, Be, Cd, Cr, Co, Cu, Mn, Ni, Pb, V, Zn, Al, Fe, Sr, Ca, Mg; TPH (C6-C36)/BTEX, PAHs, OC/OP/PCB, TKN, TOC, NOx)	Grain Size (4 fractions: <0.063 mm; 0.063 to 0.25 mm; 0.25 mm to 2 mm; >2 mm)

Hold

Lab identification	Date	Time	Matrix	Sample Number	Estimated Level of Contamination	Total no	Tick required analytes	
	13-12-06		Sediment	1 H1	Low	2 jars	✓	✓
				2 H2			✓	✓
				3 H3			✓	✓
				4 H4			✓	✓
				5 H5			✓	✓
				6 H6			✓	✓
				7 H7			✓	✓
				8 H8			✓	✓
				9 H9			✓	✓
				10 H10			✓	✓
				11 H11			✓	✓
				12 H12			✓	✓
				13 H13			✓	✓
				14 H43			✓	✓
				15 H44			✓	✓
				16 H45			✓	✓
				17 H46			✓	✓
				18 H47			✓	✓
				19 H48			✓	✓
				20 H49			✓	✓
					TOTAL	40 jars	20	20

ALS Environmental
Sydney
Work Order
ES0615839
Telephone : +61 (02) 8784 8555

Remarks:
No historical data available. Please send results to Dr Carsten Matthai (Email: carsten_matthai@urscorp.com).

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric

Courier Job No:

Send results to Carsten_Matthai@urscorp.com

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

Note: 2 x 250ml jars with identical label + 1 500ml plastic bag per Sample ID.

CHAIN OF CUSTODY FORM

Sheet 1 of 1

THIS COLUMN FOR LAB USE ONLY

Job Code: 43217595

Due Date: 23-12-06

FROM:
URS (AUSTRALIA)
ACN 000 691 690
North Sydney
Level 3 116 Miller Street

Ph: 8925 5500 **Fax: 8925 5555**

DATE: 15-12-06

TO:
ALS Smithfield
277 Woodpark Rd
Smithfield 2164

Project No: 43217595
Project Manager: Carsten Matthai
Agreement No: SY-215-06 URS V3

Sampler(s): Carsten Matthai
Signature(s): Matthai
Checked:

Custody seal intact? YES ✓ NO
Sample cold? YES ✓ NO

Released for URS by: Carsten Matthai
Date: 15-12-06 Time: 10am

Received for Laboratory by: [signature]
Date: 15/12/06 Time: 4:15pm

Container Size, Type, Preservative and Analysis

Container Identification

Size mL	250	500 g
Type*	Glass	Plastic Bag
Preservative Code		
Analytes	Analytes per SY-215-06 URS V3 (Metals - As, Ba, Be, Cd, Cr, Co, Cu, Mn, Ni, Pb, V, Zn, Al, Fe, Sr, Ca, Mg; TPH (C6-C36)/BTEX, PAHs, OC/OP/PCB, TKN, TOC, NOx)	Grain Size (4 fractions: <0.063 mm; 0.063 to 0.25 mm; 0.25 mm to 2 mm; >2 mm)

Lab identification	Date	Time	Matrix	Sample Number	Estimated Level of Contamination	Total no	Tick required analytes		Hold
	13-12-06		Sediment	21 H50	Low	2 jars	✓	✓	
				22 H51			✓	✓	
				23 H52			✓	✓	
				24 H53			✓	✓	
				25 H54			✓	✓	
				26 H55			✓	✓	
						TOTAL 12 jars	6	6	

ALS Environmental
Sydney
Work Order
ES0615839
Telephone : +61 (02) 8784 8555

Remarks:
No historical data available. Please send results to Dr Carsten Matthai (Email: carsten_matthai@urscorp.com).

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric

Courier Job No:

Send results to Carsten_Matthai@urscorp.com

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

CHAIN OF CUSTODY FORM

Sheet 1 of 1

THIS COLUMN FOR LAB USE ONLY			
Job Code: 43217595	FROM: **URS (AUSTRALIA)** ACN 000 691 690 North Sydney Level 3 116 Miller Street **Ph: 8925 5500**	DATE: 15-12-06 **Fax: 8925 5555**	TO: **ALS Smithfield** 277 Woodpark Rd Smithfield 2164
Due Date: 23-12-06	Project No: 43217595 Project Manager: Carsten Matthai Agreement No: SY-215-06 URS V3	Sampler(s): Carsten Matthai Signature(s): Matthai Checked:	
Custody seal intact? YES / NO Sample cold? YES / NO	Released for URS by: Carsten Matthai Date: 15-12-06 Time: 10.00am	Received for Laboratory by: [signature] Date: 15/12/06 Time: 4-15 pm	

Container Size, Type, Preservative and Analysis — Container Identification

Size mL	250	500 g	
Type*	Glass	Plastic Bag	
Preservative Code			
Analytes	Analytes per SY-215-06 URS V3 (Metals - As, Ba, Be, Cd, Cr, Co, Cu, Mn, Ni, Pb, V, Zn, Al, Fe, Sr, Ca, Mg; TPH (C6-C36)/BTEX, PAHs, OC/OP/PCB, TKN, TOC, NOx)	Grain Size (4 fractions: <0.063 mm; 0.063 to 0.25 mm; 0.25 mm to 2 mm; >2 mm)	Reactive P as per client request 18/12/06

Hold

Lab identification	Date	Time	Matrix	Sample Number	Estimated Level of Contamination	Total no	Analytes per SY-215-06 URS V3	Grain Size	Reactive P
	13-12-06		Sediment	1 H1	Low	2jars	✓	✓	✓
	↓		↓	2 H2	↓	↓	✓	✓	✓
				3 H3			✓	✓	✓
				4 H4			✓	✓	✓
				5 H5			✓	✓	✓
				6 H6			✓	✓	✓
				7 H7			✓	✓	✓
				8 H8			✓	✓	✓
				9 H9			✓	✓	✓
				10 H10			✓	✓	✓
				11 H11			✓	✓	✓
				12 H12			✓	✓	✓
				13 H13			✓	✓	✓
				14 H43			✓	✓	✓
				15 H44			✓	✓	✓
				16 H45			✓	✓	✓
				17 H46			✓	✓	✓
				18 H47			✓	✓	✓
				19 H48			✓	✓	✓
				20 H49			✓	✓	✓
TOTAL						40jars	20	20	

Tick required analytes

CONTRACT WORK
WO: ES0615839
LAB: GOLDER - PARTICLE SIZE
DATE: 15-12-06
SPLIT:

ALS Environmental
Sydney
Work Order
ES0615839
Telephone : +61 (02) 8784 8555

Remarks:
No historical data available. Please send results to Dr Carsten Matthai (Email: carsten_matthai@urscorp.com).

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric

Courier Job No:

Send results to Carsten_Matthai@urscorp.com

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

Note: 2 x 250ml jars with identical label + 1 500ml plastic bag per Sample ID.

CHAIN OF CUSTODY FORM

Sheet 1 of 1

...ONLY

...code: 43217595

FROM:
URS (AUSTRALIA)
ACN 000 691 690
North Sydney
Level 3 116 Miller Street

Ph: 8925 5500 **Fax: 8925 5555**

DATE: 15-12-06

TO:
ALS Smithfield
277 Woodpark Rd
Smithfield 2164

Due Date: 23-12-06

Project No: 43217595
Project Manager: Carsten Matthai
Agreement No: SY-215-06 URS V3

Sampler(s): Carsten Matthai
Signature(s): [signature]
Checked:

Custody seal intact? YES ✓ NO
Sample cold? YES ✓ NO

Released for URS by: Carsten Matthai
Date: 15-12-06 Time: 10am

Received for Laboratory by: [signature]
Date: 15/12/6 Time: 4.15pm

Container Size, Type, Preservative and Analysis

Container Identification

Size mL	250	500 g														
Type*	Glass	Plastic Bag														
Preservative Code																
Analytes	Analytes per SY-215-06 URS V3 (Metals - As, Ba, Be, Cd, Cr, Co, Cu, Mn, Ni, Pb, V, Zn, Al, Fe, Sr, Ca, Mg; TPH (C6-C36)/BTEX, PAHs, OC/OP/PCB, TKN, TOC, NOx)	Grain Size (4 fractions: <0.063 mm; 0.063 to 0.25 mm; 0.25 mm to 2 mm; >2 mm)	Reactive P as per client 18/12													Hold

Lab identification	Date	Time	Matrix	Sample Number	Estimated Level of Contamination	Total no	Tick required analytes													
	13-12-06		Sediment	(21) H50	Low	2 jars	✓	✓	✓											
				(22) H51			✓	✓	✓											
				(23) H52			✓	✓	✓											
				(24) H53			✓	✓	✓											
				(25) H54			✓	✓	✓											
				(26) H55			✓	✓	✓											
						TOTAL 12 jars	6	6												

ALS Environmental
Sydney
Work Order
ES0615839

Telephone : +61 (02) 8784 8555

Remarks:
No historical data available. Please send results to Dr Carsten Matthai (Email: carsten_matthai@urscorp.com).

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric

Courier Job No:

Send results to Carsten_Matthai@urscorp.com

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	: **URS AUSTRALIA (NSW) PTY LTD**	*Laboratory*	: **ALS Environmental Sydney**	*Page*	: **1 of 19**
Contact	: **MR CARSTEN MATTHAI**	*Contact*	: **Greg Vogel**	*Work Order*	: **ES0615835**
Address	: **LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060**	*Address*	: **277-289 Woodpark Road Smithfield NSW Australia 2164**		
E-mail	: **carsten_matthai@urscorp.com**	*E-mail*	: **Greg.Vogel@alsenviro.com**		
Telephone	: **02 8925 5500**	*Telephone*	: **+61 (02) 8784 8555**		
Facsimile	: **02 8925 5555**	*Facsimile*	: **+61 (02) 8784 8500**		
Project	: **43217595**	*Quote number*	: **----**	*Date received*	: **15 Dec 2006**
Order number	: **- Not provided -**			*Date issued*	: **27 Dec 2006**
C-O-C number	: **- Not provided -**			*No. of samples*	- *Received* : **17**
Site	: **- Not provided -**				*Analysed* : **17**

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	*Position*	*Department*
EDWANDY FADJAR	**Senior Organic Chemist**	**Organics - NATA 825 (10911 - Sydney)**
Greg Vogel	**Laboratory Manager**	**Inorganics - NATA 825 (10911 - Sydney)**
Pabi Subba		**Organics - NATA 825 (10911 - Sydney)**
PHALAK INTHAKESONE	**Organics Co-ordinator**	**Organics - NATA 825 (10911 - Sydney)**
Sarah Millington	**Senior Inorganic Chemist**	**Inorganics - NATA 825 (10911 - Sydney)**

Comments

This report for the ALSE reference ES0615835 supersedes any previous reports with this reference. Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- **Analytical Results for Samples Submitted**
- **Surrogate Recovery Data**

The analytical procedures used by ALS Environmental have been developed from established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported herein. Reference methods from which ALSE methods are based are provided in parenthesis.

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits). Where LOR of reported result differ from standard LOR, this may be due to high moisture, reduced sample amount or matrix interference. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number, LOR = Limit of Reporting. * Indicates failed Surrogate Recoveries.

Specific comments for Work Order **ES0615835**

EP080: Surrogates not determined for sample H19 due to sample matrix interferences, confirmed by re-extraction and re-analysis.

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Analytical Results

				Client Sample ID :	H14	H15	H16	H17	H18
				Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
				Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
				Laboratory Sample ID :					
Analyte	CAS number	LOR	Units		ES0615835-001	ES0615835-002	ES0615835-003	ES0615835-004	ES0615835-005
EA055: Moisture Content									
Moisture Content (dried @ 103°C)		1.0	%		49.7	45.9	46.7	51.8	60.4
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		8220	7600	7120	13000	13800
Arsenic	7440-38-2	5	mg/kg		12	13	15	20	21
Barium	7440-39-3	10	mg/kg		20	20	20	40	40
Beryllium	7440-41-7	1	mg/kg		1	<1	<1	1	1
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		18	17	17	25	25
Cobalt	7440-48-4	2	mg/kg		10	8	7	11	11
Copper	7440-50-8	5	mg/kg		18	15	27	46	53
Iron	7439-89-6	50	mg/kg		20300	19100	19500	29800	30200
Lead	7439-92-1	5	mg/kg		23	20	27	33	37
Manganese	7439-96-5	5	mg/kg		154	251	207	486	516
Nickel	7440-02-0	2	mg/kg		13	11	10	16	16
Strontium	7440-24-6	2	mg/kg		53	64	37	52	50
Vanadium	7440-62-2	5	mg/kg		38	37	34	55	57
Zinc	7440-66-6	5	mg/kg		62	53	74	94	109
Calcium	7440-70-2	50	mg/kg		5410	6840	2720	2810	2420
Magnesium	7439-95-4	50	mg/kg		4220	4010	3920	5320	5760
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.3	<0.1	<0.1	<0.1	<0.1
EK059G: NOX as N by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg		<0.100	<0.100	<0.100	<0.100	<0.100
EK061G: Total Kjeldahl Nitrogen as N									
Total Kjeldahl Nitrogen as N		20	mg/kg		1340	940	1230	1350	1160
EK071G: Reactive Phosphorous as P by discrete analyser									
Reactive Phosphorus as P		0.100	mg/kg		0.209	<0.100	<0.100	<0.100	0.202
EP004: Organic Matter									
Organic Matter		0.5	%		3.3	3.3	3.1	3.2	3.2
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls		0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H14	H15	H16	H17	H18
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615835-001	ES0615835-002	ES0615835-003	ES0615835-004	ES0615835-005
EP068A: Organochlorine Pesticides (OC)								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H14	H15	H16	H17	H18
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
			Laboratory Sample ID :	ES0615835-001	ES0615835-002	ES0615835-003	ES0615835-004	ES0615835-005
Analyte	*CAS number*	*LOR*	*Units*					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	90.0	72.8	102	90.0	80.2
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	92.9	71.8	92.7	84.0	81.1
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	83.1	62.8	82.8	75.3	72.9
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	74.6	75.3	79.2	75.7	73.6
2-Chlorophenol-D4	93951-73-6	0.1	%	83.8	84.0	90.2	82.2	81.1

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Analytical Results

				Client Sample ID :	H14	H15	H16	H17	H18
				Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
				Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
				Laboratory Sample ID :	ES0615835-001	ES0615835-002	ES0615835-003	ES0615835-004	ES0615835-005
Analyte	CAS number	LOR	Units						
EP075(SIM)S: Phenolic Compound Surrogates									
2.4.6-Tribromophenol	118-79-6	0.1	%		79.2	78.3	83.2	74.1	75.1
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		86.5	87.2	93.2	88.1	85.2
Anthracene-d10	1719-06-8	0.1	%		82.8	83.6	88.0	84.1	81.6
4-Terphenyl-d14	1718-51-0	0.1	%		89.6	90.8	94.4	91.4	87.0
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		80.6	91.4	95.9	88.3	83.1
Toluene-D8	2037-26-5	0.1	%		94.3	85.6	91.5	118	93.2
4-Bromofluorobenzene	460-00-4	0.1	%		82.3	85.9	91.1	104	82.8

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Analytical Results

				Client Sample ID :	H19	H20	H34	H35	H36
				Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
				Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
				Laboratory Sample ID :					
Analyte	CAS number	LOR	Units		ES0615835-006	ES0615835-007	ES0615835-008	ES0615835-009	ES0615835-010
EA055: Moisture Content									
Moisture Content (dried @ 103°C)		1.0	%		57.5	64.2	51.2	50.5	25.0
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		13000	14500	11800	8040	3130
Arsenic	7440-38-2	5	mg/kg		19	24	10	17	9
Barium	7440-39-3	10	mg/kg		30	40	30	20	10
Beryllium	7440-41-7	1	mg/kg		1	2	1	1	<1
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		24	28	21	18	8
Cobalt	7440-48-4	2	mg/kg		11	12	12	9	5
Copper	7440-50-8	5	mg/kg		20	24	20	20	<5
Iron	7439-89-6	50	mg/kg		29300	33000	24200	22400	10800
Lead	7439-92-1	5	mg/kg		29	32	22	23	8
Manganese	7439-96-5	5	mg/kg		464	881	246	244	121
Nickel	7440-02-0	2	mg/kg		16	19	15	11	4
Strontium	7440-24-6	2	mg/kg		50	62	64	52	15
Vanadium	7440-62-2	5	mg/kg		53	62	48	38	17
Zinc	7440-66-6	5	mg/kg		79	88	58	78	33
Calcium	7440-70-2	50	mg/kg		2540	3800	6570	5820	1060
Magnesium	7439-95-4	50	mg/kg		5640	6900	4830	4440	1940
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	0.7
EK059G: NOX as N by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg		0.153	0.196	<0.100	<0.100	<0.100
EK061G: Total Kjeldahl Nitrogen as N									
Total Kjeldahl Nitrogen as N		20	mg/kg		1370	2060	1510	1400	330
EK071G: Reactive Phosphorous as P by discrete analyser									
Reactive Phosphorus as P		0.100	mg/kg		<0.100	<0.100	<0.100	<0.100	<0.100
EP004: Organic Matter									
Organic Matter		0.5	%		3.2	3.0	2.8	3.1	0.9
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls		0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

ALS Environmental

Analytical Results

			Client Sample ID :	H19	H20	H34	H35	H36
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615835-006	ES0615835-007	ES0615835-008	ES0615835-009	ES0615835-010
EP068A: Organochlorine Pesticides (OC)								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H19	H20	H34	H35	H36
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
			Laboratory Sample ID :	ES0615835-006	ES0615835-007	ES0615835-008	ES0615835-009	ES0615835-010
Analyte	*CAS number*	*LOR*	*Units*					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	0.6	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	0.6	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	0.6	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	96.9	86.4	117	89.5	88.0
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	86.9	89.8	105	83.1	98.4
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	77.4	81.9	99.8	79.0	88.2
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	74.9	81.5	81.8	74.8	85.2
2-Chlorophenol-D4	93951-73-6	0.1	%	84.9	81.9	89.5	81.1	100

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Analytical Results

				Client Sample ID :	H19	H20	H34	H35	H36
				Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
				Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
				Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*		ES0615835-006	ES0615835-007	ES0615835-008	ES0615835-009	ES0615835-010
EP075(SIM)S: Phenolic Compound Surrogates									
2.4.6-Tribromophenol	118-79-6	0.1	%		72.6	73.6	72.3	72.8	66.4
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		87.1	84.4	85.7	84.9	106
Anthracene-d10	1719-06-8	0.1	%		83.4	79.8	80.3	81.1	130
4-Terphenyl-d14	1718-51-0	0.1	%		89.7	86.3	86.2	87.2	102
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		Not Determined	95.5	94.2	98.2	98.0
Toluene-D8	2037-26-5	0.1	%		Not Determined	97.6	116	110	97.4
4-Bromofluorobenzene	460-00-4	0.1	%		Not Determined	117	104	97.2	102

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Analytical Results

				Client Sample ID :	H37	H38	H39	QC1	QC2
				Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
				Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
				Laboratory Sample ID :					
Analyte	CAS number	LOR	Units		ES0615835-011	ES0615835-012	ES0615835-013	ES0615835-014	ES0615835-015
EA055: Moisture Content									
Moisture Content (dried @ 103°C)		1.0	%		59.0	56.6	57.6	61.3	56.8
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		13000	14600	11700	14200	13500
Arsenic	7440-38-2	5	mg/kg		17	22	18	22	20
Barium	7440-39-3	10	mg/kg		50	40	30	40	40
Beryllium	7440-41-7	1	mg/kg		1	2	1	2	1
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		30	27	23	27	25
Cobalt	7440-48-4	2	mg/kg		10	12	10	12	11
Copper	7440-50-8	5	mg/kg		62	58	34	60	50
Iron	7439-89-6	50	mg/kg		26500	32600	26900	33100	30500
Lead	7439-92-1	5	mg/kg		63	39	30	42	37
Manganese	7439-96-5	5	mg/kg		201	734	457	502	489
Nickel	7440-02-0	2	mg/kg		18	18	15	18	17
Strontium	7440-24-6	2	mg/kg		56	56	54	52	50
Vanadium	7440-62-2	5	mg/kg		52	62	50	64	57
Zinc	7440-66-6	5	mg/kg		128	112	81	121	105
Calcium	7440-70-2	50	mg/kg		3170	2780	3480	2520	2460
Magnesium	7439-95-4	50	mg/kg		5760	5870	5230	6100	5590
EG035T: Total Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		0.2	<0.1	<0.1	<0.1	<0.1
EK059G: NOX as N by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg		<0.100	0.115	<0.100	<0.100	<0.100
EK061G: Total Kjeldahl Nitrogen as N									
Total Kjeldahl Nitrogen as N		20	mg/kg		1960	1160	1760	1430	1170
EK071G: Reactive Phosphorous as P by discrete analyser									
Reactive Phosphorus as P		0.100	mg/kg		<0.100	<0.100	<0.100	<0.100	<0.100
EP004: Organic Matter									
Organic Matter		0.5	%		3.1	3.3	2.9	3.0	3.0
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls		0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H37	H38	H39	QC1	QC2
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0615835-011	ES0615835-012	ES0615835-013	ES0615835-014	ES0615835-015
EP068A: Organochlorine Pesticides (OC)								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H37	H38	H39	QC1	QC2
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
			Laboratory Sample ID :	ES0615835-011	ES0615835-012	ES0615835-013	ES0615835-014	ES0615835-015
Analyte	CAS number	LOR	Units					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	0.6	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	0.6	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	94.4	95.2	65.5	80.2	78.1
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	81.6	84.3	57.3	70.6	71.7
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	87.0	85.5	58.8	70.4	69.8
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	75.5	89.3	84.9	87.4	84.1
2-Chlorophenol-D4	93951-73-6	0.1	%	87.7	87.5	85.1	93.7	93.2

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Analytical Results

			Client Sample ID :	H37	H38	H39	QC1	QC2
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
			Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00	14 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*	ES0615835-011	ES0615835-012	ES0615835-013	ES0615835-014	ES0615835-015
EP075(SIM)S: Phenolic Compound Surrogates								
2.4.6-Tribromophenol	118-79-6	0.1	%	71.2	75.0	73.2	76.5	77.2
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	81.8	89.7	86.3	87.5	83.8
Anthracene-d10	1719-06-8	0.1	%	77.2	85.1	81.4	84.7	80.8
4-Terphenyl-d14	1718-51-0	0.1	%	82.0	90.0	85.9	89.0	84.8
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	118	91.3	99.2	78.8	81.7
Toluene-D8	2037-26-5	0.1	%	115	83.5	97.2	86.9	91.3
4-Bromofluorobenzene	460-00-4	0.1	%	109	86.4	102	82.6	79.1

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Analytical Results

			Client Sample ID :	QC3	QC4			
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT			
			Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00			
			Laboratory Sample ID :	ES0615835-016	ES0615835-017			
Analyte	CAS number	LOR	Units					
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	57.6	62.8			
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	11800	13400			
Arsenic	7440-38-2	5	mg/kg	17	22			
Barium	7440-39-3	10	mg/kg	40	40			
Beryllium	7440-41-7	1	mg/kg	1	1			
Cadmium	7440-43-9	1	mg/kg	<1	<1			
Chromium	7440-47-3	2	mg/kg	23	25			
Cobalt	7440-48-4	2	mg/kg	10	11			
Copper	7440-50-8	5	mg/kg	32	21			
Iron	7439-89-6	50	mg/kg	26300	29200			
Lead	7439-92-1	5	mg/kg	30	29			
Manganese	7439-96-5	5	mg/kg	459	784			
Nickel	7440-02-0	2	mg/kg	15	17			
Strontium	7440-24-6	2	mg/kg	52	53			
Vanadium	7440-62-2	5	mg/kg	49	55			
Zinc	7440-66-6	5	mg/kg	80	78			
Calcium	7440-70-2	50	mg/kg	2890	2810			
Magnesium	7439-95-4	50	mg/kg	5280	6120			
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.4			
EK059G: NOX as N by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg	<0.100	<0.100			
EK061G: Total Kjeldahl Nitrogen as N								
Total Kjeldahl Nitrogen as N		20	mg/kg	1150	1670			
EK071G: Reactive Phosphorous as P by discrete analyser								
Reactive Phosphorus as P		0.100	mg/kg	<0.100	<0.100			
EP004: Organic Matter								
Organic Matter		0.5	%	2.9	3.1			
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		0.10	mg/kg	<0.10	<0.10			
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05			
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05			
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05			
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05			
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05			

ALS Environmental

Analytical Results

			Client Sample ID :	QC3	QC4			
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT			
			Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00			
			Laboratory Sample ID :	ES0615835-016	ES0615835-017			
Analyte	CAS number	LOR	Units					
EP068A: Organochlorine Pesticides (OC)								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05			
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05			
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05			
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05			
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05			
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05			
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05			
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05			
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05			
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05			
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05			
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05			
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05			
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2			
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05			
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2			
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05			
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05			
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2			
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05			
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05			
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05			
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2			
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05			
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05			
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05			
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2			
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05			
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05			
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05			
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05			
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05			
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05			
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05			
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05			

ALS Environmental

Analytical Results

			Client Sample ID :	QC3	QC4			
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT			
			Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00			
			Laboratory Sample ID :	ES0615835-016	ES0615835-017			
Analyte	CAS number	LOR	Units					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5			
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5			
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5			
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5			
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5			
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5			
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5			
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5			
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5			
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5			
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5			
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5			
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5			
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5			
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5			
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5			
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10			
C10 - C14 Fraction		50	mg/kg	<50	<50			
C15 - C28 Fraction		100	mg/kg	<100	<100			
C29 - C36 Fraction		100	mg/kg	<100	<100			
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2			
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5			
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5			
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5			
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5			
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	95.6	77.0			
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	84.2	70.2			
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	83.8	73.2			
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	86.3	72.2			
2-Chlorophenol-D4	93951-73-6	0.1	%	91.4	90.3			

ALS Environmental

Analytical Results

			Client Sample ID :	QC3	QC4			
			Sample Matrix Type / Description :	SEDIMENT	SEDIMENT			
			Sample Date / Time :	14 Dec 2006 15:00	14 Dec 2006 15:00			
			Laboratory Sample ID :	ES0615835-016	ES0615835-017			
Analyte	*CAS number*	*LOR*	*Units*					
EP075(SIM)S: Phenolic Compound Surrogates								
2.4.6-Tribromophenol	118-79-6	0.1	%	62.8	62.5			
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	85.6	82.8			
Anthracene-d10	1719-06-8	0.1	%	84.7	80.6			
4-Terphenyl-d14	1718-51-0	0.1	%	91.5	86.6			
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	90.1	83.3			
Toluene-D8	2037-26-5	0.1	%	102	83.0			
4-Bromofluorobenzene	460-00-4	0.1	%	90.7	82.5			

ALS Environmental

Surrogate Control Limits

Matrix Type: SOIL - Surrogate Control Limits ***Surrogate Control Limits***

Method name	*Analyte name*	*Lower Limit*	*Upper Limit*
EP066: Polychlorinated Biphenyls (PCB)			
EP066S: PCB Surrogate	Decachlorobiphenyl	10	164
EP068: Pesticides by GCMS			
EP068S: Organochlorine Pesticide Surrogate	Dibromo-DDE	10	136
EP068T: Organophosphorus Pesticide Surrogate	DEF	10	136
EP075(SIM): PAH/Phenols (SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	24	113
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	19	122
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	30	115
	Anthracene-d10	27	133
	4-Terphenyl-d14	18	137
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	81	117
	4-Bromofluorobenzene	74	121

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TEST RESULTS

Client : ALS Environmental Sydney
Project : Delivered Samples
Batch No. : ES0615835

Job No. : 06634002/1
Date Received : 19/12/2006
Sampled by : Client

PARTICLE SIZE SUMMARY

Reg'n No.	Sample ID	Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2.0 mm - 0.063 mm)	Percent Silt & Clay (-0.063 mm)
L12040	H14	1	0	35	65
L12041	H15	2	0	44	56
L12042	H16	3	0	31	69
L12043	H17	4	0	6	94
L12044	H18	5	0	1	99
L12045	H19	6	0	5	95
L12046	H20	7	0	0	100
L12047	H34	8	0	8	92
L12048	H35	9	0	34	66
L12049	H36	10	0	73	27
L12050	H37	11	0	10	90
L12051	H38	12	0	5	95
L12052	H39	13	0	6	94
L12053	QC1	14	0	1	99
L12054	QC2	15	0	6	94
L12055	QC3	16	0	9	91
L12056	QC4	17	0	0	100

Test Procedure : AS 1289 3.6.1

Prepared by NF

Checked by JA

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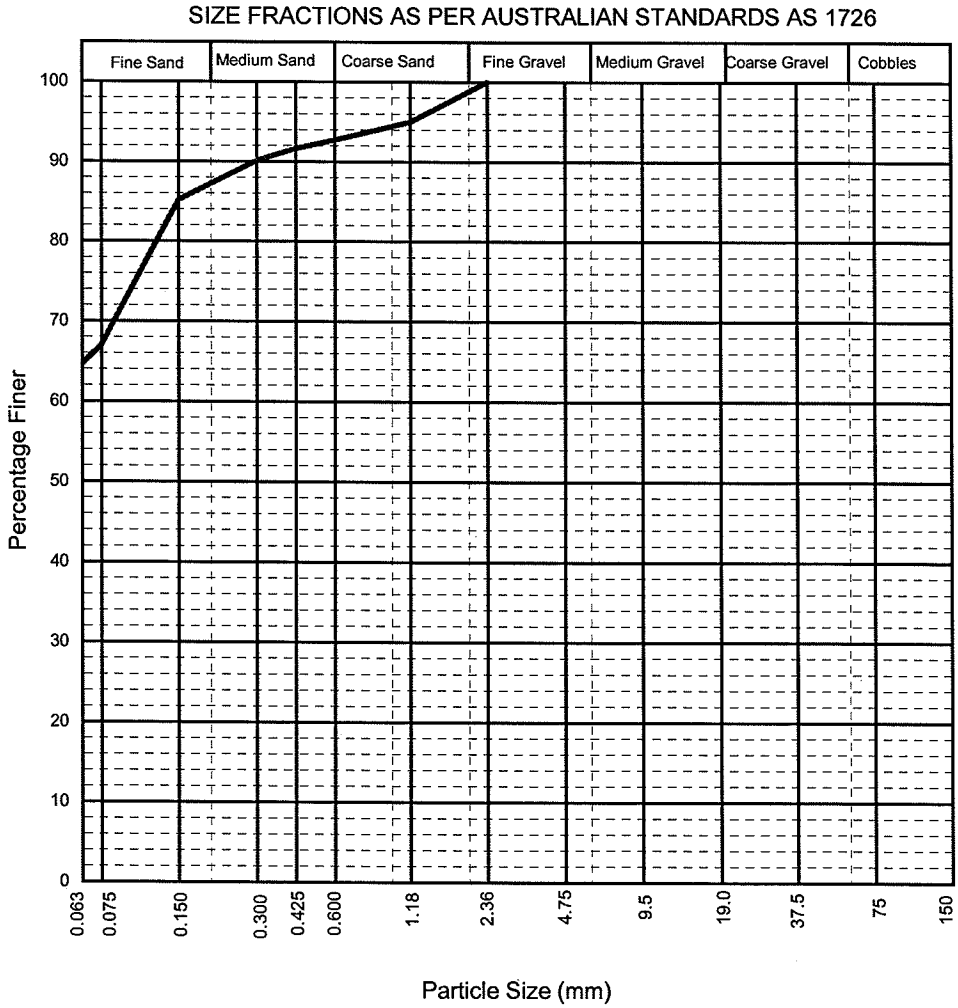
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12040
Sample ID :	H14	Batch No. :	ES 0615835 - 1
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	95.0
0.600	92.7
0.425	91.6
0.300	90.1
0.150	85.2
0.075	67.0
0.063	64.6



Remarks :

Material Description : Sandy CLAY (CH) dark grey, with shell fragments

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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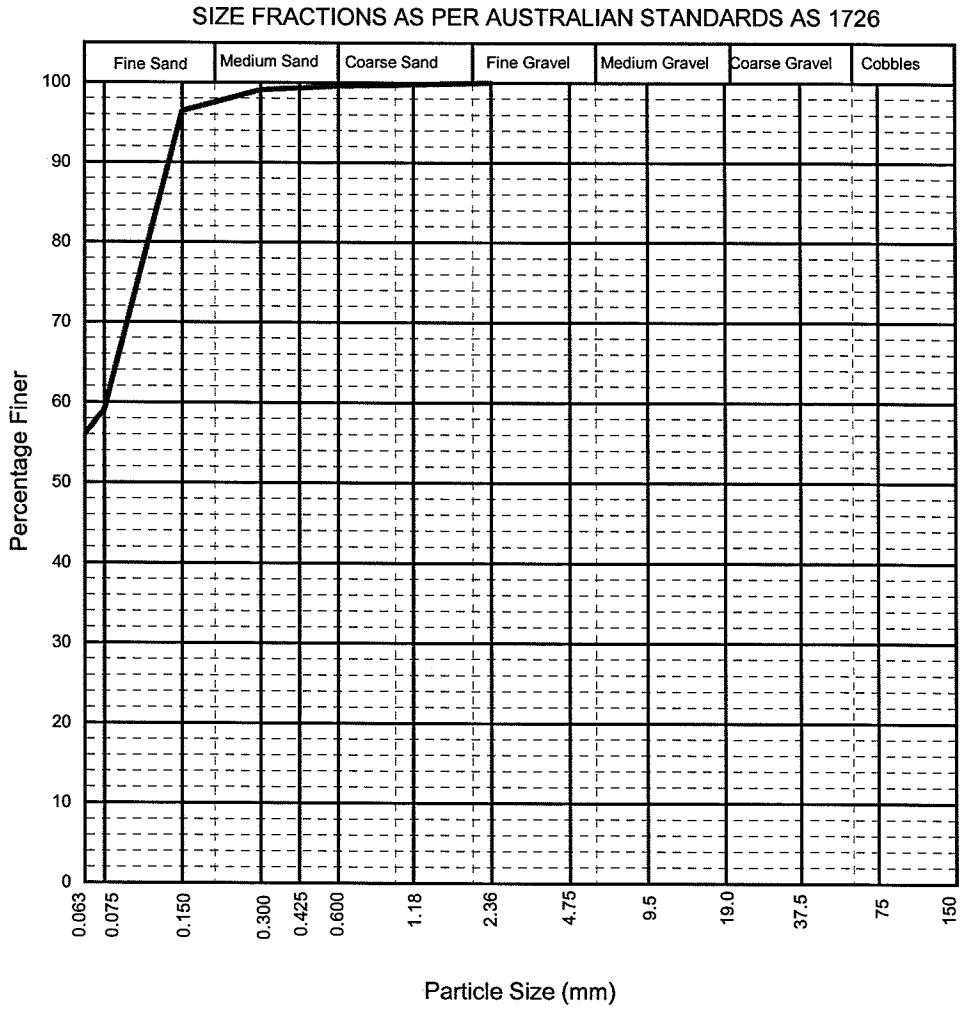
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12041
Sample ID :	H15	Batch No. :	ES 0615835 - 2
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.8
0.600	99.6
0.425	99.3
0.300	99.1
0.150	96.4
0.075	59.1
0.063	56.0

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :	
Material Description :	Sandy CLAY (CH) dark grey
Test Procedure :	AS 1289 3.6.1
Prepared by : NF	Checked by : JA

