MARINE SEDIMENT INVESTIGATION

Environmental Investigations of Proposed Capital Dredging at China Bay and Pipeline Crossing at the Narrows, Gladstone



Prepared for

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List of Acronyms and Definitions

Acronym	Description
AASS	Actual Acid Sulfate Soils
AHD	Australian Height Datum
ALS	Australian Laboratory Services Pty Ltd
ANZECC	Australian and New Zealand Environment and Conservation Council
ANC	Acid Neutralising Capacity
As	Arsenic
ASS	Acid Sulfate Soil
ARMCANZ	
BH	Boreholes
Bq	Becquerels
BSB	Below Sea Bed
BTEX	Benzene, Toluene, Ethyl-benzene, m+p Xylenes, o-Xylene
$CaCO_3$	Calcium Carbonate
Coastal CRC	CRC for Coastal Zone, Estuary and Waterway Management
COPC	Contaminants of Potential Concern
CRC	Cooperative Research Centre
CSG	Coal Seam Gas
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Curtis Coastal Plan	Curtis Coast Regional Coastal Management Plan
DGPS	Differential Global Positioning system
DNRW	Department of Natural Resources and Water
EIL	Environmental Investigation Level
EIS	Environmental Impact Statement
GPC	Gladstone Ports Corporation
GPS	Global Positioning system
HIL	Health Investigation Level
IL	Investigation Level
ISQG	Interim Sediment Quality Guidelines
KCL	Potassium Chloride
kg	Kilogram
km	Kilometre
L	Litre
LAT	Lowest astronomical tide
LOR	Limit of Reporting
LNG	Liquefied Natural Gas
m	Metre
mg	Milligram

List of Acronyms and Definitions

Acronym	Description
MIPEC	Marine Industrial Port Engineering and Contracting Pty Ltd
MOF	Materials Offloading Facility
MPI	Maximum Potential Intensity
NATA	National Association of Testing Authorities
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
NODGDM	National Ocean Disposal Guidelines for Dredged Materials
OC	Organochlorin pesticides
OP	Organophosphate pesticides,
PAH	Polycyclic Aromatic Hydrocarbon
PASS	Potential Acid Sulfate Soils
PCB	Polychlorinated Biphenyl
pH	potential of Hydrogen (measures acidity)
pH_F	Field pH
pH_{FOX}	Oxidised Field pH
PLF	Product Loading Facility
PSA	Particle Size Analysis
QASSIT	Queensland Acid Sulfate Soils Investigation Team
QA/QC	Quality Assurance/ Quality Control
QEPA	Queensland Environmental Protection Agency
RPD	Relative Mean Difference
S	Sulphur
sCr	Chromium Reducible Sulphur
s-TAA	Sulfidic Titratable Actual Acidity
SAP	Sampling and Analysis Plan
SPT	Standard Penetration Testing
TAA	Titratable Actual Acidity
TBT	Tributyltin
TC	Total Carbon
TIC	Total Inorganic Carbon
TKN	Total Kjeldahl Nitrogen
TMBC	Twice Mean Background Concentration
TN	Total Nitrogen
TOC	Total Organic Carbon
TP	Total Phosphorus
TPA	Titratable Peroxide Acidity
TPH	Total Petroleum Hydrocarbons

List of Acronyms and Definitions

Acronym	Description
TSS	Total Suspended Solids
UCL	Upper Confidence Level
UTM	Universal Transverse Mercator
µg	Microgram

Executive Summary

URS Australia Pty Ltd (URS) was commissioned by Santos Ltd (Santos) to undertake a marine sediment investigation as part of the Environmental Impact Statement (EIS) being prepared for the Gladstone Liquefied Natural Gas (GLNG) project. Specifically, this study was conducted to support the application for approval to conduct marine dredging activities in Port Curtis as a baseline investigation and provide data to assist in subsequent assessment of potential locations for spoil disposal (at the time of writing the location of such a spoil area had not yet been finalised).

The purpose of this investigation was to establish baseline conditions of any identified contamination and Acid Sulfate Soils (ASS) within the marine sediment, for the proposed capital dredge area and the areas of potential additional associated marine construction. The additional marine works comprise a potential vehicle bridge to Curtis Island, a gas transmission pipeline to Curtis Island, a Product Loading Facility (PLF), a Materials Offloading Facility (MOF) as well as a potential retaining wall which may be required for one potential location for spoil disposal. The results of this investigation and the baseline conditions identified herein will also assist in establishing the appropriateness of proposed methods and locations for the disposal of dredge spoils.

It should be noted that the environmental impact of dredge spoil disposal will be affected significantly by the method of dredging and the location of spoil disposal. It was not within the requested scope of this marine sediment investigation report to comment on the potential impacts of spoil disposal, make recommendations as to spoil disposal locations, or any treatment requirements of spoil material (this will be undertaken under separate studies).

A marine drilling investigation program commenced on the 22nd July 2008 and was completed on 3rd November 2008. URS field supervision of drilling ceased on the 15th October 2008 with the completion of BH32. Connell Wagner supervised the remaining four boreholes (BH33 to BH36) for geotechnical investigation purposes. In total, 26 boreholes were drilled during this mobilisation, of which URS and Connell Wagner collectively supervised the drilling of 22 and Connell Wagner supervised the drilling of four boreholes.

Geology and Lithology

Three main geological profiles were intersected during this investigation, which is comparable to the published geology for the area, as per the "Geological Series 1:100,000 Map for Gladstone (Sheet 9150), Department of Mines (1998)". The geological profiles encountered generally comprised marine sediments *(Holocene aged estuarine alluvial)* and residual material overlying extremely weathered to fresh bedrock (*Wandilla Formation),* which ranged from siltstones/sandstones to low grade metamorphosed argillite. The geological profiles were generally not uniform in thickness and not immediately apparent or distinct. Marine sediments varied from clays through to sands, with the seabed surface lithology often containing shell fragments, which decreased in concentration with depth down to 3 m below seabed (mBSB) in some locations. Thicker bands of marine sediment (before transition into residual) were generally found closer to mid channel, between the mainland and Curtis Island, and also where sandbank areas were observed. .

Acid Sulfate Soils – Proposed Dredge Area

The proposed GLNG capital dredge area and a small section of the adjacent Materials Offloading Facility (MOF) are the only sections of the proposed marine works which comprises removal and exposure of sediment.

Preliminary ASS investigations carried out by GeoCoastal (2008) had previously identified the area adjacent to the shoreline of China Bay as being a Potential Acid Sulfate Soil (PASS) risk.

Along the main dredging transect where capital dredging is proposed, all Holocene-aged sediments provided a negative net acidity, indicating that they have excess buffering capacity. It was concluded that dredging of this sediment will present no acid sulfate soils risk to the environment (GeoCoastal 2008).

The URS marine sediment investigation identified that throughout the area of investigation there was no indication of the presence of Actual Acid Sulfate Soils (AASS).

The presence of possible horizons of PASS was noted in several areas. In the northern section of the proposed dredge area, where the seabed was at 4.3 m below Lowest Astronomical Tide (-mLAT), some potential acidity in the marine alluvium was noted at an elevation of 16.1 –mLAT (a band 11.8 m thick); effectively the marine sediment profile. As the seabed slopes down toward the southern end of the dredge area (seabed level at 12 –mLAT) the band of potential acidity is approximately 4 m thick (again the marine alluvial sediment).

Acid neutralising capacity (ANC) was recorded in the marine sediments to depths of 3 m. Shell content was noted throughout the marine sediment, decreasing with depth. Surface sediment ANC was likely to be the result of the shell content; however ANC was also present at depth, indicating potential microscopic sources of ANC. It should be noted that ANC is indicative of buffering capacity inherent in soils; however the availability of ANC *insitu* can be overestimated during laboratory analysis. Under natural conditions shell fragments are usually coarse with minimal surface area. Under laboratory conditions shell fragments are ground, increasing the surface area to volume ratio for reaction (neutralisation). Additionally, large shell fragments may often be coated in reaction by-products such as gypsum, rendering the bulk of the calcium carbonate ($CaCO_3$) of the shell unavailable for neutralisation. ANC can also be present in the microscopic range (such as foraminiferal content) which provide larger reactive surface area ratios.

The action criteria of 0.03 %S for net acidity was exceeded (when ANC was excluded) in marine sediments collected from the proposed dredge area (the main area of sediment disturbance and removal) primarily at depths from seabed to 6 mBSB. As such, ASS management would be required. With the inclusion of ANC the Net Acidity found in the dredge area was less than LOR (except for one sample), and below the action criteria.

The overall liming rate (excluding ANC) comprising of all samples analysed within the dredge area, ranged from 2 to 47 kg $CaCO_3$/tonne. Liming rate is a derived value calculated from the Net Acidity and can be calculated excluding or including ANC.

The inclusion of ANC into the calculation of liming rates, for all samples analysed, reduces the liming rate to <1 kg $CaCO_3$/tonne; except for BH5 at 1.8-2.0 mBSB (3 kg $CaCO_3$/tonne),

As such, it is the availability of ANC through the marine sediment which governs the amount of net acidity and subsequently the need for treatment (liming).

Metals

Metals were reported in all areas of the investigation.

The following guidelines were adopted:

- Environmental Investigation Levels (EILs) from “Queensland Environmental Protection Agency (QEPA) Draft Guidelines for Assessment and Management of Contaminated Lands in Queensland 1998” (QEPA EILs);
- The Health Investigation Levels (HILs) from Table 5-A of the National Environmental Protection Measure, 1999 (NEPM) from the National Environmental Protection Council (NEPC). The HIL exposure setting ‘F’ which applies to “commercial/industrial” land use was selected (NEPM HILs); and
- The “Screening Levels” and “Maximum Levels” for marine sediment quality, as given in Table 5 of the NODGDM (2002) were also applied.

Reported concentrations for antimony, arsenic, chromium, copper, manganese, mercury and nickel, exceeded the Investigation Levels (ILs) established in some of the guidelines.

Recorded metals exceedances were consistently noted as being at depths greater than 1.0 mBSB. It is likely that the presence of metals is naturally occurring; given that several metals were consistently present at higher concentrations within the residual material than the overlying marine sediment. It is noted that the high metals concentrations were also reported in EIS studies for Curtis Island (LNG facility

onshore study area) soils and groundwater. These results have been discussed in those respective reports and summarised in the relevant EIS chapters (Section 8.3 and Section 8.6 of the EIS).

Arsenic was observed in marine sediments above guidelines in several locations at various depths. The only recorded instance of arsenic concentrations exceeding guideline investigation levels (ILs), where the depth was less then 1.0 mBSB, was in the areas proposed for the Product Loading Facility (PLF) and the Materials Offloading Facility (MOF). These areas are in close proximity to the shore of Curtis Island.

Whilst no guidelines have been established for either iron or aluminium, both metals were present in notable concentrations.

Despite the likelihood of metals being naturally occurring, if the proposed dredging is carried out and sediment is brought to the surface, metals inherent in the material may be mobilised from either sorbed metals or dissolved metals in the spoil slurry waters, potentially posing a risk to any receiving environment where dredging waters are released. Any proposed treatment of ASS must also address the risk of dissolution of dissolved metals from leachates or dredging waters, caused by over neutralisation. This may lead to iron flocs or areas of high deposition of metals at the point of release into the receiving waters.

Upper Confidence Levels and Background Levels for Metals

The calculation of the 95% Upper Confidence Level (UCL) is a statistical determination to establish an analytical concentration from a data set for a particular analyte, where 95% of the results within that data set are below the calculated ULC.

No metal guideline is exceeded by the calculated 95% UCLs for any metal except antimony (2.69 mg/kg), which exceeds the NODGM (2002) Screening Level of (2 mg/kg). Additionally some metals analysed as part of this investigation did not return results above the LOR, or returned to few results above the LOR for statistical interpretation.

It should be noted that no ILs are established under the adopted guidelines for aluminium and iron. For these parameters the twice mean background concentration (TMBC) was calculated from all 197 primary samples analysed for aluminium and iron, collected by both URS and GeoCoastal (2008), from all areas of marine sediment investigation. The TMBC for aluminium (12,918 mg/kg) was exceeded in 13 of the 197 samples (6.6% of primary samples). The TMBC for iron (33,870 mg/kg) was exceeded in 9 of the 197 samples (4.6% of primary samples).

Exceedances of TMBC for aluminium and iron were noted at varying depths and location. No immediate trend was apparent as to the distribution laterally or vertically of these exceedances.

Nutrients

No ILs or screening levels were established for nutrients under the guidelines adopted for this investigation.

Generally, nitrate, nitrite and ammonia results in sediment samples reported concentrations less than the laboratory LOR.

TKN was recorded in the range of 30-660 mg/kg. Borehole BH01 was reported to have the highest concentration of TKN and nitrogen within the proposed offshore dredge area, with the maximum TKN value observed at a depth of 0.0-0.5 mBSB (BH01).

BH12 was located closer to Curtis Island (in the tidal flats of China Bay). Recordable ammonia at the LOR (20 mg/kg) was found at 0.0-0.5 and 0.5-1.0 mBSB. This depth profile also returned maximum TKN value of 920 mg/kg at 0.5-1.0m BSB. The TKN result exceeds the maximum offshore value and is likely due to an increased organic content of surface seabed sediment on the tidal flats.

Total Kjeldahl Nitrogen (TKN) was recorded in the range of 30-660 mg/kg. Borehole BH01 was reported to have the highest concentrations of TKN and nitrogen within the proposed offshore dredge area, with the maximum TKN value observed at a depth of 0.0-0.5 mBSB (BH01).

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Samples from BH 12 located in the tidal flats of China Bay recorded ammonia at the LOR (20 mg/kg) at depths of 0.0-0.5 and 0.5-1.0 mBSB. This depth profile from BH12 returned a TKN value of 920 mg/kg at 0.5-1.0m BSB, which is greater than TKN values noted within the proposed dredge area. This is likely due to an increased organic content within the surface seabed sediment on the tidal flats.

Total Phosphorus was detected in the range of 94-506 mg/kg (BH11 at 0.0-0.5 mBSB and BH06 at 4.6-5.6 mBSB respectively).