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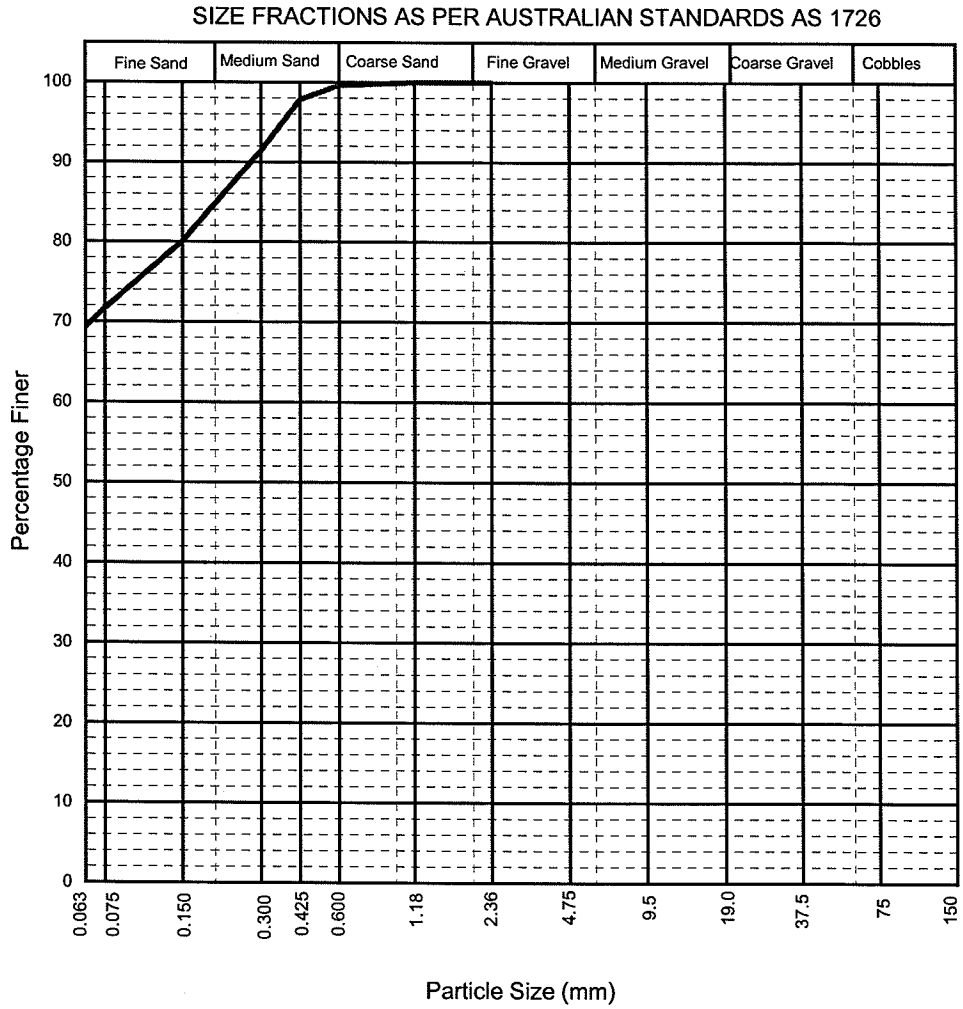
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12042
Sample ID :	H16	Batch No. :	ES 0615835 - 3
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.6
0.425	97.8
0.300	91.4
0.150	80.1
0.075	71.6
0.063	69.3



Remarks :

Material Description : Sandy CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NL

Checked by : JA

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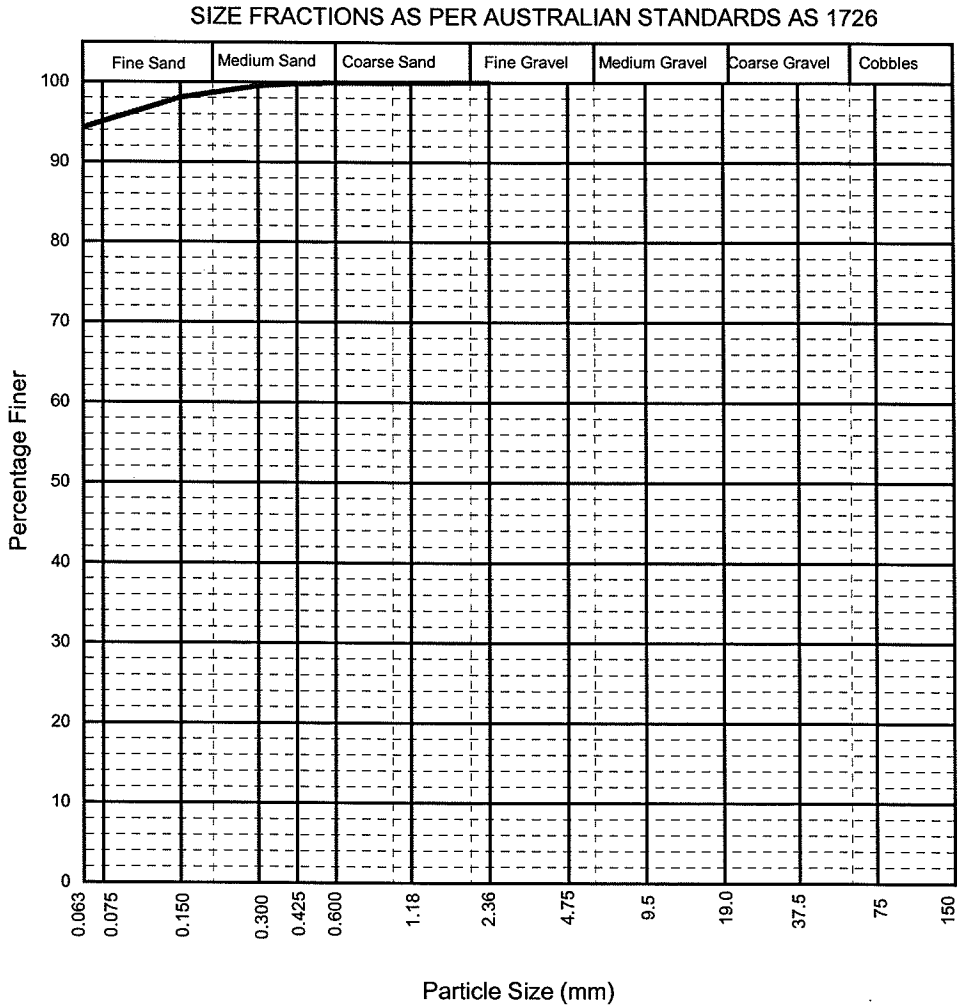
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12043
Sample ID :	H17	Batch No. :	ES 0615835 - 4
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.9
0.425	99.8
0.300	99.5
0.150	98.1
0.075	95.0
0.063	94.3

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :	
Material Description :	Silty CLAY (CH) dark grey
Test Procedure :	AS 1289 3.6.1
Prepared by : MF	Checked by : JA

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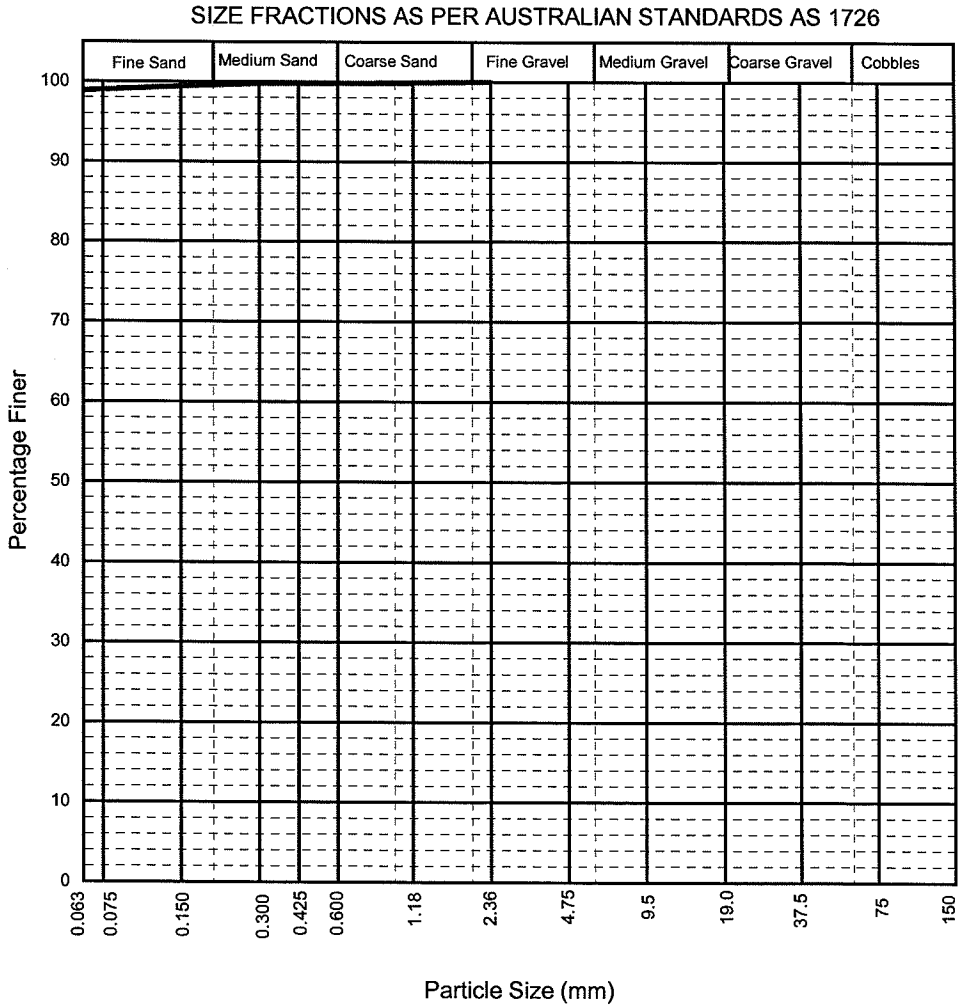
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12044
Sample ID :	H18	Batch No. :	ES 0615835 - 5
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.8
0.425	99.8
0.300	99.8
0.150	99.4
0.075	99.0
0.063	98.9



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NL

Checked by : JA

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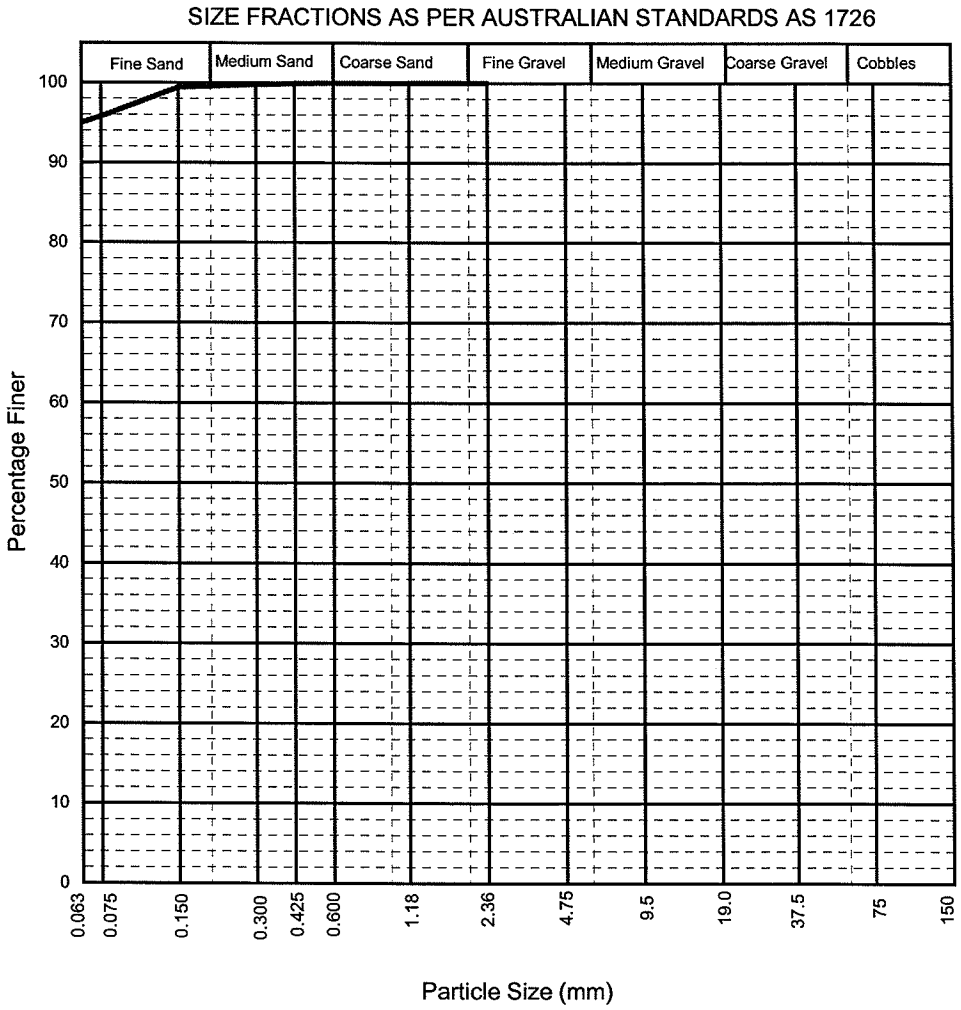
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12045
Sample ID :	H19	Batch No. :	ES 0615835 - 6
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	100.0
0.425	99.9
0.300	99.8
0.150	99.4
0.075	95.8
0.063	95.0



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NL

Checked by : JA

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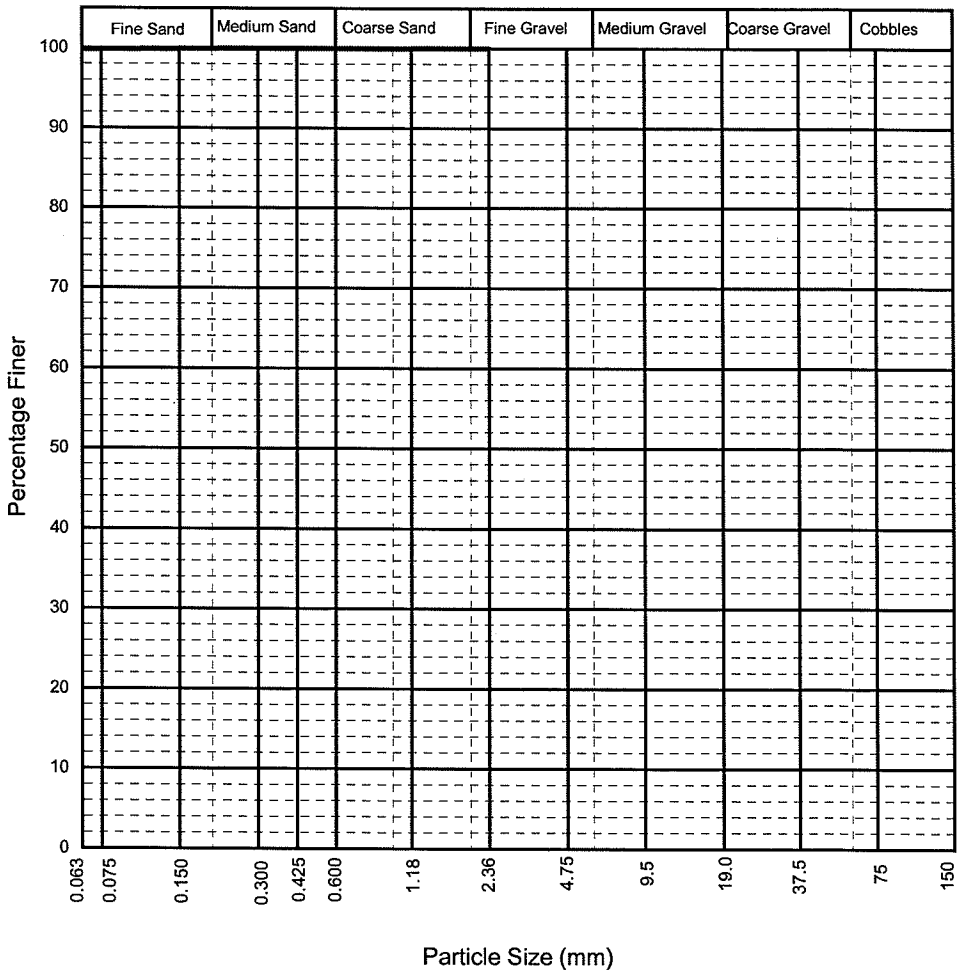
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12046
Sample ID :	H20	Batch No. :	ES 0615835 - 7
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	100.0
0.425	100.0
0.300	100.0
0.150	99.9
0.075	99.8
0.063	99.8

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JD

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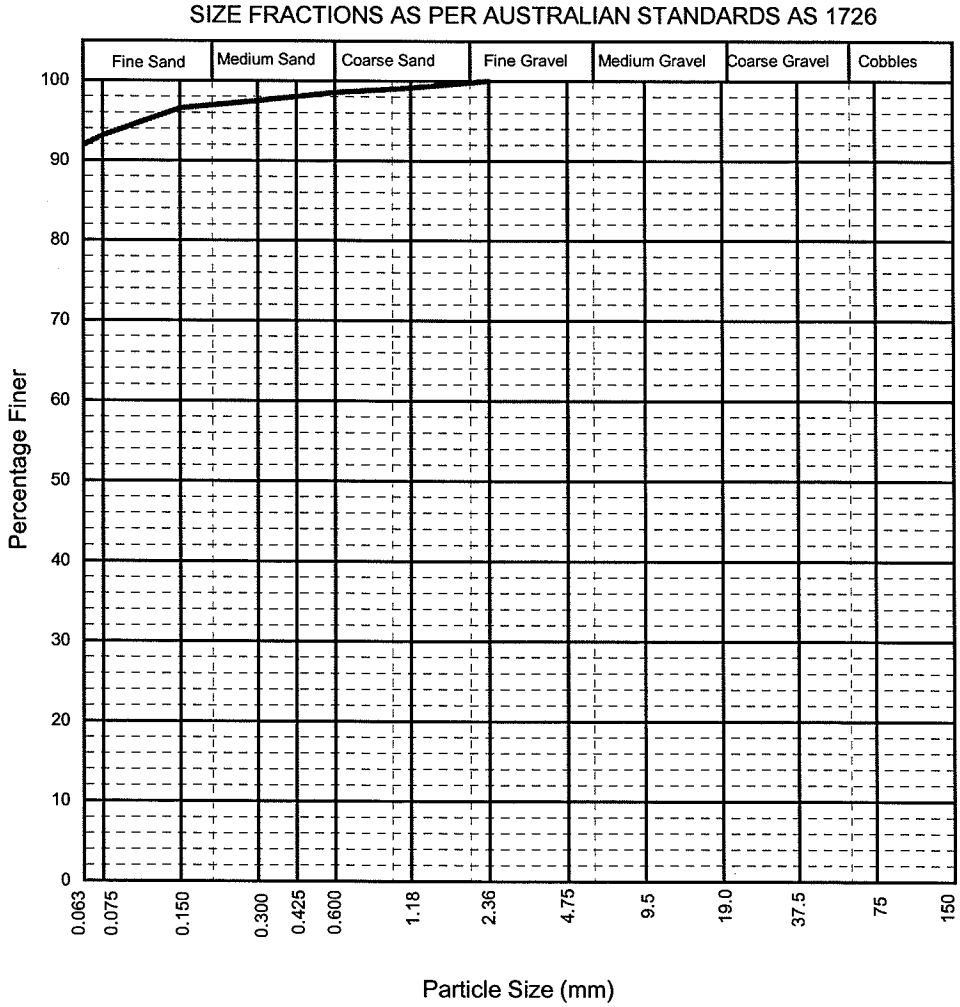
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12047
Sample ID :	H34	Batch No. :	ES 0615835 - 8
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.1
0.600	98.5
0.425	98.0
0.300	97.5
0.150	96.5
0.075	93.1
0.063	91.9



Remarks :	
Material Description :	Silty CLAY (CH) dark grey
Test Procedure :	AS 1289 3.6.1
Prepared by : NF	Checked by : JA

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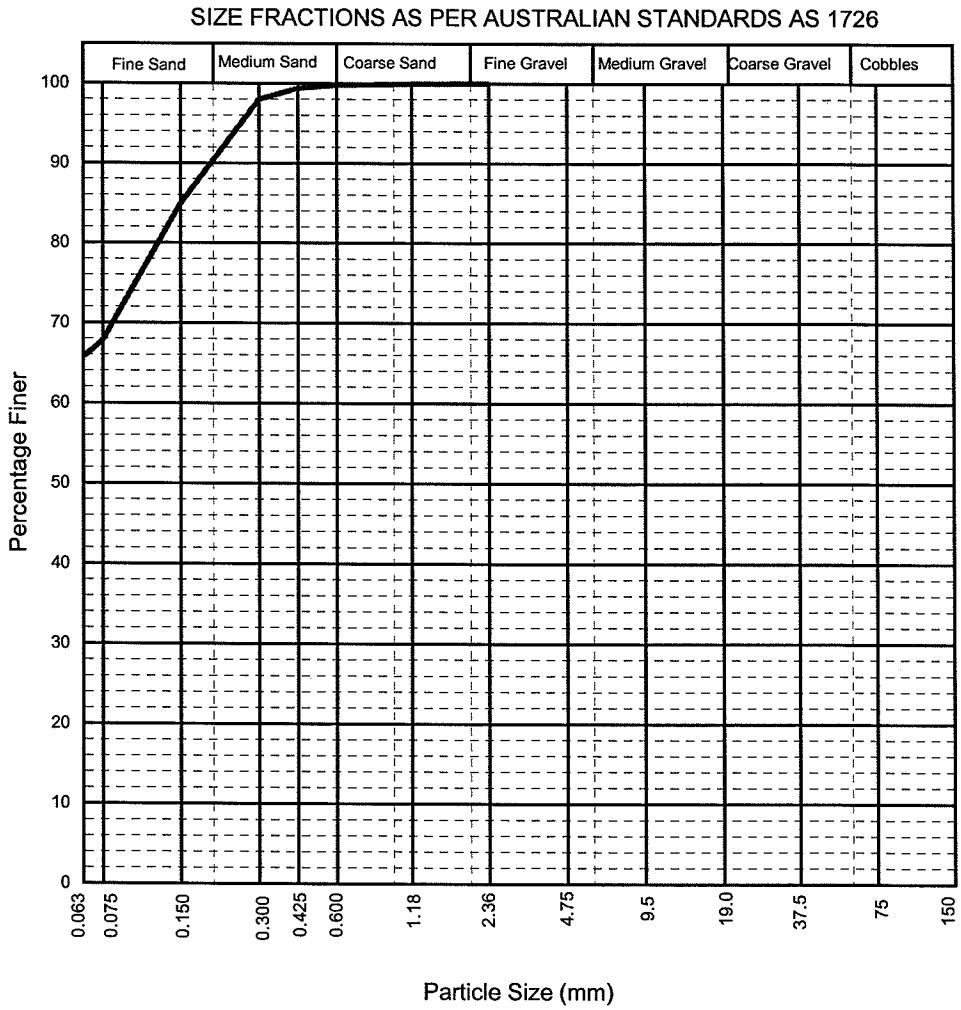
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12048
Sample ID :	H35	Batch No. :	ES 0615835 - 9
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.8
0.425	99.4
0.300	98.0
0.150	84.9
0.075	67.8
0.063	65.7



Remarks :

Material Description : Sandy CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : MC

Checked by : JA

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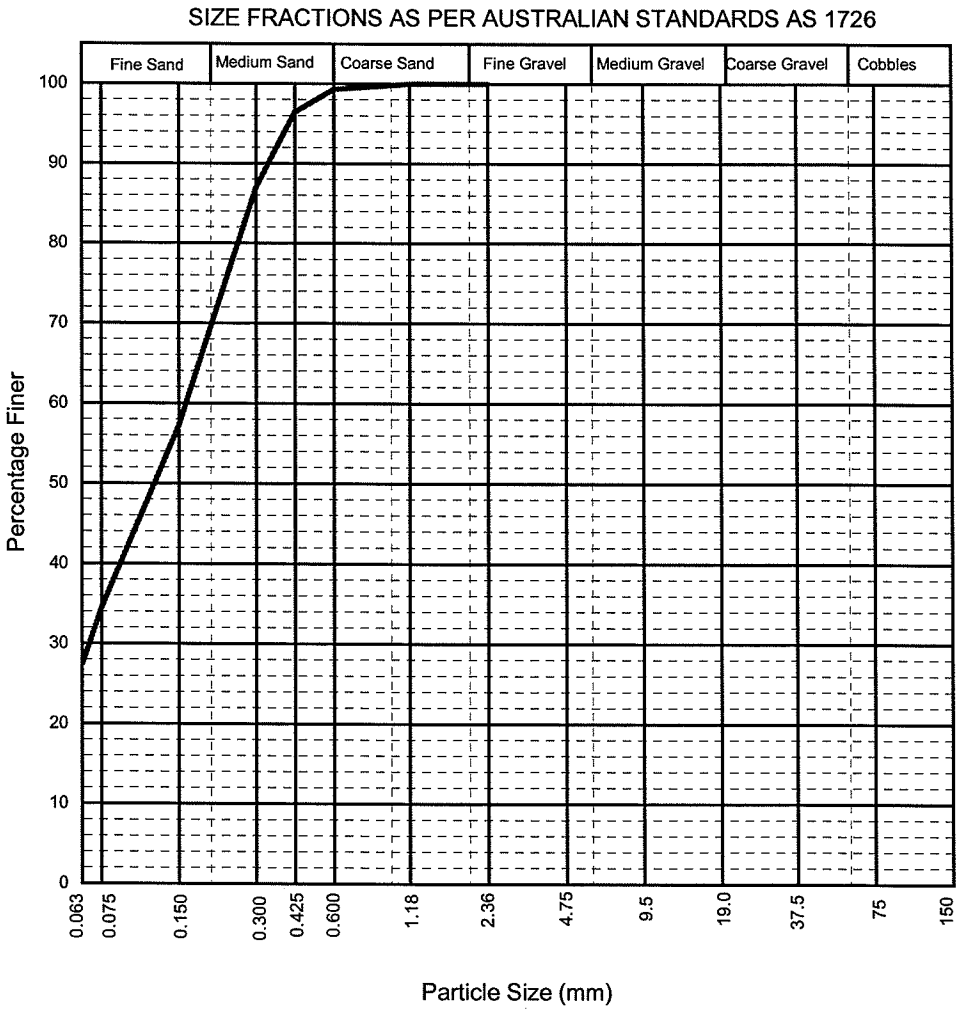
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12049
Sample ID :	H36	Batch No. :	ES 0615835 - 10
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.3
0.425	96.4
0.300	87.0
0.150	57.2
0.075	34.5
0.063	27.3



Remarks :

Material Description : Clayey SAND (SC) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : mt

Checked by : SA

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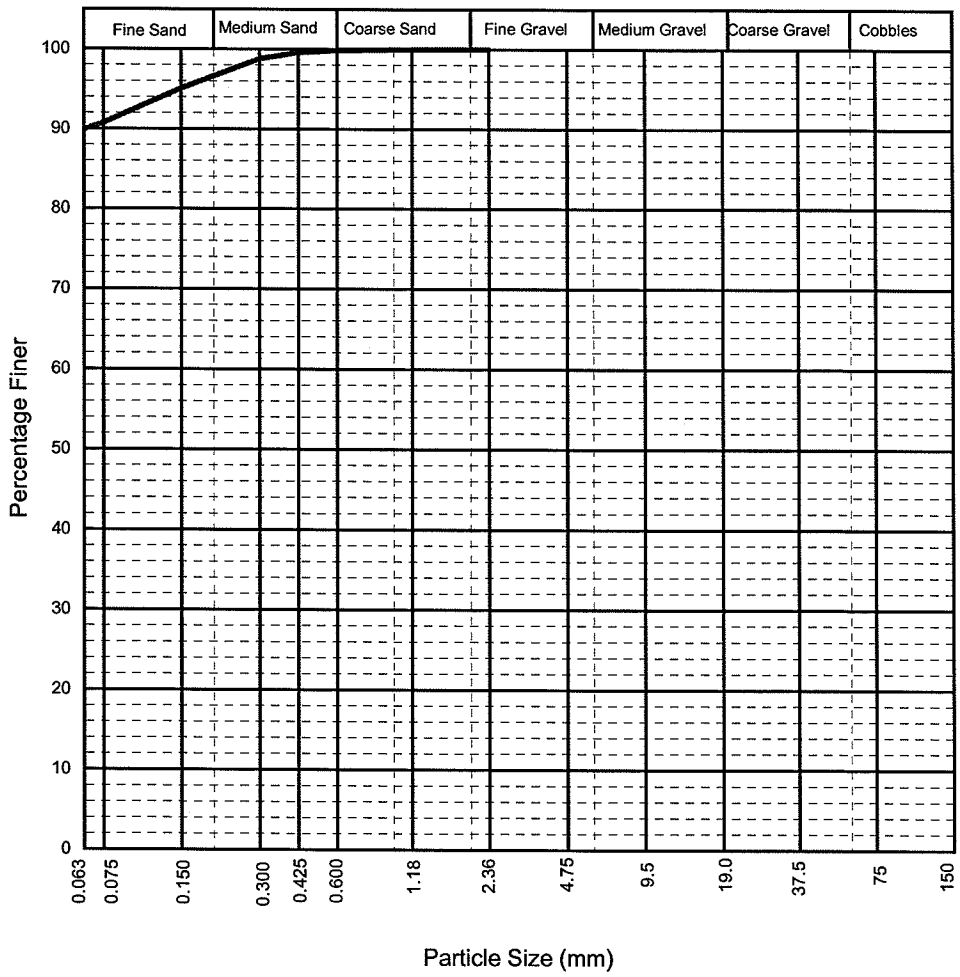
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12050
Sample ID :	H37	Batch No. :	ES 0615835 - 11
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.8
0.425	99.6
0.300	98.8
0.150	95.1
0.075	90.7
0.063	89.9

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NK

Checked by : JA

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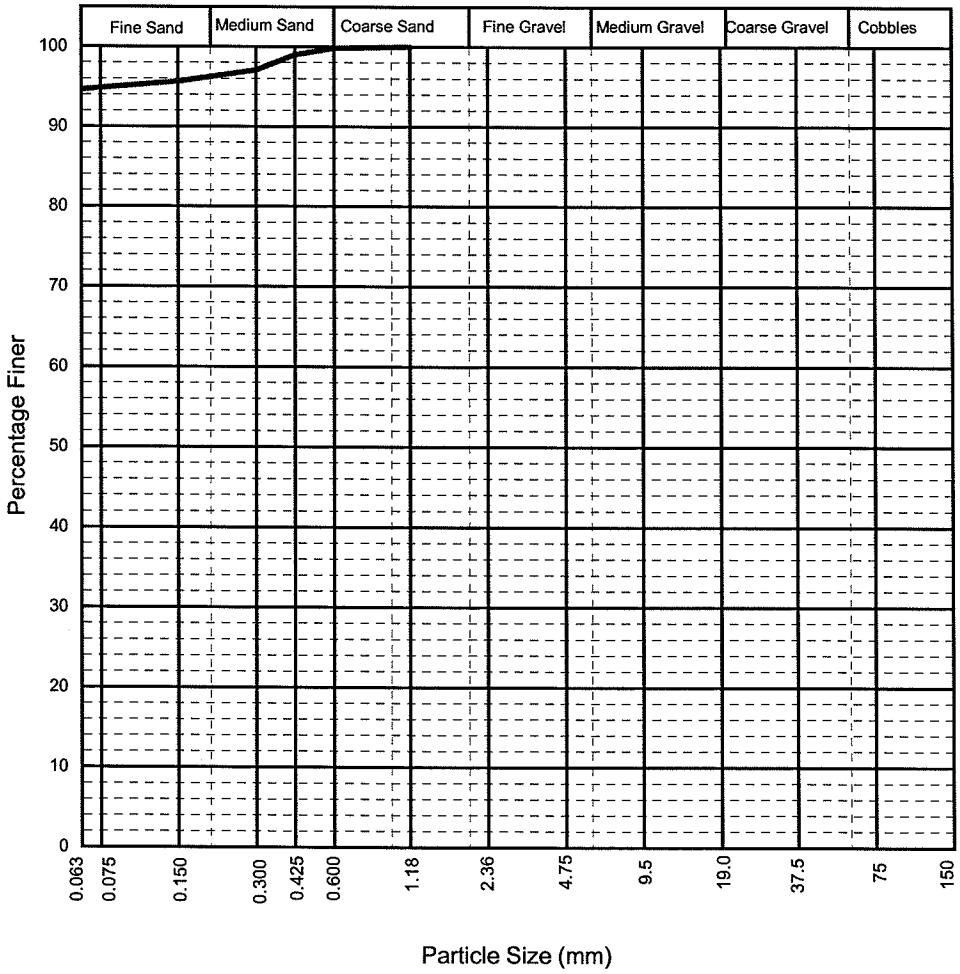
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12051
Sample ID :	H38	Batch No. :	ES 0615835 - 12
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	100.0
0.600	99.8
0.425	99.0
0.300	97.1
0.150	95.6
0.075	94.8
0.063	94.6

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NV

Checked by : JA

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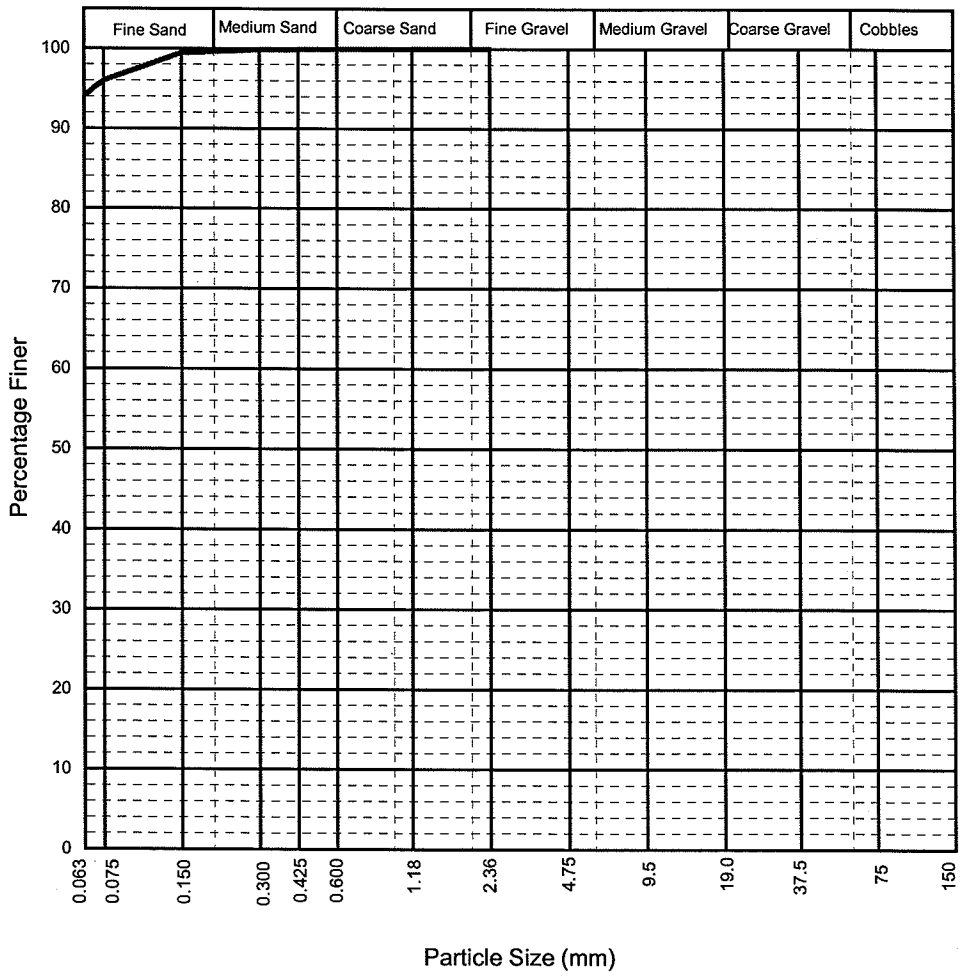
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12052
Sample ID :	H39	Batch No. :	ES 0615835 - 13
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.9
0.425	99.9
0.300	99.9
0.150	99.5
0.075	96.0
0.063	94.1

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : MF

Checked by : JA

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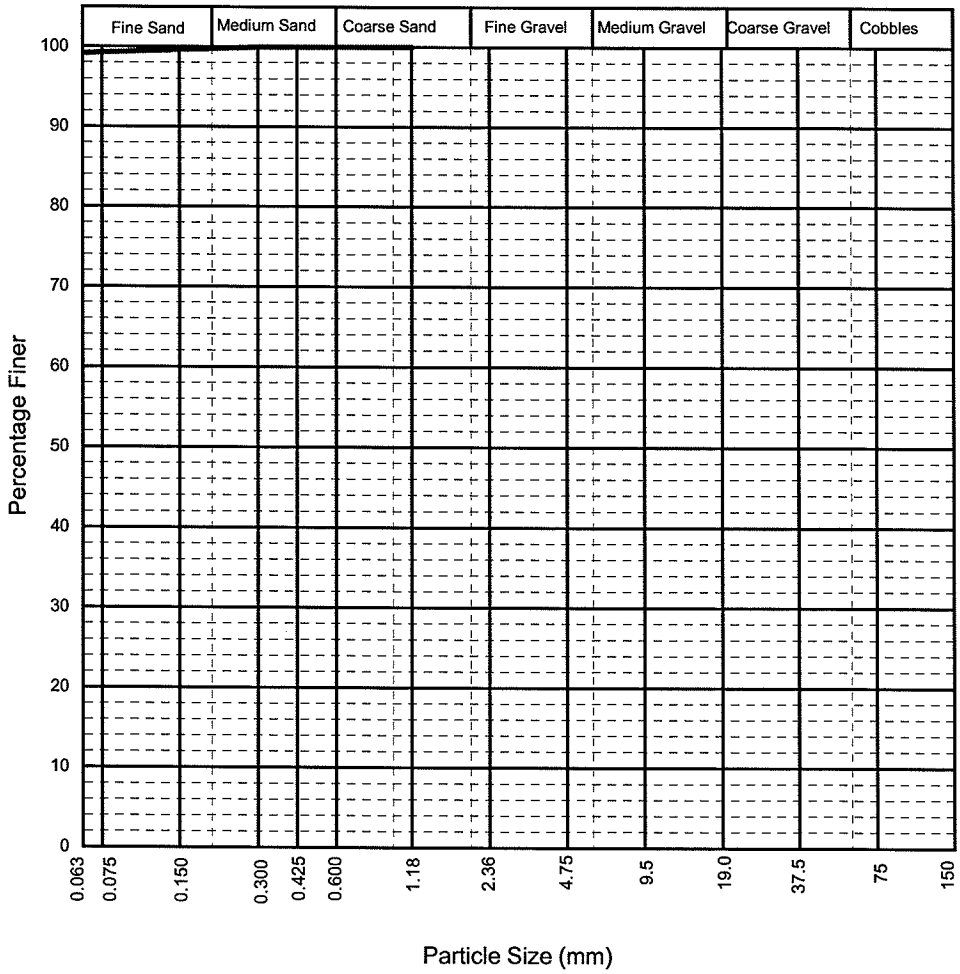
Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12053
Sample ID :	QC1	Batch No. :	ES 0615835 - 14
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	100.0
0.600	100.0
0.425	100.0
0.300	99.9
0.150	99.6
0.075	99.2
0.063	99.1

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : ME

Checked by : JA

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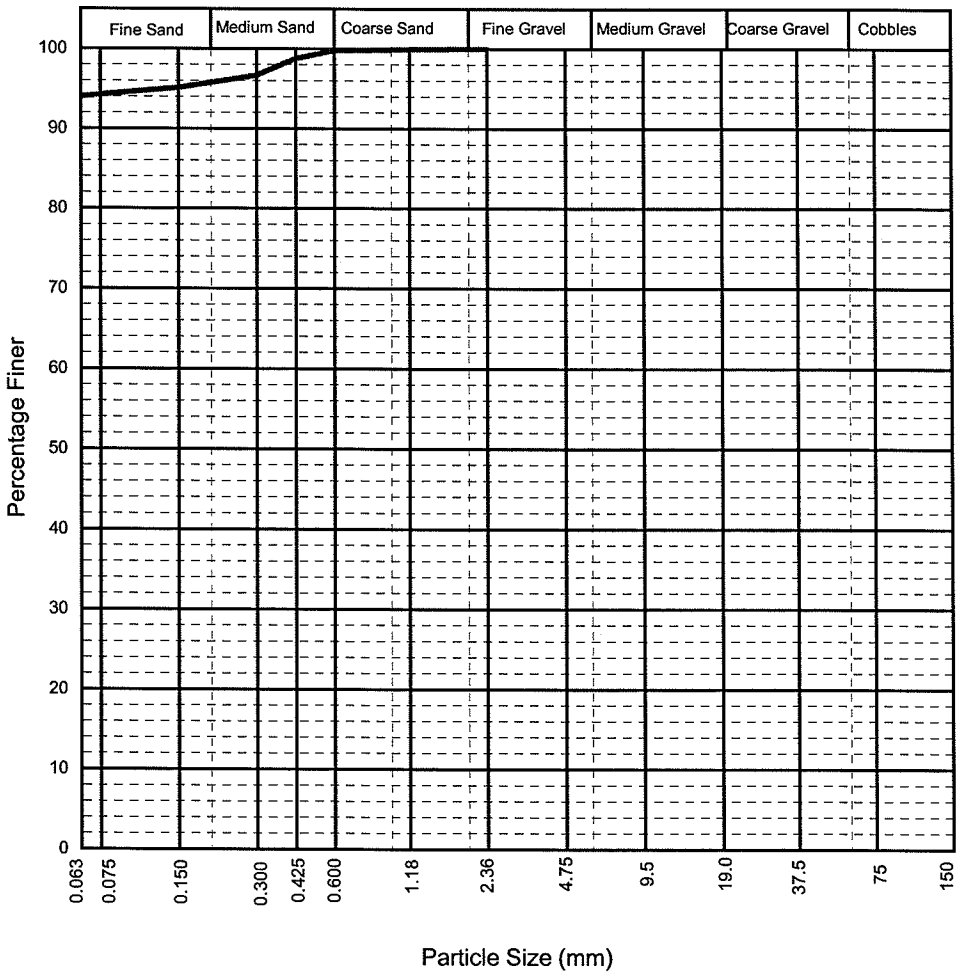
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12054
Sample ID :	QC2	Batch No. :	ES 0615835 - 15
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.8
0.425	98.8
0.300	96.7
0.150	95.1
0.075	94.2
0.063	94.0

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NV

Checked by : JA

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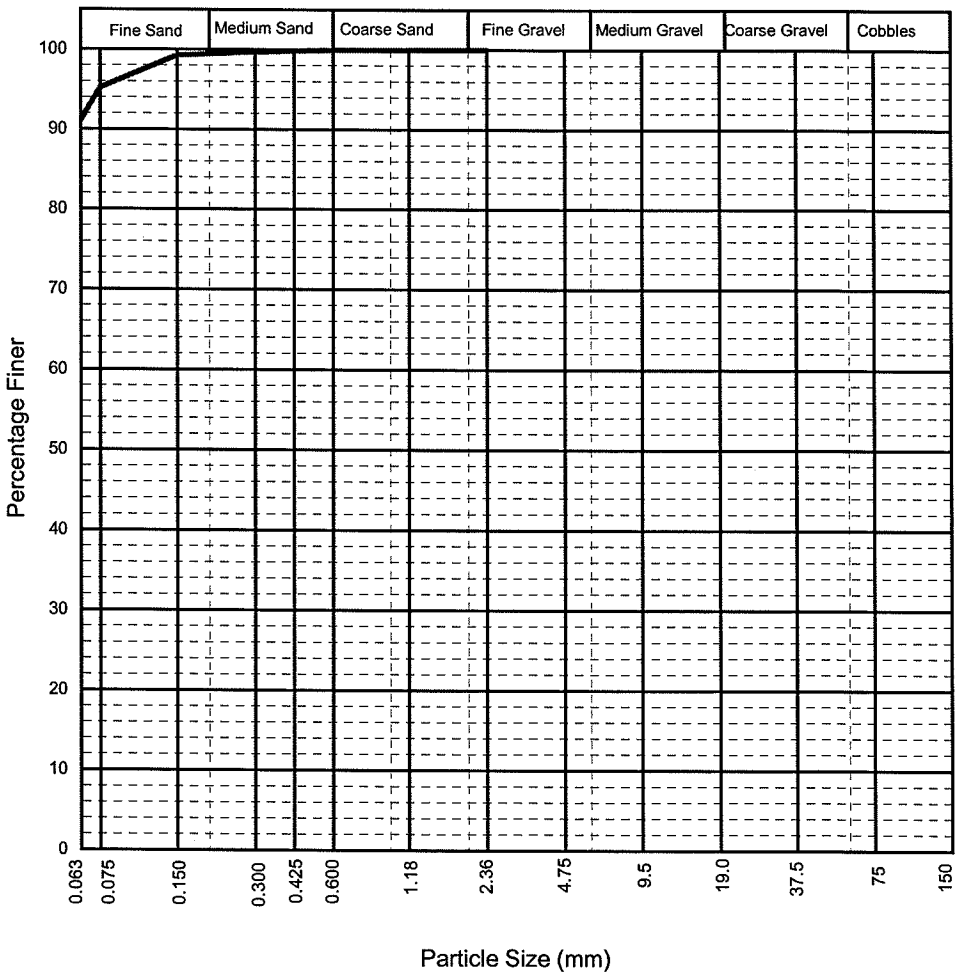
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12055
Sample ID :	QC3	Batch No. :	ES 0615835 - 16
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.9
0.425	99.8
0.300	99.7
0.150	99.2
0.075	95.2
0.063	91.1

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NL

Checked by : JA

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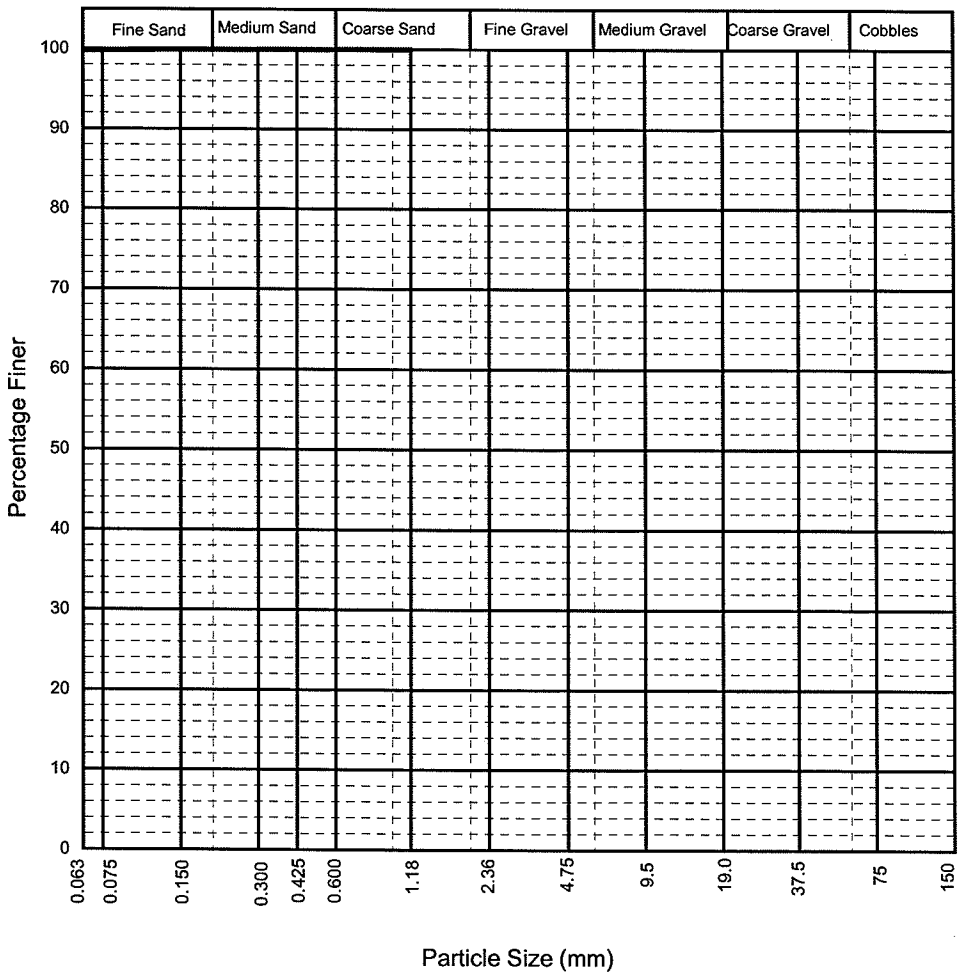
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6419
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	06634002/1
Project :	Delivered Samples	Reg'n No. :	L12056
Sample ID :	QC4	Batch No. :	ES 0615835 - 17
		Date Received :	19/12/06
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	100.0
0.600	100.0
0.425	100.0
0.300	99.9
0.150	99.9
0.075	99.8
0.063	99.8

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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ALS Environmental

QUALITY CONTROL REPORT

Client	:	**URS AUSTRALIA (NSW) PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 19**
Contact	:	MR CARSTEN MATTHAI	**Contact**	:	Greg Vogel		
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0615835**
						Amendment No.	:
Project	:	43217595	**Quote number**	:	----	**Date received**	: 15 Dec 2006
Order number	:	- Not provided -				**Date issued**	: 27 Dec 2006
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	carsten_matthai@urscorp.com	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	02 8925 5500	**Telephone**	:	+61 (02) 8784 8555	**Received**	: 17
Facsimile	:	02 8925 5555	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	: 17

This final report for the ALSE work order reference ES0615835 supersedes any previous reports with this reference.

Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

Work order specific comments

EP080: Surrogates not determined for sample H19 due to sample matrix interferences, confirmed by re-extraction and re-analysis.

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Accredited for compliance with ISO/IED 17025

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
EDWANDY FADJAR	Organics - NATA 825 (10911 - Sydney)
Greg Vogel	Inorganics - NATA 825 (10911 - Sydney)
Pabi Subba	Organics - NATA 825 (10911 - Sydney)
PHALAK INTHAKESONE	Organics - NATA 825 (10911 - Sydney)
Sarah Millington	Inorganics - NATA 825 (10911 - Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting:- Result < 10 times LOR, no limit - Result between 10 and 20 times LOR, 0% - 50% - Result > 20 times LOR, 0% - 20%

Matrix Type: SOIL ***Laboratory Duplicates (DUP) Report***

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EA055: Moisture Content						
EA055: Moisture Content - (QC Lot: 325779)				%	%	%
ES0615835-001	H14	Moisture Content (dried @ 103°C)	1.0 %	49.7	46.7	6.4
ES0615835-010	H36	Moisture Content (dried @ 103°C)	1.0 %	25.0	25.1	0.0
EA055: Moisture Content - (QC Lot: 326427)				%	%	%
ES0615678-002	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	8.3	8.9	7.3
ES0615764-010	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	27.4	27.5	0.4
EA055: Moisture Content - (QC Lot: 326428)				%	%	%
ES0615835-005	H18	Moisture Content (dried @ 103°C)	1.0 %	60.4	60.1	0.6
ES0615835-014	QC1	Moisture Content (dried @ 103°C)	1.0 %	61.3	60.4	1.5
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 326690)				mg/kg	mg/kg	%
ES0615835-001	H14	Aluminium	50 mg/kg	8220	8160	0.8
		Arsenic	5 mg/kg	12	11	0.0
		Barium	10 mg/kg	20	20	0.0
		Beryllium	1 mg/kg	1	1	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	18	18	0.0
		Cobalt	2 mg/kg	10	10	0.0
		Copper	5 mg/kg	18	18	0.0
		Iron	50 mg/kg	20300	20100	1.1
		Lead	5 mg/kg	23	23	0.0
		Manganese	5 mg/kg	154	153	0.9
		Nickel	2 mg/kg	13	13	0.0
		Strontium	2 mg/kg	53	50	5.6
		Vanadium	5 mg/kg	38	38	0.0
		Zinc	5 mg/kg	62	62	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EG005T: Total Metals by ICP-AES - continued						
EG005T: Total Metals by ICP-AES - (QC Lot: 326690) - continued				mg/kg	mg/kg	%
ES0615835-001	H14	Calcium	50 mg/kg	5410	4420	20.2
		Magnesium	50 mg/kg	4220	4290	1.7
ES0615835-011	H37	Aluminium	50 mg/kg	13000	13000	0.0
		Arsenic	5 mg/kg	17	17	0.0
		Barium	10 mg/kg	50	40	0.0
		Beryllium	1 mg/kg	1	1	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	30	26	13.4
		Cobalt	2 mg/kg	10	10	0.0
		Copper	5 mg/kg	62	62	0.0
		Iron	50 mg/kg	26500	26400	0.4
		Lead	5 mg/kg	63	54	15.5
		Manganese	5 mg/kg	201	207	3.1
		Nickel	2 mg/kg	18	17	0.0
		Strontium	2 mg/kg	56	57	0.0
		Vanadium	5 mg/kg	52	52	0.0
		Zinc	5 mg/kg	128	124	2.9
		Calcium	50 mg/kg	3170	3280	3.6
		Magnesium	50 mg/kg	5760	5750	0.0
EG035T: Total Mercury by FIMS						
EG035T: Total Mercury by FIMS - (QC Lot: 326691)				mg/kg	mg/kg	%
ES0615835-001	H14	Mercury	0.1 mg/kg	0.3	<0.1	94.5
ES0615835-011	H37	Mercury	0.1 mg/kg	0.2	<0.1	78.6
EK059G: NOX as N by Discrete Analyser						
EK059G: NOX as N by Discrete Analyser - (QC Lot: 325771)				mg/kg	mg/kg	%
ES0615835-001	H14	Nitrite + Nitrate as N (Sol.)	0.100 mg/kg	<0.100	<0.100	0.0
ES0615835-010	H36	Nitrite + Nitrate as N (Sol.)	0.100 mg/kg	<0.100	<0.100	0.0
EK061G: Total Kjeldahl Nitrogen as N						
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 326480)				mg/kg	mg/kg	%

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EK061G: Total Kjeldahl Nitrogen as N - continued						
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 326480) - continued				mg/kg	mg/kg	%
ES0615835-001	H14	Total Kjeldahl Nitrogen as N	20 mg/kg	1340	1330	0.9
ES0615835-010	H36	Total Kjeldahl Nitrogen as N	20 mg/kg	330	330	0.0
EK071G: Reactive Phosphorous as P by discrete analyser						
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326528)				mg/kg	mg/kg	%
ES0615835-001	H14	Reactive Phosphorus as P	0.100 mg/kg	0.209	0.269	25.0
ES0615835-010	H36	Reactive Phosphorus as P	0.100 mg/kg	<0.100	<0.100	0.0
EP004: Organic Matter						
EP004: Organic Matter - (QC Lot: 325694)				%	%	%
ES0615835-001	H14	Organic Matter	0.5 %	3.3	3.3	0.0
ES0615835-011	H37	Organic Matter	0.5 %	3.1	3.2	0.0
EP066: Polychlorinated Biphenyls (PCB)						
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 325749)				mg/kg	mg/kg	%
ES0615835-001	H14	Total Polychlorinated biphenyls	0.10 mg/kg	<0.10	<0.10	0.0
ES0615835-009	H35	Total Polychlorinated biphenyls	0.10 mg/kg	<0.10	<0.10	0.0
EP068A: Organochlorine Pesticides (OC)						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325748)				mg/kg	mg/kg	%
ES0615835-001	H14	alpha-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	<0.05	0.0
		beta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		gamma-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		delta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor	0.05 mg/kg	<0.05	<0.05	0.0
		Aldrin	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor epoxide	0.05 mg/kg	<0.05	<0.05	0.0
		trans-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		alpha-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		cis-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		Dieldrin	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDE	0.05 mg/kg	<0.05	<0.05	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325748) - continued				mg/kg	mg/kg	%
ES0615835-001	H14	Endrin	0.05 mg/kg	<0.05	<0.05	0.0
		beta-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDD	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin aldehyde	0.05 mg/kg	<0.05	<0.05	0.0
		Endosulfan sulfate	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDT	0.2 mg/kg	<0.2	<0.2	0.0
		Endrin ketone	0.05 mg/kg	<0.05	<0.05	0.0
		Methoxychlor	0.2 mg/kg	<0.2	<0.2	0.0
ES0615835-009	H35	alpha-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	<0.05	0.0
		beta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		gamma-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		delta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor	0.05 mg/kg	<0.05	<0.05	0.0
		Aldrin	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor epoxide	0.05 mg/kg	<0.05	<0.05	0.0
		trans-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		alpha-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		cis-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		Dieldrin	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDE	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin	0.05 mg/kg	<0.05	<0.05	0.0
		beta-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDD	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin aldehyde	0.05 mg/kg	<0.05	<0.05	0.0
		Endosulfan sulfate	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDT	0.2 mg/kg	<0.2	<0.2	0.0
		Endrin ketone	0.05 mg/kg	<0.05	<0.05	0.0
		Methoxychlor	0.2 mg/kg	<0.2	<0.2	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068B: Organophosphorus Pesticides (OP)						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 325748)				mg/kg	mg/kg	%
ES0615835-001	H14	Dichlorvos	0.05 mg/kg	<0.05	<0.05	0.0
		Demeton-S-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Monocrotophos	0.2 mg/kg	<0.2	<0.2	0.0
		Dimethoate	0.05 mg/kg	<0.05	<0.05	0.0
		Diazinon	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion-methyl	0.2 mg/kg	<0.2	<0.2	0.0
		Malathion	0.05 mg/kg	<0.05	<0.05	0.0
		Fenthion	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion	0.2 mg/kg	<0.2	<0.2	0.0
		Pirimphos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorfenvinphos	0.05 mg/kg	<0.05	<0.05	0.0
		Bromophos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Fenamiphos	0.05 mg/kg	<0.05	<0.05	0.0
		Prothiofos	0.05 mg/kg	<0.05	<0.05	0.0
		Ethion	0.05 mg/kg	<0.05	<0.05	0.0
		Carbophenothion	0.05 mg/kg	<0.05	<0.05	0.0
		Methyl Azinphos	0.05 mg/kg	<0.05	<0.05	0.0
ES0615835-009	H35	Dichlorvos	0.05 mg/kg	<0.05	<0.05	0.0
		Demeton-S-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Monocrotophos	0.2 mg/kg	<0.2	<0.2	0.0
		Dimethoate	0.05 mg/kg	<0.05	<0.05	0.0
		Diazinon	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion-methyl	0.2 mg/kg	<0.2	<0.2	0.0
		Malathion	0.05 mg/kg	<0.05	<0.05	0.0
		Fenthion	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos	0.05 mg/kg	<0.05	<0.05	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 325748) - continued				mg/kg	mg/kg	%
ES0615835-009	H35	Parathion	0.2 mg/kg	<0.2	<0.2	0.0
		Pirimphos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorfenvinphos	0.05 mg/kg	<0.05	<0.05	0.0
		Bromophos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Fenamiphos	0.05 mg/kg	<0.05	<0.05	0.0
		Prothiofos	0.05 mg/kg	<0.05	<0.05	0.0
		Ethion	0.05 mg/kg	<0.05	<0.05	0.0
		Carbophenothion	0.05 mg/kg	<0.05	<0.05	0.0
		Methyl Azinphos	0.05 mg/kg	<0.05	<0.05	0.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 325766)				mg/kg	mg/kg	%
ES0615835-001	H14	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
ES0615835-011	H37	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 325766) - continued				mg/kg	mg/kg	%
ES0615835-011	H37	Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325690)				mg/kg	mg/kg	%
ES0615835-001	H14	C6 - C9 Fraction	10 mg/kg	<10	<10	0.0
ES0615835-011	H37	C6 - C9 Fraction	10 mg/kg	<10	<10	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325765)				mg/kg	mg/kg	%
ES0615835-001	H14	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
ES0615835-011	H37	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
EP080: BTEX						
EP080: BTEX - (QC Lot: 325690)				mg/kg	mg/kg	%
ES0615835-001	H14	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EP080: BTEX - continued						
EP080: BTEX - (QC Lot: 325690) - continued				**mg/kg**	**mg/kg**	**%**
ES0615835-001	H14	Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
ES0615835-011	H37	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC type is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. Abbreviations: LOR = Limit of reporting.

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

		Method blank result	Actual Results		Recovery Limits	
			Spike concentration	Spike Recovery	Dynamic Recovery Limits	
Analyte name	LOR			LCS	Low	High
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 326690)		mg/kg	mg/kg	%	%	%
Aluminium	50 mg/kg	<50	----	----	----	----
Arsenic	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	13.1	91.5	86.6	123
Barium	10 mg/kg	<10	----	----	----	----
Beryllium	1 mg/kg	<1	----	----	----	----
Cadmium	1 mg/kg	<1	----	----	----	----
	1 mg/kg	----	2.76	95.4	79.9	120
Calcium	50 mg/kg	<50	----	----	----	----
Chromium	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	60.9	94.6	87.1	119
Cobalt	2 mg/kg	<2	----	----	----	----
Copper	5 mg/kg	----	54.7	99.3	85.2	117
	5 mg/kg	<5	----	----	----	----
Iron	50 mg/kg	<50	----	----	----	----
Lead	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	55.2	87.6	82.1	117
Magnesium	50 mg/kg	<50	----	----	----	----
Manganese	5 mg/kg	<5	----	----	----	----
Nickel	2 mg/kg	----	54.8	101	88	122
	2 mg/kg	<2	----	----	----	----
Strontium	2 mg/kg	<2	----	----	----	----
Vanadium	5 mg/kg	<5	----	----	----	----
Zinc	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	104	90.6	79	116
EG035T: Total Mercury by FIMS						

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EG035T: Total Mercury by FIMS - continued						
EG035T: Total Mercury by FIMS - (QC Lot: 326691)		mg/kg	mg/kg	%	%	%
Mercury	0.1 mg/kg	<0.1	----	----	----	----
	0.1 mg/kg	----	1.4	106	73.7	108
EK059G: NOX as N by Discrete Analyser						
EK059G: NOX as N by Discrete Analyser - (QC Lot: 325771)		mg/kg	mg/kg	%	%	%
Nitrite + Nitrate as N (Sol.)	0.1 mg/kg	----	4.8	97.4	70	130
	0.100 mg/kg	<0.100	----	----	----	----
EK061G: Total Kjeldahl Nitrogen as N						
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 326480)		mg/kg	mg/kg	%	%	%
Total Kjeldahl Nitrogen as N	20 mg/kg	<20	----	----	----	----
	20 mg/kg	----	1000	88.5	70	130
EK071G: Reactive Phosphorous as P by discrete analyser						
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326528)		mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	0.1 mg/kg	----	2.5	104	70	130
	0.100 mg/kg	<0.100	----	----	----	----
EP004: Organic Matter						
EP004: Organic Matter - (QC Lot: 325694)		%	%	%	%	%
Organic Matter	0.5 %	<0.5	----	----	----	----
	0.5 %	----	4.58	104	86	111
EP066: Polychlorinated Biphenyls (PCB)						
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 325749)		mg/kg	mg/kg	%	%	%
Total Polychlorinated biphenyls	0.10 mg/kg	<0.10	----	----	----	----
	0.1 mg/kg	----	0.5	91.7	57.4	117
EP068A: Organochlorine Pesticides (OC)						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325748)		mg/kg	mg/kg	%	%	%
4,4'-DDD	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	95.1	65.3	116
4,4'-DDE	0.05 mg/kg	----	0.25	100	67.5	114
	0.05 mg/kg	<0.05	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325748) - continued		mg/kg	mg/kg	%	%	%
4,4'-DDT	0.2 mg/kg	----	0.25	103	58.4	127
	0.2 mg/kg	<0.2	----	----	----	----
Aldrin	0.05 mg/kg	----	0.25	99.1	67	113
	0.05 mg/kg	<0.05	----	----	----	----
alpha-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	98.8	60.8	116
alpha-Endosulfan	0.05 mg/kg	----	0.25	98.4	65.8	116
	0.05 mg/kg	<0.05	----	----	----	----
beta-BHC	0.05 mg/kg	----	0.25	102	59.8	117
	0.05 mg/kg	<0.05	----	----	----	----
beta-Endosulfan	0.05 mg/kg	----	0.25	87.1	66.1	117
	0.05 mg/kg	<0.05	----	----	----	----
cis-Chlordane	0.05 mg/kg	----	0.25	99.2	57.3	120
	0.05 mg/kg	<0.05	----	----	----	----
delta-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	102	65.8	114
Dieldrin	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	99.0	67.4	116
Endosulfan sulfate	0.05 mg/kg	----	0.25	101	63.6	119
	0.05 mg/kg	<0.05	----	----	----	----
Endrin	0.05 mg/kg	----	0.25	90.5	63	121
	0.05 mg/kg	<0.05	----	----	----	----
Endrin aldehyde	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	86.9	57.3	115
Endrin ketone	0.05 mg/kg	----	0.25	107	63.6	117
	0.05 mg/kg	<0.05	----	----	----	----
gamma-BHC	0.05 mg/kg	----	0.25	101	59.8	118
	0.05 mg/kg	<0.05	----	----	----	----
Heptachlor	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	100	65.6	115

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325748) - continued		mg/kg	mg/kg	%	%	%
Heptachlor epoxide	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	101	65.6	113
Hexachlorobenzene (HCB)	0.05 mg/kg	----	0.25	90.6	59.4	115
	0.05 mg/kg	<0.05	----	----	----	----
Methoxychlor	0.2 mg/kg	----	0.25	117	50.4	132
	0.2 mg/kg	<0.2	----	----	----	----
trans-Chlordane	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	98.8	60.7	113
EP068B: Organophosphorus Pesticides (OP)						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 325748)		mg/kg	mg/kg	%	%	%
Methyl Azinphos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	81.4	29.8	137
Bromophos-ethyl	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	101	64.3	114
Carbophenothion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	103	59.5	119
Chlorfenvinphos	0.05 mg/kg	----	0.25	110	61.4	123
	0.05 mg/kg	<0.05	----	----	----	----
Chlorpyrifos	0.05 mg/kg	----	0.25	102	64.2	111
	0.05 mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	0.05 mg/kg	----	0.25	100	65.1	111
	0.05 mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	0.05 mg/kg	----	0.25	67.6	10.1	159
	0.05 mg/kg	<0.05	----	----	----	----
Diazinon	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	102	64.9	111
Dichlorvos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	75.8	25.5	124
Dimethoate	0.05 mg/kg	----	0.25	96.5	48.6	126
	0.05 mg/kg	<0.05	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 325748) - continued		mg/kg	mg/kg	%	%	%
Ethion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	103	62	116
Fenamiphos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	92.9	45.5	128
Fenthion	0.05 mg/kg	----	0.25	94.1	64.7	110
	0.05 mg/kg	<0.05	----	----	----	----
Malathion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	101	60.4	127
Monocrotophos	0.2 mg/kg	----	0.25	58.8	2.88	149
	0.2 mg/kg	<0.2	----	----	----	----
Parathion	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	83.7	60	116
Parathion-methyl	0.2 mg/kg	----	0.25	100	61.4	113
	0.2 mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	0.05 mg/kg	----	0.25	92.4	64.8	111
	0.05 mg/kg	<0.05	----	----	----	----
Prothiofos	0.05 mg/kg	----	0.25	104	65.4	111
	0.05 mg/kg	<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 325766)		mg/kg	mg/kg	%	%	%
Acenaphthene	0.5 mg/kg	----	4	89.9	81.5	112
	0.5 mg/kg	<0.5	----	----	----	----
Acenaphthylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	90.0	79.6	113
Anthracene	0.5 mg/kg	----	4	85.5	81.1	112
	0.5 mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	0.5 mg/kg	----	4	89.2	77.2	112
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	84.4	76.4	113

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 325766) - continued		mg/kg	mg/kg	%	%	%
Benzo(b)fluoranthene	0.5 mg/kg	----	4	89.3	71.8	118
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	98.7	72.4	114
Benzo(k)fluoranthene	0.5 mg/kg	----	4	86.1	74.2	117
	0.5 mg/kg	<0.5	----	----	----	----
Chrysene	0.5 mg/kg	----	4	87.1	79.8	114
	0.5 mg/kg	<0.5	----	----	----	----
Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	99.6	71.7	113
Fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	88.6	78.8	113
Fluorene	0.5 mg/kg	----	4	89.8	79.9	112
	0.5 mg/kg	<0.5	----	----	----	----
Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	95.6	71	113
Naphthalene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	90.3	81.9	113
Phenanthrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	88.5	79.4	114
Pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	88.0	78.9	113
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325690)		mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	10 mg/kg	<10	----	----	----	----
	10 mg/kg	----	26	95.5	68.4	128
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325765)		mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	50 mg/kg	<50	----	----	----	----
	50 mg/kg	----	200	107	75.2	116

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	*LOR*	*Method blank result*	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
				LCS	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons - continued						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325765) - continued		mg/kg	mg/kg	%	%	%
C15 - C28 Fraction	100 mg/kg	----	200	93.0	75.3	113
	100 mg/kg	<100	----	----	----	----
C29 - C36 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	109	72.6	117
EP080: BTEX						
EP080: BTEX - (QC Lot: 325690)		mg/kg	mg/kg	%	%	%
Benzene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	105	67.5	125
Ethylbenzene	0.5 mg/kg	----	1	114	65.3	126
	0.5 mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	2	114	66.5	124
ortho-Xylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	108	66.7	123
Toluene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	102	69	122

Quality Control Report - Matrix Spikes (MS)

The quality control term **Matrix Spike (MS)** refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EG005T: Total Metals by ICP-AES								
EG005T: Total Metals by ICP-AES - (QC Lot: 326690)				mg/kg	mg/kg	%	%	%
Arsenic	ES0615835-001	H14	5 mg/kg	50	12	99.4	70	130
Cadmium			1 mg/kg	50	<1	105	70	130
Chromium			2 mg/kg	50	18	103	70	130
Copper			5 mg/kg	250	18	112	70	130
Lead			5 mg/kg	250	23	98.1	70	130
Nickel			2 mg/kg	50	13	97.5	70	130
Zinc			5 mg/kg	250	62	98.7	70	130
EG035T: Total Mercury by FIMS								
EG035T: Total Mercury by FIMS - (QC Lot: 326691)				mg/kg	mg/kg	%	%	%
Mercury	ES0615835-001	H14	0.1 mg/kg	5	0.3	109	70	130
EK059G: NOX as N by Discrete Analyser								
EK059G: NOX as N by Discrete Analyser - (QC Lot: 325771)				mg/kg	mg/kg	%	%	%
Nitrite + Nitrate as N (Sol.)	ES0615835-001	H14	0.1 mg/kg	3.0	<0.100	84.2	70	130
EK061G: Total Kjeldahl Nitrogen as N								
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 326480)				mg/kg	mg/kg	%	%	%
Total Kjeldahl Nitrogen as N	ES0615835-001	H14	20 mg/kg	500	1340	71.6	70	130
EK071G: Reactive Phosphorous as P by discrete analyser								
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 326528)				mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	ES0615835-001	H14	0.1 mg/kg	2.5	0.209	110	70	130
EP066: Polychlorinated Biphenyls (PCB)								
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 325749)				mg/kg	mg/kg	%	%	%
Total Polychlorinated biphenyls	ES0615835-001	H14	0.1 mg/kg	0.5	<0.10	87.9	70	130
EP068A: Organochlorine Pesticides (OC)								

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration		MS	Low	High
EP068A: Organochlorine Pesticides (OC) - continued								
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 325748)				mg/kg	mg/kg	%	%	%
gamma-BHC	ES0615835-001	H14	0.05 mg/kg	0.25	<0.05	119	75.65	110.44
Heptachlor			0.05 mg/kg	0.25	<0.05	110	72.2	106.71
Aldrin			0.05 mg/kg	0.25	<0.05	70.0	77.54	107.0
Dieldrin			0.05 mg/kg	0.25	<0.05	83.4	76.37	109.7
Endrin			0.05 mg/kg	1	<0.05	106	68.51	119.47
4,4'-DDT			0.2 mg/kg	1	<0.2	99.2	67.12	118.10
EP068B: Organophosphorus Pesticides (OP)								
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 325748)				mg/kg	mg/kg	%	%	%
Diazinon	ES0615835-001	H14	0.05 mg/kg	0.25	<0.05	96.6	75.85	107.06
Chlorpyrifos-methyl			0.05 mg/kg	0.25	<0.05	105	74.84	107.91
Pirimphos-ethyl			0.05 mg/kg	0.25	<0.05	102	67.98	109.42
Bromophos-ethyl			0.05 mg/kg	0.25	<0.05	72.2	74.94	107.37
Prothiofos			0.05 mg/kg	0.25	<0.05	82.4	75.45	106.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 325766)				mg/kg	mg/kg	%	%	%
Acenaphthene	ES0615835-001	H14	0.5 mg/kg	10	<0.5	93.4	70	130
Pyrene			0.5 mg/kg	10	<0.5	95.9	70	130
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325690)				mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	ES0615835-001	H14	10 mg/kg	26	<10	95.2	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 325765)				mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	ES0615835-001	H14	50 mg/kg	700	<50	78.6	70	130
C15 - C28 Fraction			100 mg/kg	3400	<100	111	70	130
C29 - C36 Fraction			100 mg/kg	3600	<100	100	70	130
EP080: BTEX								
EP080: BTEX - (QC Lot: 325690)				mg/kg	mg/kg	%	%	%
Benzene	ES0615835-001	H14	0.2 mg/kg	2.5	<0.2	86.6	70	130
Toluene			0.5 mg/kg	2.5	<0.5	79.9	70	130

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EP080: BTEX - continued								
EP080: BTEX - (QC Lot: 325690) - continued				mg/kg	mg/kg	%	%	%
Ethylbenzene	ES0615835-001	H14	0.5 mg/kg	2.5	<0.5	89.2	70	130
meta- & para-Xylene			0.5 mg/kg	2.5	<0.5	86.0	70	130
ortho-Xylene			0.5 mg/kg	2.5	<0.5	84.9	70	130