Total Organic Carbon (TOC) was noted to decrease through the marine sediment profile with depth, as the presence of organic material noted in field observations also decreased. The concentration of TOC ranged from 0.02-1.43 %, with the highest value observed from BH18 at 2.6-3.0 and 3.0-3.2 mBSB.

Pore Water Ammonia

Analysis for Pore Water Ammonia was carried out upon advice from the QEPA, on four samples from three boreholes within the proposed dredge area, collected by GeoCoastal (2008) during the preliminary investigation. Results ranged from 2630 to 5580 µg/L. All four pore water analytical results exceeded the respective pH adjusted trigger values, outlined in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand,* (ANZECC/ARMCANZ (2000). It should be noted that the guideline allows for higher trigger values at lower pH's.

Organic Compounds

Sampling and analysis of organic compounds during this investigation was carried out for the following targeted parameters;

- Total petroleum Hydrocarbons (TPH);
- Benzene, Toluene, Ethyl-Benzene and Xylene (BTEX) compounds;
- Poly Aromatic Hydrocarbons (PAH);
- Organochlorine (OC) and Organophosphate (OP) pesticides;
- Phenolic Compounds;
- Tributyltin (TBT);
- Triazine Pesticides, Carbamates Pesticides and Phenoxyacetic acid Pesticides; and
- Polychlorinated Biphenyls (PCBs).

Sampling of these compounds was carried out by both URS and GeoCoastal (2008). Results for these parameters were below LOR for all samples except for:

- Naphthalene (trace detection) was detected in 8 samples and 2-Methylnaphthalene was detected in 11 samples at concentrations below the NODGDM (2002) screening levels;
- Phenol (trace detection) was reported for 7 samples at concentrations below the NEPM HILs; and
- Two OC pesticides (4,4-DDT and Endrin) were initially reported above the ISQG-low screening level at BH11 (12.95-13.45 -mLAT) and BH12 (3.2-4.2 -mLAT). DDT was also detected below the screening level in one other sample. ALS reanalysed these samples and confirmed that these results were false positives and that all samples are below the LOR for DDT and Endrin.

Radionuclides

All radionuclide results for the four samples analysed were below the NODGDM (2002) Screening Level of 35 becquerels per gram (Bq/g).

Section 1 Background Information

URS Australia Pty Ltd (URS) was commissioned by Santos Ltd (Santos) to undertake an Environmental Impact Statement (EIS) for the proposed development of a Liquefied Natural Gas (LNG) facility, on the southern end of Curtis Island, in Port Curtis, near Gladstone. In addition to the construction on Curtis Island, Santos proposes the following marine works:

- Dredging of a shipping channel branching off the Targinie Channel, a swing basin and the construction of a Product Loading Facility (PLF) to allow for LNG carriers to dock and load, located to the west of China Bay, Curtis Island;
- Dredging a trench to lay a gas transmission pipeline between Friend Point and Laird Point and the construction of a vehicle bridge across an adjacent alignment. The trenched pipeline will allow for the natural gas to be piped from Santos' coal seam gas fields, situated close to Roma, to the proposed LNG facility on Curtis Island; and
- The development of, a Materials Offloading Facility (MOF), including dredging, to support construction works.

As part of the overall EIS, URS was further commissioned to undertake a specific environmental investigation, as follows:

- Carry out sampling to establish the sediment profile in the proposed dredge areas, the proposed bridge and pipeline crossing, and the proposed PLF and MOF;
- Identify any existing contamination within the marine sediment in these areas;
- Identify and classify the Acid Sulfate Soils (ASS) condition within the marine sediments in these areas; and
- Carry out additional drilling and investigation at the southern end of Curtis Island for a potential retaining wall which may be required for one potential location for spoil disposal.

This environmental investigation was undertaken in tandem with a geotechnical investigation carried out by Connell Wagner, who were commissioned by Santos.

1.1 Purpose and Investigation Overview

The purpose of this investigation was to establish baseline conditions of any identified contamination and ASS within the marine sediment, for the proposed dredge areas and the areas of specific proposed additional marine works. The results of this investigation and the baseline conditions identified herein will also assist in establishing the appropriateness of proposed methods and locations for the disposal of dredge spoils.

The number and location of boreholes was determined through consultation with the Gladstone Ports Corporation (GPC) and the Queensland Environmental Protection Agency (QEPA), from whom Santos sought advice regarding the Sampling and Analysis Plan (SAP) which was implemented during field investigations. Additionally, sampling and analytical requirements were guided by the results of previous preliminary marine sediment studies recently carried out in the dredge area (GeoCoastal Pty Ltd carried out a preliminary marine sediment investigation in the proposed dredging area in June 2008 (GeoCoastal 2008)).

It should be noted that the environmental impact of dredge spoil disposal will be affected significantly by the method of dredging and the location of spoil disposal. It was not within the requested scope of this marine sediment investigation report to comment on the potential impacts of spoil disposal, make recommendations as to spoil disposal locations, or any treatment requirements of spoils.

Section 2 Background Information

2.1 Site Description

The Port Curtis estuary is a natural deepwater harbour located beside the city of Gladstone on the coast of central Queensland. The estuary is a composite estuarine system including estuaries of the Calliope River, The Narrows and several other creek systems and inlets. Within Port Curtis is Auckland Creek and the mouth of the Boyne River, which is dammed upstream by the Awoonga Dam. These estuarine components merge with deeper waters to form the naturally deep Gladstone Harbour (administered by the GPC) which is protected by southern Curtis Island and Facing Island.

Substantial urbanisation, industrialisation and port development has occurred in recent decades. The coastal strip beside Port Curtis is moderately populated (the Gladstone urban centre supports a >40,000 regional population) and is now the centre for several industries including coal exports, cement and chemicals manufacture, alumina refining and aluminium smelting.

Port Curtis is located within the Great Barrier Reef World Heritage Area, but its waters lie outside the boundaries of the Great Barrier Reef Marine Park and State Marine Parks.

Approximately 3 km north of Fisherman's Island terminal (located in Gladstone Harbour) is 'The Narrows', which is listed in the National Estate Register and is a State Marine Park. The Narrows runs between the mainland and Curtis Island. As with the majority of the Port area, Port Curtis is located within the Rodd's Bay Dugong Sanctuary B.

Figure 1 gives an overview of the investigation areas, showing The Narrows at the north where the potential bridge and pipeline crossing are located, through the dredge area to the southern end of Curtis Island.

2.1.1 Regional Geology and Acid Sulfate Soils

Geology

According to the "Geological Series 1:100,000 Map for Gladstone (Sheet 9150), Department of Mines (1998)", the geology around the Curtis Island area and just inland of the eastern shoreline of The Narrows comprises Holocene aged *estuarine alluvial and residual* deposits overlying the *Wandilla Formation* (mudstone, arenite and chert) as part of the *Curtis Island Group* of formations from the Early Carboniferous age.

The shoreline of The Narrows on the western (mainland) side comprises a mixture of Holocene aged *estuarine alluvial and residual* deposits developing into Holocene age *coastal plains* moving eastwards into The Narrows, which include *tidal flats* and comprises lithologies of sands and muds.

The area around the proposed dredge site may have been disturbed by previous dredging, reclamation and filling activities.

Acid Sulfate Soils

ASS risk maps are generated and published by the Queensland Department of Natural Resources and Water (DNRW). At the time of this investigation, several previous ASS studies had been commissioned by the DNRW in the area around Gladstone (Tannum Sands and The Narrows) as well as numerous industry commissioned ASS surveys; however, no ASS Risk map had been published for the Gladstone area by the DNRW.

In addition, a terrestrial ASS study has been conducted as part of the GLNG EIS, the results of which are reported separately.

Given the presence of Holocene tidal flats and muds (particularly in existing mangrove swamps or areas where mangrove swamps have been drained and reclaimed); there is a likelihood that "organic clays" may be either acidic or potentially acidic.

Section 2 Background Information

2.2 Potential Contaminant Sources

The Port of Gladstone has pastoral, agricultural, chemical and industrial processing as well as manufacturing industries utilising port facilities, or which are located adjacent to the port.

Table 2-1 lists some of the major industries served by the port and their associated products, which could give rise to contaminants of potential concern (COPC) for the area, while **Table 2-2** shows some of the major import and export cargoes handled within the Port.

Table 2-1 Major Industries

INDUSTRY NAME	INDUSTRY TYPE and POTENTIAL CONTAMINANTS
BSL – Boyne Smelters Limited	Aluminium smelter
QAL – Queensland Alumina Ltd	Alumina refinery
NRG – NRG Gladstone Operating Services Pty Ltd	Power generator
Orica Australia Pty Ltd	Sodium cyanide, ammonium nitrate and chlorine plant
RTA – Rio Tinto Aluminium (Yarwun)	Alumina refinery
QER – Queensland Energy Resources (ceased operation 2003)	Oil shale miner and medium shale oil and naphtha plant
Cement Australia	Cement and clinker plant
Origin Energy	Gas import, storage and distribution
BP	Petroleum product import, storage and distribution
Caltex	Petroleum product import, storage and distribution
Graincorp	Agricultural product export and import
Queensland Magnesia	Magnesia and magnesite export
Patrick's Corporation	Container/general cargo handling, storage and distribution

Table 2-2 Major Imports and Exports of Port of Gladstone

IMPORTS	EXPORTS
Bauxite	Alumina
Bunker oil	Aluminium
Caustic soda	Calcite
Cement gypsum	Cement
Containers	Cement clinker
General cargo	Coal
Liquid pitch	Containers
LP gas	Fly ash
Petroleum coke	General cargo
Petroleum products	Agricultural products e.g. grain

Section 2 Background Information

2.3 Acid Sulfate Soils Background

ASS is a common name for naturally occurring clays, muds and sands rich in iron sulfides (pyrite). ASS typically occur in coastal and estuarine sediments. When such sediments are exposed to the air by excavation, dredging, placement of fill or by lowering the local ground water table, the iron sulfides react with oxygen to form sulfuric acid according to the following overall reaction:

$$FeS_2 + \frac{15}{4} O_2 + \frac{7}{2} H_2O \rightarrow Fe(OH)_3 + 2\,SO_4^{2-} + 2\,H_2^{+}$$

The decrease in pH also causes iron, aluminum and other metals to become soluble. The flushing or leaching of disturbed ASS potentially enables mobilization of the dissolved metals and acidic leach waters. This can cause significant impact to the environment, engineered structures and human health in the receiving areas.

In their natural (usually anaerobic) environments, the iron sulfides in the soil are relatively stable. These stable ASS are called Potential Acid Sulfate Soils (PASS) because they have the potential to produce acidity when exposed to oxygen, but have not yet done so. PASS materials have a pH close to neutral (pH 6.5 – 7.5) when undisturbed. Disturbed PASS materials that have been subjected to oxidation are referred to as Actual Acid Sulfate Soils (AASS). AASS are acidic and have a pH of less than 4.

Indicative ASS Testing

Field pH (pH_F) and oxidised field pH (pH_{FOX}) are indicative tests and involve the addition of water and hydrogen peroxide (to simulate full oxidation) respectively, to soil samples. These tests are used to indicate the likelihood of a soil to be an AASS or PASS, according to the following:

- pH_F value of less than 4 may indicate that AASS is present;
- pH_{FOX} value of less than 3 may indicate that PASS is present;
- pH_{FOX} values 1 pH unit below the associated pH_F value may indicate PASS, with larger reductions in pH_{FOX} generally providing a stronger indication of PASS; and
- A strong reaction to peroxide in the pH_{FOX} test in may also indicate PASS. The oxidation of organic matter may also result in strong reaction rates.

Section 3 GLNG Proposed Marine Works

3.1 Capital Dredging

The proposed capital dredging will comprise the dredging of an approach channel, off the existing Targinie Channel, berthing pockets and a swing basin, to a design depth of 14.0 m below Lowest Astronomical Tide (-mLAT). This will allow the safe passage, docking and loading of LNG carriers, with a margin of safety between vessel keel and the seabed. The estimated *insitu* volume of material to be dredged as part of the capital dredging between the surveyed seabed and 14 -mLAT is approximately 8,000,000 m^3. Dredging is most likely to be undertaken using conventional cutter suction dredges, with all material pumped as a water/sediment slurry from the dredge, through a floating discharge line to the spoil disposal/reclamation site.

The design depth and estimated capital dredging volume, is based on advice from Santos at the time of field investigations and is as per the agreed SAP (August 2008). If subsequent to the completion of this investigation report, the capital dredging design depth is modified, the results presented herein will continue to be representative of the baseline conditions within the proposed dredge area to a targeted sample depth of 15-mLAT.

Figure 3 shows a view of boreholes (BH01-BH14, BH17, BH18) located in the proposed dredge area. Shown are the locations of the eight preliminary boreholes drilled by GeoCoastal (2008), and the ten subsequent boreholes drilled by URS during this phase of investigation. The boreholes were located to ensure representative coverage across the proposed dredge area and into the shallows of China Bay.

Some additional boreholes are shown on **Figure 3**, which were located at points where the construction of the offshore structures (PLF, MOF and potential retaining wall) are proposed.

3.2 Potential Bridge Construction and Pipeline Trenching

A potential bridge between Friend Point (mainland) and Laird Point (Curtis Island) is being investigated to allow vehicular access to Curtis Island. The need for such a bridge is the subject of ongoing consultation with regulatory agencies. The design of the bridge is subject to further investigations, but if constructed, but if constructed will likely be founded on bored piles with driven steel liners, at a depth where suitable rock is encountered. This is unlikely to result in the significant disturbance of marine sediments, as piles are bored to final depth through driven steel liners which contain the sediments from the boring process.

The pipeline from the coal seam gas (CSG) fields to the LNG facility is planned to cross from Friend Point to Laird Point along an alignment adjacent to the north of the potential bridge. The pipeline is proposed to be buried approximately 2 m below the seabed in a trench, with ballast placed on top of the trench to secure the pipeline. The approximate distance from Friend Point to Laird Point is 1500 m. It is estimated that the trench required to lay the pipeline will be will be approximately 2 m wide, resulting in a total of 6000 m^3 *insitu* of disturbed sediments.