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**URS AUSTRALIA (NSW) PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	:	**1 of 10**
Contact	:	MR CARSTEN MATTHAI	**Contact**	:	Greg Vogel			
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060	**Address**	:	Smithfield NSW Australia 2164	**Work order**	:	**ES0615835**
						Amendment No.	:	
Project	:	43217595	**Quote number**	:	----	**Date received**	:	15 Dec 2006
Order number	:	- Not provided -				**Date issued**	:	27 Dec 2006
C-O-C number	:	- Not provided -						
Site	:	- Not provided -						
E-mail	:	carsten_matthai@urscorp.com	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	02 8925 5500	**Telephone**	:	+61 (02) 8784 8555	**Received**	:	17
Facsimile	:	02 8925 5555	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	:	17

This Interpretive Quality Control Report was issued on 27 Dec 2006 for the ALS work order reference ES0615835 and supersedes any previous reports with this reference.
This report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Type Frequency Compliance
- Summary of all Quality Control Outliers
- Brief Method Summaries

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL ***Analysis Holding Time and Preservation***

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	----	----	----	**18 Dec 2006**	21 Dec 2006	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	**20 Dec 2006**	12 Jun 2007	Pass	**20 Dec 2006**	12 Jun 2007	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								
EG035T: Total Mercury by FIMS								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	**20 Dec 2006**	11 Jan 2007	Pass	**20 Dec 2006**	11 Jan 2007	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser								

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser **- continued**								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	**18 Dec 2006**	12 Jun 2007	Pass	**18 Dec 2006**	12 Jun 2007	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								
EK061G: TKN as N By Discrete Analyser								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	**20 Dec 2006**	12 Jun 2007	Pass	**20 Dec 2006**	12 Jun 2007	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	**19 Dec 2006**	12 Jun 2007	Pass	**20 Dec 2006**	12 Jun 2007	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								
EP004: Organic Matter								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	----	----	----	**18 Dec 2006**	21 Dec 2006	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								
EP066: Polychlorinated Biphenyls (PCB)								

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EP066: Polychlorinated Biphenyls (PCB) **- continued**								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	**18 Dec 2006**	28 Dec 2006	Pass	**20 Dec 2006**	27 Jan 2007	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								
EP068: Pesticides by GCMS								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	**18 Dec 2006**	28 Dec 2006	Pass	**20 Dec 2006**	27 Jan 2007	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								
EP071: TPH - Semivolatile Fraction								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	**18 Dec 2006**	28 Dec 2006	Pass	**20 Dec 2006**	27 Jan 2007	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								
EP075(SIM): PAH/Phenols (SIM)								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	**18 Dec 2006**	28 Dec 2006	Pass	**20 Dec 2006**	27 Jan 2007	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								
EP080: TPH Volatiles/BTEX								

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EP080: TPH Volatiles/BTEX **- continued**								
Soil Glass Jar - Unpreserved								
H14,	H15,	**14 Dec 2006**	**18 Dec 2006**	28 Dec 2006	Pass	**19 Dec 2006**	28 Dec 2006	Pass
H16,	H17,							
H18,	H19,							
H20,	H34,							
H35,	H36,							
H37,	H38,							
H39,	QC1,							
QC2,	QC3,							
QC4								

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: SOIL ***Frequency of Quality Control Samples***

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	**Actual**	**Expected**	
Laboratory Duplicates (DUP)					
EA055-103: Moisture Content	6	57	**10.5**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG005T: Total Metals by ICP-AES	2	20	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	2	20	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	2	17	**11.8**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	2	17	**11.8**	**9.5**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	2	20	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	2	20	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	2	19	**10.5**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	2	19	**10.5**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	2	17	**11.8**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	2	17	**11.8**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	17	**11.8**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EG005T: Total Metals by ICP-AES	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	1	17	**5.9**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	1	19	**5.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	19	**5.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EG005T: Total Metals by ICP-AES	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	1	17	**5.9**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	1	19	**5.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	19	**5.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Matrix Type: SOIL

Frequency of Quality Control Samples

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	**Actual**	**Expected**	
Matrix Spikes (MS)					
EG005T: Total Metals by ICP-AES	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	1	17	**5.9**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	1	19	**5.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	19	**5.3**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	17	**5.9**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Laboratory Duplicates (DUP)							
EG005T: Total Metals by ICP-AES	SOIL	ES0615835-001	H14	Calcium	20.2 %	0-20 %	RPD exceeds LOR based limits
Matrix Spikes (MS)							
EP068A: Organochlorine Pesticides (OC)	SOIL	ES0615835-001	H14	gamma-BHC	119 %	75.65-110.44 %	Recovery greater than upper data quality objective
				Heptachlor	110 %	72.2-106.71 %	Recovery greater than upper data quality objective
				Aldrin	70.0 %	77.54-107.0 %	Recovery less than lower data quality objective
EP068B: Organophosphorus Pesticides (OP)	SOIL	ES0615835-001	H14	Bromophos-ethyl	72.2 %	74.94-107.37 %	Recovery less than lower data quality objective

- **For all matrices, no method blank result outliers occur.**
- **For all matrices, no laboratory spike recoveries breaches occur.**

Surrogates

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Surrogates							
EP080S: TPH(V)/BTEX Surrogates	SOIL	ES0615835-004	H17	Toluene-D8	118 %	81-117 %	Recovery greater than upper data quality objective
				1,2-Dichloroethane-D4	ND	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
				Toluene-D8	ND	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
				4-Bromofluorobenzene	ND	----	Surrogate recovery not determined due to (target or non-target) matrix interferences
				1,2-Dichloroethane-D4	78.8 %	80-120 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

- **No holding time outliers occur.**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SEDIMENT ***Method Reference Summary***

Preparation Methods

EK061/EK067 : TKN/TP Digestion - APHA 20th ed., 4500 Norg- D; APHA 20th ed., 4500 P - H. Macro Kjeldahl digestion.

EN34 : 1:5 solid / water leach for soluble analytes - 10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

EN69 : Hot Block Digest for metals in soils sediments and sludges - USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)

ORG16 : Methanolic Extraction of Soils for Purge and Trap - (USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

ORG17A : Tumbler Extraction of Solids (Option A - Concentrating) - In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

ORG17B : Tumbler Extraction of Solids (Option B - Non-concentrating) - In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Analytical Methods

EA055-103 : Moisture Content - A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)

EG005T : Total Metals by ICP-AES - (APHA 20th ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)

EG035T : Total Mercury by FIMS - AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)

EK059G : Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser - APHA 20th ed., 4500 NO3- F. SEAL Method 2-018-1-L February 2003. Combined oxidised Nitrogen (NO2+NO3) in a water extract is determined by Cadmium Reduction, and direct colourimetry by SEAL.

EK061G : TKN as N By Discrete Analyser - APHA 20th ed., 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Seal Discrete Analyser.

EK071G : Reactive Phosphorus as P-Soluble By Discrete Analyser - APHA 20th ed., 4500 P-F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by SEAL. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2

EP004 : Organic Matter - AS1289.4.4.4 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (1999) Schedule B(3) (Method 105)

EP066 : Polychlorinated Biphenyls (PCB) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 504)

Matrix Type: SEDIMENT

Method Reference Summary

Analytical Methods

EP068 : Pesticides by GCMS - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 504,505)

EP071 : TPH - Semivolatile Fraction - (USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)

EP075(SIM) : PAH/Phenols (SIM) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)

EP080 : TPH Volatiles/BTEX - (USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

PSA-SOL : Particle Size Analysis (Solid) - Particle Size Analysis of solid matrices conducted by Subcontracting Laboratory

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: +61 (02) 8784 8555 Facsimile: +61 (02) 8784 8500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive report

Client Details

Client	:	**URS AUSTRALIA (NSW) PTY LTD**
Contact	:	**MR CARSTEN MATTHAI**
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060
Project	:	**43217595**
Order number	:	**- Not provided -**
C-O-C Number	:	**- Not provided -**
Site	:	**- Not provided -**
Sampler	:	**- Not provided -**
E-mail	:	carsten_matthai@urscorp.com
Telephone	:	02 8925 5500
Facsimile	:	02 8925 5555

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0615835**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	+61 (02) 8784 8555
Facsimile	:	+61 (02) 8784 8500

Dates

Date Samples Received	:	15 Dec 2006	**SRA Issue Date**	:	18 Dec 2006
Scheduled Reporting Date	:	**27 Dec 2006**	**Client Requested Date**	:	27 Dec 2006

Delivery Details

Mode of Delivery	:	Carrier.	**Temperature**		:	9.3' C - Ice present
No. of coolers/boxes	:	2 HARD	**No. of samples**	**- Received**		17
Security Seal	:	Intact.		**- Analysed**		17

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Particle Size Distribution analysis to be conducted by Golder Associates.**

- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.

Client	: URS AUSTRALIA (NSW) PTY LTD	**Work Order**	: ES0615835
Project	: 43217595	**ALS Quote Reference**	: ----

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		EA055-103 - SOIL Moisture Content	**EG005T (solids) - SOIL** Total Metals by ICP-AES	**EK059G (solids) - SOIL** Nitrite plus Nitrate as N (NOx) - soluble by Discrete Analys	**EK061G (Solids) - SOIL** Total Kjeldahl Nitrogen as N (TKN) By Discrete Analyser	**EK071G (solids) - SOIL** Reactive Phosphorus as P By Discrete Analyser	**EP004 (Carbon) - SOIL** Total Organic Carbon (Calc.)	**PSA-SOL - SOIL** Particle Size Analysis (Solid)	**S-03 - SOIL** 13 Metals (NEPM Suite - incl. Digestion)	**S-07 - SOIL** TPH/BTEX/PAH (SIM)	**S-13 - SOIL** OC/OP/PCB
ES0615835-001	**H14 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-002	**H15 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-003	**H16 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-004	**H17 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-005	**H18 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-006	**H19 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-007	**H20 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-008	**H34 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-009	**H35 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-010	**H36 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-011	**H37 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-012	**H38 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-013	**H39 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-014	**QC1 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-015	**QC2 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-016	**QC3 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
ES0615835-017	**QC4 - 14 Dec 2006**	]	]	]	]	]	]	]	]	]	]
	Total(s) :	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**17**

Client	: URS AUSTRALIA (NSW) PTY LTD	**Work Order**	: ES0615835
Project	: 43217595	**ALS Quote Reference**	: ----

Requested Reports

l	**ACCOUNTS PAYABLE**		
-	Invoice	Email	sydney_accounts@urscorp.com
l	**MR CARSTEN MATTHAI**		
-	A4 - Quality Control Report - NEPM format	Email	carsten_matthai@urscorp.com
-	Subcontracted Reports	Email	carsten_matthai@urscorp.com
-	A4 - Certificate of Analysis - NEPM format	Email	carsten_matthai@urscorp.com
-	A4 - Interpretive Quality Control Report - NEPM format	Email	carsten_matthai@urscorp.com
-	MRED Export Format	Email	carsten_matthai@urscorp.com
-	A4 - Sample Receipt Notification - Comprehensive format	Email	carsten_matthai@urscorp.com
-	Chain of Custody Acknowledgement	Email	carsten_matthai@urscorp.com

Sample Container(s) / Preservation Non-Compliance Log

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

l **No sample container / preservation non-compliance exist.**

CHAIN OF CUSTODY FORM

Sheet 1 of 1

THIS COLUMN FOR LAB USE ONLY

Job Code:

Due Date:

FROM:
URS (AUSTRALIA)
ACN 000 691 690
North Sydney
Level 3 116 Miller Street

Ph: 8925 5500

DATE:

Fax: 8925 5555

TO:
ALS Smithfield
277 Woodpark Rd
Smithfield 2164

Project No: 43217595
Project Manager: Carsten Matthai
Agreement No: SY-215-06 URS V3

Sampler(s): Carsten Matthai
Signature(s): [signature]
Checked:

Custody seal intact? (YES) NO
Sample cold? (YES) NO 9.3°C

Released for URS by: Carsten Matthai
Date: 15-12-06 Time: 10:00am

Received for Laboratory by: VESSIE
Date: 15-12-06 Time: 3:40pm

Container Size, Type, Preservative and Analysis

Container Identification

Lab identification	Date	Time	Matrix	Sample Number	Estimated Level of Contamination	Total no	Analytes per SY-215-06 URS V3 (Metals - As, Ba, Be, Cd, Cr, Co, Cu, Mn, Ni, Pb, V, Zn, Al, Fe, Sr, Ca, Mg; TPH (C6-C36)/BTEX, PAHs, OC/OP/PCB, TKN, TOC, NOx)	Grain Size (4 fractions: <0.063 mm; 0.063 to 0.25 mm; 0.25 mm to 2 mm)	Hold
Size mL							250	500 g	
Type*							Glass	Plastic Bag	
Preservative Code									
Analytes							Tick required analytes		
	14-12-06		Sediment	H14 (1)	Low	2 jars	✓	✓	
				H15 (2)			✓	✓	
				H16 (3)			✓	✓	
				H17 (4)			✓	✓	
				H18 (5)			✓	✓	
				H19 (6)			✓	✓	
				H20 (7)			✓	✓	
				H34 (8)			✓	✓	
				H35 (9)			✓	✓	
				H36 (10)			✓	✓	
				H37 (11)			✓	✓	
				H38 (12)			✓	✓	
				H39 (13)			✓	✓	
				QC1 (14)			✓	✓	
				QC2 (15)			✓	✓	
				QC3 (16)			✓	✓	
				QC4 (17)			✓	✓	
					TOTAL	34 jars	17	17	

ALS Environmental
Sydney
Work Order
ES0615835
Telephone : +61 (02) 8784 8555

Urgent!!

please send 2 new eskies!!

Urgent!!

Remarks:
No historical data available. Please send results to Dr Carsten Matthai (Email: carsten_matthai@urscorp.com).

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric

Courier Job No:

Send results to Carsten_Matthai@urscorp.com

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

Note: 2 identical labelled jars plus one plastic bag per sample ID

CHAIN OF CUSTODY FORM

Sheet 1 of 1

THIS COLUMN FOR LAB USE ONLY

Job Code:

Due Date:

FROM:
URS (AUSTRALIA)
ACN 000 691 690
North Sydney
Level 3 116 Miller Street

Ph: 8925 5500

DATE:

Fax: 8925 5555

TO:
ALS Smithfield
277 Woodpark Rd
Smithfield 2164

Project No: 43217595
Project Manager: Carsten Matthai
Agreement No: SY-215-06 URS V3

Sampler(s): Carsten Matthai
Signature(s):
Checked:

Custody seal intact? (YES) NO
Sample cold? (YES) NO 9.3°C

Released for URS by: Carsten Matthai
Date: 15-12-06 Time: 10:00am

Received for Laboratory by: VESSIE
Date: 15-12-06 Time: 3:40pm

Container Size, Type, Preservative and Analysis

Container Identification

Lab identification	Date	Time	Matrix	Sample Number		Estimated Level of Contamination	Total no	Analytes per SY-215-06 URS V3 (Metals - As, Ba, Be, Cd, Cr, Co, Cu, Mn, Ni, Pb, V, Zn, Al, Fe, Sr, Ca, Mg; TPH (C6-C36)/BTEX, PAHs, OC/OP/PCB, TKN, TOC, NOx)	Grain Size (4 fractions: <0.063 mm; 0.063 to 0.25 mm; 0.25 mm to 2 mm; >2 mm)	Reactive P	as per client email 18/12	Hold
Size mL								250	500 g			
Type*								Glass	Plastic Bag			
Preservative Code												
	14-12-06		Sediment	H14	1	Low	2 jars	✓	✓	✓		
				H15	2			✓	✓	✓		
				H16	3			✓	✓	✓		
				H17	4			✓	✓	✓		
				H18	5			✓	✓	✓		
				H19	6			✓	✓	✓		
				H20	7			✓	✓	✓		
				H34	8			✓	✓	✓		
				H35	9			✓	✓	✓		
				H36	10			✓	✓	✓		
				H37	11			✓	✓	✓		
				H38	12			✓	✓	✓		
				H39	13			✓	✓	✓		
				QC1	14			✓	✓	✓		
				QC2	15			✓	✓	✓		
				QC3	16			✓	✓	✓		
				QC4	17			✓	✓	✓		
							TOTAL 34 jars	17	17			

Tick required analytes

CONTRACT WORK
WO: ES0615835
LAB: GOLDER - Particle Size
DATE: 15-12-06
SPLIT:

Urgent!

please send 2 new eskies!

Urgent!

ALS Environmental
Sydney
Work Order
ES0615835
Telephone : +61 (02) 8784 8555

615586
cm339

Remarks:
No historical data available. Please send results to Dr Carsten Matthai (Email: carsten_matthai@urscorp.com).

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric

Courier Job No:

Send results to Carsten_Matthai@urscorp.com

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

Note: 2 identical labelled jars plus one plastic bag per sample ID

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	: **URS AUSTRALIA (NSW) PTY LTD**	*Laboratory*	: **ALS Environmental Sydney**	*Page*	: **1 of 15**
Contact	: **MR CARSTEN MATTHAI**	*Contact*	: **Greg Vogel**	*Work Order*	: **ES0616125**
Address	: **LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060**	*Address*	: **277-289 Woodpark Road Smithfield NSW Australia 2164**		
E-mail	: **carsten_matthai@urscorp.com**	*E-mail*	: **Greg.Vogel@alsenviro.com**		
Telephone	: **02 8925 5500**	*Telephone*	: **+61 (02) 8784 8555**		
Facsimile	: **02 8925 5555**	*Facsimile*	: **+61 (02) 8784 8500**		
Project	: **34217595**	*Quote number*	: **----**	*Date received*	: **22 Dec 2006**
Order number	: **- Not provided -**			*Date issued*	: **5 Jan 2007**
C-O-C number	: **- Not provided -**			*No. of samples*	- *Received* : **15**
Site	: **- Not provided -**				*Analysed* : **15**

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory 825

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Accredited for compliance with ISO/IEC 17025.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	*Position*	*Department*
EDWANDY FADJAR	**Senior Organic Chemist**	**Organics - NATA 825 (10911 - Sydney)**
Greg Vogel	**Laboratory Manager**	**Inorganics - NATA 825 (10911 - Sydney)**
Rassem Ayoubi	**Senior Organic Chemist**	**Organics - NATA 825 (10911 - Sydney)**

Comments

This report for the ALSE reference ES0616125 supersedes any previous reports with this reference. Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- **Analytical Results for Samples Submitted**
- **Surrogate Recovery Data**

The analytical procedures used by ALS Environmental have been developed from established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported herein. Reference methods from which ALSE methods are based are provided in parenthesis.

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits). Where LOR of reported result differ from standard LOR, this may be due to high moisture, reduced sample amount or matrix interference. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number, LOR = Limit of Reporting. * Indicates failed Surrogate Recoveries.

Specific comments for Work Order **ES0616125**

EPO66: Positive results for EPO66 contain suspected Archlor 1254.
EPO68: Poor matrix spike recovery due to matrix affect. Confirmed by re-extraction and re-analysis.

ALS Environmental

Analytical Results

			Client Sample ID :	H21	H22	H23	H24	H25
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0616125-001	ES0616125-002	ES0616125-003	ES0616125-004	ES0616125-005
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	66.8	45.3	74.7	75.6	47.4
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	19500	6960	17300	16800	5500
Arsenic	7440-38-2	5	mg/kg	15	10	18	16	9
Barium	7440-39-3	10	mg/kg	60	10	40	40	20
Beryllium	7440-41-7	1	mg/kg	<1	<1	<1	<1	<1
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	38	22	29	26	12
Cobalt	7440-48-4	2	mg/kg	5	2	8	10	2
Copper	7440-50-8	5	mg/kg	684	68	54	42	84
Iron	7439-89-6	50	mg/kg	29600	16700	28300	28200	11400
Lead	7439-92-1	5	mg/kg	179	94	84	53	32
Manganese	7439-96-5	5	mg/kg	68	88	425	513	118
Nickel	7440-02-0	2	mg/kg	17	7	14	15	5
Strontium	7440-24-6	2	mg/kg	81	51	87	105	63
Vanadium	7440-62-2	5	mg/kg	59	25	66	72	22
Zinc	7440-66-6	5	mg/kg	412	130	151	128	86
Calcium	7440-70-2	50	mg/kg	6690	4800	8980	11900	9230
Magnesium	7439-95-4	50	mg/kg	7560	4320	8120	8830	3560
EK059G: NOX as N by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg	<0.100	<0.100	<0.100	<0.125	<0.100
EK061G: Total Kjeldahl Nitrogen as N								
Total Kjeldahl Nitrogen as N		20	mg/kg	9290	2410	6880	7220	2520
EK071G: Reactive Phosphorous as P by discrete analyser								
Reactive Phosphorus as P		0.100	mg/kg	<0.100	<0.100	0.533	1.47	<0.100
EP004: Organic Matter								
Total Organic Carbon		0.5	%	7.6	4.2	4.6	4.8	3.0
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		0.10	mg/kg	0.17	<0.10	<0.10	<0.12	<0.10
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05

ALS Environmental

Analytical Results

			Client Sample ID :	H21	H22	H23	H24	H25
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0616125-001	ES0616125-002	ES0616125-003	ES0616125-004	ES0616125-005
EP068A: Organochlorine Pesticides (OC)								
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.06	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

ALS Environmental

Analytical Results

			Client Sample ID :	H21	H22	H23	H24	H25
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :	ES0616125-001	ES0616125-002	ES0616125-003	ES0616125-004	ES0616125-005
Analyte	CAS number	LOR	Units					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	0.6	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	11	16	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<60	<50
C15 - C28 Fraction		100	mg/kg	310	<100	<100	<120	<100
C29 - C36 Fraction		100	mg/kg	480	<100	<100	<120	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	1.0	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	83.0	83.8	89.2	80.2	76.6
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	78.2	91.2	102	90.7	86.2
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	83.7	96.0	106	93.8	89.2
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	105	112	98.3	95.3	96.9
2-Chlorophenol-D4	93951-73-6	0.1	%	109	112	99.9	97.7	98.3
2.4.6-Tribromophenol	118-79-6	0.1	%	104	80.8	53.3	56.4	64.6

ALS Environmental

Analytical Results

			Client Sample ID :	H21	H22	H23	H24	H25
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*	ES0616125-001	ES0616125-002	ES0616125-003	ES0616125-004	ES0616125-005
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	100	102	92.1	92.4	93.6
Anthracene-d10	1719-06-8	0.1	%	104	105	97.5	96.0	96.4
4-Terphenyl-d14	1718-51-0	0.1	%	100	104	96.9	93.0	92.3
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	114	81.2	92.2	81.4	81.0
Toluene-D8	2037-26-5	0.1	%	108	91.7	94.1	91.8	93.9
4-Bromofluorobenzene	460-00-4	0.1	%	105	84.7	74.1	89.6	86.7

ALS Environmental

Analytical Results

				Client Sample ID :	H26	H27	H28	H29	H30
				Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
				Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
				Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*		ES0616125-006	ES0616125-007	ES0616125-008	ES0616125-009	ES0616125-010
EA055: Moisture Content									
Moisture Content (dried @ 103°C)		1.0	%		72.9	65.8	64.2	64.7	69.1
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		19700	16100	13700	16400	18900
Arsenic	7440-38-2	5	mg/kg		20	15	18	28	17
Barium	7440-39-3	10	mg/kg		40	30	30	40	40
Beryllium	7440-41-7	1	mg/kg		1	1	1	1	2
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		35	27	24	28	31
Cobalt	7440-48-4	2	mg/kg		10	11	9	11	11
Copper	7440-50-8	5	mg/kg		159	41	75	28	37
Iron	7439-89-6	50	mg/kg		34700	30100	27400	34500	35700
Lead	7439-92-1	5	mg/kg		75	43	57	35	44
Manganese	7439-96-5	5	mg/kg		663	852	548	875	647
Nickel	7440-02-0	2	mg/kg		16	16	17	18	18
Strontium	7440-24-6	2	mg/kg		147	114	74	87	86
Vanadium	7440-62-2	5	mg/kg		74	58	52	64	68
Zinc	7440-66-6	5	mg/kg		196	115	119	98	121
Calcium	7440-70-2	50	mg/kg		20700	15200	7470	7850	7810
Magnesium	7439-95-4	50	mg/kg		9820	7460	6680	7370	8360
EK059G: NOX as N by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg		<0.100	<0.100	<0.100	<0.100	<0.100
EK061G: Total Kjeldahl Nitrogen as N									
Total Kjeldahl Nitrogen as N		20	mg/kg		9980	4870	2980	4620	4040
EK071G: Reactive Phosphorous as P by discrete analyser									
Reactive Phosphorus as P		0.100	mg/kg		0.203	0.483	0.600	0.298	0.534
EP004: Organic Matter									
Total Organic Carbon		0.5	%		6.6	2.8	4.3	3.3	3.9
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls		0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H26	H27	H28	H29	H30
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0616125-006	ES0616125-007	ES0616125-008	ES0616125-009	ES0616125-010
EP068A: Organochlorine Pesticides (OC)								
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

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Analytical Results

			Client Sample ID :	H26	H27	H28	H29	H30
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :	ES0616125-006	ES0616125-007	ES0616125-008	ES0616125-009	ES0616125-010
Analyte	CAS number	LOR	Units					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	11	<10	<10	<10	<10
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	0.6	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	77.5	79.4	79.8	93.7	85.4
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	88.6	86.2	89.9	98.5	92.4
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	91.7	88.3	92.8	100	94.5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	100	91.1	102	98.0	89.3
2-Chlorophenol-D4	93951-73-6	0.1	%	101	97.8	108	102	95.4
2.4.6-Tribromophenol	118-79-6	0.1	%	77.5	60.8	77.1	64.4	62.9

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Analytical Results

			Client Sample ID :	H26	H27	H28	H29	H30
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*	ES0616125-006	ES0616125-007	ES0616125-008	ES0616125-009	ES0616125-010
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	95.7	94.2	104	99.0	92.8
Anthracene-d10	1719-06-8	0.1	%	97.3	95.8	107	101	94.0
4-Terphenyl-d14	1718-51-0	0.1	%	94.0	96.2	107	98.5	92.6
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	97.5	98.9	110	82.2	101
Toluene-D8	2037-26-5	0.1	%	102	102	96.5	96.8	103
4-Bromofluorobenzene	460-00-4	0.1	%	80.0	80.8	74.0	89.7	79.9

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Analytical Results

				Client Sample ID :	H31	H32	H33	QC5	QC6
				Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
				Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
				Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*		ES0616125-011	ES0616125-012	ES0616125-013	ES0616125-014	ES0616125-015
EA055: Moisture Content									
Moisture Content (dried @ 103°C)		1.0	%		59.9	54.2	43.5	65.9	72.3
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		16400	11800	7980	15200	16700
Arsenic	7440-38-2	5	mg/kg		24	19	16	15	19
Barium	7440-39-3	10	mg/kg		40	30	20	30	30
Beryllium	7440-41-7	1	mg/kg		1	1	<1	1	1
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		28	22	17	26	29
Cobalt	7440-48-4	2	mg/kg		11	9	8	11	8
Copper	7440-50-8	5	mg/kg		25	19	15	41	74
Iron	7439-89-6	50	mg/kg		33800	26400	22900	29300	31900
Lead	7439-92-1	5	mg/kg		33	27	26	42	69
Manganese	7439-96-5	5	mg/kg		522	315	223	875	638
Nickel	7440-02-0	2	mg/kg		18	14	11	16	15
Strontium	7440-24-6	2	mg/kg		71	88	32	121	137
Vanadium	7440-62-2	5	mg/kg		64	48	36	57	67
Zinc	7440-66-6	5	mg/kg		90	72	76	110	134
Calcium	7440-70-2	50	mg/kg		5840	8590	2370	15300	19100
Magnesium	7439-95-4	50	mg/kg		6720	5500	4240	7470	9570
EK059G: NOX as N by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)		0.100	mg/kg		<0.100	<0.100	<0.100	<0.100	<0.100
EK061G: Total Kjeldahl Nitrogen as N									
Total Kjeldahl Nitrogen as N		20	mg/kg		4170	2280	1460	4400	6850
EK071G: Reactive Phosphorous as P by discrete analyser									
Reactive Phosphorus as P		0.100	mg/kg		0.262	<0.100	<0.100	0.455	0.198
EP004: Organic Matter									
Total Organic Carbon		0.5	%		3.2	3.0	1.8	3.0	6.5
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls		0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

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Analytical Results

			Client Sample ID :	H31	H32	H33	QC5	QC6
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	CAS number	LOR	Units	ES0616125-011	ES0616125-012	ES0616125-013	ES0616125-014	ES0616125-015
EP068A: Organochlorine Pesticides (OC)								
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

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Analytical Results

			Client Sample ID :	H31	H32	H33	QC5	QC6
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :	ES0616125-011	ES0616125-012	ES0616125-013	ES0616125-014	ES0616125-015
Analyte	CAS number	LOR	Units					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	<10	11
C10 - C14 Fraction		50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction		100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	0.5	0.7
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	82.8	71.8	81.9	77.1	76.2
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	94.5	82.5	90.5	91.5	89.1
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	97.5	83.9	92.5	94.5	92.8
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	89.3	90.7	91.1	89.6	89.3
2-Chlorophenol-D4	93951-73-6	0.1	%	94.0	95.6	96.0	95.6	94.7
2.4.6-Tribromophenol	118-79-6	0.1	%	60.9	69.0	73.5	70.9	62.4

ALS Environmental

Analytical Results

			Client Sample ID :	H31	H32	H33	QC5	QC6
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*	ES0616125-011	ES0616125-012	ES0616125-013	ES0616125-014	ES0616125-015
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	93.1	94.5	93.6	93.6	92.8
Anthracene-d10	1719-06-8	0.1	%	92.6	95.4	94.4	94.7	93.8
4-Terphenyl-d14	1718-51-0	0.1	%	94.6	94.1	94.7	94.4	92.4
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	80.4	79.6	92.7	89.2	97.8
Toluene-D8	2037-26-5	0.1	%	97.1	88.8	108	82.3	103
4-Bromofluorobenzene	460-00-4	0.1	%	90.8	82.8	99.2	74.2	96.8

ALS Environmental

Surrogate Control Limits

Matrix Type: SOIL - Surrogate Control Limits ***Surrogate Control Limits***

Method name	*Analyte name*	*Lower Limit*	*Upper Limit*
EP066: Polychlorinated Biphenyls (PCB)			
EP066S: PCB Surrogate	Decachlorobiphenyl	10	164
EP068: Pesticides by GCMS			
EP068S: Organochlorine Pesticide Surrogate	Dibromo-DDE	10	136
EP068T: Organophosphorus Pesticide Surrogate	DEF	10	136
EP075(SIM): PAH/Phenols (SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	24	113
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	19	122
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	30	115
	Anthracene-d10	27	133
	4-Terphenyl-d14	18	137
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	81	117
	4-Bromofluorobenzene	74	121

ALS Environmental

QUALITY CONTROL REPORT

Client	:	**URS AUSTRALIA (NSW) PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 19**
Contact	:	MR CARSTEN MATTHAI	**Contact**	:	Greg Vogel		
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0616125**
						Amendment No.	:
Project	:	34217595	**Quote number**	:	----	**Date received**	: 22 Dec 2006
Order number	:	- Not provided -				**Date issued**	: 5 Jan 2007
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	carsten_matthai@urscorp.com	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	02 8925 5500	**Telephone**	:	+61 (02) 8784 8555	**Received**	: 15
Facsimile	:	02 8925 5555	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	: 15

This final report for the ALSE work order reference ES0616125 supersedes any previous reports with this reference.

Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

Work order specific comments

EPO66: Positive results for EPO66 contain suspected Archlor 1254.

EPO68: Poor matrix spike recovery due to matrix affect. Confirmed by re-extraction and re-analysis.