Figure 2 gives a view of the locations of the proposed bridge and pipeline crossing, along with the borehole locations for that area (BH19-BH21, BH24-BH26). A total of six borehole locations were drilled; three along a potential northern alignment and three along a potential southern alignment. Previous sediment sampling had not been conducted in this area. Geotechnical investigations were also undertaken at these boreholes to allow for subsequent initial bridge design, as such, drilling continued until 5 m of suitable rock was encountered, or to the limits of the drilling rig.

3.3 Product Loading Facility PLF) and Materials Offloading Facility (MOF)

The PLF will comprise a trestle jetty to connect the facility on Curtis Island to offshore loading platforms. The trestle will be approximately 400 m long with the loading platform at the end covering an approximate area of 50 m x 30 m. The PLF will allow for the LNG carriers to dock and be loaded with LNG. The PLF will likely be founded upon piles driven into the seabed, until suitable rock is reached. This is unlikely to result in the significant disturbance of marine sediments.

Section 3 GLNG Proposed Marine Works

The MOF is proposed to be constructed on the southern tip of China Bay at Hamilton Point. The facility will act as a support point for construction works. The final construction methodology of the MOF has not been determined, but may potentially include a sheet-piled structure and piled foundations to support the necessary berthing and mooring structures. Approximately 100,000 m^3 (*insitu*) of material would be dredged at the MOF to a design depth of 8 –mLAT.

Figure 3 shows the locations of boreholes drilled for the proposed PLF (BH16, BH28, BH31 and BH32) and MOF (BH15, BH27). Borehole locations were selected to ensure that there was representative coverage across the entire length of both marine structures. As geotechnical investigations were also undertaken at these boreholes, drilling continued until 5 m of suitable rock was encountered, or to the limits of the drilling rig.

The design of the PLF and MOF are subject to further investigations.

3.4 Potential Spoil Disposal Retaining Wall

As at the date of submission of this report (January 2009), the method and location of disposal of the dredge spoil had not been finalised. Santos has commissioned the investigation of a number of potential spoil disposal areas on Curtis Island, including Laird Point and Boatshed Point, and the valley directly to the north of the LNG facility site. As part of these investigations, two additional boreholes were drilled in the Boatshed Point area, in the vicinity of a potential retaining wall, for opportunistic data gathering. These boreholes are shown on **Figure 3** (BH29 and BH30).

Section 4 Previous Environmental Studies

4.1 GeoCoastal (2008) – Santos GLNG Dredge Area

Santos commissioned GeoCoastal to collect sediment cores for environmental and ASS testing from the proposed GLNG dredge area in June 2008, as a preliminary study to be used in conjunction with the subsequent URS marine sediment investigation.

The location of the GeoCoastal boreholes are shown in **Figure 1 and Figure 3**. GeoCoastal drilled eight boreholes (BH); seven in the deeper section of the proposed dredge area and one in the shallower section of China Bay. Depths ranged from 4.2 –mLAT (BH12) to 15.17 –mLAT (BH9 and BH10).

The analytical parameters tested as part of the GeoCoastal investigation were as per the requirements of the National Ocean Disposal Guidelines for Dredged Materials (NODGDM 2002) and the Queensland Environmental Protection Agency (QEPA), and are listed below:

- Physical: Particle Size Analysis (PSA);
- Metals, Trace Elements and Metaloids;
- Nutrients: Nitrate and Nitrite, Nitrite, Ammonia, Nitrate, Total Kjeldahl Nitrogen (TKN), Total Nitrogen and Total Phosphorus;
- Organics: Total Petroleum Hydrocarbons (TPH), BTEX (Benzene, Toluene, Ethyl-benzene, m+p Xylenes, o-Xylene), Polycyclic Aromatic Hydrocarbons (PAHs), and Phenolic compounds;
- Other Organics: Total Organic Carbon (TOC), Tributyltin (TBT), Organochlorine (OC) Pesticides, Organophosphate (OP) pesticides, Polychlorinated Biphenyls (PCB), Phenoxyacetic Acid herbicides, Triazine herbicides, Carbamate pesticides;
- Acid Sulfate Soils: Indicative field test (ph_{Field} and pH_{Fox}) and Chromium Suite analysis; and
- Other: Radionuclides.

The analytical results from GeoCoastal (2008) have been incorporated into the URS marine sediment investigation into the analytical results tables within this report **(URS 2008 - Analytical Results Tables**).

Summary of Results

All of the samples analysed returned results below the laboratory Limit of Reporting (LOR) for:

- TPH and BTEX compounds;
- OC pesticides and OP pesticides;
- Triazine Herbicides and Phenoxy Acid Herbicides; and
- TBT and PCBs.

Four PAHs (2-methylnaphthalene, naphthalene, phenanthrene and pyrene) were recorded above the laboratory limit of reporting (LOR), but below the Interim Sediment Quality Guidelines (ISQG) - low screening levels contained in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ 2000) and the NODGDM (2002).

The only phenolic compound recorded above the LOR was phenol at concentrations of between 10 and 30 µg/kg, which is below the National Environment Protection Council 1999 Health-based Investigation Levels - Commercial/Industrial guideline of 42,500 mg/kg (NEPC 1999).

Elevated levels of several metals not addressed in Table 5 of NODGM 2002 were recorded (aluminium, iron and manganese). For these parameters, the twice mean background concentration (TMBC) was calculated using analytical results.

Section 4 Previous Environmental Studies

The TMBC for aluminium (10,961 mg/kg) was exceeded in three samples from BH12 (0.0-0.5 -mLAT, 0.5-1.0 -mLAT and 3.2-4.2 -mLAT). Aluminium is generally not considered a toxic contaminant in marine sediments.[1]

The TMBC for iron (30,590 mg/kg) was exceeded in two samples, from BH1 (7.65-8.15 -mLAT) and BH12 (0.5-1.0 -mLAT). Iron is not considered a toxic contaminant (NODGDM 2002)[1].

The TMBC for manganese (647 mg/kg) was exceeded in two samples, from BH3 (6.52-7.02 -mLAT) and BH9 (14.17-15.17 -mLAT); these samples also exceed the QEPA's Environmental Investigation Level (QEPA EILs) for manganese of 500 mg/kg. Additionally the QEPA EIL for manganese was exceeded by two other samples, BH1 (7.65-8.15 -mLAT) and BH3 (7.02-7.52 -mLAT).

The mean level of manganese across all samples was 323 mg/kg with a standard deviation of 229 mg/kg, which is similar to the levels reported for Hay Point (279 ± 248 mg/kg). The 95% Upper Confidence Level (UCL)[2] calculated over all samples for Manganese (399 mg/kg) was below the QEPA EILs.

Manganese has been mined at several locations in and around Gladstone with the Mount Miller deposit 10 km to the west of the city being the most significant producer. Manganese is widely recognised as occurring naturally in marine sediments.

Several other metals/metalloids were recorded above the LOR (arsenic, chromium, copper, lead and nickel), but were all below the ISQG-low screening level.

Two OC pesticides (4,4-DDT and Endrin) were initially reported above the ISQG-low screening level at BH11 (12.95-13.45 -mLAT) and BH12 (3.2-4.2 -mLAT). DDT was also detected below the screening level in one other sample. Australian Laboratory Services Pty Ltd (ALS) reanalysed these samples and confirmed that these results were false positives and that all samples are below the LOR for DDT and Endrin.

Queensland Health was commissioned to test for radionuclides in one sample BH3 (6.52-7.02 -mLAT). All of the results (including the sum of gross alpha and gross beta) were well below the ISQG-low screening level of 35 becquerels per gram (Bq/g).

Relevant results from laboratory reports show that the marine sediments within the channel which comprised of Holocene silty clays and silty clayey sands contain PASS but also contain high levels of shell (calcium carbonate) that have effectively acted as a neutralising agent, resulting in no overall net acidity. No Actual ASS was present (GeoCoastal 2008).

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[1] Aluminium is concentrated in sediment and particulate matter, especially at neutral pH, with concentrations ranging from 20 000 to 80 000 mg/kg. Aluminium is one of the most abundant elements in soil and concentrations vary widely. A range of 700 to 100 000 mg/kg was quoted by the U.S. Geological Survey. Therefore, there are large amounts of aluminium in the environment; however, the element does not appear to have a role in biological systems, presumably because it is not bioavailable under normal conditions. Dissolved aluminium concentrations can be substantially higher in acidic or poorly buffered environments when subjected to sustained or periodic exposure to strong acid inputs. Under such circumstances aluminium may be transported from soil to surface waters. Acidic deposition, afforestation, the cessation of liming and sulphide oxidation all contribute to acidification and the release of previously bound aluminium (Imray et al. 1998).

Bauxite, deposited beneath the South Trees wharf from spillage during handling (Curran 1995), and dust and outfall from the red mud pond of QAL are potential sources of aluminium and iron enrichment to biota of Port Curtis estuary. The highest concentration of dissolved aluminium (46 µg L-1) was recorded near the red mud pond of QAL (McConchie 1995). Results of a dust monitoring study in 1992 to 1993 revealed alumina from QAL activities travelled considerable distances within the Port Curtis region (Katestone Scientific 1994) (reported in Apte et al. 2005).

ASS are relatively harmless in their undisturbed (submerged) state but may generate large quantities of sulfuric acid when exposed to the atmosphere through excavation, dredging or lowering of the water table. In addition, iron and aluminium metals may become soluble under acid conditions (Al3+, Fe2+ and Fe3+) and enter rivers and estuaries where they may have detrimental effects on aquatic organisms (Imray et al. 1998).

[2] Samples with results below the LOR were treated as half the LOR for the purposes off calculating UCLs.

Section 4 Previous Environmental Studies

Along the main marine transect where dredging is proposed, all Holocene-aged sediments provided a negative Net Acidity indicating that they have excess buffering capacity. An approximate inverse relationship can be observed, where decreased grain size equates to increased buffering capacity. This probably indicates that the main carbonate contribution that provides effective buffering is in the microscopic range (e.g. foraminifera) rather than visual shell. It was concluded that dredging of this sediment would provide no ASS risk to the environment (GeoCoastal 2008).

Borehole BH12, located in the shallows in China Bay, contained significant Net Acidity in the absence of shell. Therefore, the substrate in this area may have a zone of PASS immediately below the interface and this is likely to be representative of these embayment sediments. This sediment may have the potential for environmental harm if disturbed, or oxidised (GeoCoastal 2008).

The current proposal does not plan to disturb this area (BH12). However, while this should not lead to intentional disturbance, the logistics of controlling sediment disturbance while placing piling barges in the bay and driving piles for the trestle structure will need to be considered. (GeoCoastal 2008).

4.2 Douglas Partners (2005) – Proposed Dredging Works Existing Shipping Channels Gladstone

Douglas Partners Pty Ltd carried out a marine sediment investigation in 2005 (Douglas Partners 2005), for the then Central Queensland Ports Authority (now GPC). The investigation focussed along the Targinie Channel from the RG Tanna Coal terminal to the south up the Targinie swing basin, at the Fisherman's Landing wharves. The Fisherman's Landing wharves are approximately 500 m to 2 km from the proposed GLNG dredge area (see **Appendix C** for the Douglas Partners sample locations).

Environmental and ASS tests were conducted on fifteen cores, down to a depth 16.05 –mLAT (bore DP15). In each of the bores drilled for dredging purposes, samples were taken at no less than 1 m intervals, by standard penetration test (SPT) split spoon, to the maximum investigation depths. Samples were selected for environmental testing as follows:

- At the sea bed, generally within the top meter; samples were analysed for metals, PCBs, pesticides, PAHs, TBT, TOC and ASS (field screening and chromium suite); and
- From the lower portion of the test bore (only where the bore exceeded 5 m in depth). Deeper bores sampled at reduced frequency until the target environmental sampling depth was reached or exceeded, were analysed for metals, Napthalene, total PAH and organic carbon and ASS.

The specific tests in each suite (ASS excepted) generally followed those listed in Table 5 of the NODGDM (2002), with the exception of radionuclides (which were not tested) and organic carbon tests (which were not specifically listed in Table 5 but were included in the testing in order to establish whether or not the results needed to be "normalised").

The analytical results obtained for metals were all below the LOR and/or the "Screening Levels" and "Maximum Levels" for marine sediment quality, as given in Table 5 of the NODGDM (2002), with the exception of arsenic (As) levels in two samples which were marginally above the screening level of 20 mg/kg as follows:

- 23 mg/kg in the sample of silty clay from Bore DP13 at 0.0 m to 0.45 m depth; and
- 22 mg/kg in the sample of silty clay from Bore DP15 at 7.0 m to 7.45 m depth.

It is suggested that these slightly elevated values are due to the observation that sediments in eastern Australia "commonly have high natural levels of As", as stated in the NODGDM (2002). This is also consistent with the results of earlier testing at this site, as reported by WBM 1996. When, however, the 95% upper confidence limit (UCL) was calculated (i.e. the value which 95% of all test results are below), a value of 19.5 mg/kg was obtained, which was less than the Screening Level of 20 mg/kg and thus acceptable in accordance with the NODGDM (2002) (Douglas Partners 2005).

Section 4 Previous Environmental Studies

The results of TOC were all in the range of 0.1 mg/kg to 0.5 mg/kg (0.00001% to 0.00005%). It follows from Section 3.10.1 of the NODGDM (2002) that organic test results would normally have to be multiplied by the values indicated in Table 7.2 of the NODGDM (2002) to normalise results to 1% TOC.

All organic results (PAHs, pesticides, PCBs and TBT) were below the LOR (and the Screening and Maximum Levels) and therefore cannot be normalized, with the exception of two TBT values reported above the LOR of 0.2 µSn/kg, as follows:

- 0.5 µSn/kg in the sample of gravelly clayey sand from Bore DP4 0-0.45 m (below seabed); and
- 0.3 µSn/kg in the sample of silty clay and sand from Bore DP9 0-0.95 m (below seabed).

After multiplying these TBT values by 2.0 and 3.3 respectively, the normalised value of 1 µSn/kg (for both samples) was still below the screening level of 5 µSn/kg, as presented in Table 5 of the NODGDM (2002) and was hence acceptable (Douglas Partners 2005).

- ASS testing was performed on selected samples (generally shallow samples) of potential dredged spoil from Bores DP1 to DP15. The action criterion from the Chromium Suite of tests which triggers a requirement for ASS disturbance to be managed was derived from the “Soil Management Guidelines – Queensland Acid Sulfate Soils Technical Manual” (Moore et al. 2002) and the “Acid Sulfate Soils Laboratory Methods Guidelines” (Ahern et al. 2004) (see **Section 5.5.3**), as being greater than or equal to 0.03%S for sand and clay soils.

This action criterion was not exceeded in any of the 16 samples submitted for Chromium Suite testing. It was thus concluded that a management plan for ASS was not required and that any risk of environmental impact from oxidation of PASS during the dredging process was less than the threshold values presented in the published guidelines (Douglas Partners 2005).

4.3 Coastal Cooperative Research Centre (2005) – Port Curtis Contaminants of Concern

The Cooperative Research Centre for Coastal Zone, Estuary and Waterway Management (Coastal CRC) reported the results of a screening level based, risk assessment in 2005 (Coastal CRC 2005).

The report identified three main COPC within Port Curtis: arsenic, TBT, and naphthalene.

The concentrations of metals in sampled sediments were found to be generally below levels of regulatory concern. However, arsenic, chromium and nickel concentrations were consistently above the ANZECC Low ISQG at many sample locations. The report stated that this does not necessarily imply deleterious effects but represents a ‘flag’ for further investigations.

Concentrations of chromium and nickel were comparable to those at established control sites, indicating that both these metals were associated with natural sources and were a “background” presence. However, arsenic concentrations were consistently above background levels detected at the control sites.

The report does conclude that it is likely that both arsenic and detected naphthalene originate from natural sources.

Section 5 Investigation Methodology

5.1 Fieldwork Programme and Personnel

Drilling operations commenced on the 22nd July 2008 and were completed on 3rd November 2008. URS field supervision of drilling ceased on the 15th October 2008 with the completion of BH32. Connell Wagner supervised the remaining four boreholes (BH33 to BH36) for geotechnical investigation. In total, 26 boreholes were drilled during this mobilisation, of which URS and Connell Wagner collectively supervised the drilling of 22 and Connell Wagner supervised the drilling of 4 boreholes.

Santos contracted Drill Search Pty Ltd (Drill Search) directly, to undertake the drilling works. Additionally Santos contracted Marine Industrial Port Engineering and Contracting Pty Ltd (MIPEC) directly, to supply and operate a barge, tugboat, and carry out logistical management of the drilling works. MIPEC were the head contractors for the duration of the works.

5.1.1 Health and Safety

A URS risk-based health and safety plan, including Job Safety Analysis worksheets, was prepared for the Santos GLNG project, including boating and drilling operations. However, all personnel involved in the marine drilling operations worked under the MIPEC Health and Safety plan, as MIPEC were commissioned as the head contractor.

5.2 Equipment Overview

To undertake the environmental sampling and assessment, a 2.5 tonne Gemco trailer mounted drill rig with a depth capability of drilling +50 m, was mounted and secured to one end of a Jembri-Dev flat barge. The drilling rig was previously modified to be fully hydraulic to allow for ramps and a winch system. The 'Jembri-Dev' barge measured 18.09 m in length, 7.09 m in width and was 1.56 m from deck surface to the underside of the flat bottom.

The deck load of the barge was 1.75 tonnes per square metre and had been previously modified with four hydraulic anchor winches. The anchor winches were situated on the port and starboard sides of the barge, with wire rope running from each to an anchor at each of the four corners of the barge. A crib room, shade sail and eating area was also erected for the staff.

5.3 Borehole Location

Borehole locations were established by URS and Santos in consultation with the GPC and the EPA. URS provided the coordinates of the borehole locations in both geographical (Latitude/Longitude) and Universal Transverse Mercator (UTM) (GDA94; MGA94 Zone 56) format. Positioning the barge over each borehole location was undertaken by using a hand held Global Positioning System (GPS) and a higher resolution Differential Global Positioning System (DGPS). MIPEC used the hand held GPS to initially position a buoy (from a tender vessel) to within close proximity of the desired position. The barge was then moved to the buoy using the tug boat. With the aid of the DGPS and using the four point winched anchor system to manoeuvre the barge accurately, the drill rig was moved into position and secured by hydraulically locking the barge's winches.

In the proposed dredge area, boreholes were generally targeted to a depth 1.0 m below the planned dredging depth (14 -mLAT), giving a target drill depth of 15.0 -mLAT. To establish seabed elevation relative to LAT at each location, a conversion was made from metres in Australian Height Datum (mAHD) recorded on the DGPS. The RG Tanna Tide Gauge and RG Tanna Tidal Plane Data indicate that 0.0 mLAT at Gladstone is -2.268m AHD. Therefore, by measuring the depth to seabed from the DPGS and converting from mAHD to mLAT, the seabed elevation relative to mLAT for each borehole could be calculated. The depth to seabed was measured either by a weighted line (at slack water), the tug boat depth sounder, existing bathymetrical charts and/or the length of drill rods required to touch the seabed.

As detailed in **Section 3.2 and Section 3.3**, the investigatory boreholes associated with the potential bridge alignment, and the PLF MOF marine structures, were to be drilled until 5 m of suitable rock had

Section 5 Investigation Methodology

been encountered or until the limit of the drill rig capability. To determine the progress of the borehole and to confirm the depth of each core or sample run, the depth of water needed to be measured regularly during drilling, given that the ebb and flow of the tide raised and lowered the drill rig (on a floating barge) relative to the seabed.

5.4 Drilling Methodology

Drilling methods generally involved driving casing into the seabed to prevent collapse and then drilling with wash-boring (mud drilling) and NMLC coring/drilling equipment. Casing was advanced downwards through the loose material behind the drilling bit until denser soils or weathered rock was encountered.

For the environmental assessment, the recovery of continuous “soil core” was attempted in softer or loose materials, using 100 mm and 75 mm diameter push tube sampling methods or Standard Penetration Testing (SPT) split spoon samplers.

When residual materials were reached, wash boring and SPT at regular intervals of approximately 1.50 m was undertaken. When denser soils, stiff clays, weathered rock or bedrock was encountered, coring using the NMLC coring bit was undertaken.

5.5 Sampling Strategy

The proposed sampling methodology was as follows:

- Four samples for the first 2 m below seabed (mBSB) every half metre (0.0-0.45 mBSB, 0.5-0.95 mBSB, 1.0 -1.45 m and 1.5-1.95 mBSB); and
- From 2 mBSB to borehole termination (max soil depth, excludes rock coring) samples were taken every change of lithology or every 1 metre (whichever was the greater).

However, due to the unconsolidated marine sediments (loose sands and very soft silty clay depositions) encountered in the first 1-2 m of the seabed, sediment recovery was generally poor for those depths, despite various methods of recovery being employed. As such, a limited amount of sample was able to be recovered from the first 1-2 m of seabed; this reduced the general sample frequency and available sample volume from that depth range.

Some samples collected were held by ALS and not analysed, allowing for any subsequent future analysis (e.g. Toxicity Characteristic Leaching Procedures), which may be requested based on initial analytical data or subsequent regulatory advice. Remaining samples on hold are tabulated in **Appendix F**.

All samples were collected using fresh disposable nitrile gloves to prevent cross contamination. Additionally, where reusable equipment (such as SPT gear or core barrels) came into contact with sample material, laboratory supplied phosphate-free soap solution (Decon90) was used to wash and decontaminate the equipment prior to rinsing with fresh water, between each use.

Samples were collected in laboratory provided ASS sample bags for ASS analysis and Teflon lid glass jars for all other analytical parameters. Samples were stored in water tight eskies chilled with ice and transported from the barge to the ALS Brisbane office, within 24 hours, weather and courier operations permitting. ALS is accredited by the National Association of Testing Authorities (NATA) for the requested analyses.

Where sub-samples were taken for quality control purposes, selected composite samples were homogenised as much as practical, prior to splitting, to ensure representative split samples.

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5.5.1 Analytical Sampling and Parameters

Analytical methods adhered to the requirements of the NODGDM (2002) and/or to NATA accredited methods used by ALS which have been approved by the relevant authorities.

Preclusion of Specific Analytical Parameters based on Preliminary Sampling

The preliminary sampling phase carried out by GeoCoastal (2008) included a full marine sediment nutrient suite analyses on eight boreholes in the dredge area, satisfying the NODGDM (2002) and QEPA advice. The GeoCoastal (2008) survey did not identify the below analytes in any samples. As such these parameters were considered "validated" and were not selected for analysis during this URS marine sediment investigation:

- TPH compounds, BTEX compounds, Phenolic compounds, OP pesticides, phenoxyacetic acid herbicides, triazine pesticides, carbamate pesticides and PCBs.

QLD EPA Specific Analytical Requirements in conjunction with NODGDM (2002)

QLD EPA advice for analytical requirements was in addition and reiteration of the NODGDM (2002), for marine sediments specific to the GLNG dredge area study, and was for a minimum of:

- Radionuclides in one core;
- Phenoxyacetic Acid herbicides, Triazine herbicides and Carbamate pesticides in one core; and
- Pore Water Ammonia data from three cores (boreholes).

These QEPA requirements were addressed by the GeoCoastal (2008) preliminary investigation and/or the URS sampling phase as follows:

- Radionuclides were analysed in four borehole cores from the dredge area and one from the potential bridge area, as part of this phase of works. Additionally, GeoCoastal (2008) sampled one core in the dredge area for radionuclides;
- Phenoxyacetic Acid herbicides and Triazine herbicides were analysed in four boreholes from the dredge area, of which three were collected during the URS investigation and one collected from the GeoCoastal (2008) phase. One additional borehole from the potential bridge area was sampled for radionuclides during the URS investigation ;
- Carbamate pesticides were analysed from the dredge area in one borehole (BH3) at three sample depths during GeoCoastal (2008); and
- Pore Water Ammonia was analysed in four samples from three boreholes (one sample each from two boreholes and two sample depths from the third) during the GeoCoastal (2008) investigation.

Remaining Sampling and Analysis

Samples collected from the seabed surface to 2 mBSB were generally analysed for the following analytical suites as per the requirements of the NODGDM (2002) (excludes those parameters precluded by the preliminary investigation):

- PSA;
- Metals/Trace Elements/ Metaloids: Aluminium, Antimony, Arsenic, Cadmium, Chromium, Copper, Cyanides, Iron, Lead, Manganese, Mercury, Nickel, Silver and Zinc;
- Organics: PAHs; TOC, TBT, OC Pesticides, OP Pesticides and PCBs; and
- ASS: Indicative field test (ph_{Field} and pH_{Fox}) and Chromium Suite analysis.

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Samples collected at depth greater than 2 mBSB were tested for the following reduced environmental parameters, at the sampling frequencies (excludes those parameters precluded by the preliminary investigation):

- PSA;
- Metals/Trace Elements/ Metaloids: Aluminium, Antimony, Arsenic, Cadmium, Chromium, Copper, Cyanides, Iron, Lead, Manganese, Mercury, Nickel, Silver and Zinc;
- Naphthalene plus total PAHs;
- TOC; and
- ASS: Indicative field test (ph_{Field} and pH_{Fox}) and Chromium Suite analysis.

It should be noted that PSA determines the relative proportions of clay, silt and sand in a soil. These size fractions are the mineral component of a soil and together determine soil texture. Although field texture is related to the particle size distribution measured in the laboratory, texture classes assigned from field texture and particle size analysis are not always equivalent (for example, soils with high levels of exchangeable sodium have a heavier apparent field texture than suggested by the particle size analysis or high field moisture contents in a sample may impede accurate representation of fractions when sample recovery is poor).

5.5.2 Analytical Investigation Criteria

Assessment of analytical results by way of comparison against published Investigation Levels (ILs) within relevant guidelines requires that the ILs selected are suitable and consider the following:

- The nature and source of the material;
- Potential sources of contamination and thus any specific COPC; and
- The end location of the excavated material and therefore, the associated potential human or environmental receptors of any mobilised contamination.

As stated in **Section 1.1** and **Section 3.4**, the location of dredge spoil disposal was not finalised or disclosed at the time of preparation of this report, and was not within the requested scope of this investigation to address. Specific potential environmental, ecological and human receptors could therefore not be established, limiting the selection of specific guidelines appropriate to those potential receptors. Accordingly, for initial evaluation purposes, analytical results were compared against the following:

- Environmental Investigation Level (EILs) from the "QLD EPA Draft Guidelines for Assessment and Management of Contaminated Lands in Queensland 1998" (QEPA EILs);
- Health Investigation Levels (HILs) from Table 5-A of the National Environmental Protection Measure, 1999 (NEPM) from the National Environmental Protection Council (NEPC). The HIL exposure setting 'F' which applies to "commercial/industrial" land use was selected (NEPM HILs); and
- Comparison against the "Screening Levels (Effects Range – Low)" and "Maximum Levels" for marine sediment quality, as given in Table 5 of the NODGDM (2002).

Acid Sulfate Soils

The "State Planning Policy 2/02 Guideline – Acid Sulfate Soils" (SPP 2/02), the "Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland 1988" (Ahern et al. 1998) and the "Soil Management Guidelines – Queensland Acid Sulfate Soils Technical Manual" (Moore et al. 2002), outline the requirements for investigation, treatment and management of ASS. Additionally the "Acid Sulfate Soils Laboratory Methods Guidelines" (Ahern et al., 2004) outline the analytical methods for ASS laboratories, as well as having determinations for establishing neutralisation targets (where required). SPP 2/02

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applies to all soil and sediment at or below 5 mAHD and becomes applicable for development sites where the natural elevation is less than 20 mAHD, where development involves:

- excavating or otherwise removing 100 m^3 or more of soil or sediment; or
- Land filling involving 500 m^3 or more of material with an average depth of 0.5 m or greater.

In Queensland, action criteria defined in SPP2/02 indicate when ASS disturbed at a site will need to be managed. Action criteria are based on the sum of actual (existing) plus potential acidity and are shown in **Table 5-1**. The action criteria are differentiated on the basis of soil textural characteristics depending on the scale of the project.

Given the scale of the proposed works and the texture within the marine sediments, the most conservative trigger value was assumed of 0.03 %S Equivalent Sulphur (existing + potential acidity).