ALSE - Excellence in Analytical Testing

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Accredited for compliance with ISO/IED 17025

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
EDWANDY FADJAR	Organics - NATA 825 (10911 - Sydney)
Greg Vogel	Inorganics - NATA 825 (10911 - Sydney)
Rassem Ayoubi	Organics - NATA 825 (10911 - Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** = *Limit of Reporting,* ***RPD*** = *Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting:- Result < 10 times LOR, no limit - Result between 10 and 20 times LOR, 0% - 50% - Result > 20 times LOR, 0% - 20%

Matrix Type: SOIL ***Laboratory Duplicates (DUP) Report***

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EA055: Moisture Content						
EA055: Moisture Content - (QC Lot: 329795)				%	%	%
ES0616109-003	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	13.7	13.2	3.8
ES0616125-003	H23	Moisture Content (dried @ 103°C)	1.0 %	74.7	74.9	0.2
EA055: Moisture Content - (QC Lot: 329796)				%	%	%
ES0616125-014	QC5	Moisture Content (dried @ 103°C)	1.0 %	65.9	65.0	1.4
ES0616168-003	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	20.4	19.5	4.6
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 330442)				mg/kg	mg/kg	%
ES0616125-001	H21	Aluminium	50 mg/kg	19500	19600	0.4
		Arsenic	5 mg/kg	15	15	0.0
		Barium	10 mg/kg	60	50	0.0
		Beryllium	1 mg/kg	<1	<1	0.0
		Cadmium	1 mg/kg	<1	1	0.0
		Chromium	2 mg/kg	38	38	0.0
		Cobalt	2 mg/kg	5	5	0.0
		Copper	5 mg/kg	684	649	5.2
		Iron	50 mg/kg	29600	30000	1.3
		Lead	5 mg/kg	179	180	0.0
		Manganese	5 mg/kg	68	73	7.1
		Nickel	2 mg/kg	17	18	0.0
		Strontium	2 mg/kg	81	86	5.6
		Vanadium	5 mg/kg	59	59	0.0
		Zinc	5 mg/kg	412	415	0.8
		Calcium	50 mg/kg	6690	6790	1.5
		Magnesium	50 mg/kg	7560	7650	1.2
ES0616125-011	H31	Aluminium	50 mg/kg	16400	15800	3.7

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EG005T: Total Metals by ICP-AES - continued						
EG005T: Total Metals by ICP-AES - (QC Lot: 330442) - continued				mg/kg	mg/kg	%
ES0616125-011	H31	Arsenic	5 mg/kg	24	23	7.2
		Barium	10 mg/kg	40	40	0.0
		Beryllium	1 mg/kg	1	1	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	28	27	0.0
		Cobalt	2 mg/kg	11	10	0.0
		Copper	5 mg/kg	25	24	0.0
		Iron	50 mg/kg	33800	32000	5.7
		Lead	5 mg/kg	33	32	3.6
		Manganese	5 mg/kg	522	506	3.1
		Nickel	2 mg/kg	18	17	0.0
		Strontium	2 mg/kg	71	68	3.9
		Vanadium	5 mg/kg	64	61	3.9
		Zinc	5 mg/kg	90	86	4.2
		Calcium	50 mg/kg	5840	5490	6.2
		Magnesium	50 mg/kg	6720	6510	3.1
EK059G: NOX as N by Discrete Analyser						
EK059G: NOX as N by Discrete Analyser - (QC Lot: 331537)				mg/kg	mg/kg	%
ES0616125-001	H21	Nitrite + Nitrate as N (Sol.)	0.100 mg/kg	<0.100	<0.100	0.0
ES0616125-010	H30	Nitrite + Nitrate as N (Sol.)	0.100 mg/kg	<0.100	<0.100	0.0
EK061G: Total Kjeldahl Nitrogen as N						
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 330137)				mg/kg	mg/kg	%
ES0616125-001	H21	Total Kjeldahl Nitrogen as N	20 mg/kg	9290	9070	2.4
ES0616125-010	H30	Total Kjeldahl Nitrogen as N	20 mg/kg	4040	3480	15.1
EK071G: Reactive Phosphorous as P by discrete analyser						
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 331538)				mg/kg	mg/kg	%
ES0616125-001	H21	Reactive Phosphorus as P	0.100 mg/kg	<0.100	0.150	40.3
ES0616125-010	H30	Reactive Phosphorus as P	0.100 mg/kg	0.534	0.534	0.0
EP004: Organic Matter						

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP004: Organic Matter - continued						
EP004: Organic Matter - (QC Lot: 329519)				%	%	%
ES0616125-001	H21	Total Organic Carbon	0.5 %	7.6	7.6	0.0
ES0616125-011	H31	Total Organic Carbon	0.5 %	3.2	3.2	0.0
EP066: Polychlorinated Biphenyls (PCB)						
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 329362)				mg/kg	mg/kg	%
ES0616125-001	H21	Total Polychlorinated biphenyls	0.10 mg/kg	0.17	0.25	34.3
ES0616125-011	H31	Total Polychlorinated biphenyls	0.10 mg/kg	<0.10	<0.10	0.0
EP068A: Organochlorine Pesticides (OC)						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361)				mg/kg	mg/kg	%
ES0616125-001	H21	alpha-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	<0.05	0.0
		beta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		gamma-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		delta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor	0.05 mg/kg	<0.05	<0.05	0.0
		Aldrin	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor epoxide	0.05 mg/kg	<0.05	<0.05	0.0
		trans-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		alpha-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		cis-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		Dieldrin	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDE	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin	0.05 mg/kg	<0.05	<0.05	0.0
		beta-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDD	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin aldehyde	0.05 mg/kg	<0.05	<0.05	0.0
		Endosulfan sulfate	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDT	0.2 mg/kg	<0.2	<0.2	0.0
		Endrin ketone	0.05 mg/kg	<0.05	<0.05	0.0
		Methoxychlor	0.2 mg/kg	<0.2	<0.2	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361) - continued				mg/kg	mg/kg	%
ES0616125-011	H31	alpha-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	<0.05	0.0
		beta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		gamma-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		delta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor	0.05 mg/kg	<0.05	<0.05	0.0
		Aldrin	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor epoxide	0.05 mg/kg	<0.05	<0.05	0.0
		trans-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		alpha-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		cis-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		Dieldrin	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDE	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin	0.05 mg/kg	<0.05	<0.05	0.0
		beta-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDD	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin aldehyde	0.05 mg/kg	<0.05	<0.05	0.0
		Endosulfan sulfate	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDT	0.2 mg/kg	<0.2	<0.2	0.0
		Endrin ketone	0.05 mg/kg	<0.05	<0.05	0.0
		Methoxychlor	0.2 mg/kg	<0.2	<0.2	0.0
EP068B: Organophosphorus Pesticides (OP)						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361)				mg/kg	mg/kg	%
ES0616125-001	H21	Dichlorvos	0.05 mg/kg	<0.05	<0.05	0.0
		Demeton-S-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Monocrotophos	0.2 mg/kg	<0.2	<0.2	0.0
		Dimethoate	0.05 mg/kg	<0.05	<0.05	0.0
		Diazinon	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos-methyl	0.05 mg/kg	<0.05	<0.05	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361) - continued				mg/kg	mg/kg	%
ES0616125-001	H21	Parathion-methyl	0.2 mg/kg	<0.2	<0.2	0.0
		Malathion	0.05 mg/kg	<0.05	<0.05	0.0
		Fenthion	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion	0.2 mg/kg	<0.2	<0.2	0.0
		Pirimphos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorfenvinphos	0.05 mg/kg	<0.05	<0.05	0.0
		Bromophos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Fenamiphos	0.05 mg/kg	<0.05	<0.05	0.0
		Prothiofos	0.05 mg/kg	<0.05	<0.05	0.0
		Ethion	0.05 mg/kg	<0.05	<0.05	0.0
		Carbophenothion	0.05 mg/kg	<0.05	<0.05	0.0
		Methyl Azinphos	0.05 mg/kg	<0.05	<0.05	0.0
ES0616125-011	H31	Dichlorvos	0.05 mg/kg	<0.05	<0.05	0.0
		Demeton-S-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Monocrotophos	0.2 mg/kg	<0.2	<0.2	0.0
		Dimethoate	0.05 mg/kg	<0.05	<0.05	0.0
		Diazinon	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion-methyl	0.2 mg/kg	<0.2	<0.2	0.0
		Malathion	0.05 mg/kg	<0.05	<0.05	0.0
		Fenthion	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion	0.2 mg/kg	<0.2	<0.2	0.0
		Pirimphos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorfenvinphos	0.05 mg/kg	<0.05	<0.05	0.0
		Bromophos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Fenamiphos	0.05 mg/kg	<0.05	<0.05	0.0
		Prothiofos	0.05 mg/kg	<0.05	<0.05	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361) - continued				mg/kg	mg/kg	%
ES0616125-011	H31	Ethion	0.05 mg/kg	<0.05	<0.05	0.0
		Carbophenothion	0.05 mg/kg	<0.05	<0.05	0.0
		Methyl Azinphos	0.05 mg/kg	<0.05	<0.05	0.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 329364)				mg/kg	mg/kg	%
ES0616125-002	H22	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
ES0616125-011	H31	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 329364) - continued				mg/kg	mg/kg	%
ES0616125-011	H31	Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329238)				mg/kg	mg/kg	%
ES0616125-001	H21	C6 - C9 Fraction	10 mg/kg	<10	<10	0.0
ES0616125-011	H31	C6 - C9 Fraction	10 mg/kg	<10	<10	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329363)				mg/kg	mg/kg	%
ES0616125-002	H22	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
ES0616125-011	H31	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
EP080: BTEX						
EP080: BTEX - (QC Lot: 329238)				mg/kg	mg/kg	%
ES0616125-001	H21	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
ES0616125-011	H31	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EP080: BTEX - continued						
EP080: BTEX - (QC Lot: 329238) - continued				**mg/kg**	**mg/kg**	**%**
ES0616125-011	H31	meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC type is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. Abbreviations: LOR = Limit of reporting.

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

		Method blank result	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
Analyte name	*LOR*			*LCS*	*Low*	*High*
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 330442)		mg/kg	mg/kg	%	%	%
Aluminium	50 mg/kg	<50	----	----	----	----
Arsenic	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	13.1	101	86.6	123
Barium	10 mg/kg	<10	----	----	----	----
Beryllium	1 mg/kg	<1	----	----	----	----
Cadmium	1 mg/kg	<1	----	----	----	----
	1 mg/kg	----	2.76	99.4	79.9	120
Calcium	50 mg/kg	<50	----	----	----	----
Chromium	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	60.9	96.4	87.1	119
Cobalt	2 mg/kg	<2	----	----	----	----
Copper	5 mg/kg	----	54.7	100	85.2	117
	5 mg/kg	<5	----	----	----	----
Iron	50 mg/kg	<50	----	----	----	----
Lead	5 mg/kg	----	55.2	93.5	82.1	117
	5 mg/kg	<5	----	----	----	----
Magnesium	50 mg/kg	<50	----	----	----	----
Manganese	5 mg/kg	<5	----	----	----	----
Nickel	2 mg/kg	----	54.8	98.4	88	122
	2 mg/kg	<2	----	----	----	----
Strontium	2 mg/kg	<2	----	----	----	----
Vanadium	5 mg/kg	<5	----	----	----	----
Zinc	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	104	95.3	79	116
EK059G: NOX as N by Discrete Analyser						

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EK059G: NOX as N by Discrete Analyser - continued						
EK059G: NOX as N by Discrete Analyser - (QC Lot: 331537)		mg/kg	mg/kg	%	%	%
Nitrite + Nitrate as N (Sol.)	0.1 mg/kg	----	4.8	109	70	130
	0.100 mg/kg	<0.100	----	----	----	----
EK061G: Total Kjeldahl Nitrogen as N						
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 330137)		mg/kg	mg/kg	%	%	%
Total Kjeldahl Nitrogen as N	20 mg/kg	----	1000	104	70	130
	20 mg/kg	<20	----	----	----	----
EK071G: Reactive Phosphorous as P by discrete analyser						
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 331538)		mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	0.1 mg/kg	----	2.5	102	70	130
	0.100 mg/kg	<0.100	----	----	----	----
EP004: Organic Matter						
EP004: Organic Matter - (QC Lot: 329519)		%	%	%	%	%
Total Organic Carbon	0.5 %	<0.5	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)						
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 329362)		mg/kg	mg/kg	%	%	%
Total Polychlorinated biphenyls	0.10 mg/kg	<0.10	----	----	----	----
	0.1 mg/kg	----	0.5	85.0	57.4	117
EP068A: Organochlorine Pesticides (OC)						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361)		mg/kg	mg/kg	%	%	%
4,4'-DDD	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	78.6	65.3	116
4,4'-DDE	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	79.6	67.5	114
4,4'-DDT	0.2 mg/kg	----	0.25	82.4	58.4	127
	0.2 mg/kg	<0.2	----	----	----	----
Aldrin	0.05 mg/kg	----	0.25	81.4	67	113
	0.05 mg/kg	<0.05	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361) - continued		mg/kg	mg/kg	%	%	%
alpha-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	78.6	60.8	116
alpha-Endosulfan	0.05 mg/kg	----	0.25	80.0	65.8	116
	0.05 mg/kg	<0.05	----	----	----	----
beta-BHC	0.05 mg/kg	----	0.25	78.6	59.8	117
	0.05 mg/kg	<0.05	----	----	----	----
beta-Endosulfan	0.05 mg/kg	----	0.25	80.8	66.1	117
	0.05 mg/kg	<0.05	----	----	----	----
cis-Chlordane	0.05 mg/kg	----	0.25	79.6	57.3	120
	0.05 mg/kg	<0.05	----	----	----	----
delta-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	80.2	65.8	114
Dieldrin	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	81.6	67.4	116
Endosulfan sulfate	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	77.6	63.6	119
Endrin	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	76.4	63	121
Endrin aldehyde	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	65.8	57.3	115
Endrin ketone	0.05 mg/kg	----	0.25	80.0	63.6	117
	0.05 mg/kg	<0.05	----	----	----	----
gamma-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	78.6	59.8	118
Heptachlor	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	80.6	65.6	115
Heptachlor epoxide	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	79.2	65.6	113
Hexachlorobenzene (HCB)	0.05 mg/kg	----	0.25	77.2	59.4	115
	0.05 mg/kg	<0.05	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361) - continued		mg/kg	mg/kg	%	%	%
Methoxychlor	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	81.6	50.4	132
trans-Chlordane	0.05 mg/kg	----	0.25	79.4	60.7	113
	0.05 mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361)		mg/kg	mg/kg	%	%	%
Methyl Azinphos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	68.0	29.8	137
Bromophos-ethyl	0.05 mg/kg	----	0.25	79.4	64.3	114
	0.05 mg/kg	<0.05	----	----	----	----
Carbophenothion	0.05 mg/kg	----	0.25	78.2	59.5	119
	0.05 mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	85.0	61.4	123
Chlorpyrifos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	80.2	64.2	111
Chlorpyrifos-methyl	0.05 mg/kg	----	0.25	77.4	65.1	111
	0.05 mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	0.05 mg/kg	----	0.25	71.6	10.1	159
	0.05 mg/kg	<0.05	----	----	----	----
Diazinon	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	86.4	64.9	111
Dichlorvos	0.05 mg/kg	----	0.25	26.4	25.5	124
	0.05 mg/kg	<0.05	----	----	----	----
Dimethoate	0.05 mg/kg	----	0.25	76.4	48.6	126
	0.05 mg/kg	<0.05	----	----	----	----
Ethion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	79.8	62	116
Fenamiphos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	76.8	45.5	128

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361) - continued		mg/kg	mg/kg	%	%	%
Fenthion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	77.6	64.7	110
Malathion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	79.8	60.4	127
Monocrotophos	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	63.6	2.88	149
Parathion	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	77.4	60	116
Parathion-methyl	0.2 mg/kg	----	0.25	74.8	61.4	113
	0.2 mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	0.05 mg/kg	----	0.25	79.4	64.8	111
	0.05 mg/kg	<0.05	----	----	----	----
Prothiofos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	79.8	65.4	111
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 329364)		mg/kg	mg/kg	%	%	%
Acenaphthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	109	81.5	112
Acenaphthylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	113	79.6	113
Anthracene	0.5 mg/kg	----	4	109	81.1	112
	0.5 mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	113	77.2	112
Benzo(a)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	108	76.4	113
Benzo(b)fluoranthene	0.5 mg/kg	----	4	102	71.8	118
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	110	72.4	114

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 329364) - continued		mg/kg	mg/kg	%	%	%
Benzo(k)fluoranthene	0.5 mg/kg	----	4	99.2	74.2	117
	0.5 mg/kg	<0.5	----	----	----	----
Chrysene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	109	79.8	114
Dibenz(a,h)anthracene	0.5 mg/kg	----	4	110	71.7	113
	0.5 mg/kg	<0.5	----	----	----	----
Fluoranthene	0.5 mg/kg	----	4	106	78.8	113
	0.5 mg/kg	<0.5	----	----	----	----
Fluorene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	110	79.9	112
Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	109	71	113
Naphthalene	0.5 mg/kg	----	4	110	81.9	113
	0.5 mg/kg	<0.5	----	----	----	----
Phenanthrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	108	79.4	114
Pyrene	0.5 mg/kg	----	4	106	78.9	113
	0.5 mg/kg	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329238)		mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	10 mg/kg	----	26	104	68.4	128
	10 mg/kg	<10	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329363)		mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	50 mg/kg	<50	----	----	----	----
	50 mg/kg	----	200	96.0	75.2	116
C15 - C28 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	97.0	75.3	113
C29 - C36 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	105	72.6	117

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

		Method blank result	Actual Results		Recovery Limits	
			Spike concentration	Spike Recovery	Dynamic Recovery Limits	
Analyte name	*LOR*			*LCS*	*Low*	*High*
EP080: BTEX						
EP080: BTEX - (QC Lot: 329238)		mg/kg	mg/kg	%	%	%
Benzene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	86.1	67.5	125
Ethylbenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	86.5	65.3	126
meta- & para-Xylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	2	86.3	66.5	124
ortho-Xylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	85.8	66.7	123
Toluene	0.5 mg/kg	----	1	83.6	69	122
	0.5 mg/kg	<0.5	----	----	----	----

Quality Control Report - Matrix Spikes (MS)

The quality control term **Matrix Spike (MS)** refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EG005T: Total Metals by ICP-AES								
EG005T: Total Metals by ICP-AES - (QC Lot: 330442)				mg/kg	mg/kg	%	%	%
Arsenic	ES0616125-001	H21	5 mg/kg	50	15	102	70	130
Cadmium			1 mg/kg	50	<1	103	70	130
Chromium			2 mg/kg	50	38	99.6	70	130
Copper			5 mg/kg	250	684	106	70	130
Lead			5 mg/kg	250	179	100	70	130
Nickel			2 mg/kg	50	17	96.5	70	130
Zinc			5 mg/kg	250	412	97.0	70	130
EK059G: NOX as N by Discrete Analyser								
EK059G: NOX as N by Discrete Analyser - (QC Lot: 331537)				mg/kg	mg/kg	%	%	%
Nitrite + Nitrate as N (Sol.)	ES0616125-001	H21	0.1 mg/kg	3.0	<0.100	96.8	70	130
EK061G: Total Kjeldahl Nitrogen as N								
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 330137)				mg/kg	mg/kg	%	%	%
Total Kjeldahl Nitrogen as N	ES0616125-001	H21	20 mg/kg	500	9290	* Not Determined	70	130
EK071G: Reactive Phosphorous as P by discrete analyser								
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 331538)				mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	ES0616125-001	H21	0.1 mg/kg	2.5	<0.100	111	70	130
EP066: Polychlorinated Biphenyls (PCB)								
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 329362)				mg/kg	mg/kg	%	%	%
Total Polychlorinated biphenyls	ES0616125-001	H21	0.1 mg/kg	0.5	0.17	81.7	70	130
EP068A: Organochlorine Pesticides (OC)								
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361)				mg/kg	mg/kg	%	%	%
gamma-BHC	ES0616125-001	H21	0.05 mg/kg	0.25	<0.05	66.0	75.65	110.44
Heptachlor			0.05 mg/kg	0.25	<0.05	36.4	72.2	106.71

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration		MS	Low	High
EP068A: Organochlorine Pesticides (OC) - continued								
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361) - continued				mg/kg	mg/kg	%	%	%
Aldrin	ES0616125-001	H21	0.05 mg/kg	0.25	<0.05	36.4	77.54	107.0
Dieldrin			0.05 mg/kg	0.25	<0.05	67.8	76.37	109.7
Endrin			0.05 mg/kg	1	<0.05	81.3	68.51	119.47
4,4'-DDT			0.2 mg/kg	1	<0.2	* Not Determined	67.12	118.10
EP068B: Organophosphorus Pesticides (OP)								
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361)				mg/kg	mg/kg	%	%	%
Diazinon	ES0616125-001	H21	0.05 mg/kg	0.25	<0.05	77.0	75.85	107.06
Chlorpyrifos-methyl			0.05 mg/kg	0.25	<0.05	74.0	74.84	107.91
Pirimphos-ethyl			0.05 mg/kg	0.25	<0.05	78.8	67.98	109.42
Bromophos-ethyl			0.05 mg/kg	0.25	<0.05	53.4	74.94	107.37
Prothiofos			0.05 mg/kg	0.25	<0.05	72.0	75.45	106.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 329364)				mg/kg	mg/kg	%	%	%
Acenaphthene	ES0616125-002	H22	0.5 mg/kg	10	<0.5	98.9	70	130
Pyrene			0.5 mg/kg	10	<0.5	102	70	130
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329238)				mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	ES0616125-001	H21	10 mg/kg	26	<10	92.8	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329363)				mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	ES0616125-002	H22	50 mg/kg	700	<50	101	70	130
C15 - C28 Fraction			100 mg/kg	3400	<100	122	70	130
C29 - C36 Fraction			100 mg/kg	3600	<100	85.2	70	130
EP080: BTEX								
EP080: BTEX - (QC Lot: 329238)				mg/kg	mg/kg	%	%	%
Benzene	ES0616125-001	H21	0.2 mg/kg	2.5	<0.2	77.2	70	130
Toluene			0.5 mg/kg	2.5	<0.5	76.7	70	130
Ethylbenzene			0.5 mg/kg	2.5	<0.5	82.6	70	130
meta- & para-Xylene			0.5 mg/kg	2.5	<0.5	80.3	70	130

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EP080: BTEX - continued								
EP080: BTEX - (QC Lot: 329238) - continued				mg/kg	mg/kg	%	%	%
ortho-Xylene	ES0616125-001	H21	0.5 mg/kg	2.5	<0.5	79.1	70	130

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**URS AUSTRALIA (NSW) PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	:	**1 of 10**
Contact	:	MR CARSTEN MATTHAI	**Contact**	:	Greg Vogel			
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060	**Address**	:	Smithfield NSW Australia 2164	**Work order**	:	**ES0616125**
						Amendment No.	:	
Project	:	34217595	**Quote number**	:	----	**Date received**	:	22 Dec 2006
Order number	:	- Not provided -				**Date issued**	:	5 Jan 2007
C-O-C number	:	- Not provided -						
Site	:	- Not provided -						
E-mail	:	carsten_matthai@urscorp.com	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	02 8925 5500	**Telephone**	:	+61 (02) 8784 8555	**Received**	:	15
Facsimile	:	02 8925 5555	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	:	15

This Interpretive Quality Control Report was issued on 5 Jan 2007 for the ALS work order reference ES0616125 and supersedes any previous reports with this reference.
This report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Type Frequency Compliance
- Summary of all Quality Control Outliers
- Brief Method Summaries

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL ***Analysis Holding Time and Preservation***

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	----	----	----	**27 Dec 2006**	28 Dec 2006	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**29 Dec 2006**	19 Jun 2007	Pass	**2 Jan 2007**	19 Jun 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**3 Jan 2007**	19 Jun 2007	Pass	**3 Jan 2007**	19 Jun 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EK061G: TKN as N By Discrete Analyser								

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EK061G: TKN as N By Discrete Analyser **- continued**								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**29 Dec 2006**	19 Jun 2007	Pass	**29 Dec 2006**	19 Jun 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**3 Jan 2007**	19 Jun 2007	Pass	**3 Jan 2007**	19 Jun 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP004: Organic Matter								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	----	----	----	**27 Dec 2006**	28 Dec 2006	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**27 Dec 2006**	4 Jan 2007	Pass	**2 Jan 2007**	5 Feb 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP068: Pesticides by GCMS								

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EP068: Pesticides by GCMS **- continued**								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**27 Dec 2006**	4 Jan 2007	Pass	**2 Jan 2007**	5 Feb 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP071: TPH - Semivolatile Fraction								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**27 Dec 2006**	4 Jan 2007	Pass	**2 Jan 2007**	5 Feb 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP075(SIM): PAH/Phenols (SIM)								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**27 Dec 2006**	4 Jan 2007	Pass	**2 Jan 2007**	5 Feb 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP080: TPH Volatiles/BTEX								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**22 Dec 2006**	4 Jan 2007	Pass	**27 Dec 2006**	4 Jan 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: SOIL ***Frequency of Quality Control Samples***

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	**Actual**	**Expected**	
Laboratory Duplicates (DUP)					
EA055-103: Moisture Content	4	38	**10.5**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG005T: Total Metals by ICP-AES	2	20	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	2	15	**13.3**	**9.5**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	20	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EG005T: Total Metals by ICP-AES	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	1	15	**6.7**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EG005T: Total Metals by ICP-AES	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	1	15	**6.7**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Matrix Type: SOIL

Frequency of Quality Control Samples

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	**Actual**	**Expected**	
Matrix Spikes (MS)					
EG005T: Total Metals by ICP-AES	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	1	15	**6.7**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Laboratory Control Samples (LCS)							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	SOIL	364252-007	----	Acenaphthylene	113 %	79.6-113 %	Recovery greater than upper control limit
				Benz(a)anthracene	113 %	77.2-112 %	Recovery greater than upper control limit
Matrix Spikes (MS)							
EK061G: Total Kjeldahl Nitrogen as N	SOIL	ES0616125-001	H21	Total Kjeldahl Nitrogen as N	ND	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP068A: Organochlorine Pesticides (OC)	SOIL	ES0616125-001	H21	gamma-BHC	66.0 %	75.65-110.44 %	Recovery less than lower data quality objective
				Heptachlor	36.4 %	72.2-106.71 %	Recovery less than lower data quality objective
				Aldrin	36.4 %	77.54-107.0 %	Recovery less than lower data quality objective
				Dieldrin	67.8 %	76.37-109.7 %	Recovery less than lower data quality objective
				4,4'-DDT	ND	----	Matrix spike recovery not determined due to sample matrix interference.
EP068B: Organophosphorus Pesticides (OP)	SOIL	ES0616125-001	H21	Chlorpyrifos-methyl	74.0 %	74.84-107.91 %	Recovery less than lower data quality objective
				Bromophos-ethyl	53.4 %	74.94-107.37 %	Recovery less than lower data quality objective
				Prothiofos	72.0 %	75.45-106.05 %	Recovery less than lower data quality objective

- **For all matrices, no RPD recovery outliers occur for the duplicate analysis.**
- **For all matrices, no method blank result outliers occur.**

Surrogates

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
				1,2-Dichloroethane-D4	79.6 %	80-120 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

- **No holding time outliers occur.**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL ***Method Reference Summary***

Preparation Methods

EK061/EK067 : TKN/TP Digestion - APHA 20th ed., 4500 Norg- D; APHA 20th ed., 4500 P - H. Macro Kjeldahl digestion.

EN34 : 1:5 solid / water leach for soluble analytes - 10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

EN69 : Hot Block Digest for metals in soils sediments and sludges - USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)

ORG16 : Methanolic Extraction of Soils for Purge and Trap - (USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

ORG17A : Tumbler Extraction of Solids (Option A - Concentrating) - In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

ORG17B : Tumbler Extraction of Solids (Option B - Non-concentrating) - In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Analytical Methods

EA055-103 : Moisture Content - A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)

EG005T : Total Metals by ICP-AES - (APHA 20th ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)

EK059G : Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser - APHA 20th ed., 4500 NO3- F. SEAL Method 2-018-1-L February 2003. Combined oxidised Nitrogen (NO2+NO3) in a water extract is determined by Cadmium Reduction, and direct colourimetry by SEAL.

EK061G : TKN as N By Discrete Analyser - APHA 20th ed., 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Seal Discrete Analyser.

EK071G : Reactive Phosphorus as P-Soluble By Discrete Analyser - APHA 20th ed., 4500 P-F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by SEAL. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2

EP004 : Organic Matter - AS1289.4.4.4 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (1999) Schedule B(3) (Method 105)

EP066 : Polychlorinated Biphenyls (PCB) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 504)

EP068 : Pesticides by GCMS - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 504,505)

Matrix Type: SOIL

Method Reference Summary

Analytical Methods

EP071 : TPH - Semivolatile Fraction - (USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)

EP075(SIM) : PAH/Phenols (SIM) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)

EP080 : TPH Volatiles/BTEX - (USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

PSA-SOL : Particle Size Analysis (Solid) - Particle Size Analysis of solid matrices conducted by Subcontracting Laboratory

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: +61 (02) 8784 8555 Facsimile: +61 (02) 8784 8500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive report

Client Details

Client	:	**URS AUSTRALIA (NSW) PTY LTD**
Contact	:	**MR CARSTEN MATTHAI**
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060
Project	:	**34217595**
Order number	:	**- Not provided -**
C-O-C Number	:	**- Not provided -**
Site	:	**- Not provided -**
Sampler	:	**CARSTEN MATTHAI**
E-mail	:	carsten_matthai@urscorp.com
Telephone	:	02 8925 5500
Facsimile	:	02 8925 5555

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0616125**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	+61 (02) 8784 8555
Facsimile	:	+61 (02) 8784 8500

Dates

Date Samples Received	:	22 Dec 2006	**SRA Issue Date**	:	22 Dec 2006
Scheduled Reporting Date	:	**4 Jan 2007**	**Client Requested Date**	:	4 Jan 2007

Delivery Details

Mode of Delivery	:	Carrier.	**Temperature**		:	11'C - Ice present
No. of coolers/boxes	:	1 HARD	**No. of samples**	**- Received**		15
Security Seal	:	Intact.		**- Analysed**		15

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**

- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Analytical work for Particle size not able to be conducted by ALSE will be sub-contracted to Golder Associates.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.

Client	: URS AUSTRALIA (NSW) PTY LTD	**Work Order**	: ES0616125
Project	: 34217595	**ALS Quote Reference**	: ----

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		EA055-103 - SOIL Moisture Content	**EG005T (solids) - SOIL** Total Metals by ICP-AES	**EK059G (solids) - SOIL** Nitrite plus Nitrate as N (NOx) - soluble by Discrete Analys	**EK061G (Solids) - SOIL** Total Kjeldahl Nitrogen as N (TKN) By Discrete Analyser	**EK071G (solids) - SOIL** Reactive Phosphorus as P By Discrete Analyser	**EP004 (Carbon) - SOIL** Total Organic Carbon (Calc.)	**PSA-SOL - SOIL** Particle Size Analysis (Solid)	**S-07 - SOIL** TPH/BTEX/PAH (SIM)	**S-13 - SOIL** OC/OP/PCB	
ES0616125-001	**H21 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-002	**H22 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-003	**H23 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-004	**H24 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-005	**H25 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-006	**H26 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-007	**H27 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-008	**H28 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-009	**H29 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-010	**H30 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-011	**H31 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-012	**H32 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-013	**H33 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-014	**QC5 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-015	**QC6 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
	Total(s) :	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	

Client	: URS AUSTRALIA (NSW) PTY LTD	**Work Order**	: ES0616125
Project	: 34217595	**ALS Quote Reference**	: ----

Requested Reports

l	**ACCOUNTS PAYABLE**		
-	Invoice	Email	sydney_accounts@urscorp.com
l	**MR CARSTEN MATTHAI**		
-	A4 - Certificate of Analysis - NEPM format	Email	carsten_matthai@urscorp.com
-	A4 - Quality Control Report - NEPM format	Email	carsten_matthai@urscorp.com
-	A4 - Interpretive Quality Control Report - NEPM format	Email	carsten_matthai@urscorp.com
-	chromatogram cover sheet	Email	carsten_matthai@urscorp.com
-	MRED Export Format	Email	carsten_matthai@urscorp.com
-	Chain of Custody Acknowledgement	Email	carsten_matthai@urscorp.com
-	A4 - Sample Receipt Notification - Comprehensive format	Email	carsten_matthai@urscorp.com

Sample Container(s) / Preservation Non-Compliance Log

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

l **No sample container / preservation non-compliance exist.**

CHAIN OF CUSTODY FORM

Sheet 1 of 1

THIS COLUMN FOR LAB USE ONLY

Job Code: 43217595

Due Date: 1-1-07

Custody seal intact? YES / NO

Sample cold? YES / NO

FROM:
URS (AUSTRALIA)
ACN 000 691 690
North Sydney
Level 3 116 Miller Street
Ph: 8925 5500 Fax: 8925 5555

DATE: 21-12-06

TO:
ALS Smithfield
277 Woodpark Rd
Smithfield 2164

Project No: 43217595
Project Manager: Carsten Matthai
Agreement No: SY-215-06 URS

Sampler(s): Carsten Matthai
Signature(s): Matthai
Checked:

Released for URS by: Carsten Matthai
Date: 22-12-06 Time: 10 am.

Received for Laboratory by: FADI
Date: 22/12/06 Time: 3:20pm

Container Size, Type, Preservative and Analysis

Container Identification

Size mL	250	500 g																
Type*	Glass	Plastic Bag																
Preservative Code																		
Analytes	Analytes per SY-215-06 URS V3 (Metals - As, Ba, Be, Cd, Cr, Co, Cu, Mn, Ni, Pb, V, Zn, Al, Fe, Sr, Ca, Mg; TPH (C6-C36)/BTEX, PAHs, OC/OP/PCB, TKN, TOC, NOx)	Grain Size (4 fractions: <0.063 mm; 0.063 to 0.25 mm; 0.25 mm to 2 mm; >2 mm)	Reactive P															Hold

ALS Environmental
Sydney
Work Order
ES0616125

Telephone : +61 (02) 8784 8555

Lab Identification	Date	Time	Matrix	Sample Number		Estimated Level of Contamination	Total no	Tick required analytes				
	21-12-06		Sediment	H21	1	Low		✓	✓	✓		
				H22	2			✓	✓	✓		
				H23	3			✓	✓	✓		
				H24	4			✓	✓	✓		
				H25	5			✓	✓	✓		
				H26	6			✓	✓	✓		
				H27	7			✓	✓	✓		
				H28	8			✓	✓	✓		
				H29	9			✓	✓	✓		
				H30	10			✓	✓	✓		
				H31	11			✓	✓	✓		
				H32	12			✓	✓	✓		
				H33	13			✓	✓	✓		
				QC5	14			✓	✓	✓		
				QC6	15			✓	✓	✓		
						TOTAL		15	15	15		

CONTRACT WORK
WO:
LAB: Cetec Ass
DATE: 21/1/7
SPLIT:

results 5/4/16

Remarks:
No historical data available. Please send results to Dr Carsten Matthai (Email: carsten_matthai@urscorp.com).

Note 2 glass jars (identical) and one plastic bag for grainsize

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric

Courier Job No:

Send results to Carsten_Matthai@urscorp.com

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

ALS Environmental

QUALITY CONTROL REPORT

Client	:	**URS AUSTRALIA (NSW) PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 19**
Contact	:	MR CARSTEN MATTHAI	**Contact**	:	Greg Vogel		
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0616125**
						Amendment No.	:
Project	:	34217595	**Quote number**	:	----	**Date received**	: 22 Dec 2006
Order number	:	- Not provided -				**Date issued**	: 5 Jan 2007
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	carsten_matthai@urscorp.com	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**	
Telephone	:	02 8925 5500	**Telephone**	:	+61 (02) 8784 8555	**Received**	: 15
Facsimile	:	02 8925 5555	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	: 15

This final report for the ALSE work order reference ES0616125 supersedes any previous reports with this reference.

Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

Work order specific comments

EPO66: Positive results for EPO66 contain suspected Archlor 1254.

EPO68: Poor matrix spike recovery due to matrix affect. Confirmed by re-extraction and re-analysis.