Table 5-1 Action Criteria Based on ASS Analysis for Three Broad Texture Categories

Type of Material		Action Criteria if 1 to 1000 tonnes		Action Criteria if more than 1000 tonnes	
		Existing + Potential Acidity		Existing + Potential Acidity	
Texture Range	Approximate clay content	Equivalent Sulphur	Equivalent Acidity (oven-dry basis)	Equivalent Sulphur (oven-dry	Equivalent Acidity (oven-dry basis)
Coarse Texture Sands to loamy sand	≤5 (%)	0.03 (%S)	18 (mol H^+/tonne)	0.03 (%S)	18 (mol H^+/tonne)
Medium texture Sandy loams to light clays	5-40 (%)	0.06 (%S)	36 (mol H^+/tonne)	0.03 (%S)	18 (mol H^+/tonne)
Fine texture (Medium to heavy clays and silty clays)	≥40 (%)	0.1 (%S)	62 (mol H^+/tonne)	0.03 (%S)	18 (mol H^+/tonne)

5.5.3 Quality Control

Recommended quality assurance/quality control (QA/QC) practice from the NODGDM (2002) state that 10% of sites sampled will have a triplicate (location) sample taken, and 5% of sites will have a duplicate sample taken. Given the high density of sampling locations drilled and the extreme difficulty associated with repeatable accurate location of the barge and drill rig, triplicate locations for QA/QC were not drilled.

However, as a conservative measure of sampling and analytical QA/QC, duplicate and triplicate split samples were collected at a target frequency of 10%, soil volume permitting. QA/QC samples were "blind" labelled and submitted for analysis. This is in excess of the NODGDM (2002) duplicate sample frequency requirements of 5% and the Australian Standard AS4482.1 – 2005 *Guide to the investigation and sampling of sites with potentially contaminated soil – non volatile and semi volatile compounds (AS4482.1-2005)* requirements (also 5%).

Relative Percentage Differences (RPDs) were calculated between primary, duplicate and triplicate samples. The NODGDM (2002) indicates that RPD results should be within 35%; however AS4482.1-2005 states that RPDs must be within 50%.

The comparative guidelines adopted for this investigation include the "QLD EPA Draft Guidelines for Assessment and Management of Contaminated Lands in Queensland 1998" and the "NEPM" as well as the NODGM (2002), given that the location of spoil disposal was not within the requested scope of this

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report and may be onshore. As such, the application of the 50% criteria has been assumed as per the requirements of AS4482.1-2005, to permit for data validation to be more broadly applicable.

To ensure decontamination of re-useable equipment, an equipment rinsate blank water sample was collected at the end of each day, if sample collection had occurred. As volatile organic hydrocarbons were not part of the suite of analysis for this phase of works, no transport blanks were submitted.

Section 6 Geology and Lithology

6.1 Overview

The sediment lithology and underlying geology observed across the various investigation areas is described in the following sections. Borehole drilling logs and a drilling summary have been included in **Appendix A**, which include the logs from this phase of the investigation as well as from GeoCoastal (2008). Geological cross sections have been generated for several configurations, running east-west for the potential bridge alignments, north-west to south-east for the dredge area and east-west for the PLF and MOF. These cross sections **A-A'**, **B-B'**, **C-C'** and **D-D'** have been included in **Appendix B.**

It was apparent that three main geological profiles were intersected during this investigation, which is comparable to the published geology for the area, as discussed in **Section 2.1.1**. The geological profile encountered during this investigation generally comprised marine sediments *(Holocene aged estuarine alluvial)* and residual material overlying extremely weathered to fresh bedrock (*Wandilla Formation)*, which ranges from siltstones/sandstones up to low grade metamorphosed argillite. The geological profiles were generally not uniform in thickness and were not immediately apparent or distinct.

A summary of the location of each borehole and the broad geological profiles is given in **Table 6-1**. It should be noted that there was significant overlap in borehole location within the dredge area and the PLF investigation.

6.2 Capital Dredging Area

6.2.1 Marine Sediments

The general geological profile of the dredge area comprises marine deposits in the form of soft clays, loose sands and gravels from the seabed surface to a range of depths between 9 and 15 -mLAT. Marine sediments were generally grey or brown in colour and contained shell fragments (of varying prevalence) up to 40 mm in diameter within the first two metres. The thickest profiles of marine sediment were found in BH13 (11.2 m) and BH18 (10.7 m) which are located on the western edge of the proposed dredge area towards the central channel of the waterway.

Cross sections **B-B'**, **C-C'** and **D-D'** show an increase in the thickness of the marine sediments, moving west away from Curtis Island. It is also appears that BH13 and BH18 are located on a sand bank suggesting an area of greater sediment deposition.

6.2.2 Residual material

Underlying the marine sediment is a residual material generally comprised of orange brown sandy clay, clayey sands, gravelly sands and clays. Occasional rock fabric was noted in several boreholes at depth, suggesting the material was becoming more competent. Residual material was encountered in all boreholes except for those located in the southwest corner of the dredge area, BH08A and BH9-BH11 (from GeoCoastal 2008). Cross sections **B-B'** and **C-C'** show that residual material was encountered at depths greater than 10 –mLAT, with the thickness increasing in a westerly direction away from Curtis Island.

6.2.3 Bedrock

Bedrock was encountered in BH4 and was the only bedrock observed within the dredge area boreholes. Extremely weathered to distinctly weathered siltstone/sandstone was encountered from 7.15 -mLAT. As bedrock was not encountered in any other borehole within the vicinity of BH04, this observation may be an uncharacteristic knoll. From the deeper boreholes drilled in association with the proposed PLF and MOF (discussed in **Section 6.3)** the depth to rock generally becomes shallower moving east towards Curtis Island.

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Table 6-1 Summary of Boreholes Lithology Depths

Location	Consultant	Work Area	Purpose	Northing	Easting	Marine Sediment (mBSB)	Residual Rock (mBSB)	XW/DW/Bedrock (mBSB)	Seabed (mLAT)	Marine Sediment (mLAT)	Residual Rock (mLAT)	XW/DW/Bedrock (mLAT)
BH01	GeoCoastal	Dredge	Env	7368680	316464	0.0 to 3.6	3.6 to 4.25	NE	-7.15	-7.15 to -10.75	-10.75 to -11.4	NE
BH02	URS	Dredge	Env/Geo	7368460	316691	0.0 to 2.4	2.4 to 6.6	NE	-7.30	-7.3 to -9.7	-9.7 to -13.9	NE
BH02B	URS	Dredge	Env/Geo	7368461	316693	NE	6.6 to 9.4	NE	-7.30	NE	-13.9 to -16.7	NE
BH03	GeoCoastal	Dredge	Env	7368324	316452	0.0 to 5.95	5.95 to 6.9	NE	-6.52	-6.52 to -12.47	-12.47 to -13.42	NE
BH04	URS	Dredge	Env/Geo	7368272	316968	0.0 to 2.2	2.2 to 2.95	2.95 - 12.7	-4.20	-4.2 to -6.4	-6.4 to -7.15	-7.15 to -16.9
BH05	GeoCoastal	Dredge	Env	7368005	317071	0.0 to 6.6	NE	NE	-7.86	-7.86 to -14.46	NE	NE
BH06	GeoCoastal	Dredge	Env	7367768	317334	0.0 to 5.5	5.5 to 6.0	NE	-9.40	-9.4 to -14.9	-14.9 to -15.4	NE
BH07	URS	Dredge	Env/Geo	7367426	317422	0.0 to 3.5	3.5 to 4.8	NE	-11.8	-11.8 to -15.3	-15.3 to -16.6	NE
BH08A	URS	Dredge	Env/Geo	7367162	317726	0.0 to 3.05	NE	NE	-11.2	-11.2 to -14.25	NE	NE
BH08B	URS	Dredge	Env/Geo	7367160	317728	0.0 to 5.0	5.0 to 5.55	NE	-11.1	-11.1 to -16.1	-16.1 to -16.65	NE
BH09	GeoCoastal	Dredge	Env	7367060	318110	0.0 to 5.0	NE	NE	-10.17	-10.17 to -15.17	NE	NE
BH10	GeoCoastal	Dredge	Env	7366821	318339	0.0 to 2.6	NE	NE	-12.57	-12.57 to -15.17	NE	NE
BH11	GeoCoastal	Dredge	Env	7366655	318652	0.0 to 2.6	NE	NE	-12.45	-12.45 to -15.05	NE	NE
BH12	GeoCoastal	Dredge	Env	7368609	317540	0.0 to 3.75	3.75 to 4.2	NE	0	0.0 to -3.75	-3.75 to -4.2	NE
BH13	URS	Dredge	Env/Geo	7368000	316757	0.0 to 11.2	11.2 to 14.3	NE	-2.7	-2.7 to -13.9	-13.9 to -17.0	NE
BH14	URS	Dredge	Env/Geo	7367695	317138	0.0 to 7.05	7.05 to 9.05	NE	-8.5	-8.5 to -15.55	-15.55 to -17.55	NE
BH15	URS	MOF	Env/Geo	7368078	317748	0.0 to 3.0	3.0 to 5.45	5.45 to 7.8	0.37	0.37 to -2.63	-2.63 to -5.08	-5.08 to 7.43
BH16	URS	PLF	Env/Geo	7368705	317126	0.0 to 4.6	4.6 to 8.45	NE	1.05	1.05 to -3.55	-3.55 to -7.4	NE
BH17	URS	Dredge	Env/Geo	7367975	317377	0.0 to 1.12	1.12 to 11.0	NE	-8.03	-8.03 to -9.15	-9.15 to -19.03	NE
BH18	URS	Dredge	Env/Geo	7368156	316364	0.0 to 10.7	10.7 to 16.45	NE	0.30	0.3 to -10.4	-10.4 to -16.15	NE

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Location	Consultant	Work Area	Purpose	Northing	Easting	Marine Sediment (mBSB)	Residual Rock (mBSB)	XW/DW/Bedrock (mBSB)	Seabed (mLAT)	Marine Sediment (mLAT)	Residual Rock (mLAT)	XW/DW/Bedrock (mLAT)
BH19	URS	Bridge	Env/Geo	7372535	312564	0.0 to 3.6	3.6 to 28.6	28.6 to 33.59	-0.70	-0.7 to -4.3	-4.3 to -29.30	-29.30 to -34.29
BH19B	URS	Bridge	Env/Geo	7372538	312567	NE	NE	33.59 to 44.20	-0.70	NE	NE	-34.29 to -44.9
BH20	URS	Bridge	Env/Geo	7372613	313066	0.0 to 5.5	5.5 to 15.0	15.0 to 42.5	-11.38	-11.38 to -16.88	-16.88 to -26.38	-26.38 to -53.88
BH21	URS	Bridge	Env/Geo	7372704	313571	0.0 to 1.90	1.90 to 16.1	16.1 to 31.15	-2.50	-2.5 to -4.4	-4.4 to -18.6	-18.6 to -33.65
BH24	URS	Bridge	Env/Geo	7372220	312930	0.0 to 6.7	6.7 to 14.05	14.05 - 33.7	-10.60	-10.60 to -17.30	-17.30 to -24.65	-24.65 to -44.3
BH25	URS	Bridge	Env/Geo	7372224	313481	0.0 to 13.0	13.0 to 14.85	14.85 to 22.9	-4.00	-4.0 to -17.0	-17.0 to -18.85	-18.85 to -26.9
BH25B	URS	Bridge	Env/Geo	7372228	313475	NE	NE	22.9 to 31.0	-4.00	NE	NE	-26.9 to -35.0
BH26	URS	Bridge	Env/Geo	7372231	314025	0.0 to 3.2	NE	3.2 to 30.7	1.60	1.6 to -2.45	NE	-2.45 to -29.1
BH27	URS	MOF	Env/Geo	7367968	317742	0.0 to 1.6	1.6 to 2.3	2.3 to 5.45	-0.10	-0.1 to -1.7	-1.7 to -2.4	-2.4 to -5.55
BH27B	URS	MOF	Env/Geo	7367967	317743	NE	NE	7.0 to 20.0	-0.10	NE	NE	-7.10 to -20.01
BH28	URS	PLF	Env/Geo	7368500	316931	0.0 to 5.9	5.9 to 6.3	NE	-6.20	-6.2 to -12.1	-12.1 to -12.50	NE
BH28B	URS	PLF	Env/Geo	7368496	316930	NE	5.9 to 11.3	11.3 to 31.4	-6.20	NE	-13.5 to -17.5	-17.5 to -37.6
BH29	URS	Retaining wall	Env/Geo	7367380	319317	0.0 to 4.1	4.1 to 8.4	8.4 to 15.0	1.10	1.1 to -3.0	-3.0 to -7.3	-7.3 to -13.9
BH30	URS	Retaining wall	Env/Geo	7367551	319597	0.0 to 8.3	8.3 to 15.0	NE	1.00	1.0 to -7.3	-7.3 to 14.0	NE
BH31	URS	PLF	Env/Geo	7368763	317089	0.0 to 0.3	0.3 to 5.0	5.0 to 20.0	0.55	0.55 to 0.15	+0.15 to -4.45	-4.45 to -19.45
BH32	URS	PLF	Env/Geo	7368698	317031	0.0 to 4.7	4.7 to 7.7	7.7 to 20.0	0.56	0.56 to -4.14	-4.14 to -7.14	-7.14 to -19.44
BH33	Connell	PLF	Geo	7368627	316983	0.0 to 12.2	12.2 to 17.7	17.7 to 25.10	1	1.0 to -11.2	-11.2 to -16.7	-16.7 to -24.1
BH34A	Connell	PLF	Geo	7368667	316814	0.0 to 8.0	8.0 to 18.0	18.0 to 30.0	0.6	-7.4 to -17.4	-17.4 to -24.2	-24.2 to -29.4
BH35	Connell	PLF	Geo	317093	7368464	0.0 to 6.0	NE	6.0 to 26.3	-5	-5.0 to -11.0	NE	-11.0 to -31.3
BH36	Connell	MOF	Geo	317597	7367814	0.0 to 11.1	11.1 to 15.5	15.5 to 18.5	-10.4	-10.4 to -21.50	-21.5 to -25.90	-25.90 to -28.90

XW: Extremely Weathered. DW: Distinctly Weathered. NE: Not Encountered

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It should be noted that boreholes BH33-36 were supervised by Connell Wagner, for geotechnical assessment only for the PLF and MOF. As such no environmental samples were collected from these boreholes and the drilling logs have not been included in this report.

6.3 PLF and MOF

6.3.1 Marine Sediments

The PLF and MOF are situated immediately to the east of the capital dredge area in China Bay and comprise similar marine sediments (clays, sands and gravels). Several PLF boreholes were located on the tidal flats of China Bay off Curtis Island and were at a positive LAT elevation, as shown in **Table 6-1**. The marine sediments, similar to the dredge area, were grey to brown in colour and shell fragments were noted within the upper lithologies.

Referring to cross section **B-B'**, which is along the proposed PLF trestle jetty, the seabed deepens in a westerly direction to approximately 6 -mLAT into a natural deeper channel, before rising up on to the sand bank as observed in boreholes BH13 and BH18. Additionally, cross section **B-B'** shows the thickness of the marine sediments increasing in a westerly direction away from Curtis Island, with a maximum thickness of marine sediment observed in BH33 (12.2 m). The marine sediment profile thins out due to residual and bedrock becoming sub horizontal, before thickening again in the sand bank.

Two boreholes (BH15 & BH27) drilled in relation to the MOF were located on the tidal flats of China Bay. In both cases a thin deposit of marine sediment was encountered (up to 3 m thick). Moving west from China Bay the seabed deepens to approximately 10 -mLAT and the thickness of the marine sediments appears to increase, with a maximum of 11.1 m recorded in BH36.

6.3.2 Residual material

Underlying the marine sediment is a residual material comprised of orange brown sandy clay, clayey sands, gravel sands and clays. Residual material was encountered in all boreholes except BH35 where marine sediments were noted lying directly on weathered siltstone.

Referring to cross section **B-B'** which is along the proposed PLF trestle jetty and **Table 6-1**, the residual material dips underneath the marine sediments moving west of Curtis Island before becoming sub horizontal. The residual material has a thickness range of between 3.0 m and 10.0 m.

From cross section **C-C'** which is associated with the MOF, thinner deposits of residual material are encountered within the vicinity of the Curtis Island (western) end of the proposed MOF, with the thinnest profile observed in BH27 (0.7 m).

6.3.3 Bedrock

Boreholes related to the PLF and MOF were drilled deeper for geotechnical assessment of underlying rock suitability; as such, these boreholes were advanced to depths to encounter bedrock and give a better indication of the underlying bed geology, than boreholes located in other areas of investigation.

The general geological composition of the bed rock was extremely weathered to distinctly weathered siltstone and sandstone. In BH28B, low grade metamorphism (argillite) was recorded underlying the siltstone and sandstone; this was established by the diffuse quartz veining returned within that particular core.

In relation to the PLF, the bedrock becomes sub horizontal moving west of Curtis Island, similar to the residual material. The condition of the bedrock underlying the proposed MOF can not be inferred as bedrock was only intersected in one borehole (BH27B).

Section 6 Analytical Results

6.4 Potential Bridge – Northern Alignment

6.4.1 Marine Sediments

The potential northern bridge alignment investigation comprised three boreholes between Friend Point (mainland) and Laird Point (Curtis Island). From cross section **A-A'** it can be observed that there is a pronounced deepening of the seabed toward the centre of the narrows, with a maximum seabed depth noted as 11.38 -mLAT in BH20.

The marine sediments comprise grey to brown clays, loose sands and gravels and range in thickness from 1.9 m to 5.55 m with the thickest sediments noted in BH20 (located in the central channel). Shell fragments up to 40 mm in diameter were generally noted in the first two metres.

6.4.2 Residual material

Underlying the marine sediment is a residual material comprised of orange brown sandy clay, clayey sands, gravel sands and clays.

Referring to cross section **A-A'**, the residual material was encountered in all boreholes along the northern alignment and was thinnest in BH20 (9.5 m) located in the centre of the narrows. The thickest profile of residual material was located in BH19 (25 m) which is located closest to the western side of the alignment. Generally the profile of residual material appears to thicken, moving west, back toward the mainland

6.4.3 Bedrock

Bedrock was encountered in all three boreholes. Similar to the areas around the capital dredging and the POF MLF marine structures, bedrock was intersected at shallower depths closer to Curtis Island (west). The shallowest instance of bedrock was in BH21 at 18.6 -mLAT while the deepest instance was observed in BH19 at 29.30 -mLAT. Bedrock generally comprised extremely and distinctly weathered siltstones and sandstones.

In BH20, conglomerate was noted between 29.98 -mLAT and 46.28 -mLAT. The conglomerate showed a change from being extremely weathered to distinctly weathered with depth, similar to the siltstone and sandstone. It was only noted in BH20 within the siltstone/sandstone horizon suggesting that deposition may have been rapid. Low grade metamorphism (argillite) bedrock was encountered in BH21 at 24.2 -mLAT.

6.5 Potential Bridge – Southern Alignment

6.5.1 Marine Sediments

The potential southern bridge alignment comprised three boreholes between Friend Point and Laird Point, between 250-500 m south of the potential northern alignment. The three boreholes on the southern alignment are offset to the west compared to the boreholes on the northern alignment (see **Figure 2**). Boreholes BH20 and BH24 along the northern and southern alignment respectively, are aligned with the central channel of The Narrows at that point. The maximum seabed depth noted along the southern alignment was 10.60 -mLAT at BH24, comparable to BH20 along the northern alignment.

Marine sediments comprise grey to brown clays, loose sands and gravels and range in profile thickness from 3.2 m in BH26 to 13.0 m in the vicinity of BH25. Shown on **Figure 2**, BH25 is located on a sand bar which is the reason for the thicker marine sediment hoziron within that borehole. The marine sediments are then noted to thin to a profile of 6.7 m within BH24 in the central channel (again comparable to BH20 in the northern alignment).

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6.5.2 Residual material

Underlying the marine sediment is a residual material which comprises orange brown sandy clay, clayey sands, gravel sands and clays.

Residual material was encountered in boreholes BH24 and BH25/25B only. In BH26 (located close to the shore of Curtis Island) marine sediments were noted lying directly above extremely weathered siltstone. The residual material ranges in profile thickness from 1.85 m to 7.35 m, with the thickest profile observed in BH24. This is similar to the condition noted along the potential northern alignment that the residual material profile thickens moving west of Curtis Island.

6.5.3 Bedrock

Bedrock was encountered in all three boreholes and was generally intersected at shallower depths toward the west (centre of the channel). As previously mentioned, within BH26 the marine sediments directly overlay extremely weathered siltstone at a depth of 26.9 -mLAT. As observed along the northern bridge alignment, the bedrock comprises of extremely weathered to distinctly weathered siltstone and sandstone. Low grade metamorphism (argillite) bedrock was encountered in BH25/25B and BH26 at depths of 21.9 -mLAT and 22.20 -mLAT respectively.

6.6 Potential Spoil Disposal Retaining Wall

Two boreholes were located in the potential spoil disposal retaining wall area (the cove at the southern end of Curtis Island near Boatshed Point). As such, only limited geological information is available.

Broad observations were made of marine sediments comprising soft to firm grey clays overlying residual material. The marine sediment profile is noted as being thicker in BH30 on the north-east side of the cove, with a maximum thickness of 8.3 m recorded.

Bedrock was only encountered in BH29 at 7.3 -mLAT and comprised of extremely weathered siltstone grading to distinctly weathered sandstone.

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Tabulated analytical results are presented in the attachment (**URS 2008 - Analytical Results Tables**), which includes data from both GeoCoastal (2008) and URS' phases of investigation. The analytical data is presented across five tables. A CD-ROM with laboratory provided certificates of analysis is provided in **Appendix D**.

7.1 Capital Dredging Area

7.1.1 Acid Sulfate Soils

Boreholes BH01-BH11, BH13, BH14, BH17 and BH18 were located within the proposed dredging area. In total, 136 samples (including 22 QA/QC samples) were analysed from varying depths, elevations and lithology. Specifically, field screening pH tests were carried out on 38 primary samples from 7 boreholes (GeoCoastal 2008 only), while full analytical ASS testing was carried out on all 136 samples.

- Indicative field ASS results (pH_F and pH_{FOX}):
  - Indicative ASS analysis was carried out only on boreholes drilled by GeoCoastal (2008) and as such, discussion of indicative ASS results is limited to that data.
  - For GeoCoastal 2008 pH_f analysis, the resulting pH values ranged from 6.94-8.37, and were collected from depths ranging from seabed surface to a minimum of 4.0 mBSB (14.0 –mLAT) in the northern dredge area and a minimum of 2.0 mBSB (14.5 –mLAT) in the southern (channel component) dredge area. These results, being greater than pH 4, indicate that AASS is unlikely.
  - For GeoCoastal 2008 pH_{fox}, the resulting pH values ranged from 3.3-8.47. Indicatively a pH_{Fox} of less than 3 would suggest PASS. Two samples returned pH_{Fox} results between 3 and 4. Both these samples were at elevations of 9.5 –mLAT. These samples also experienced the largest reductions in pH from pH_F to pH_{Fox}.
- Actual and Retained Acidity (Existing Acidity):
  - pH potassium chloride (pH KCl) results indicated minimal actual acidity in any sample, lithology or depth. The pH KCl values ranged from 6.4-9.4. These results were supported by sulfidic - Titratable Actual Acidity (sTAA) values, which returned values less than the LOR (<0.02 %S) for all samples analysed. This is consistent with the absence of AASS throughout the soil profile and the lack of oxidising conditions within the saturated sediments.
- Potential Acidity (S_{Cr}):
  - Of the 114 primary samples analysed (including QA/QC field splits), 64 primary samples returned positive S_{Cr} results above the LOR, in the range of 0.02 to 1.0 %S.
  - Elevation ranges for positive potential acidity were from 4.3 –mLAT to 16.1 –mLAT. Referring to cross section **D-D'** it can be seen that this range is within the marine sediment. Toward the north the potential acidity is within a band 11.8 m thick (where the seabed is less than 4.3 –mLAT), while toward the south of the dredge area, where the seabed drops to approximately 12 –mLAT, the band is 4 m thick.
- Excess Acid Neutralising Capacity (ANC):
  - ANC is indicative of buffering capacity inherent in soils; however the availability of ANC *insitu* can be overestimated during laboratory analysis. Under natural conditions shell fragments are usually coarse with minimal surface area. Under laboratory conditions shell fragments are ground, increasing the surface area/volume ratio for reaction (neutralisation). Additionally, large shell fragments may often be coated in reaction by-products such as gypsum, rendering the bulk of the $CaCO_3$ of the shell unavailable for neutralisation. ANC can also be present in the microscopic range (such as foraminiferal content) and provide larger reactive surface area ratios.

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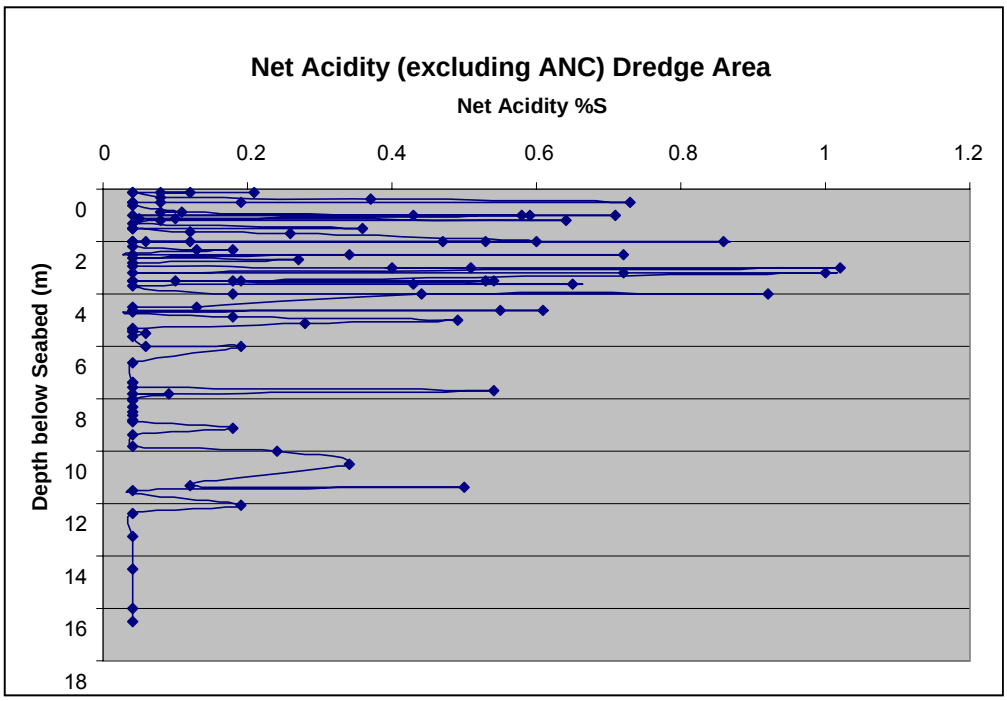
- ANC was noted in 111 of the 114 primary samples collected and ranged in value from 0.023 %S to 9.09 %S. ANC generally appears to decrease with depth into the sediment profile. This may be a result of the decreasing shell content observed with depth. There are bands of material at depth such as the gravelly sand noted at BH13 at 11.9-12 mBSB or 1.4.5 -mLAT (3.32 %S) where ANC is elevated; however, at that depth in BH13 the profile had transitioned into residual material and was underlying horizons of sands and gravels. Additionally, these sorts of residual sands and gravels are unlikely to contain ASS.

- Net acidity:
  - As per **Section 5.3.3**, the action criteria for this investigation is 0.03 % Net Acidity. The overall values of Net Acidity for the dredge area (excluding ANC) range from 0.04 %S to 1.02 %S. **Drawing 7-1** shows a comparison of the Net Acidity against seabed depth, with higher Net Acidity values and occurrence within the range of 0-6 mBSB across the dredge area, which is within the alluvial marine sediment profile.
  - Additional bands of net acidity can be seen as outliers at 8.0 mBSB and 10-12 mBSB. These results occur from BH13 at 9 to 11.5 mBSB and in BH18 at 7.5 to 10.5 -mLAT and are sandy gravels tending to clayey sands.