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
EDWANDY FADJAR	Organics - NATA 825 (10911 - Sydney)
Greg Vogel	Inorganics - NATA 825 (10911 - Sydney)
Rassem Ayoubi	Organics - NATA 825 (10911 - Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** = *Limit of Reporting,* ***RPD*** = *Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting:- Result < 10 times LOR, no limit - Result between 10 and 20 times LOR, 0% - 50% - Result > 20 times LOR, 0% - 20%

Matrix Type: SOIL ***Laboratory Duplicates (DUP) Report***

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EA055: Moisture Content						
EA055: Moisture Content - (QC Lot: 329795)				%	%	%
ES0616109-003	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	13.7	13.2	3.8
ES0616125-003	H23	Moisture Content (dried @ 103°C)	1.0 %	74.7	74.9	0.2
EA055: Moisture Content - (QC Lot: 329796)				%	%	%
ES0616125-014	QC5	Moisture Content (dried @ 103°C)	1.0 %	65.9	65.0	1.4
ES0616168-003	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	20.4	19.5	4.6
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 330442)				mg/kg	mg/kg	%
ES0616125-001	H21	Aluminium	50 mg/kg	19500	19600	0.4
		Arsenic	5 mg/kg	15	15	0.0
		Barium	10 mg/kg	60	50	0.0
		Beryllium	1 mg/kg	<1	<1	0.0
		Cadmium	1 mg/kg	<1	1	0.0
		Chromium	2 mg/kg	38	38	0.0
		Cobalt	2 mg/kg	5	5	0.0
		Copper	5 mg/kg	684	649	5.2
		Iron	50 mg/kg	29600	30000	1.3
		Lead	5 mg/kg	179	180	0.0
		Manganese	5 mg/kg	68	73	7.1
		Nickel	2 mg/kg	17	18	0.0
		Strontium	2 mg/kg	81	86	5.6
		Vanadium	5 mg/kg	59	59	0.0
		Zinc	5 mg/kg	412	415	0.8
		Calcium	50 mg/kg	6690	6790	1.5
		Magnesium	50 mg/kg	7560	7650	1.2
ES0616125-011	H31	Aluminium	50 mg/kg	16400	15800	3.7

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EG005T: Total Metals by ICP-AES - continued						
EG005T: Total Metals by ICP-AES - (QC Lot: 330442) - continued				mg/kg	mg/kg	%
ES0616125-011	H31	Arsenic	5 mg/kg	24	23	7.2
		Barium	10 mg/kg	40	40	0.0
		Beryllium	1 mg/kg	1	1	0.0
		Cadmium	1 mg/kg	<1	<1	0.0
		Chromium	2 mg/kg	28	27	0.0
		Cobalt	2 mg/kg	11	10	0.0
		Copper	5 mg/kg	25	24	0.0
		Iron	50 mg/kg	33800	32000	5.7
		Lead	5 mg/kg	33	32	3.6
		Manganese	5 mg/kg	522	506	3.1
		Nickel	2 mg/kg	18	17	0.0
		Strontium	2 mg/kg	71	68	3.9
		Vanadium	5 mg/kg	64	61	3.9
		Zinc	5 mg/kg	90	86	4.2
		Calcium	50 mg/kg	5840	5490	6.2
		Magnesium	50 mg/kg	6720	6510	3.1
EK059G: NOX as N by Discrete Analyser						
EK059G: NOX as N by Discrete Analyser - (QC Lot: 331537)				mg/kg	mg/kg	%
ES0616125-001	H21	Nitrite + Nitrate as N (Sol.)	0.100 mg/kg	<0.100	<0.100	0.0
ES0616125-010	H30	Nitrite + Nitrate as N (Sol.)	0.100 mg/kg	<0.100	<0.100	0.0
EK061G: Total Kjeldahl Nitrogen as N						
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 330137)				mg/kg	mg/kg	%
ES0616125-001	H21	Total Kjeldahl Nitrogen as N	20 mg/kg	9290	9070	2.4
ES0616125-010	H30	Total Kjeldahl Nitrogen as N	20 mg/kg	4040	3480	15.1
EK071G: Reactive Phosphorous as P by discrete analyser						
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 331538)				mg/kg	mg/kg	%
ES0616125-001	H21	Reactive Phosphorus as P	0.100 mg/kg	<0.100	0.150	40.3
ES0616125-010	H30	Reactive Phosphorus as P	0.100 mg/kg	0.534	0.534	0.0
EP004: Organic Matter						

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP004: Organic Matter - continued						
EP004: Organic Matter - (QC Lot: 329519)				%	%	%
ES0616125-001	H21	Total Organic Carbon	0.5 %	7.6	7.6	0.0
ES0616125-011	H31	Total Organic Carbon	0.5 %	3.2	3.2	0.0
EP066: Polychlorinated Biphenyls (PCB)						
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 329362)				mg/kg	mg/kg	%
ES0616125-001	H21	Total Polychlorinated biphenyls	0.10 mg/kg	0.17	0.25	34.3
ES0616125-011	H31	Total Polychlorinated biphenyls	0.10 mg/kg	<0.10	<0.10	0.0
EP068A: Organochlorine Pesticides (OC)						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361)				mg/kg	mg/kg	%
ES0616125-001	H21	alpha-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	<0.05	0.0
		beta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		gamma-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		delta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor	0.05 mg/kg	<0.05	<0.05	0.0
		Aldrin	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor epoxide	0.05 mg/kg	<0.05	<0.05	0.0
		trans-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		alpha-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		cis-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		Dieldrin	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDE	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin	0.05 mg/kg	<0.05	<0.05	0.0
		beta-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDD	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin aldehyde	0.05 mg/kg	<0.05	<0.05	0.0
		Endosulfan sulfate	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDT	0.2 mg/kg	<0.2	<0.2	0.0
		Endrin ketone	0.05 mg/kg	<0.05	<0.05	0.0
		Methoxychlor	0.2 mg/kg	<0.2	<0.2	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361) - continued				mg/kg	mg/kg	%
ES0616125-011	H31	alpha-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Hexachlorobenzene (HCB)	0.05 mg/kg	<0.05	<0.05	0.0
		beta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		gamma-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		delta-BHC	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor	0.05 mg/kg	<0.05	<0.05	0.0
		Aldrin	0.05 mg/kg	<0.05	<0.05	0.0
		Heptachlor epoxide	0.05 mg/kg	<0.05	<0.05	0.0
		trans-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		alpha-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		cis-Chlordane	0.05 mg/kg	<0.05	<0.05	0.0
		Dieldrin	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDE	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin	0.05 mg/kg	<0.05	<0.05	0.0
		beta-Endosulfan	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDD	0.05 mg/kg	<0.05	<0.05	0.0
		Endrin aldehyde	0.05 mg/kg	<0.05	<0.05	0.0
		Endosulfan sulfate	0.05 mg/kg	<0.05	<0.05	0.0
		4,4'-DDT	0.2 mg/kg	<0.2	<0.2	0.0
		Endrin ketone	0.05 mg/kg	<0.05	<0.05	0.0
		Methoxychlor	0.2 mg/kg	<0.2	<0.2	0.0
EP068B: Organophosphorus Pesticides (OP)						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361)				mg/kg	mg/kg	%
ES0616125-001	H21	Dichlorvos	0.05 mg/kg	<0.05	<0.05	0.0
		Demeton-S-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Monocrotophos	0.2 mg/kg	<0.2	<0.2	0.0
		Dimethoate	0.05 mg/kg	<0.05	<0.05	0.0
		Diazinon	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos-methyl	0.05 mg/kg	<0.05	<0.05	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361) - continued				mg/kg	mg/kg	%
ES0616125-001	H21	Parathion-methyl	0.2 mg/kg	<0.2	<0.2	0.0
		Malathion	0.05 mg/kg	<0.05	<0.05	0.0
		Fenthion	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion	0.2 mg/kg	<0.2	<0.2	0.0
		Pirimphos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorfenvinphos	0.05 mg/kg	<0.05	<0.05	0.0
		Bromophos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Fenamiphos	0.05 mg/kg	<0.05	<0.05	0.0
		Prothiofos	0.05 mg/kg	<0.05	<0.05	0.0
		Ethion	0.05 mg/kg	<0.05	<0.05	0.0
		Carbophenothion	0.05 mg/kg	<0.05	<0.05	0.0
		Methyl Azinphos	0.05 mg/kg	<0.05	<0.05	0.0
ES0616125-011	H31	Dichlorvos	0.05 mg/kg	<0.05	<0.05	0.0
		Demeton-S-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Monocrotophos	0.2 mg/kg	<0.2	<0.2	0.0
		Dimethoate	0.05 mg/kg	<0.05	<0.05	0.0
		Diazinon	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos-methyl	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion-methyl	0.2 mg/kg	<0.2	<0.2	0.0
		Malathion	0.05 mg/kg	<0.05	<0.05	0.0
		Fenthion	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorpyrifos	0.05 mg/kg	<0.05	<0.05	0.0
		Parathion	0.2 mg/kg	<0.2	<0.2	0.0
		Pirimphos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Chlorfenvinphos	0.05 mg/kg	<0.05	<0.05	0.0
		Bromophos-ethyl	0.05 mg/kg	<0.05	<0.05	0.0
		Fenamiphos	0.05 mg/kg	<0.05	<0.05	0.0
		Prothiofos	0.05 mg/kg	<0.05	<0.05	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361) - continued				mg/kg	mg/kg	%
ES0616125-011	H31	Ethion	0.05 mg/kg	<0.05	<0.05	0.0
		Carbophenothion	0.05 mg/kg	<0.05	<0.05	0.0
		Methyl Azinphos	0.05 mg/kg	<0.05	<0.05	0.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 329364)				mg/kg	mg/kg	%
ES0616125-002	H22	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
ES0616125-011	H31	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0
		Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 329364) - continued				mg/kg	mg/kg	%
ES0616125-011	H31	Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329238)				mg/kg	mg/kg	%
ES0616125-001	H21	C6 - C9 Fraction	10 mg/kg	<10	<10	0.0
ES0616125-011	H31	C6 - C9 Fraction	10 mg/kg	<10	<10	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329363)				mg/kg	mg/kg	%
ES0616125-002	H22	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
ES0616125-011	H31	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
EP080: BTEX						
EP080: BTEX - (QC Lot: 329238)				mg/kg	mg/kg	%
ES0616125-001	H21	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0
		meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
ES0616125-011	H31	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.5 mg/kg	<0.5	<0.5	0.0
		Ethylbenzene	0.5 mg/kg	<0.5	<0.5	0.0

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EP080: BTEX - continued						
EP080: BTEX - (QC Lot: 329238) - continued				**mg/kg**	**mg/kg**	**%**
ES0616125-011	H31	meta- & para-Xylene	0.5 mg/kg	<0.5	<0.5	0.0
		ortho-Xylene	0.5 mg/kg	<0.5	<0.5	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC type is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. Abbreviations: LOR = Limit of reporting.

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

		Method blank result	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
Analyte name	*LOR*			*LCS*	*Low*	*High*
EG005T: Total Metals by ICP-AES						
EG005T: Total Metals by ICP-AES - (QC Lot: 330442)		mg/kg	mg/kg	%	%	%
Aluminium	50 mg/kg	<50	----	----	----	----
Arsenic	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	13.1	101	86.6	123
Barium	10 mg/kg	<10	----	----	----	----
Beryllium	1 mg/kg	<1	----	----	----	----
Cadmium	1 mg/kg	<1	----	----	----	----
	1 mg/kg	----	2.76	99.4	79.9	120
Calcium	50 mg/kg	<50	----	----	----	----
Chromium	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	60.9	96.4	87.1	119
Cobalt	2 mg/kg	<2	----	----	----	----
Copper	5 mg/kg	----	54.7	100	85.2	117
	5 mg/kg	<5	----	----	----	----
Iron	50 mg/kg	<50	----	----	----	----
Lead	5 mg/kg	----	55.2	93.5	82.1	117
	5 mg/kg	<5	----	----	----	----
Magnesium	50 mg/kg	<50	----	----	----	----
Manganese	5 mg/kg	<5	----	----	----	----
Nickel	2 mg/kg	----	54.8	98.4	88	122
	2 mg/kg	<2	----	----	----	----
Strontium	2 mg/kg	<2	----	----	----	----
Vanadium	5 mg/kg	<5	----	----	----	----
Zinc	5 mg/kg	<5	----	----	----	----
	5 mg/kg	----	104	95.3	79	116
EK059G: NOX as N by Discrete Analyser						

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EK059G: NOX as N by Discrete Analyser - continued						
EK059G: NOX as N by Discrete Analyser - (QC Lot: 331537)		mg/kg	mg/kg	%	%	%
Nitrite + Nitrate as N (Sol.)	0.1 mg/kg	----	4.8	109	70	130
	0.100 mg/kg	<0.100	----	----	----	----
EK061G: Total Kjeldahl Nitrogen as N						
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 330137)		mg/kg	mg/kg	%	%	%
Total Kjeldahl Nitrogen as N	20 mg/kg	----	1000	104	70	130
	20 mg/kg	<20	----	----	----	----
EK071G: Reactive Phosphorous as P by discrete analyser						
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 331538)		mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	0.1 mg/kg	----	2.5	102	70	130
	0.100 mg/kg	<0.100	----	----	----	----
EP004: Organic Matter						
EP004: Organic Matter - (QC Lot: 329519)		%	%	%	%	%
Total Organic Carbon	0.5 %	<0.5	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)						
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 329362)		mg/kg	mg/kg	%	%	%
Total Polychlorinated biphenyls	0.10 mg/kg	<0.10	----	----	----	----
	0.1 mg/kg	----	0.5	85.0	57.4	117
EP068A: Organochlorine Pesticides (OC)						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361)		mg/kg	mg/kg	%	%	%
4,4'-DDD	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	78.6	65.3	116
4,4'-DDE	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	79.6	67.5	114
4,4'-DDT	0.2 mg/kg	----	0.25	82.4	58.4	127
	0.2 mg/kg	<0.2	----	----	----	----
Aldrin	0.05 mg/kg	----	0.25	81.4	67	113
	0.05 mg/kg	<0.05	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361) - continued		mg/kg	mg/kg	%	%	%
alpha-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	78.6	60.8	116
alpha-Endosulfan	0.05 mg/kg	----	0.25	80.0	65.8	116
	0.05 mg/kg	<0.05	----	----	----	----
beta-BHC	0.05 mg/kg	----	0.25	78.6	59.8	117
	0.05 mg/kg	<0.05	----	----	----	----
beta-Endosulfan	0.05 mg/kg	----	0.25	80.8	66.1	117
	0.05 mg/kg	<0.05	----	----	----	----
cis-Chlordane	0.05 mg/kg	----	0.25	79.6	57.3	120
	0.05 mg/kg	<0.05	----	----	----	----
delta-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	80.2	65.8	114
Dieldrin	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	81.6	67.4	116
Endosulfan sulfate	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	77.6	63.6	119
Endrin	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	76.4	63	121
Endrin aldehyde	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	65.8	57.3	115
Endrin ketone	0.05 mg/kg	----	0.25	80.0	63.6	117
	0.05 mg/kg	<0.05	----	----	----	----
gamma-BHC	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	78.6	59.8	118
Heptachlor	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	80.6	65.6	115
Heptachlor epoxide	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	79.2	65.6	113
Hexachlorobenzene (HCB)	0.05 mg/kg	----	0.25	77.2	59.4	115
	0.05 mg/kg	<0.05	----	----	----	----

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068A: Organochlorine Pesticides (OC) - continued						
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361) - continued		mg/kg	mg/kg	%	%	%
Methoxychlor	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	81.6	50.4	132
trans-Chlordane	0.05 mg/kg	----	0.25	79.4	60.7	113
	0.05 mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361)		mg/kg	mg/kg	%	%	%
Methyl Azinphos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	68.0	29.8	137
Bromophos-ethyl	0.05 mg/kg	----	0.25	79.4	64.3	114
	0.05 mg/kg	<0.05	----	----	----	----
Carbophenothion	0.05 mg/kg	----	0.25	78.2	59.5	119
	0.05 mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	85.0	61.4	123
Chlorpyrifos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	80.2	64.2	111
Chlorpyrifos-methyl	0.05 mg/kg	----	0.25	77.4	65.1	111
	0.05 mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	0.05 mg/kg	----	0.25	71.6	10.1	159
	0.05 mg/kg	<0.05	----	----	----	----
Diazinon	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	86.4	64.9	111
Dichlorvos	0.05 mg/kg	----	0.25	26.4	25.5	124
	0.05 mg/kg	<0.05	----	----	----	----
Dimethoate	0.05 mg/kg	----	0.25	76.4	48.6	126
	0.05 mg/kg	<0.05	----	----	----	----
Ethion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	79.8	62	116
Fenamiphos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	76.8	45.5	128

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP068B: Organophosphorus Pesticides (OP) - continued						
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361) - continued		mg/kg	mg/kg	%	%	%
Fenthion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	77.6	64.7	110
Malathion	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	79.8	60.4	127
Monocrotophos	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	63.6	2.88	149
Parathion	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	0.25	77.4	60	116
Parathion-methyl	0.2 mg/kg	----	0.25	74.8	61.4	113
	0.2 mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	0.05 mg/kg	----	0.25	79.4	64.8	111
	0.05 mg/kg	<0.05	----	----	----	----
Prothiofos	0.05 mg/kg	<0.05	----	----	----	----
	0.05 mg/kg	----	0.25	79.8	65.4	111
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 329364)		mg/kg	mg/kg	%	%	%
Acenaphthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	109	81.5	112
Acenaphthylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	113	79.6	113
Anthracene	0.5 mg/kg	----	4	109	81.1	112
	0.5 mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	113	77.2	112
Benzo(a)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	108	76.4	113
Benzo(b)fluoranthene	0.5 mg/kg	----	4	102	71.8	118
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	110	72.4	114

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

Analyte name	LOR	Method blank result	Actual Results: Spike concentration	Actual Results: Spike Recovery LCS	Recovery Limits: Dynamic Recovery Limits Low	Recovery Limits: Dynamic Recovery Limits High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 329364) - continued		mg/kg	mg/kg	%	%	%
Benzo(k)fluoranthene	0.5 mg/kg	----	4	99.2	74.2	117
	0.5 mg/kg	<0.5	----	----	----	----
Chrysene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	109	79.8	114
Dibenz(a,h)anthracene	0.5 mg/kg	----	4	110	71.7	113
	0.5 mg/kg	<0.5	----	----	----	----
Fluoranthene	0.5 mg/kg	----	4	106	78.8	113
	0.5 mg/kg	<0.5	----	----	----	----
Fluorene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	110	79.9	112
Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	109	71	113
Naphthalene	0.5 mg/kg	----	4	110	81.9	113
	0.5 mg/kg	<0.5	----	----	----	----
Phenanthrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	108	79.4	114
Pyrene	0.5 mg/kg	----	4	106	78.9	113
	0.5 mg/kg	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329238)		mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	10 mg/kg	----	26	104	68.4	128
	10 mg/kg	<10	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329363)		mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	50 mg/kg	<50	----	----	----	----
	50 mg/kg	----	200	96.0	75.2	116
C15 - C28 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	97.0	75.3	113
C29 - C36 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	105	72.6	117

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

		Method blank result	Actual Results		Recovery Limits	
			Spike concentration	Spike Recovery	Dynamic Recovery Limits	
Analyte name	*LOR*			*LCS*	*Low*	*High*
EP080: BTEX						
EP080: BTEX - (QC Lot: 329238)		mg/kg	mg/kg	%	%	%
Benzene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	86.1	67.5	125
Ethylbenzene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	86.5	65.3	126
meta- & para-Xylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	2	86.3	66.5	124
ortho-Xylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	1	85.8	66.7	123
Toluene	0.5 mg/kg	----	1	83.6	69	122
	0.5 mg/kg	<0.5	----	----	----	----

Quality Control Report - Matrix Spikes (MS)

The quality control term **Matrix Spike (MS)** refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EG005T: Total Metals by ICP-AES								
EG005T: Total Metals by ICP-AES - (QC Lot: 330442)				mg/kg	mg/kg	%	%	%
Arsenic	ES0616125-001	H21	5 mg/kg	50	15	102	70	130
Cadmium			1 mg/kg	50	<1	103	70	130
Chromium			2 mg/kg	50	38	99.6	70	130
Copper			5 mg/kg	250	684	106	70	130
Lead			5 mg/kg	250	179	100	70	130
Nickel			2 mg/kg	50	17	96.5	70	130
Zinc			5 mg/kg	250	412	97.0	70	130
EK059G: NOX as N by Discrete Analyser								
EK059G: NOX as N by Discrete Analyser - (QC Lot: 331537)				mg/kg	mg/kg	%	%	%
Nitrite + Nitrate as N (Sol.)	ES0616125-001	H21	0.1 mg/kg	3.0	<0.100	96.8	70	130
EK061G: Total Kjeldahl Nitrogen as N								
EK061G: Total Kjeldahl Nitrogen as N - (QC Lot: 330137)				mg/kg	mg/kg	%	%	%
Total Kjeldahl Nitrogen as N	ES0616125-001	H21	20 mg/kg	500	9290	* Not Determined	70	130
EK071G: Reactive Phosphorous as P by discrete analyser								
EK071G: Reactive Phosphorous as P by discrete analyser - (QC Lot: 331538)				mg/kg	mg/kg	%	%	%
Reactive Phosphorus as P	ES0616125-001	H21	0.1 mg/kg	2.5	<0.100	111	70	130
EP066: Polychlorinated Biphenyls (PCB)								
EP066: Polychlorinated Biphenyls (PCB) - (QC Lot: 329362)				mg/kg	mg/kg	%	%	%
Total Polychlorinated biphenyls	ES0616125-001	H21	0.1 mg/kg	0.5	0.17	81.7	70	130
EP068A: Organochlorine Pesticides (OC)								
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361)				mg/kg	mg/kg	%	%	%
gamma-BHC	ES0616125-001	H21	0.05 mg/kg	0.25	<0.05	66.0	75.65	110.44
Heptachlor			0.05 mg/kg	0.25	<0.05	36.4	72.2	106.71

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration		MS	Low	High
EP068A: Organochlorine Pesticides (OC) - continued								
EP068A: Organochlorine Pesticides (OC) - (QC Lot: 329361) - continued				mg/kg	mg/kg	%	%	%
Aldrin	ES0616125-001	H21	0.05 mg/kg	0.25	<0.05	36.4	77.54	107.0
Dieldrin			0.05 mg/kg	0.25	<0.05	67.8	76.37	109.7
Endrin			0.05 mg/kg	1	<0.05	81.3	68.51	119.47
4,4'-DDT			0.2 mg/kg	1	<0.2	* Not Determined	67.12	118.10
EP068B: Organophosphorus Pesticides (OP)								
EP068B: Organophosphorus Pesticides (OP) - (QC Lot: 329361)				mg/kg	mg/kg	%	%	%
Diazinon	ES0616125-001	H21	0.05 mg/kg	0.25	<0.05	77.0	75.85	107.06
Chlorpyrifos-methyl			0.05 mg/kg	0.25	<0.05	74.0	74.84	107.91
Pirimphos-ethyl			0.05 mg/kg	0.25	<0.05	78.8	67.98	109.42
Bromophos-ethyl			0.05 mg/kg	0.25	<0.05	53.4	74.94	107.37
Prothiofos			0.05 mg/kg	0.25	<0.05	72.0	75.45	106.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 329364)				mg/kg	mg/kg	%	%	%
Acenaphthene	ES0616125-002	H22	0.5 mg/kg	10	<0.5	98.9	70	130
Pyrene			0.5 mg/kg	10	<0.5	102	70	130
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329238)				mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	ES0616125-001	H21	10 mg/kg	26	<10	92.8	70	130
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 329363)				mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	ES0616125-002	H22	50 mg/kg	700	<50	101	70	130
C15 - C28 Fraction			100 mg/kg	3400	<100	122	70	130
C29 - C36 Fraction			100 mg/kg	3600	<100	85.2	70	130
EP080: BTEX								
EP080: BTEX - (QC Lot: 329238)				mg/kg	mg/kg	%	%	%
Benzene	ES0616125-001	H21	0.2 mg/kg	2.5	<0.2	77.2	70	130
Toluene			0.5 mg/kg	2.5	<0.5	76.7	70	130
Ethylbenzene			0.5 mg/kg	2.5	<0.5	82.6	70	130
meta- & para-Xylene			0.5 mg/kg	2.5	<0.5	80.3	70	130

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EP080: BTEX - continued								
EP080: BTEX - (QC Lot: 329238) - continued				mg/kg	mg/kg	%	%	%
ortho-Xylene	ES0616125-001	H21	0.5 mg/kg	2.5	<0.5	79.1	70	130

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**URS AUSTRALIA (NSW) PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	:	**1 of 10**
Contact	:	MR CARSTEN MATTHAI	**Contact**	:	Greg Vogel			
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060	**Address**	:	Smithfield NSW Australia 2164	**Work order**	:	**ES0616125**
						Amendment No.	:	
Project	:	34217595	**Quote number**	:	----	**Date received**	:	22 Dec 2006
Order number	:	- Not provided -				**Date issued**	:	5 Jan 2007
C-O-C number	:	- Not provided -						
Site	:	- Not provided -						
E-mail	:	carsten_matthai@urscorp.com	**E-mail**	:	Greg.Vogel@alsenviro.com	**No. of samples**		
Telephone	:	02 8925 5500	**Telephone**	:	+61 (02) 8784 8555	**Received**	:	15
Facsimile	:	02 8925 5555	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	:	15

This Interpretive Quality Control Report was issued on 5 Jan 2007 for the ALS work order reference ES0616125 and supersedes any previous reports with this reference.
This report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Type Frequency Compliance
- Summary of all Quality Control Outliers
- Brief Method Summaries

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL ***Analysis Holding Time and Preservation***

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	----	----	----	**27 Dec 2006**	28 Dec 2006	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**29 Dec 2006**	19 Jun 2007	Pass	**2 Jan 2007**	19 Jun 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**3 Jan 2007**	19 Jun 2007	Pass	**3 Jan 2007**	19 Jun 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EK061G: TKN as N By Discrete Analyser								

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EK061G: TKN as N By Discrete Analyser **- continued**								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**29 Dec 2006**	19 Jun 2007	Pass	**29 Dec 2006**	19 Jun 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**3 Jan 2007**	19 Jun 2007	Pass	**3 Jan 2007**	19 Jun 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP004: Organic Matter								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	----	----	----	**27 Dec 2006**	28 Dec 2006	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**27 Dec 2006**	4 Jan 2007	Pass	**2 Jan 2007**	5 Feb 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP068: Pesticides by GCMS								

Matrix Type: SOIL

Analysis Holding Time and Preservation

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EP068: Pesticides by GCMS **- continued**								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**27 Dec 2006**	4 Jan 2007	Pass	**2 Jan 2007**	5 Feb 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP071: TPH - Semivolatile Fraction								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**27 Dec 2006**	4 Jan 2007	Pass	**2 Jan 2007**	5 Feb 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP075(SIM): PAH/Phenols (SIM)								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**27 Dec 2006**	4 Jan 2007	Pass	**2 Jan 2007**	5 Feb 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EP080: TPH Volatiles/BTEX								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**22 Dec 2006**	4 Jan 2007	Pass	**27 Dec 2006**	4 Jan 2007	Pass
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: SOIL ***Frequency of Quality Control Samples***

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	**Actual**	**Expected**	
Laboratory Duplicates (DUP)					
EA055-103: Moisture Content	4	38	**10.5**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG005T: Total Metals by ICP-AES	2	20	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	2	15	**13.3**	**9.5**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	20	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EG005T: Total Metals by ICP-AES	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	1	15	**6.7**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EG005T: Total Metals by ICP-AES	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	1	15	**6.7**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP004: Organic Matter	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Matrix Type: SOIL

Frequency of Quality Control Samples

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	**Actual**	**Expected**	
Matrix Spikes (MS)					
EG005T: Total Metals by ICP-AES	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061G: TKN as N By Discrete Analyser	1	15	**6.7**	**4.8**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK071G: Reactive Phosphorus as P-Soluble By Discrete Analyser	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP066: Polychlorinated Biphenyls (PCB)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP068: Pesticides by GCMS	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	**5.0**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Laboratory Control Samples (LCS)							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	SOIL	364252-007	----	Acenaphthylene	113 %	79.6-113 %	Recovery greater than upper control limit
				Benz(a)anthracene	113 %	77.2-112 %	Recovery greater than upper control limit
Matrix Spikes (MS)							
EK061G: Total Kjeldahl Nitrogen as N	SOIL	ES0616125-001	H21	Total Kjeldahl Nitrogen as N	ND	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP068A: Organochlorine Pesticides (OC)	SOIL	ES0616125-001	H21	gamma-BHC	66.0 %	75.65-110.44 %	Recovery less than lower data quality objective
				Heptachlor	36.4 %	72.2-106.71 %	Recovery less than lower data quality objective
				Aldrin	36.4 %	77.54-107.0 %	Recovery less than lower data quality objective
				Dieldrin	67.8 %	76.37-109.7 %	Recovery less than lower data quality objective
				4,4'-DDT	ND	----	Matrix spike recovery not determined due to sample matrix interference.
EP068B: Organophosphorus Pesticides (OP)	SOIL	ES0616125-001	H21	Chlorpyrifos-methyl	74.0 %	74.84-107.91 %	Recovery less than lower data quality objective
				Bromophos-ethyl	53.4 %	74.94-107.37 %	Recovery less than lower data quality objective
				Prothiofos	72.0 %	75.45-106.05 %	Recovery less than lower data quality objective

- **For all matrices, no RPD recovery outliers occur for the duplicate analysis.**
- **For all matrices, no method blank result outliers occur.**

Surrogates

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
				1,2-Dichloroethane-D4	79.6 %	80-120 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

- **No holding time outliers occur.**

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL ***Method Reference Summary***

Preparation Methods

EK061/EK067 : TKN/TP Digestion - APHA 20th ed., 4500 Norg- D; APHA 20th ed., 4500 P - H. Macro Kjeldahl digestion.

EN34 : 1:5 solid / water leach for soluble analytes - 10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.

EN69 : Hot Block Digest for metals in soils sediments and sludges - USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)

ORG16 : Methanolic Extraction of Soils for Purge and Trap - (USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

ORG17A : Tumbler Extraction of Solids (Option A - Concentrating) - In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

ORG17B : Tumbler Extraction of Solids (Option B - Non-concentrating) - In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Analytical Methods

EA055-103 : Moisture Content - A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)

EG005T : Total Metals by ICP-AES - (APHA 20th ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)

EK059G : Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser - APHA 20th ed., 4500 NO3- F. SEAL Method 2-018-1-L February 2003. Combined oxidised Nitrogen (NO2+NO3) in a water extract is determined by Cadmium Reduction, and direct colourimetry by SEAL.

EK061G : TKN as N By Discrete Analyser - APHA 20th ed., 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Seal Discrete Analyser.

EK071G : Reactive Phosphorus as P-Soluble By Discrete Analyser - APHA 20th ed., 4500 P-F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by SEAL. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2

EP004 : Organic Matter - AS1289.4.4.4 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (1999) Schedule B(3) (Method 105)

EP066 : Polychlorinated Biphenyls (PCB) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 504)

EP068 : Pesticides by GCMS - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 504,505)

Matrix Type: SOIL

Method Reference Summary

Analytical Methods

EP071 : TPH - Semivolatile Fraction - (USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)

EP075(SIM) : PAH/Phenols (SIM) - (USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)

EP080 : TPH Volatiles/BTEX - (USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

PSA-SOL : Particle Size Analysis (Solid) - Particle Size Analysis of solid matrices conducted by Subcontracting Laboratory

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ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive report

Client Details

Client	:	**URS AUSTRALIA (NSW) PTY LTD**
Contact	:	**MR CARSTEN MATTHAI**
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060
Project	:	**34217595**
Order number	:	**- Not provided -**
C-O-C Number	:	**- Not provided -**
Site	:	**- Not provided -**
Sampler	:	**CARSTEN MATTHAI**
E-mail	:	carsten_matthai@urscorp.com
Telephone	:	02 8925 5500
Facsimile	:	02 8925 5555

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0616125**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	+61 (02) 8784 8555
Facsimile	:	+61 (02) 8784 8500

Dates

Date Samples Received	:	22 Dec 2006	**SRA Issue Date**	:	22 Dec 2006
Scheduled Reporting Date	:	**4 Jan 2007**	**Client Requested Date**	:	4 Jan 2007

Delivery Details

Mode of Delivery	:	Carrier.	**Temperature**		:	11'C - Ice present
No. of coolers/boxes	:	1 HARD	**No. of samples**	**- Received**		15
Security Seal	:	Intact.		**- Analysed**		15

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**

- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Analytical work for Particle size not able to be conducted by ALSE will be sub-contracted to Golder Associates.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

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Client	: URS AUSTRALIA (NSW) PTY LTD	**Work Order**	: ES0616125
Project	: 34217595	**ALS Quote Reference**	: ----

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		EA055-103 - SOIL Moisture Content	**EG005T (solids) - SOIL** Total Metals by ICP-AES	**EK059G (solids) - SOIL** Nitrite plus Nitrate as N (NOx) - soluble by Discrete Analys	**EK061G (Solids) - SOIL** Total Kjeldahl Nitrogen as N (TKN) By Discrete Analyser	**EK071G (solids) - SOIL** Reactive Phosphorus as P By Discrete Analyser	**EP004 (Carbon) - SOIL** Total Organic Carbon (Calc.)	**PSA-SOL - SOIL** Particle Size Analysis (Solid)	**S-07 - SOIL** TPH/BTEX/PAH (SIM)	**S-13 - SOIL** OC/OP/PCB	
ES0616125-001	**H21 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-002	**H22 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-003	**H23 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-004	**H24 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-005	**H25 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-006	**H26 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-007	**H27 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-008	**H28 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-009	**H29 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-010	**H30 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-011	**H31 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-012	**H32 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-013	**H33 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-014	**QC5 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
ES0616125-015	**QC6 - 21 Dec 2006**	]	]	]	]	]	]	]	]	]	
	Total(s) :	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	

Client	: URS AUSTRALIA (NSW) PTY LTD	**Work Order**	: ES0616125
Project	: 34217595	**ALS Quote Reference**	: ----

Requested Reports

l	**ACCOUNTS PAYABLE**		
-	Invoice	Email	sydney_accounts@urscorp.com
l	**MR CARSTEN MATTHAI**		
-	A4 - Certificate of Analysis - NEPM format	Email	carsten_matthai@urscorp.com
-	A4 - Quality Control Report - NEPM format	Email	carsten_matthai@urscorp.com
-	A4 - Interpretive Quality Control Report - NEPM format	Email	carsten_matthai@urscorp.com
-	chromatogram cover sheet	Email	carsten_matthai@urscorp.com
-	MRED Export Format	Email	carsten_matthai@urscorp.com
-	Chain of Custody Acknowledgement	Email	carsten_matthai@urscorp.com
-	A4 - Sample Receipt Notification - Comprehensive format	Email	carsten_matthai@urscorp.com

Sample Container(s) / Preservation Non-Compliance Log

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

l **No sample container / preservation non-compliance exist.**

CHAIN OF CUSTODY FORM

Sheet 1 of 1

THIS COLUMN FOR LAB USE ONLY

Job Code: 43217595

Due Date: 1-1-07

Custody seal intact? YES / NO

Sample cold? YES / NO

FROM:
URS (AUSTRALIA)
ACN 000 691 690
North Sydney
Level 3 116 Miller Street
Ph: 8925 5500 Fax: 8925 5555

DATE: 21-12-06

TO:
ALS Smithfield
277 Woodpark Rd
Smithfield 2164

Project No: 43217595
Project Manager: Carsten Matthai
Agreement No: SY-215-06 URS

Sampler(s): Carsten Matthai
Signature(s): Matthai
Checked:

Released for URS by: Carsten Matthai
Date: 22-12-06 Time: 10 am.

Received for Laboratory by: FADI
Date: 22/12/06 Time: 3:20pm

Container Size, Type, Preservative and Analysis

Container Identification

Size mL	250	500 g																
Type*	Glass	Plastic Bag																
Preservative Code																		
Analytes	Analytes per SY-215-06 URS V3 (Metals - As, Ba, Be, Cd, Cr, Co, Cu, Mn, Ni, Pb, V, Zn, Al, Fe, Sr, Ca, Mg; TPH (C6-C36)/BTEX, PAHs, OC/OP/PCB, TKN, TOC, NOx)	Grain Size (4 fractions: <0.063 mm; 0.063 to 0.25 mm; 0.25 mm to 2 mm; >2 mm)	Reactive P															Hold

ALS Environmental
Sydney
Work Order
ES0616125

Telephone : +61 (02) 8784 8555

Lab Identification	Date	Time	Matrix	Sample Number		Estimated Level of Contamination	Total no	Tick required analytes				
	21-12-06		Sediment	H21	1	Low		✓	✓	✓		
				H22	2			✓	✓	✓		
				H23	3			✓	✓	✓		
				H24	4			✓	✓	✓		
				H25	5			✓	✓	✓		
				H26	6			✓	✓	✓		
				H27	7			✓	✓	✓		
				H28	8			✓	✓	✓		
				H29	9			✓	✓	✓		
				H30	10			✓	✓	✓		
				H31	11			✓	✓	✓		
				H32	12			✓	✓	✓		
				H33	13			✓	✓	✓		
				QC5	14			✓	✓	✓		
				QC6	15			✓	✓	✓		
						TOTAL		15	15	15		

CONTRACT WORK
WO:
LAB: Cetec Ass
DATE: 21/1/7
SPLIT:

results 5/4/16

Remarks:
No historical data available. Please send results to Dr Carsten Matthai (Email: carsten_matthai@urscorp.com).