Drawing 7-1 Net Acidity (Excluding ANC) vs. Depth for GLNG Dredge Area



  - When available ANC is included in calculations for Net Acidity, all samples analysed from the dredge area return values less than the LOR (<0.02 %S) and subsequently less than the action criteria (0.03 %S), except for BH5 at 1.8-2.0 mBSB (0.06 %S).
    - The overall liming rate (excluding ANC) comprising of all samples analysed within the dredge area, ranged from 2 to 47 kg $CaCO_3$/tonne. Liming rate is a derived value calculated from the Net Acidity and can be calculated excluding or including ANC.
    - The inclusion of ANC into the calculation of liming rates, for all samples analysed, reduces the liming rate to <1 kg $CaCO_3$/tonne; except for BH5 at 1.8-2.0 mBSB (3 kg $CaCO_3$/tonne),

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7.1.2 Metals

A total of 105 primary samples were analysed from BH1-BH14, BH17 and BH18 for metals analysis including Aluminium, Antimony, Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Silver and Zinc.

A summary of analytical results exceeding the screening levels and/or ILs from the adopted guidelines is given in **Table 7-1**. It should be noted that screening levels and ILs have not been established for Aluminium or Iron under the guidelines adopted for this investigation. Additionally some metals were recorded in samples at levels above the LOR but below the screening levels and ILs. These have not been shown in the summary table.

The NODGDM (2002) screening level for antimony was exceeded in 2 of the 105 samples; BH02B at 9.3-9.4 mBSB in residual sandy gravel material and in QC25 (the triplicate of BH17 1.55-2.0 mBSB). Sample QC25 also contained mercury and nickel above the NODGDM (2002) screening levels; however, for antimony, mercury and nickel, neither the primary or duplicate sample associated with QC25 exceeded the screening levels.

Mercury exceeded the NODGDM (2002) screening level in one other sample; BH14 at a depth of 8.6-8.85 mBSB (in residual clay). Nickel exceeded the NODGDM (2002) screening levels in three samples from BH14 at the same depth profile (7.8-8.85 mBSB).

Chromium was detected above the QEPA EIL in a single sample (BH14 at 7.1-7.4 mBSB) in residual clayey sand.

Arsenic was detected marginally above the QEPA EIL and NODGDM (2002) screening level in three samples collected from BH13 at depths of 1.6-2.3, 11.3-11.4 and 11.9-12.07 mBSB and in BH18 at 30-32 mBSB, in marine sediment sands and gravels.

Copper exceeded both QEPA EILs and NODGDM (2002) screening level in BH17 (at 2.7-3.2 and 3.2-3.5 mBSB).

Manganese exceeded the QLD EPA EILs in 20 of the 105 samples from seven boreholes, ranging in location from the north-western end of the dredge area to the south-eastern end. Exceedances varied from 546 to 3,750 mg/kg, with the maximum from BH18 at 11.3-13.25 mBSB.

Comparison of manganese data with depth from the seabed surface indicates that across the dredge area, the maximum value of manganese between seabed surface and 2 mBSB is 1,730 mg/kg (BH13 1.0-1.6 mBSB) in a sandy marine sediment, while the absolute maximum value of 3,750 mg/kg is from 11.3-11.5 mBSB (in a residual clay).

There appears to be no apparent trend with depth or location indicative of external metals sources. As such, it is likely that manganese is naturally occurring.

The selected guidelines do not give screening levels or ILs for either aluminium or iron. However, both these metals are present in recordable concentrations. Aluminium was detected in all samples analysed with a range of 1,200-13,100 mg/kg. The maximum concentration was detected in BH17 at 0.5-1.0 mBSB. Iron was detected in the range of 2,100–38,200 mg/kg in all samples analysed with a maximum concentration detected in BH01 at 0.5-1.0 mBSB.

For both aluminium and iron the analytical results indicate no immediate trend for locations of higher or lower concentrations within in the dredge area. Additionally, no immediate concentration trends relating to depth are apparent within the marine sediment profile, although there is some noted variability with changes in lithology.

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Table 7-1 Capital Dredging Area Metals Guideline Exceedance (mg/kg)

	Guidelines (mg/kg)	Antimony	Arsenic	Chromium	Copper	Manganese	Mercury	Nickel
	QEPA - EILs	20	20	50	60	500	1	60
	NEPM - HBILs 'F'	ne	500	500	5000	7500	75	3000
	NODGDM (2002)	2	20	80	65	ne	0.15	21
	95% UCL	2.69	10.35	14.51	30.31	426.20	0.06	10.39
Location	Sample ID							
BH01	GC/GLNG #1_0.5-1.0	<5	15	18	11	546	<0.1	15
BH02	BH02 1.9-2.3	<5	10	11	11	1110	<0.1	7
BH02	BH02 4.2-4.6	<5	<5	13	26	1340	<0.1	12
BH02B	BH02B 9.3-9.4	8	<6	11	15	22	<0.3	<6
BH03	GC/GLNG #3_0-0.5	<5	11	12	7	725	<0.1	6
BH03	GC/GLNG #3_0.5-1.0	<5	12	10	6	604	<0.1	6
BH07	BH07 2.7-3.2	<5	13	15	96	-	<0.1	9
BH07	BH07 3.2-3.5	<5	10	16	117	274	<0.1	8
BH09	GC/GLNG #9_4.0-5.0	<5	<5	8	10	984	<0.1	4
BH13	BH13 1.0-1.6	<5	18	8	<5	1730	<0.1	6
BH13	BH13 1.6-2.3	<5	26	7	<5	808	<0.1	5
BH13	QC42 (Duplicate BH13 1.6-2.3)	<5	14	11	7	624	<0.1	7
BH13	QC43 (Triplicate BH13 1.6-2.3)	<5	22	6	<5	934	<0.1	5
BH13	BH13 4.9-5.3	<5	11	7	<5	934	<0.1	5
BH13	BH13 7.3-7.4	<5	10	10	11	840	<0.1	6
BH13	BH13 9.0-9.15	<5	7	9	16	2490	<0.1	9
BH13	BH13 11.3-11.4	<5	28	10	10	-	<0.1	11
BH13	BH13 11.9-12.07	<5	23	7	12	170	<0.1	11
BH 14	BH14 7.1-7.4	<5	<5	66	6	122	<0.1	6
BH 14	BH14 7.8-8	<5	11	12	23	-	<0.1	68
BH 14	BH14 8.2-8.5	<5	<5	24	21	99	<0.1	23
BH 14	BH14 8.6-8.85	<5	5	16	21	-	0.2	22
BH 17	QC25 (Triplicate BH17 1.55-2.0)	21	<5	18	36	304	0.2	23
BH 17	BH17 5.0-5.45	<5	7	15	31	691	<0.1	12
BH 18	BH18 0.7-0.85	<5	10	9	<5	623	<0.1	5
BH 18	BH18 0.9-1.2	<5	12	7	<5	812	<0.1	4
BH 18	BH18 1.3-1.7	<5	11	8	5	999	<0.1	5
BH 18	QC34 (Duplicate BH18 1.3-1.7)	<5	11	8	<5	817	<0.1	5
BH 18	BH18 3.0-3.2	<5	37	11	7	607	<0.1	7
BH 18	BH18 4.6-4.9	<5	12	11	6	1400	<0.1	6
BH 18	BH18 5.7-6.0	<5	20	10	5	733	<0.1	6
BH 18	BH18 11.3-11.5	<5	<5	17	63	3750	<0.1	20
BH 18	BH18 13.0-13.25	<5	5	16	52	1670	<0.1	14
BH 18	BH18 15.6-16.0	<5	16	8	42	275	<0.1	25

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7.1.3 Nutrients (Full Analytical Suite)

Samples from the dredge area were analysed for a full suite of nutrients by GeoCoastal (2008), and for carbon as part of the URS investigation (see **Section 5.5.1**).

Carbon analysis, as Total Carbon (TC), TOC and Total Inorganic Carbon (TIC) was carried out on samples collected from all boreholes within the dredge area. The concentration of TOC ranged from 0.02-1.43 %, with the highest value observed from BH18 at 2.6-3.0 mBSB and 3.0-3.2 mBSB.

Nitrogen analysis was carried out on samples from boreholes BH1, BH3, BH5, BH6 and BH9 – BH11, with the analytical results being as follows:

- Nitrate, nitrite and ammonia results in sediment samples were less than the LOR for all samples except for BH01 at 0.0-0.5 mBSB, where both nitrate and nitrite were recorded as 0.1 mg/kg; and in BH06 at 0.0-0.5 mBSB, where ammonia was recorded as 20 mg/kg (at the LOR);
- TKN was recorded in the range of 30-920 mg/kg. BH01 was seen to generally have the highest concentration of TKN and nitrogen within the proposed offshore dredge area, with the maximum TKN value observed at a depth of 0.0-0.5 mBSB (BH01);
- Samples from BH 12 located in the tidal flats of China Bay recorded ammonia at the LOR (20 mg/kg) at depths of 0.0-0.5 and 0.5-1.0 mBSB. This depth profile from BH12 returned a TKN value of 920 mg/kg at 0.5-1.0m BSB, which is greater than TKN values noted within the proposed dredge area. This is likely due to an increased organic content within the surface seabed sediment on the tidal flats; and
- Total Phosphorus was detected in the range of 94-506 mg/kg (BH11 at 0.0-0.5 mBSB and BH06 at 4.6-5.6 mBSB respectively).

7.1.4 Particle Size Analysis (PSA)

PSA results for the main dredge area (104 samples) appear to equate with the field classifications. Of the 104 samples analysed from the dredge area, approximately 50% had a primary component of clay and silt and were classified as such. The highest clay content observed was 81% from BH14 at 8.2-8.5 mBSB.

Sand was the observed primary fraction in 42 samples, ranging from 38%-89% content. The highest percentage of sand (89%) was recorded in BH13 (11.9-12.07 m BSB) and BH18 (0.7-0.85 m BSB), with BH18 located on a sandbank at the westernmost point of the dredge area.

Gravel was recovered in 11 samples where gravel percentages ranged from 16% to 73%, with the highest content being from BH2B at 7.8-8.0 mBSB.

7.2 Product Loading Facility (PLF)

7.2.1 Acid Sulfate Soils

Boreholes BH16, BH28, BH31 and BH32 were located along the proposed PLF and trestle jetty. In total 37 samples were collected (including QA/QC split samples) at varying depths in different lithologies, to a maximum sample depth of 9.6 mBSB in BH32. Specifically, field screening pH tests were carried out on 30 samples while full analytical ASS testing was carried out on all 37 samples.

- Indicative field ASS results (pH_F and pH_{FOX}):
  - For pH_F analysis the resulting pH values ranged from 6.3-9.8. These results being greater than pH 4 indicate that the presence of AASS is unlikely.

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  - For pH_{Fox} the resulting pH values ranged from 5.3-6.1, down to a maximum sample depth of 6.3 mBSB. BH28 is located at the westernmost point of the PLF investigation area, and was also located at a lower elevation than BH16, BH31 and BH32.
  - From BH32, pH_{Fox} values from the primary samples, at depths between 1.5 and 3.2 mBSB, returned the lowest value of pH_{Fox} at 1.2. Indicatively a pH_{Fox} of less than 3 would suggest PASS, which is consistent with this sediment being a soft, dark grey clay, at those depths.
  - Additionally, all pH reductions noted during oxidation were in the range of 1.2-7.2. Greater oxidation driven pH reductions were noted in the sediment from BH32 at 0.7 to 3.2 mBSB. The majority of samples from all lithological units exhibited moderate to strong rates of reaction which may indicate elevated levels of sulphides.

- Actual and Retained Acidity (Existing Acidity):
  - pH KCl results indicated minimal actual acidity in any sample, lithology or depth. The pH KCl values ranged from 5.5-8.8, with higher pH levels noted in the first 1-3 mBSB, where shell fragments were observed.
  - These results were supported by sTAA values, which returned values less than the LOR (<0.02 %S) for all samples analysed. This is consistent with the absence of AASS throughout the soil profile and the lack of oxidising conditions within the saturated sediment in that area.
- Potential Acidity (S_{Cr}):
  - Potential acidity was not detected in any samples from BH31 and BH32, conflicting with the indicative pH_{Fox} results for BH32. However for BH16 and BH28, potential acidity was noted at a range of between 0.07 and 0.87 %S, to a depth of 5.7 mBSB in BH28 and 3.6 mBSB in BH16. This may indicate that potential acidity is present to greater depths toward the central channel than against the shores of Curtis Island.
- Acid Neutralising Capacity (ANC):
  - ANC was observed in all primary samples collected except for BH28 at 5.9-6.3 mBSB and BH 32 9.3-9.6 mBSB.
  - ANC values appear to be consistent throughout the soil profile in BH32 and BH31. Moving west into the channel away from the shore of Curtis Island and to lower elevations, BH16 showed a slight trend in ANC with higher values at seabed surface decreasing with seabed depth. This trend is more pronounced in BH28, located further to the west into the channel, which had a greater prevalence of shell at seabed surface which decreased with depth into the clay profile.
- Net Acidity:
  - As per **Section 5.3.3** the action criteria for this investigation is 0.03 % Net Acidity. All samples analysed from BH31 and BH32 returned a Net Acidity (excluding ANC) of less than 0.03 %S.
  - Boreholes BH16 and BH28 returned Net Acidity values (excluding ANC) above the action criteria of between 0.04 %S and 0.89 %S. The depths at which these values were noted related to those observed for Potential Acidity results, specifically 0.5-3.6 mBSB in BH16 before clay transitions into sand.
  - When available ANC is factored in, all marine alluvial sediments with a recorded net acidity showed a reduction to levels at or below the action criteria, except for BH16 at 1.0-1.45 mBSB (0.31 %S) and 1.5-2.0 mBSB (0.05 %S), and BH28 at 5.3-5.7 mBSB (0.17 %S).
    - The liming rate (including ANC) of the sediment profile 1.0-2.0 mBSB noted in BH16 is between 8 and 14 kg $CaCO_3$/tonne.