Note 2 glass jars (identical) and one plastic bag for grainsize

* Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinsed Jar; S = Solvent Washed Acid Rinsed Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric

Courier Job No:

Send results to Carsten_Matthai@urscorp.com

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

Golder Associates

MANSFIELD LABORATORY

1/51 Secam Street, Mansfield QLD 4122
PO Box 2034 Mansfield DC QLD 4122
Phone:(07) 3343 3166 Fax:(07) 3849 4705
www.golder.com.au

TEST RESULTS

Client : ALS Environmental Sydney
Project : Delivered Samples
Batch No. : ES0616125

Job No. : 077634002/5
Date Received : 02/01/2007
Sampled by : Client

PARTICLE SIZE SUMMARY

Reg'n No.	Sample ID	Sample No.	Percent Gravel (+ 2 mm)	Percent Coarse to Med. Sand (2 mm - 0.250 mm)	Percent Med. To Fine Sand (0.250 mm - 0.063 mm)	Percent Silt & Clay (-0.063 mm)
L12176	H21	1	0	2	4	94
L12177	H22	2	0	31	27	42
L12178	H23	3	0	1	1	98
L12179	H24	4	0	0	1	99
L12180	H25	5	0	40	29	31
L12181	H26	6	0	5	5	90
L12182	H27	7	0	4	13	83
L12183	H28	8	0	4	17	79
L12184	H29	9	0	0	0	100
L12185	H30	10	0	0	1	99
L12186	H31	11	0	0	0	100
L12187	H32	12	0	0	12	88
L12188	H33	13	0	0	13	87
L12189	QC5	14	0	4	13	83
L12190	QC6	15	0	6	3	91

Remarks :

Test Procedure : AS1289 3.6.1

Prepared by : NF

Checked by JA

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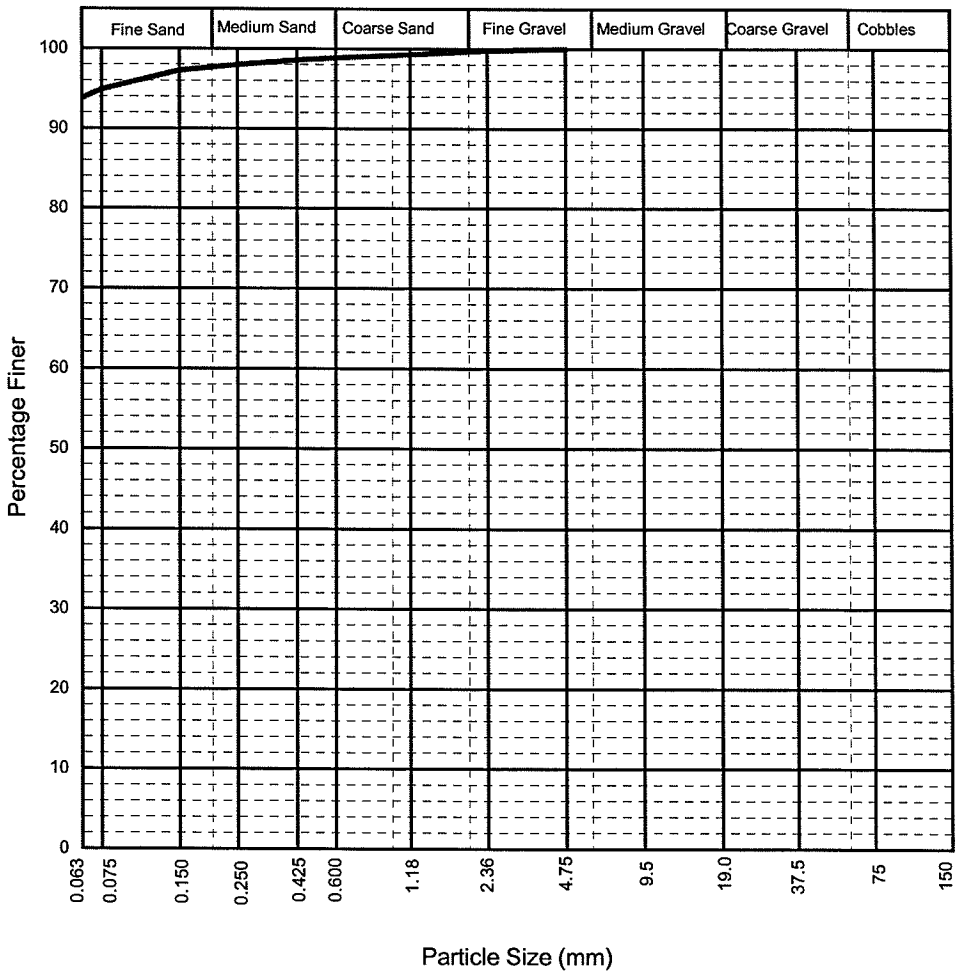
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12176
Sample ID :	H21	Batch No. :	ES0616125 - 1
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	100.0
2.36	99.8
1.18	99.3
0.600	98.9
0.425	98.6
0.250	98.0
0.150	97.3
0.075	94.9
0.063	93.8

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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R Jann 15/1/7
Authorised Signatory

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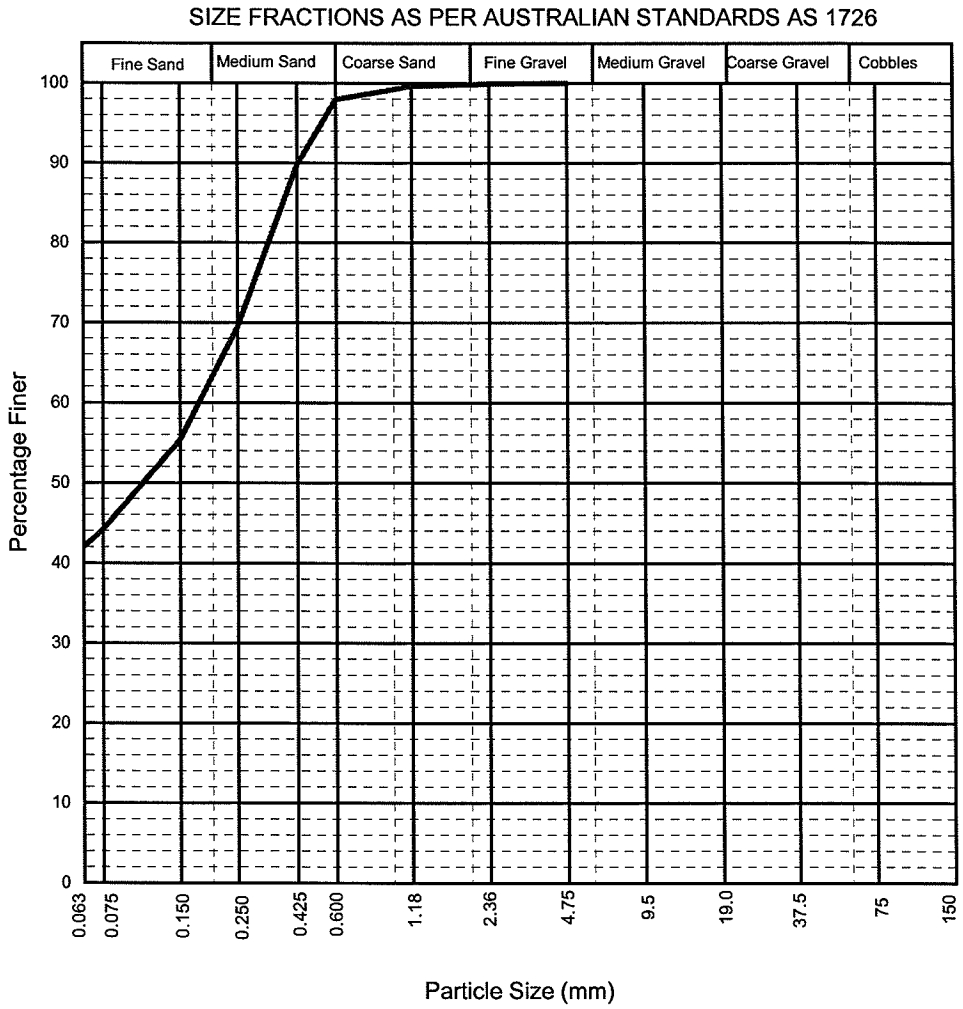
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12177
Sample ID :	H22	Batch No. :	ES0616125 - 2
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	100.0
2.36	99.9
1.18	99.6
0.600	97.9
0.425	89.7
0.250	69.4
0.150	55.3
0.075	44.2
0.063	42.0



Remarks :

Material Description : Clayey SAND (SC) grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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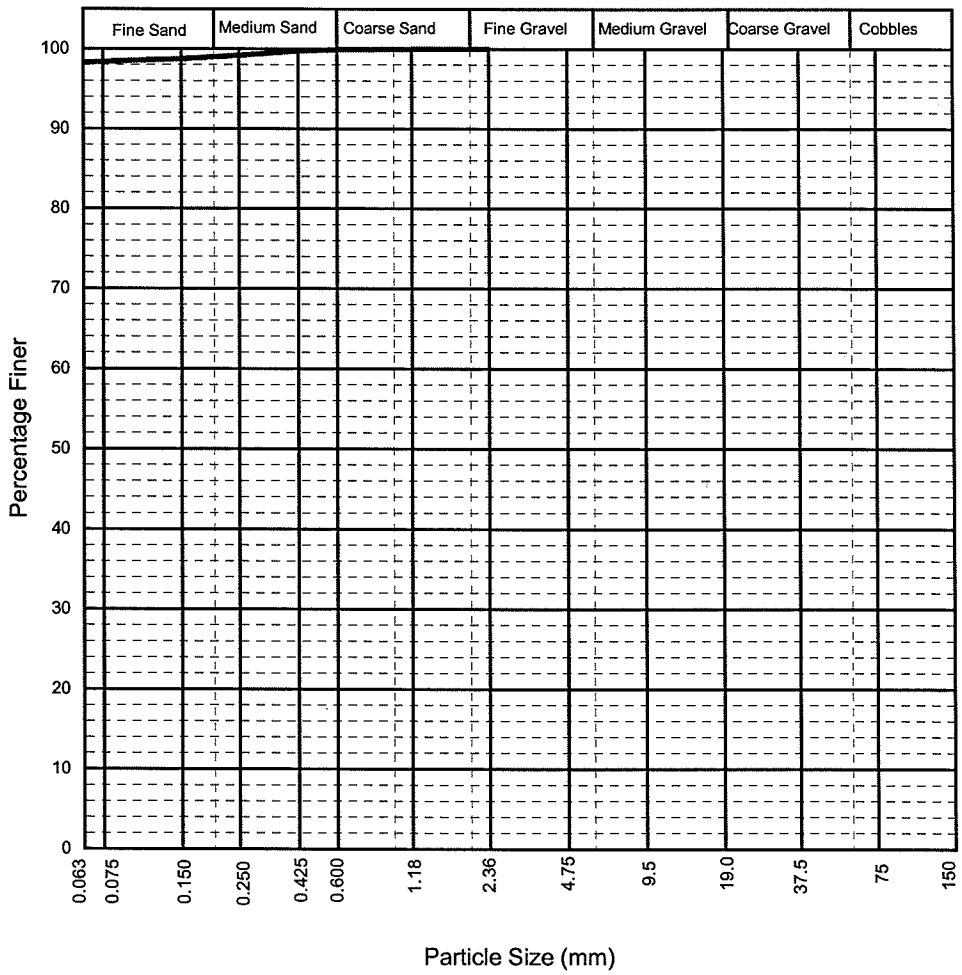
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12178
Sample ID :	H23	Batch No. :	ES0616125 - 3
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.9
0.425	99.7
0.250	99.2
0.150	98.7
0.075	98.4
0.063	98.3

SIZE FRACTIONS AS PER AUSTRALIAN STANDARDS AS 1726



Remarks :

Material Description : Silty CLAY (CH) grey

Test Procedure : AS 1289 3.6.1

Prepared by : NK

Checked by : JA

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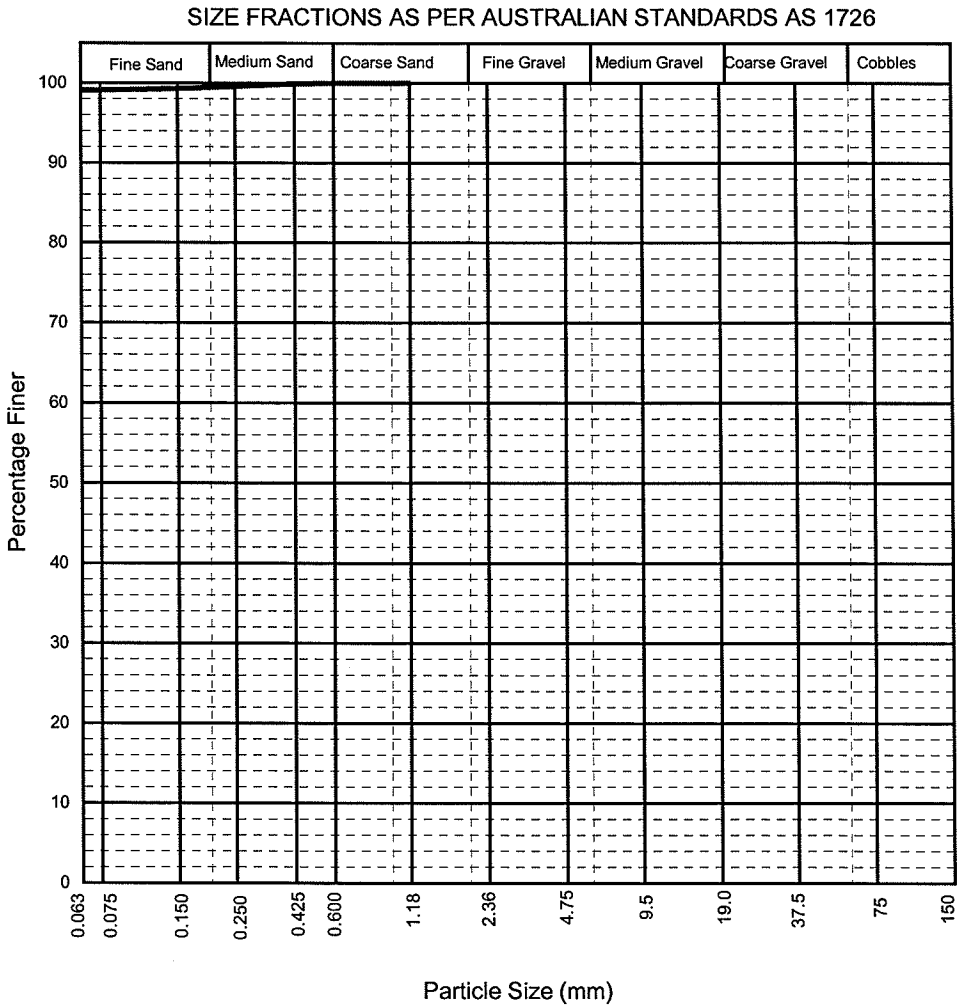
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12179
Sample ID :	H24	Batch No. :	ES0616125 - 4
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	100.0
0.600	100.0
0.425	99.9
0.250	99.6
0.150	99.3
0.075	99.1
0.063	99.0



Remarks :	
Material Description :	Silty CLAY (CH) grey
Test Procedure :	AS 1289 3.6.1
Prepared by : MK	Checked by : JA

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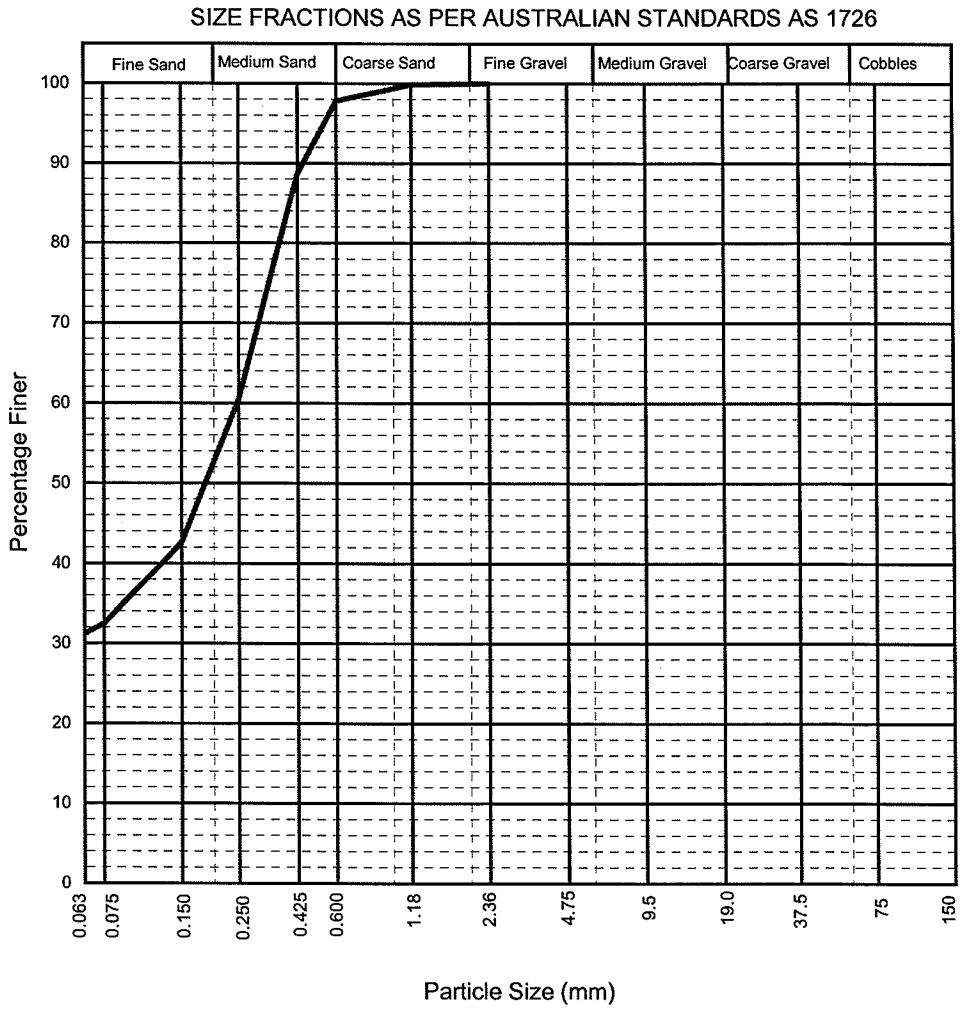
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12180
Sample ID :	H25	Batch No. :	ES0616125 - 5
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	97.8
0.425	88.6
0.250	60.5
0.150	42.6
0.075	32.5
0.063	31.2



Remarks :	
Material Description :	Clayey SAND (SC) dark grey
Test Procedure :	AS 1289 3.6.1
Prepared by : MF	Checked by : JA

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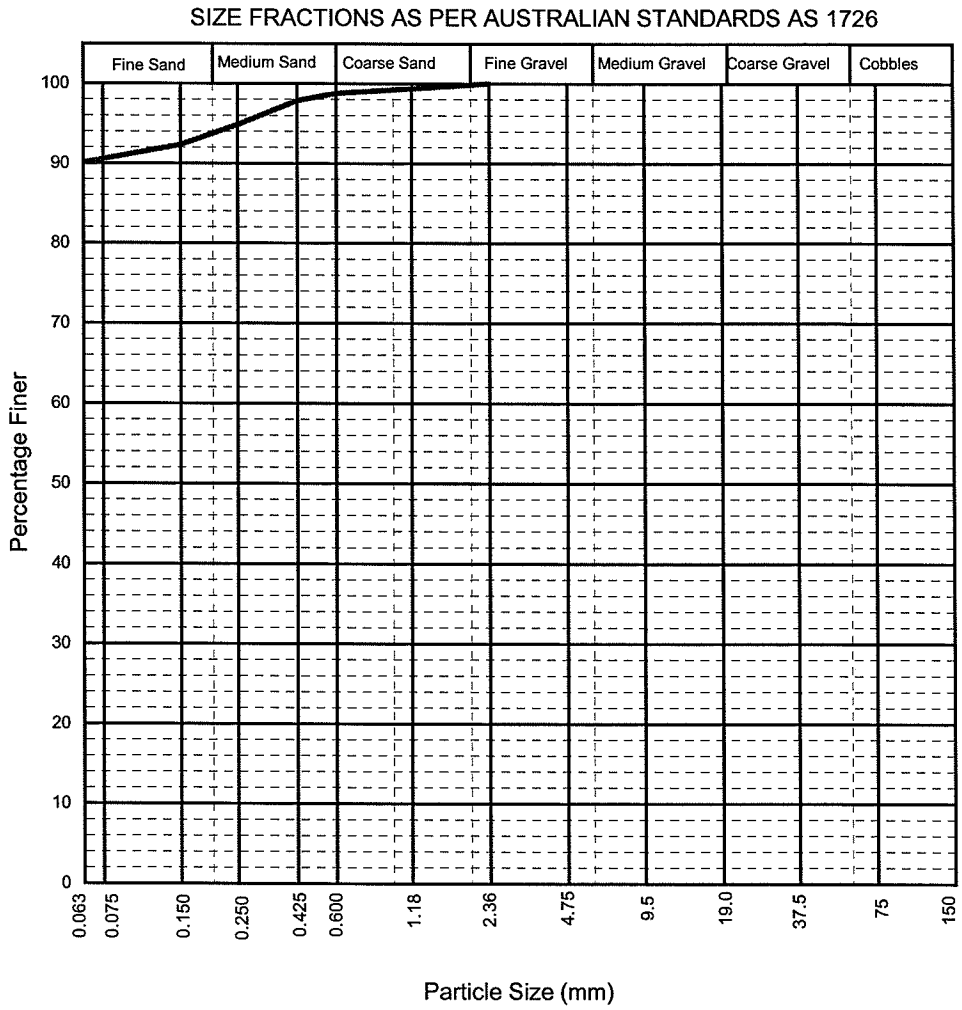
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12181
Sample ID :	H26	Batch No. :	ES0616125 - 6
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.4
0.600	98.8
0.425	97.9
0.250	94.8
0.150	92.3
0.075	90.5
0.063	90.1



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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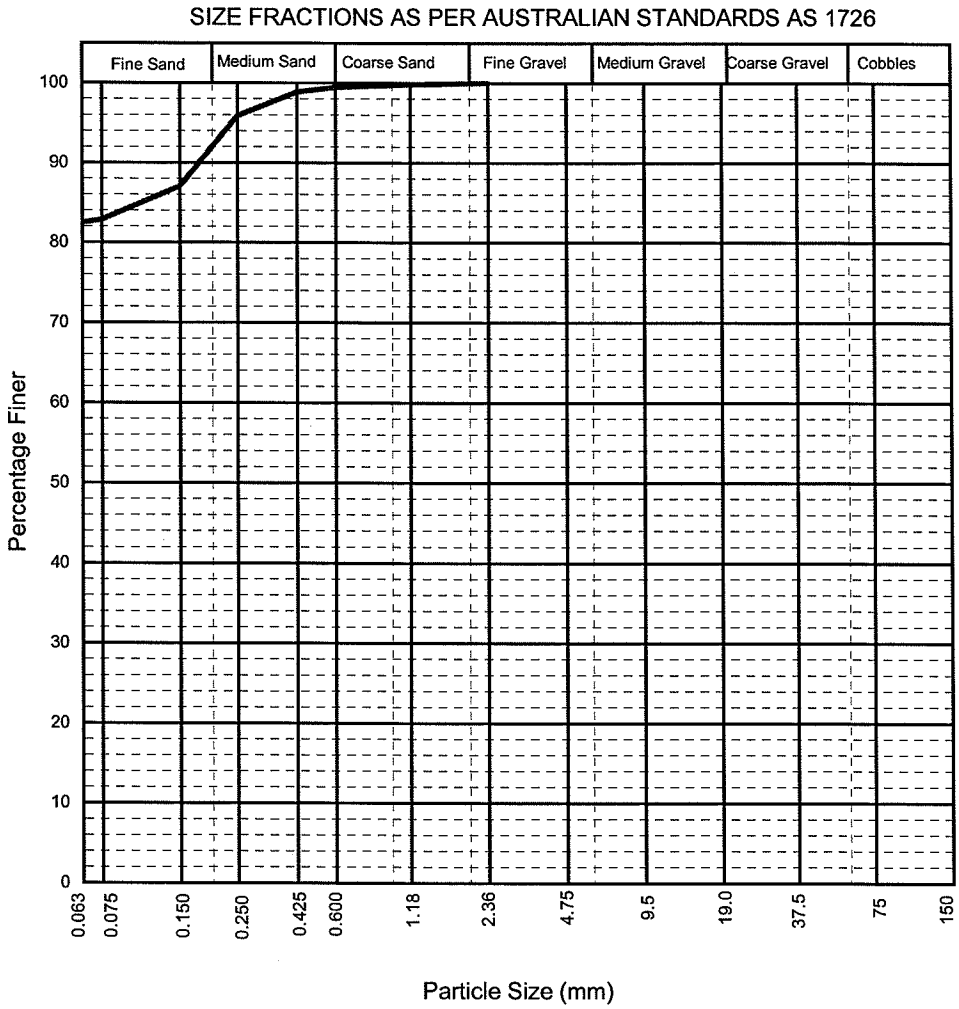
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12182
Sample ID :	H27	Batch No. :	ES0616125 - 7
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.8
0.600	99.4
0.425	98.8
0.250	95.9
0.150	87.0
0.075	82.8
0.063	82.5



Remarks :

Material Description : Silty CLAY (CH) grey, with some sand

Test Procedure : AS 1289 3.6.1

Prepared by : MF | Checked by : JA

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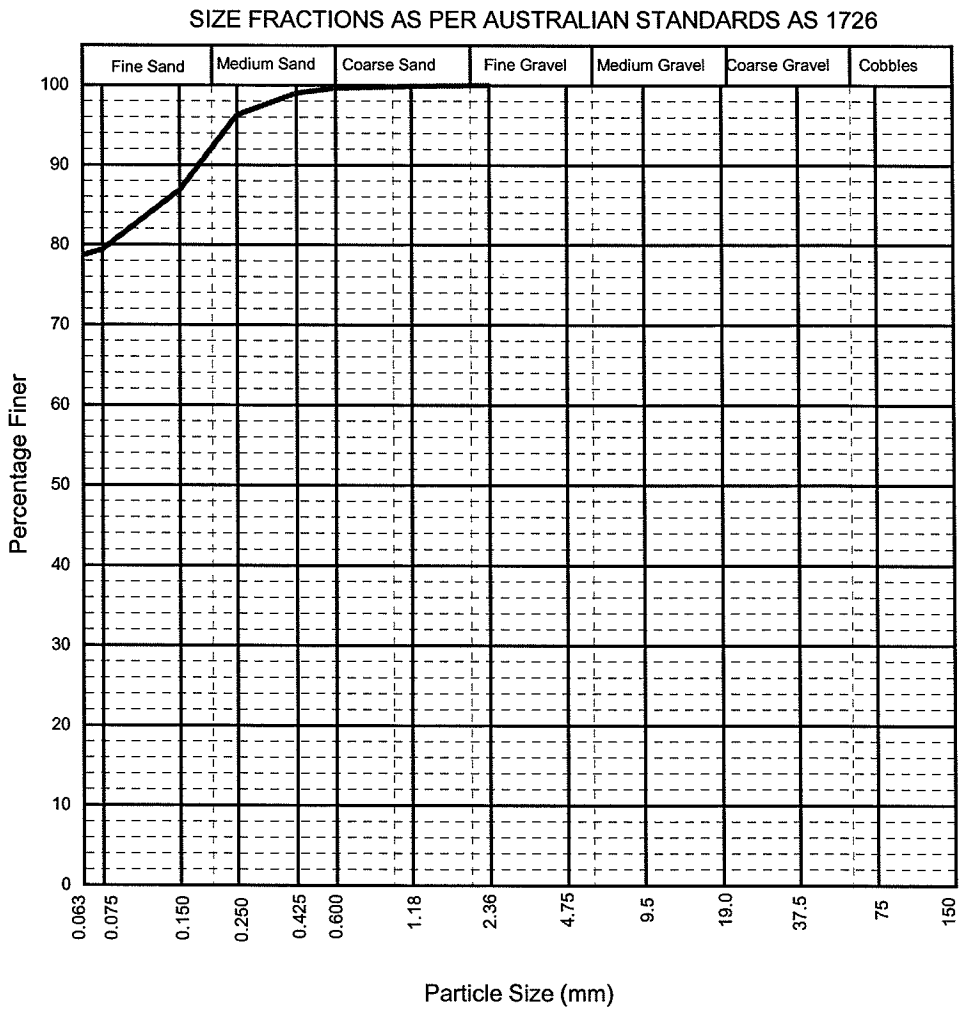
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12183
Sample ID :	H28	Batch No. :	ES0616125 - 8
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.6
0.425	99.0
0.250	96.3
0.150	86.8
0.075	79.4
0.063	78.7



Remarks :

Material Description : Silty CLAY (CH) grey, with some sand

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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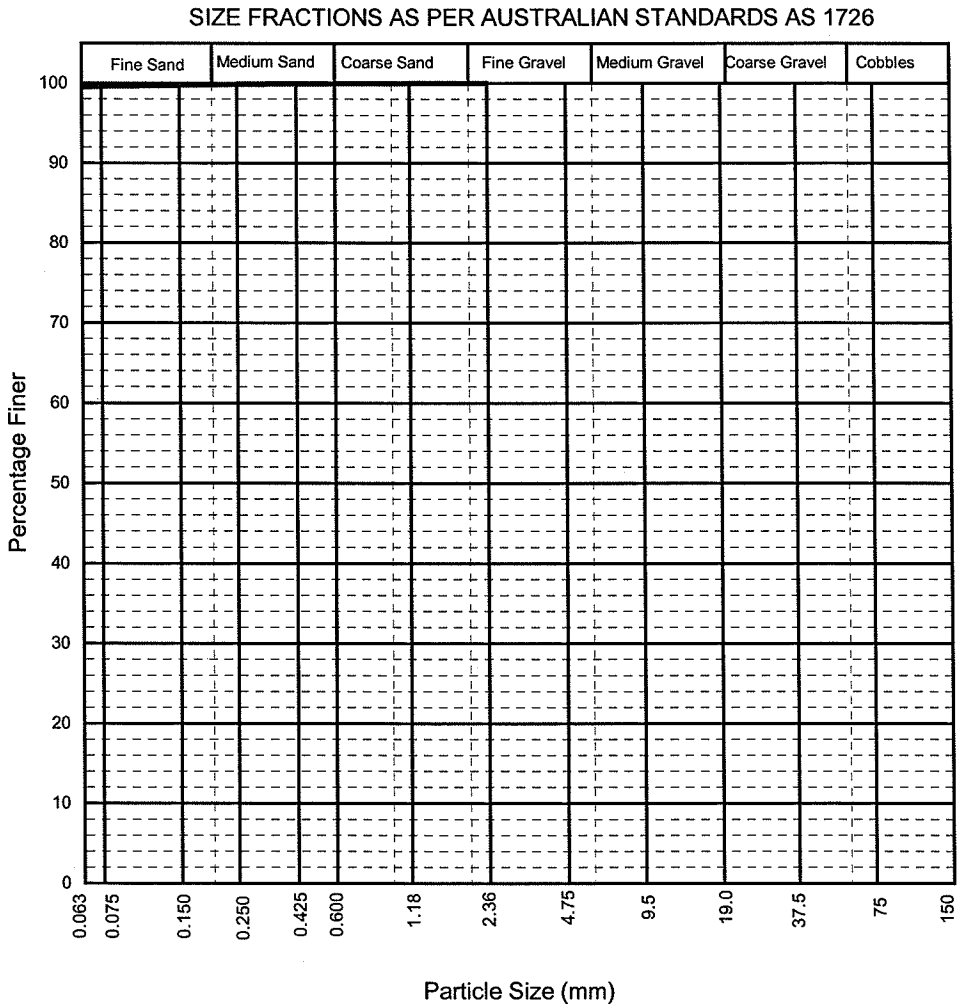
www.golder.com.au

PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12184
Sample ID :	H29	Batch No. :	ES0616125 - 9
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	100.0
0.600	99.9
0.425	99.9
0.250	99.8
0.150	99.7
0.075	99.6
0.063	99.5



Remarks :	
Material Description :	Silty CLAY (CH) dark grey
Test Procedure :	AS 1289 3.6.1
Prepared by : NF	Checked by : JA

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N Jones 15/1/7
Authorised Signatory

Golder Associates

MANSFIELD LABORATORY

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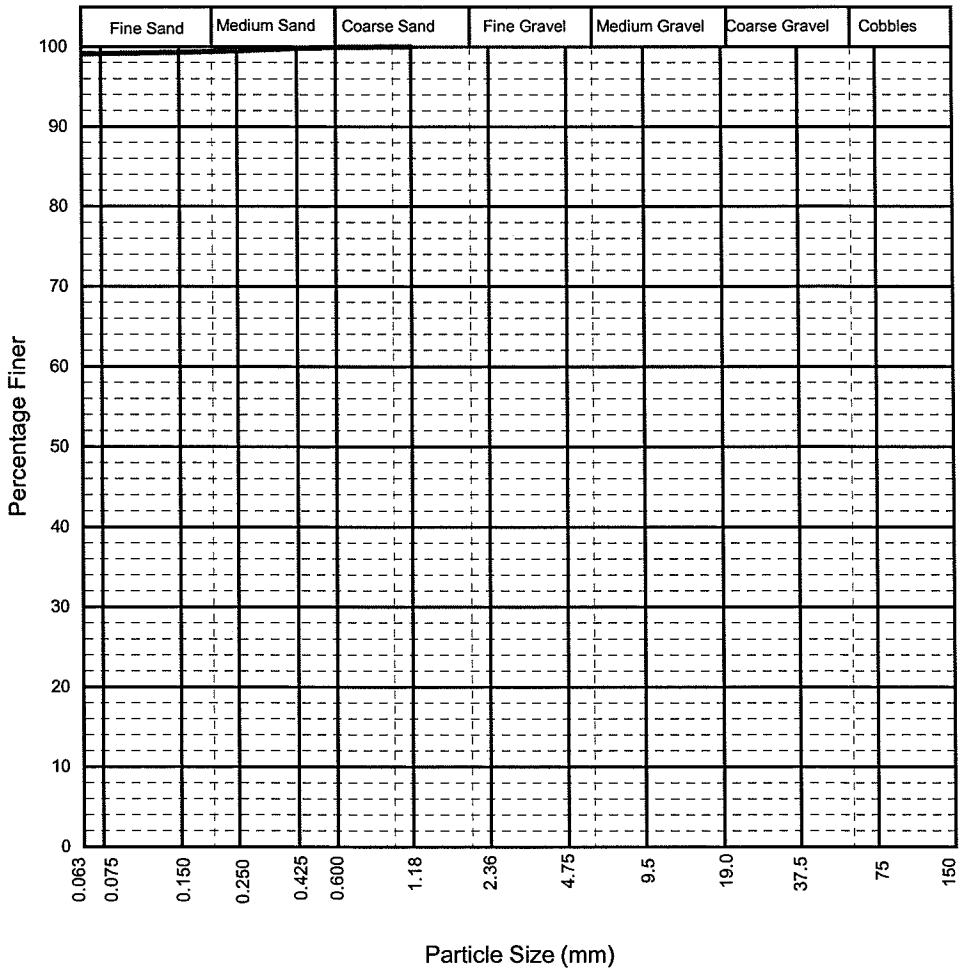
PO Box 2034 Mansfield DC Qld 4122
Ph : (07) 3343 3166 Fax : (07) 3343 4705
www.golder.com.au

PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12185
Sample ID :	H30	Batch No. :	ES0616125 - 10
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	100.0
0.600	99.9
0.425	99.8
0.250	99.5
0.150	99.3
0.075	99.1
0.063	99.1



Remarks :	
Material Description :	Silty CLAY (CH) dark grey
Test Procedure :	AS 1289 3.6.1
Prepared by : MK	Checked by : JA

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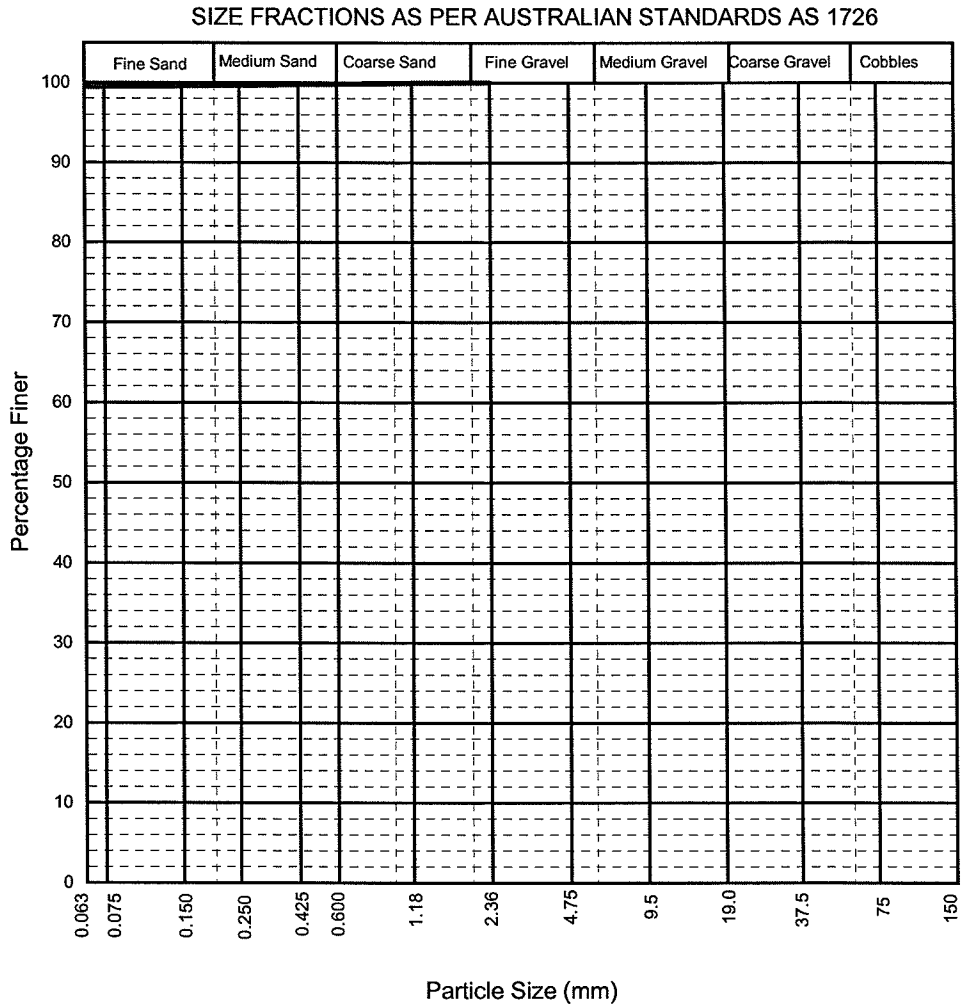
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12186
Sample ID :	H31	Batch No. :	ES0616125 - 11
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.8
0.425	99.8
0.250	99.7
0.150	99.6
0.075	99.5
0.063	99.5



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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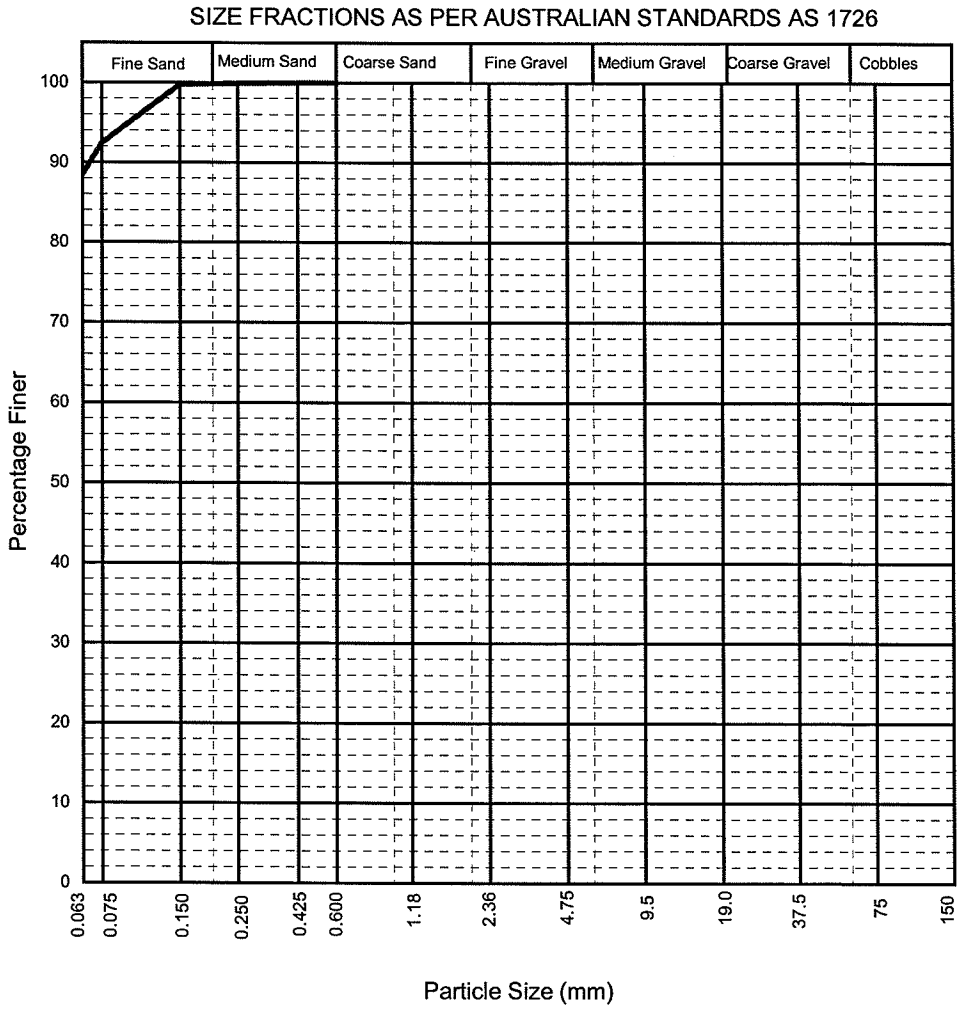
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12187
Sample ID :	H32	Batch No. :	ES0616125 - 12
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	
0.600	100.0
0.425	100.0
0.250	99.9
0.150	99.7
0.075	92.4
0.063	88.4



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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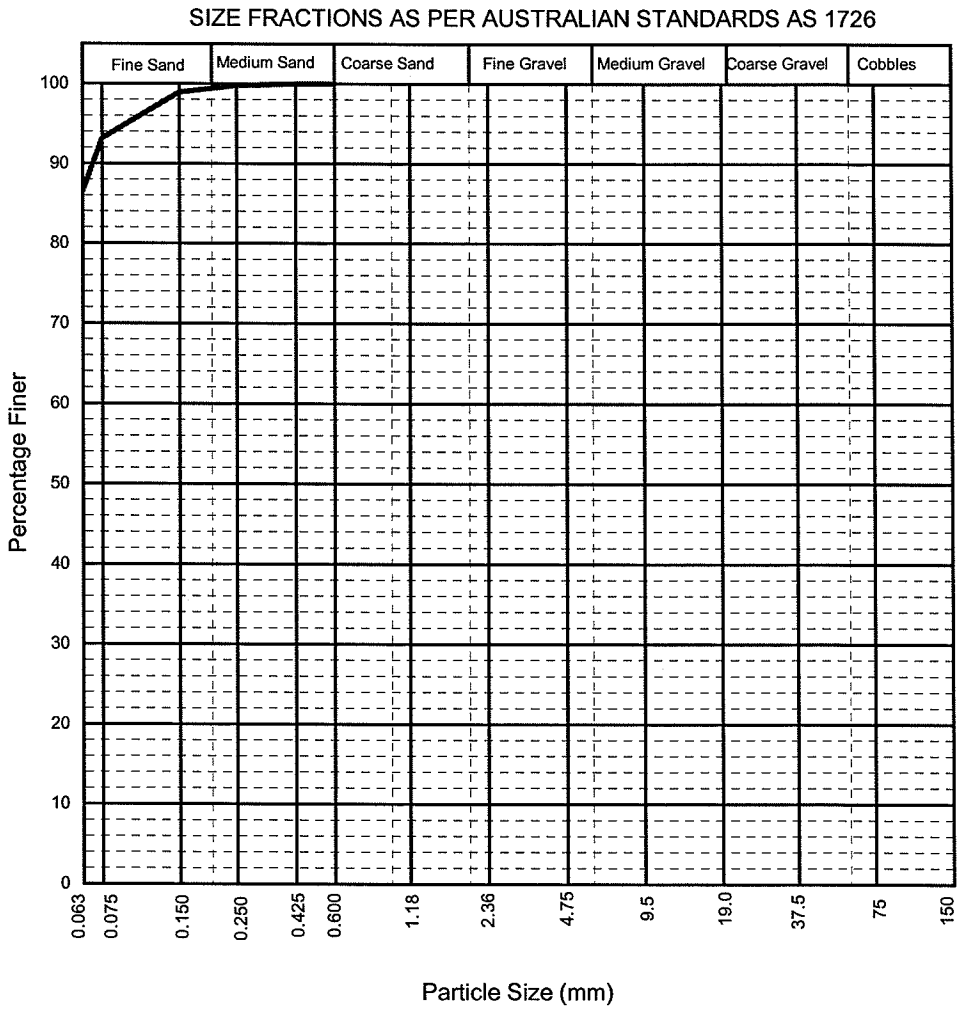
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12188
Sample ID :	H33	Batch No. :	ES0616125 - 13
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	
1.18	
0.600	100.0
0.425	100.0
0.250	99.8
0.150	98.9
0.075	93.1
0.063	86.5



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NK

Checked by : JA

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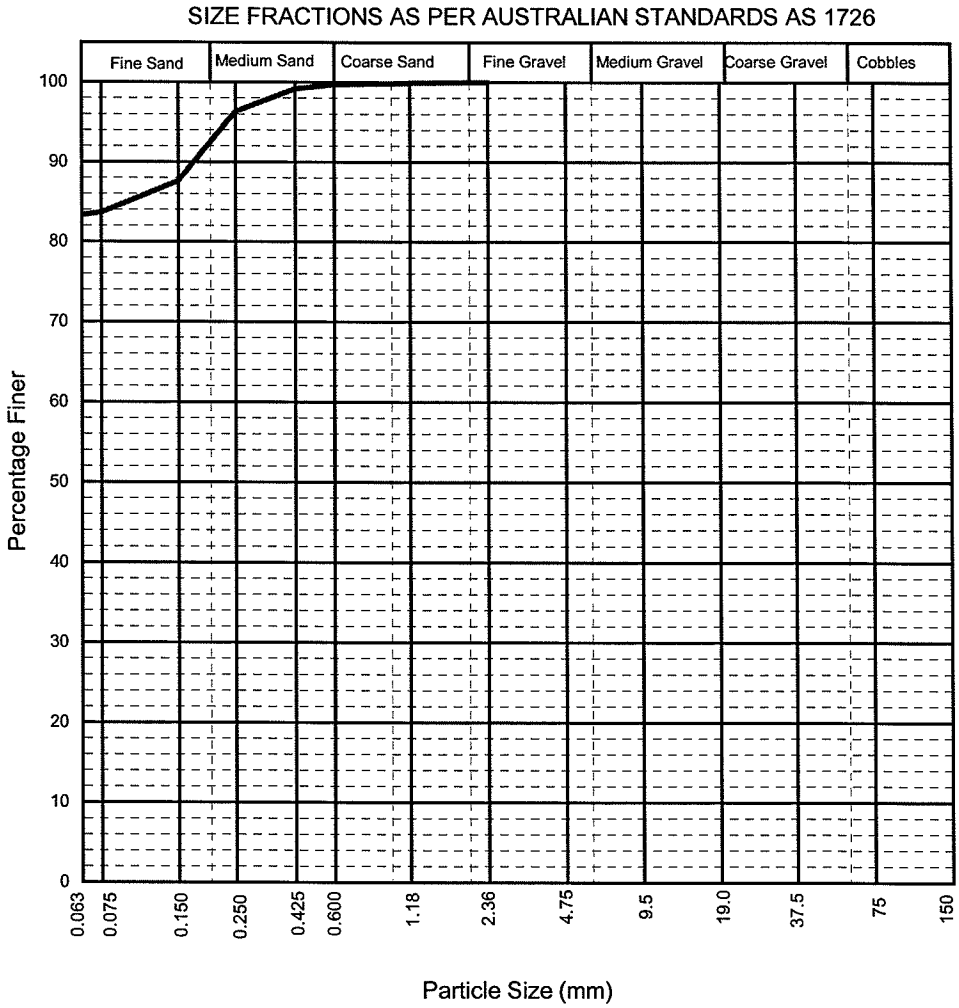
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12189
Sample ID :	QC5	Batch No. :	ES0616125 - 14
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.9
0.600	99.7
0.425	99.2
0.250	96.3
0.150	87.6
0.075	83.7
0.063	83.3



Remarks :

Material Description : Silty CLAY (CH) dark grey, with some sand

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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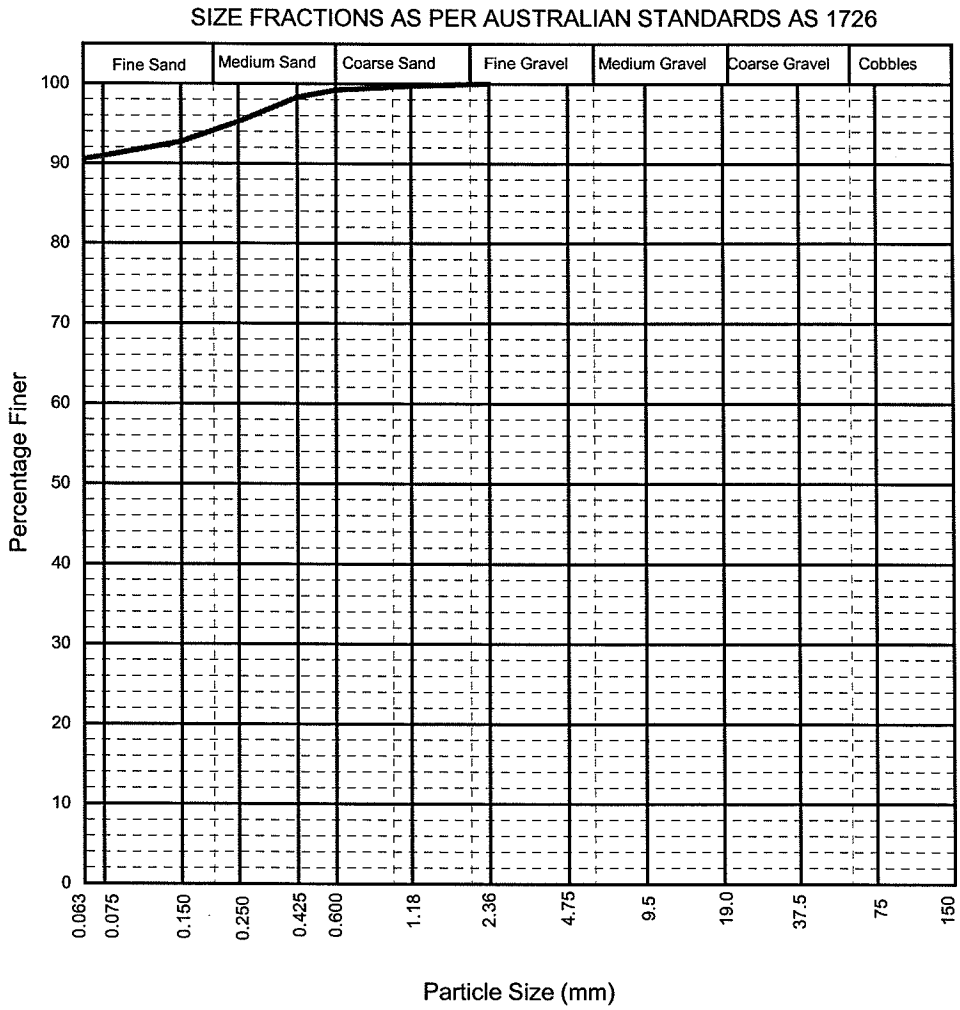
PARTICLE SIZE DISTRIBUTION

Client :	ALS Environmental Sydney	Report No. :	R6425
Address :	277 Woodpark Road, Smithfield NSW	Job No. :	077634002/5
Project :	Delivered Samples	Reg'n No. :	L12190
Sample ID :	QC6	Batch No. :	ES0616125 - 15
		Date Received :	02/01/07
		Sampled By :	Client

Sieve Size (mm)	Percent Passing
150	
75	
37.5	
19.0	
9.5	
4.75	
2.36	100.0
1.18	99.7
0.600	99.2
0.425	98.3
0.250	95.2
0.150	92.7
0.075	90.9
0.063	90.5



Remarks :

Material Description : Silty CLAY (CH) dark grey

Test Procedure : AS 1289 3.6.1

Prepared by : NF

Checked by : JA

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CERTIFICATE OF ANALYSIS

Client	: **URS AUSTRALIA (NSW) PTY LTD**	*Laboratory*	: **ALS Environmental Sydney**	*Page*	: **1 of 6**
Contact	: **MR CARSTEN MATTHAI**	*Contact*	: **Victor Kedicioglu**	*Work Order*	: **ES0700723**
Address	: **LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060**	*Address*	: **277-289 Woodpark Road Smithfield NSW Australia 2164**		
E-mail	: **carsten_matthai@urscorp.com**	*E-mail*	: **Victor.Kedicioglu@alsenviro.com**		
Telephone	: **02 8925 5500**	*Telephone*	: **+61 (02) 8784 8555**		
Facsimile	: **02 8925 5555**	*Facsimile*	: **+61 (02) 8784 8500**		
Project	: **34217595**	*Quote number*	: **----**	*Date received*	: **19 Jan 2007**
Order number	: **Rebatch Of ES0616125**			*Date issued*	: **23 Jan 2007**
C-O-C number	: **- Not provided -**			*No. of samples*	- *Received* : **15**
Site	: **- Not provided -**				*Analysed* : **15**

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NATA Accredited Laboratory 825

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Signatory	*Position*	*Department*
Celine Conceicao	**Spectroscopist**	**Inorganics - NATA 825 (10911 - Sydney)**

Comments

This report for the ALSE reference ES0700723 supersedes any previous reports with this reference. Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- **Analytical Results for Samples Submitted**
- **Surrogate Recovery Data**

The analytical procedures used by ALS Environmental have been developed from established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported herein. Reference methods from which ALSE methods are based are provided in parenthesis.

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insuffient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits). Where LOR of reported result differ from standard LOR, this may be due to high moisture, reduced sample amount or matrix interference. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number, LOR = Limit of Reporting. * Indicates failed Surrogate Recoveries.

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Analytical Results

			Client Sample ID :	H21	H22	H23	H24	H25
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*	ES0700723-001	ES0700723-002	ES0700723-003	ES0700723-004	ES0700723-005
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	61.8	44.2	73.9	73.2	47.4
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.9	0.2	0.1	<0.1	<0.1

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Analytical Results

			Client Sample ID :	H26	H27	H28	H29	H30
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*	ES0700723-006	ES0700723-007	ES0700723-008	ES0700723-009	ES0700723-010
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	69.6	63.5	61.3	62.0	68.0
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.3	<0.1	0.2	<0.1	<0.1

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Analytical Results

			Client Sample ID :	H31	H32	H33	QC5	QC6
			Sample Matrix Type / Description :	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Date / Time :	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00	21 Dec 2006 15:00
			Laboratory Sample ID :					
Analyte	*CAS number*	*LOR*	*Units*	ES0700723-011	ES0700723-012	ES0700723-013	ES0700723-014	ES0700723-015
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	59.5	52.9	40.0	62.9	71.0
EG035T: Total Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2

Surrogate Control Limits

- **No surrogates present on this report.**

ALS Environmental

QUALITY CONTROL REPORT

Client	:	**URS AUSTRALIA (NSW) PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	: **1 of 4**
Contact	:	MR CARSTEN MATTHAI	**Contact**	:	Victor Kedicioglu		
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	: **ES0700723**
						Amendment No.	:
Project	:	34217595	**Quote number**	:	----	**Date received**	: 18 Jan 2007
Order number	:	Rebatch Of ES0616125				**Date issued**	: 23 Jan 2007
C-O-C number	:	- Not provided -					
Site	:	- Not provided -					
E-mail	:	carsten_matthai@urscorp.com	**E-mail**	:	Victor.Kedicioglu@alsenviro.com	**No. of samples**	
Telephone	:	02 8925 5500	**Telephone**	:	+61 (02) 8784 8555	**Received**	: 15
Facsimile	:	02 8925 5555	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	: 15

This final report for the ALSE work order reference ES0700723 supersedes any previous reports with this reference.

Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- Matrix Spikes (MS); Recovery and Acceptance Limits

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Department
Celine Conceicao	Inorganics - NATA 825 (10911 - Sydney)

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.
- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** = *Limit of Reporting,* ***RPD*** = *Relative Percent Difference.*
* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting:- Result < 10 times LOR, no limit - Result between 10 and 20 times LOR, 0% - 50% - Result > 20 times LOR, 0% - 20%

Matrix Type: SOIL ***Laboratory Duplicates (DUP) Report***

Laboratory Sample ID	*Client Sample ID*	*Analyte name*	*LOR*	*Original Result*	*Duplicate Result*	*RPD*
EA055: Moisture Content						
EA055: Moisture Content - (QC Lot: 340468)				**%**	**%**	**%**
ES0700547-001	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	18.1	18.7	3.4
ES0700547-022	Anonymous	Moisture Content (dried @ 103°C)	1.0 %	24.8	23.6	4.7
EA055: Moisture Content - (QC Lot: 340469)				**%**	**%**	**%**
ES0700723-004	H24	Moisture Content (dried @ 103°C)	1.0 %	73.2	73.2	0.0
ES0700723-014	QC5	Moisture Content (dried @ 103°C)	1.0 %	62.9	62.8	0.0
EG035T: Total Mercury by FIMS						
EG035T: Total Mercury by FIMS - (QC Lot: 340045)				**mg/kg**	**mg/kg**	**%**
ES0700631-039	Anonymous	Mercury	0.1 mg/kg	0.1	<0.1	0.0
ES0700723-011	H31	Mercury	0.1 mg/kg	<0.1	0.1	0.0

Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC type is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. Abbreviations: LOR = Limit of reporting.

Matrix Type: SOIL

Method Blank (MB) and Laboratory Control Samples (LCS) Report

		Method blank result	*Actual Results*		*Recovery Limits*	
			Spike concentration	*Spike Recovery*	*Dynamic Recovery Limits*	
Analyte name	*LOR*			*LCS*	*Low*	*High*
EG035T: Total Mercury by FIMS						
EG035T: Total Mercury by FIMS - (QC Lot: 340045)		mg/kg	mg/kg	%	%	%
Mercury	0.1 mg/kg	----	1.4	94.7	73.7	108
	0.1 mg/kg	<0.1	----	----	----	----

Quality Control Report - Matrix Spikes (MS)

The quality control term **Matrix Spike (MS)** refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations:* ***LOR*** *= Limit of Reporting,* ***RPD*** *= Relative Percent Difference.*

* Indicates failed QC

Matrix Type: SOIL

Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
Analyte name	*Laboratory Sample ID*	*Client Sample ID*	*LOR*	*Spike Concentration*		*MS*	*Low*	*High*
EG035T: Total Mercury by FIMS								
EG035T: Total Mercury by FIMS - (QC Lot: 340045)				mg/kg	mg/kg	%	%	%
Mercury	ES0700631-039	Anonymous	0.1 mg/kg	5	0.1	103	70	130

ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	:	**URS AUSTRALIA (NSW) PTY LTD**	**Laboratory**	:	ALS Environmental Sydney	**Page**	:	**1 of 6**
Contact	:	MR CARSTEN MATTHAI	**Contact**	:	Victor Kedicioglu			
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060	**Address**	:	277-289 Woodpark Road Smithfield NSW Australia 2164	**Work order**	:	**ES0700723**
						Amendment No.	:	
Project	:	34217595	**Quote number**	:	----	**Date received**	:	19 Jan 2007
Order number	:	Rebatch Of ES0616125				**Date issued**	:	23 Jan 2007
C-O-C number	:	- Not provided -						
Site	:	- Not provided -						
E-mail	:	carsten_matthai@urscorp.com	**E-mail**	:	Victor.Kedicioglu@alsenviro.com	**No. of samples**		
Telephone	:	02 8925 5500	**Telephone**	:	+61 (02) 8784 8555	**Received**	:	15
Facsimile	:	02 8925 5555	**Facsimile**	:	+61 (02) 8784 8500	**Analysed**	:	15

This Interpretive Quality Control Report was issued on 23 Jan 2007 for the ALS work order reference ES0700723 and supersedes any previous reports with this reference.
This report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Type Frequency Compliance
- Summary of all Quality Control Outliers
- Brief Method Summaries

Interpretive Quality Control Report - Analysis Holding Time

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL ***Analysis Holding Time and Preservation***

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	----	----	----	**22 Jan 2007**	28 Dec 2006	**Fail by 25 days**
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EG035T: Total Mercury by FIMS								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**20 Jan 2007**	18 Jan 2007	**Fail by 2 days**	**22 Jan 2007**	18 Jan 2007	**Fail by 4 days**
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								

Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: SOIL ***Frequency of Quality Control Samples***

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	**Actual**	**Expected**	
Laboratory Duplicates (DUP)					
EA055-103: Moisture Content	4	40	**10.0**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS	2	15	**13.3**	**10.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EG035T: Total Mercury by FIMS	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EG035T: Total Mercury by FIMS	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)					
EG035T: Total Mercury by FIMS	1	15	**6.7**	**5.0**	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

- **For all matrices, no RPD recovery outliers occur for the duplicate analysis.**
- **For all matrices, no method blank result outliers occur.**
- **For all matrices, no laboratory spike recoveries breaches occur.**
- **For all matrices, no matrix spike recoveries breaches occur.**

Surrogates

- **For all matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

Method / **Container /** Client Sample ID(s)		**Date Sampled**	**Extraction / Preparation**			**Analysis**		
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EA055-103: Moisture Content								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	----	----	----	**22 Jan 2007**	28 Dec 2006	**Fail by 25 days**
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								
EG035T: Total Mercury by FIMS								
Soil Glass Jar - Unpreserved								
H21,	H22,	**21 Dec 2006**	**20 Jan 2007**	18 Jan 2007	**Fail by 2 days**	**22 Jan 2007**	18 Jan 2007	**Fail by 4 days**
H23,	H24,							
H25,	H26,							
H27,	H28,							
H29,	H30,							
H31,	H32,							
H33,	QC5,							
QC6								

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

- **No frequency outliers occur.**

Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL ***Method Reference Summary***

Preparation Methods

EN69 : Hot Block Digest for metals in soils sediments and sludges - USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)

Analytical Methods

EA055-103 : Moisture Content - A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)

EG035T : Total Mercury by FIMS - AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)

AUSTRALIAN LABORATORY SERVICES PTY LTD ABN 84 009 936 029
277-289 Woodpark Road Smithfield NSW 2164 Australia
Telephone: +61 (02) 8784 8555 Facsimile: +61 (02) 8784 8500 http://www.alsenviro.com/

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive report

Client Details

Client	:	**URS AUSTRALIA (NSW) PTY LTD**
Contact	:	**MR CARSTEN MATTHAI**
Address	:	LEVEL 3, 116 MILLER STREET NORTH SYDNEY NSW AUSTRALIA 2060
Project	:	**34217595**
Order number	:	**REBATCH OF ES0616125**
C-O-C Number	:	**- Not provided -**
Site	:	**- Not provided -**
Sampler	:	**- Not provided -**
E-mail	:	carsten_matthai@urscorp.com
Telephone	:	02 8925 5500
Facsimile	:	02 8925 5555

Laboratory Details

Laboratory	:	**ALS Environmental Sydney**
Manager	:	**Greg Vogel**
Address	:	277-289 Woodpark Road Smithfield NSW Australia 2164
Quote number	:	----
Work order	:	**ES0700723**
E-mail	:	Greg.Vogel@alsenviro.com
Telephone	:	+61 (02) 8784 8555
Facsimile	:	+61 (02) 8784 8500

Dates

Date Samples Received	:	19 Jan 2007	**SRA Issue Date**	:	19 Jan 2007
Scheduled Reporting Date	:	**22 Jan 2007**	**Client Requested Date**	:	22 Jan 2007

Delivery Details

Mode of Delivery	:	Carrier.	**Temperature**		:	6'C
No. of coolers/boxes	:	REBATCH	**No. of samples**	**- Received**		15
Security Seal	:	Intact.		**- Analysed**		15

Comments

- **Samples received in appropriately pretreated and preserved containers.**
- **Breaches in recommended extraction / analysis holding times may occur. Please contact ALSE for further information (Nanthini Coilparampil).**
- **Mercury analysis should be conducted within 28 days of sampling.**

- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALSE Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
- When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

Disclaimer : This document contains privileged and confidential information intended only for the use of the addressee. If you are not the addressee, you are hereby notified that you must not disseminate, copy or take action of its contents. If you have received this document in error, please notify ALS immediately.

Client	: URS AUSTRALIA (NSW) PTY LTD	**Work Order**	: ES0700723
Project	: 34217595	**ALS Quote Reference**	: ----

Summary of Sample(s) / Container(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	**Requested Analysis**									
		EA055-103 - SOIL Moisture Content	**EG035T (solids) - SOIL** Total Mercury by FIMS								
ES0700723-001	**H21 - 21 Dec 2006**	]	]								
ES0700723-002	**H22 - 21 Dec 2006**	]	]								
ES0700723-003	**H23 - 21 Dec 2006**	]	]								
ES0700723-004	**H24 - 21 Dec 2006**	]	]								
ES0700723-005	**H25 - 21 Dec 2006**	]	]								
ES0700723-006	**H26 - 21 Dec 2006**	]	]								
ES0700723-007	**H27 - 21 Dec 2006**	]	]								
ES0700723-008	**H28 - 21 Dec 2006**	]	]								
ES0700723-009	**H29 - 21 Dec 2006**	]	]								
ES0700723-010	**H30 - 21 Dec 2006**	]	]								
ES0700723-011	**H31 - 21 Dec 2006**	]	]								
ES0700723-012	**H32 - 21 Dec 2006**	]	]								
ES0700723-013	**H33 - 21 Dec 2006**	]	]								
ES0700723-014	**QC5 - 21 Dec 2006**	]	]								
ES0700723-015	**QC6 - 21 Dec 2006**	]	]								
	Total(s) :	**15**	**15**								

Client	: URS AUSTRALIA (NSW) PTY LTD	**Work Order**	: ES0700723
Project	: 34217595	**ALS Quote Reference**	: ----

Requested Reports

l	**ACCOUNTS PAYABLE**		
-	Invoice	Email	sydney_accounts@urscorp.com
l	**MR CARSTEN MATTHAI**		
-	A4 - Quality Control Report - NEPM format	Email	carsten_matthai@urscorp.com
-	A4 - Certificate of Analysis - NEPM format	Email	carsten_matthai@urscorp.com
-	A4 - Interpretive Quality Control Report - NEPM format	Email	carsten_matthai@urscorp.com
-	MRED Export Format	Email	carsten_matthai@urscorp.com
-	A4 - Sample Receipt Notification - Comprehensive format	Email	carsten_matthai@urscorp.com
-	Chain of Custody Acknowledgement	Email	carsten_matthai@urscorp.com

Sample Container(s) / Preservation Non-Compliance Log

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

l **No sample container / preservation non-compliance exist.**

S106 - 108

Fadi Soro

FADI: 19/1/7

From: Brenda Hong
Sent: Thursday, 18 January 2007 5:05 PM
To: Samples Sydney
Cc: Nanthini Coilparampil; Vanessa Battishill; Kim Phan
Subject: Rebatch ES0616125

Hi Fadi,

Could you please re-batch all 15 samples for Hg.

24 HR TAT

Vanessa/Kim, please do not charge for this batch.

Thanks,

Brenda Hong
Client Services

ALS Laboratory Group
Sydney, Australia
Phone: + 61 2 8784 8555
Direct: + 61 2 8784 8504
Fax: + 61 2 8784 8500
www.alsglobal.com

1 H21
2 H22
3 H23
4 H24
5 H25
6 H26
7 H27
8 H28
9 H29
10 H30
11 H31
12 H32
13 H33
14 QC5
15 QC6

-----Original Message-----
From: Carsten_Matthai@URSCorp.com [mailto:Carsten_Matthai@URSCorp.com]
Sent: Thursday, 18 January 2007 4:46 PM
To: Brenda Hong
Subject: Re: Test Results ES0616125 - omission of Hg

Brenda,

The batch below has no reported Hg concentrations. Please arrange for the lab to amend the CoA. Thanks.

Regards,
Carsten
(See attached file: ES0616125_COANA.PDF)

Carsten Matthai
Senior Environmental Scientist
URS Asia Pacific
3/116 Miller Street, North Sydney, NSW 2060, AUSTRALIA
Ph: +612 8925 5590 Fax: +612 8925 5555
mailto: carsten_matthai@urscorp.com visit our website at
http://www.ap.urscorp.com
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ALS Environmental
Sydney
Work Order
ES0700723
Telephone : +61 (02) 8784 8555

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Appendix C Data Validation

URS

DATA VALIDATION SUMMARY

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

Project Name:	Hornsby Shire Council Sediment and Antifoul Study	**Project/Task Number:**	43217595
Analytical Laboratory:	ALS ALS	**Batch/Ref. Number(s):**	ES0615839 ES0615835
Date Sampled:	13/12/06 - 14/12/06	**Sample Type:**	Sediment

Sample Handling, Receipt and Holding Times	Yes/No	Comments
COC completed adequately	Yes	Yes
Samples received intact and chilled	Yes	ES0615839- Intact 12.8C ES0615835- Intact, 9.8C, ice present.
Samples analysed within appropriate holding times per analytical methods.	Yes	Yes

# of Primary Samples	# of QAQC Samples	# of Duplicate Samples	# of Triplicate Samples
39	0	4	0

Blanks

Method Blank (MB), Rinsate Blank (RB), Trip Blank (TB), Field Blank (FB)

Type	Comments
MB	All method blank results were below LOR

Laboratory Control Samples (LCS)

Analyte	
PAHs	Recovery of Fluorene (79.8%) and Anthracene (76.8%) in ES0615839 were less than the lower control limits of 79.9% and 81.1% respectively.

Matrix Spike (MS)

Analyte	Comments
OCP- ES0615839	Recoveries of Heptachlor (107%), Endrin (130%), 4'4-DDT (123%) in sample H1, and Heptachlor (107%) in an anonomous sample, were greater than the upper data quality objectives 106.71%, 119.47%, 118.1% and 106.71% respectively.
OCP-ES0615835	Recoveries of gamma-BHC (119%) and Heptachlor (110%) in sample H14 exceeded the upper data quality objectives 110.44% and 106.71% respectively. Recovery of Aldrin 70% was less than the lower data quality limit of 77.54%.
OPP-ES0615839	Recovery of chloropyrifos-methyl (112%) an Pirimphos-ethyl (116%) in sample H1 was greater than the upper data quality objectives of 107.91% and 109.42% respectively. Recovery of Bromophos-ethyl in an anonomous sample was less than the lower data quality objective of 74.94.
OPP-ES0615835	Recovery of Bromophos-ethyl (72.2%) in sample H14was less than the lower data quality objective of 107.37%

Trip Spike /Control Trip Spike

Analyte	% R	Comments
n/a		

Duplicates

Laboratory Duplicates	Comments
Metals-ES0615839	RPD for Calcium (20.2%) in an anonomous sample exceeds LOR based limits (0-20%)
Metals-ES0615835	RPD for Calcium (20.2% and 36.8%) and Manganese (69.6%) in anonomous samples exceeds LOR based limits (0-20%)

Intra-Laboratory Duplicates	Comments
QC1/H18	All RPD results below LOR or within acceptable data quality objectives
QC2/H38	RPD for Manganese (40.07%) exceeds data quality objectives
QC3/H39	RPD for Total Kjeldahl Nitrogen (41.92%) exceeds data quality objectives
QC4/H20	All RPD results below LOR or within acceptable data quality objectives

Inter-Laboratory Duplicates	Comments
N/A	

Surrogate Monitoring Compound Analyses

Analyte	Comments
TPH/BTEX -ES0615839	Recovery of Toluene-D8 (118%) was greater than upper data quality objective (117%)
TPH/BTEX -ES0615835	Recovery of Toluene-D8 (118%) and 1,2-Dichloroethane-D4 (78.8%) exceeded quality objectives 81-117% and 80-120% respectively. Recovery of Toluene-D8, 4- Bromofluorobenzene and 1,2-Dichloroethane-D4 was not determined due to matrix interference.

Overall Comments

Low recovery of Flurorene and Anthracene in the LCS is unlikely to significantly affect the quality of the results as the exceedances were only marginal 0.1% and 4.3% respectively.

Over-reporting of OC and OP Pesticide concentrations as a result of high matrix spike recoveries does not affect the quality of the data as all batch results are below LOR. Exceedances reported for anonomous samples do not affect batch results as the these samples are of another client as and such are not representative of the primary sample matrices. Low recovery of Bromophos-ethyl and Aldrin in sample H14 may indicate that these results were under-reported, however as the exceedances are relatively minor and the reported concentrations are below LOR, it would be unlikely to affect the characterisation of the sediment.

RPD exceedance of data quality objectives in the Laboratory duplicate is marginal (0.2%) and as such are not considered significant. High RPD for Manganese in the laboratory duplicate was repeated in the field duplicate suggesting variable results. This is likely a result of sample heterogeneity.

High RPD for TKN in one of the four field duplicate analyses was likely the result of sample heterogeneity and not likely to significantly affect the quality of the batch data.
This batch is suitable for environmental interpretative use

Performed By:	L. Alexander	Reviewed By:
Date:	17-Jan-07	Date:

URS

DATA VALIDATION SUMMARY

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

Project Name:	Hornsby Shire Council Sediment and Antifoul Study	**Project/Task Number:**	43217595
Analytical Laboratory:	ALS	**Batch/Ref. Number(s):**	ES0616125
Date Sampled:	21/12/2006	**Sample Type:**	Sediment

Sample Handling, Receipt and Holding Times	Yes/No	Comments
COC completed adequately	Yes	Yes
Samples received intact and chilled	Yes	Intact 11C ice present
Samples analysed within appropriate holding times per analytical methods.	Yes	

# of Primary Samples	# of QAQC Samples	# of Duplicate Samples	# of Triplicate Samples
13	0	2	0

Blanks

Method Blank (MB), Rinsate Blank (RB), Trip Blank (TB), Field Blank (FB)

Type	Comments
MB	All method blank results were below LOR

Laboratory Control Samples (LCS)

Analyte	
PAHs	Recovery of Benz(a)anthracene (113%) was greater than the upper control limitof 112%

Matrix Spike (MS)

Analyte	Comments
TKN	Matrix spike recovery was not determined as background levels were greater than or equal to 4x spike level.
OCPs	Recovery of gamma-BHC (66%), Heptachlor (36.4%), Aldrin (36.4%) and Dieldrin (67.8%) was less than the lower data quality objectives 75.65%, 72.2%, 77.54% and 76.37% respectively. Recovery could not be determined for 4,4'DDT as a result of matrix interference.
OPPS	Recovery of Chlorpyrifos-methyl (74%), Bromophos ethyl (53.4%) and Prothiofos (72%) was less than the lower data quality limits 74.84%, 74.94% and 75.45% respectively.

Trip Spike /Control Trip Spike

Analyte	% R	Comments
n/a		

Duplicates

Laboratory Duplicates	Comments
	All RPD were within acceptable control limits.

Intra-Laboratory Duplicates	Comments
QC5/H27	All RPD were within acceptable control limits.
QC6/H26	RPD for Copper (72.96%), Zinc (37.58%) and TKN (37.2%) exceeded data quality objectives

Inter-Laboratory Duplicates	Comments
N/A	

Surrogate Monitoring Compound Analyses

Analyte	Comments
TPH/BTEX	Recover of 1,2-Dichloroethane-D4 (79.6%) was less than lower data quality objective (80%)

Overall Comments

Exceedance of control limits for Benz(a)anthracene in the LCS does not significantly affect the quality of the data as the exceedance was marginal (1%)

Recovery of TKN could not be determined in the matrix spike analysis as background concentartions exceeded 4 x spike concentration.

Low recoveries for OC and OP pesticides in the matrix spike may indicate that concentrations of these analytes were under-reported for these analytes. This is not expected to affect characterisation of the sediment as exceedances were generally marginal.

RPDs exceeded data quality objectives for TKN, Zinc and Copper in one of the field duplicate analyses. This result was not observed for any other duplicate analysis and is likely a re of sample heterogeneity. This result does not significantly affect the validity of the reported results.

This batch is suitable for environmental interpretative use

Performed By:	L. Alexander	Reviewed By:	
Date:	18-Jan-07	Date:	