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7.2.2 Metals

A total of 26 primary samples from BH16, BH28, BH31 and BH32 and submitted for metals analysis including Aluminium, Antimony, Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Silver and Zinc.

A summary of analytical results exceeding the screening levels and ILs from the adopted guidelines is given in **Table 7-2**. Additionally, some metals were recorded in samples at levels above the LOR but below the ILs, which have not been shown in the summary table.

Table 7-2 PLF Metals Guideline Exceedance (mg/kg)

	Guidelines	Arsenic	Manganese	Nickel
	QEPA - EILs	20	500	60
	NEPM - HBILs 'F'	500	7500	3000
	NODGDM (2002)	20	ne	21
	95% UCL	10.35	426.20	10.39
Location	Sample ID			
BH 16	BH16 1.0-1.45	8	507	10
BH28	BH28 3.5-4.4	11	920	13
BH31	BH31 0.18-0.20	33	448	16
BH31	BH31 0.2-0.3	27	1860	21
BH31	BH31 0.3-0.6	12	2400	45
BH32	BH32 0.7-1.0	23	273	13
BH32	BH32 2.5-3.2	12	539	13

Arsenic was detected marginally above the QEPA EILs and NODGDM (2002) screening level in BH31 in three samples between 0.18 mBSB and 1.0 mBSB (clays tending to clayey gravel). Arsenic exceedances were not detected at any depth greater then 1.0 mBSB and was not seen in the adjacent borehole (BH16).

Manganese was detected at concentrations exceeding the QEPA EILs in boreholes BH16, BH31 and BH32, between the depths of 0.18 mBSB and 3.2 mBSB. These boreholes are clustered closely around the northern point of China Bay. The maximum concentration for manganese was in BH31 at 0.3-0.6 mBSB. Additionally, the only reported nickel exceedance was in the same sample. Further out into the channel BH28 reported manganese above the QEPA EILs at a slightly deeper depth of 3.5-4.4 mBSB.

Aluminium was detected in the range of 2,380-18,400 mg/kg in all samples analysed, to a maximum sample depth of 9.6 mBSB (BH32), with a maximum concentration in BH28 at 2.4-3.4 mBSB in clay.

Iron was detected in the range of 800–39,900 mg/kg in all samples analysed to a maximum sample depth of 9.6 mBSB (BH32). The maximum concentration was detected in BH31 at 0.18-0.2 mg/kg (clay overlaying gravelly clay).

The primary lithology types varied with no immediate aluminium or iron concentration trends apparent with changing depth within the marine sediment profile.

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7.2.3 Nutrients (Reduced Suite)

Samples from the PLF area were analysed for carbon analytes only, as part of the URS investigation. A full suite of nutrient data was obtained for the dredge area during the GeoCoastal (2008) investigation (see **Section 5.5.1**).

Samples analysed from the proposed PLF area returned TOC concentrations varying from 0.02-1.50%, with a maximum value in BH31 at 0.18-0.20 mBSB.

Surface samples (samples at or within the first 1-2 mBSB) appeared to consistently contain higher concentrations of TOC as compared to deeper samples. This would be consistent with the field observations noting lithology changes and a reduction in inferred organic content with depth.

Nutrient analytical data for this area is also inferred by the analytical data from the dredge area boreholes, with significant overlap in borehole locations.

7.2.4 Particle Size Analysis (PSA)

PSA results from samples collected from boreholes located in the proposed PLF area (BH16, BH28, BH31 and BH32) show a predominant clay and silt lithology between 0.0–5.0 mBSB. The field classification of clay, being the primary lithology for 19 of the 29 samples, appears to equate to the PSA results. All other samples maintained a secondary lithology of clay and silts in the range of 36-58% and 23-52% respectively. Siltstone was also encountered in BH31 at 5.0-5.35 mBSB, BH32 at 8.1-8.4 mBSB and BH32 at 9.3-9.6 mBSB.

7.3 Materials Offloading Facility (MOF)

7.3.1 Acid Sulfate Soils

Boreholes BH15 and BH27 were drilled in the proposed MOF area. In total, 22 samples were collected (including QA/QC split samples) at varying depths in different lithologies, to a maximum sample depth of 5.3 mBSB in BH15. Specifically, field screening pH tests were carried out on eight samples collected from borehole BH27, from seabed surface to 4.35 mBSB. Full analytical ASS testing was carried out on all 22 samples from both boreholes.

- Indicative field ASS results (pH_F and pH_{FOX}):
  - For pH_f analysis the resulting pH values ranged from 6.6-8.8. These results, being greater than pH 4 indicate that the presence of AASS is unlikely.
  - For pH_{Fox}, the resulting pH values ranged from 1.8-5.6. Indicatively a pH_{Fox} of less than 3 would suggest PASS; however only BH27 0.4-0.8 mBSB returned a result less than 3 of pH_{Fox} 1.8.
  - Additionally all pH reductions noted during oxidation were in the range of 1.7-7.0, with a more pronounced reduction in pH after oxidation noted within the sediment of the first 0-1 mBSB.
  - The majority of samples from all lithological units exhibited moderate to strong rates of reaction, which may indicate elevated levels of sulphides.
- Actual and Retained Acidity (Existing Acidity):
  - pH KCl results indicated minimal actual acidity in any sample, lithology or depth. The pH KCl values ranged from 5.9-8.7, with higher pH levels noted in the first 1-2 mBSB where shell fragments were observed in both boreholes.
  - These results were supported by sTAA values, which returned values less than the LOR (<0.02 %S) for all samples analysed. This is consistent with the saturated non oxidising conditions in that area.

- Potential Acidity (S_{Cr}):
  - Of the 22 samples analysed (including QA/QC field splits), 8 primary samples returned positive S_{Cr} results above the LOR, in the range of 0.02 to 0.98 %S. These samples were generally from marine sediment depths at between seabed and 2.8 mBSB. That is consistent with a lithology change from clays to sand at 2 mBSB in BH15 and from clay to sandstone in BH27 at 2 mBSB.
- Acid Neutralising Capacity (ANC):
  - ANC was observed in primary samples from 0.0-1.0 mBSB from BH27, at values of 0.23-1.45 %S. Borehole BH15 recorded ANC values from 0.0-5.3 mBSB at between 0.04 and 3.2 %S. It was noted that in BH15 the ANC was generally higher (consistent with a higher shell content).
- Net Acidity:
  - As per **Section 5.3.3** the action criteria for this investigation is 0.03 % Net Acidity. All samples analysed returned a Net Acidity (excluding ANC) of 0.04 %S except for the following marine sediment profiles:
    - BH15 0.0-2.8 mBSB with a Net Acidity range of 0.01-1.0 %S and a maximum noted at 0.5-0.95 mBSB; and
    - BH27 0.4-1.8 mBSB with a Net Acidity of 0.06-0.65 %S.
  - When the available ANC is factored in, all marine alluvial sediments showed a reduction in Net Acidity to levels at or below the action criteria, except for BH15 at 0.5-0.95 mBSB and BH27 at 1.6-1.8 mBSB, with values of 0.78 and 0.04 %S respectively.
    - The liming rate of that sediment profile (including ANC) is between 2.0 and 36 kg $CaCO_3$/tonne.

7.3.2 Metals

A total of 15 primary samples were collected from BH15 and BH27 and submitted for metals analysis including Aluminium, Antimony, Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Silver and Zinc.

A summary of analytical results exceeding the screening levels and ILs from the adopted guidelines is given in the **Table 7-3**. Additionally, some metals were recorded in samples at levels above the LOR but below the ILs, which have not been shown in the summary table.

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Table 7-3 MOF Metals Guideline Exceedance (mg/kg)

	Guidelines	Arsenic	Chromium	Copper	Manganese	Nickel
	QEPA - EILs	20	50	60	500	60
	NEPM - HBILs 'F'	500	500	5000	7500	3000
	NODGDM (2002)	20	80	65	ne	21
	95% UCL	10.35	14.51	30.31	426.20	10.39
Location	Sample ID					
BH 15	BH15 0-0.45	49	28	23	313	18
BH 15	QC29 (Duplicate BH15 0-0.45)	22	27	17	214	15
BH 15	QC30 (Triplicate BH15 0-0.45)	35	24	22	274	15
BH 15	BH15 1.0-1.45	9	9	52	871	27
BH 15	QC31 (Duplicate BH15 1.5-2.0)	<5	8	66	49	9
BH 15	BH15 2.85-3.0	<5	68	23	-	14
BH 15	BH15 5.1-5.3	10	10	15	22	24
BH27	BH27 0.4-0.8	26	23	16	396	14

Arsenic was detected above the NODGDM (2002) screening level and the QEPA EILs in BH15 at 0.0-0.45 mBSB and in BH27 at 0.4-0.8 mBSB. No arsenic was detected in any sample at a seabed depth greater then 0.8 mBSB for the marine sediment profile.

Concentrations of chromium, copper and manganese were detected in BH15 at depths ranging from 1.0-3.0 mBSB (generally clay tending to sands at 3.0 mBSB). Concentrations of chromium and copper were marginally above ILs. Detection of copper was in QC31 (duplicate of BH15 1.5-2.0 mBSB). Copper was detected in the primary and duplicate sample but at levels below the IL.

Nickel was detected above the NODGDM (2002) in BH15 at 1.0-1.45 mBSB (clay) and 5.1-5.3 mBSB (gravel).

Exceedances were noted as being only at depths greater than 2.85 mBSB for chromium, 1.5 mBSB for copper and 1.0 mBSB for manganese and nickel.

Aluminium was detected in the range of 1,230-12,800 mg/kg in all samples analysed, to a maximum sample depth of 5.3 mBSB (BH15). The maximum detected aluminium concentration was in BH15 0.0-0.45 mBSB.

Iron was detected in the range of 5,240–44,300 mg/kg to a maximum sample depth of 5.3 mBSB (BH15). The maximum concentration was detected in BH27 0.4-0.8 mg/kg.

The primary lithology was varied through to the maximum sample depth, with no immediate aluminium or iron concentration trends apparent with either changing depth or a change in lithology. It is noted however, that the maximum concentrations for aluminium and iron are within the surface samples; with marginally lower concentrations detected in deeper sediments for both metals.

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7.3.3 Nutrients (Reduced Suite)

Samples from the MOF area were analysed for carbon analytes only, as part of the URS investigation. A full suite of nutrient data was obtained for the dredge area during the GeoCoastal (2008) investigation (see **Section 5.5.1**).

Samples analysed from the proposed MOF area returned TOC concentrations ranging from 0.03-1.83% (maximum value in BH15 at 0.0-0.45 mBSB).

Surface samples (samples at or within the first 1-2 mBSB) appeared to consistently contain higher concentrations of TOC, as compared to deeper samples. This would be consistent with the field observations of changes in lithology and a reduction in inferred organic content with depth.

Nutrient analytical data for this area is also inferred by the analytical data from the dredge area boreholes, with significant overlap in borehole locations.

7.3.4 Particle Size Analysis (PSA)

A total of 15 PSA samples were submitted for analysis. Results indicate that clay and silt (being the primary lithology) were present in the range 24-55% and 19-44% respectively, at a depth profile ranging from 0.0-2.5 mBSB. Sandstone was encountered in BH27 from 2.5 mBSB.

7.4 Potential Northern Bridge Alignment

7.4.1 Acid Sulfate Soils

Boreholes BH19, BH19B, BH20 and BH21 were drilled along the northern alignment of the proposed bridge and pipeline crossing. In total, 62 samples were collected (including QA/QC split samples) at varying depths in different lithologies, to a maximum sample depth of 28.15 mBSB in BH19. Specifically, field screening pH tests were carried out on samples collected from borehole BH19 and BH21 (eastern and western side of the alignment) from seabed surface to depths of 13.2 mBSB and 15.8m mBSB respectively. Full analytical ASS testing was carried out on all 62 samples.

- Indicative field ASS results (pH_F and pH_{FOX}):
  - For pH_F analysis the resulting pH values ranged from 5.3-9.4. These results being greater than pH 4, indicate that the presence of AASS is unlikely.
  - For pH_{Fox}, the resulting pH values ranged from 2.4-7.2. Indicatively a pH_{Fox} of less than 4 would suggest PASS. Only BH20 5.0-5.25 mBSB (pH_{Fox} 2.4) and 5.5-5.7 mBSB (pH_{Fox} 2.5) returned results less than pH 3, with the next lowest being pH_{Fox} 4.3, in BH21 1.5-1.6 mBSB. The lithology in BH20 at 5-6 mBSB is *organic material with some brown clay.* This is the only occasion on this alignment where that particular lithology had been observed.
  - Generally pH_{Fox} data indicates a trend toward lower post oxidation pH values, as depth into seabed increases and as the lithology changes from sands with shell fragments into clays and clayey sands. This likely reflects a decrease in shell fragments and an increase in sulphidic fines.
  - Additionally, most pH changes noted during oxidation were in the range of between 1.1-4.5, with the exception one sample at 14.0 mBSB. This shows a general tendency for most lithologies along this alignment to experience oxidation driven lowering of soil pH and is potentially indicative of PASS or high organic content.
- Actual and Retained Acidity (Existing Acidity):
  - pH KCl results indicated minimal actual acidity in any sample, lithology or depth; with pH KCl values ranging from 5.2-9.3.

  - These results were supported by sTAA values, which returned values less than the LOR (<0.02 %S) for all samples analysed, with the exception of BH20 at 5.0-5.25 mBSB (0.06%S). This is consistent with the saturated non oxidising conditions in that area.

- Potential Acidity (S_{Cr}):
  - Of the 62 samples analysed (including QA/QC field splits), 10 primary samples returned positive S_{Cr} results above the LOR, in the range of 0.03 to 1.22 %S. These samples were generally from marine sediment depths at between seabed and 2 mBSB. Additional results were seen in a band of organic matter at 5 mBSB in BH 20 and a horizon of clayey sand at 14 mBSB in BH21.
- Acid Neutralising Capacity (ANC):
  - ANC was observed in samples collected from the first three metres of seabed across all three boreholes; effectively the marine sediment profile containing shell fragments down to the residual horizon. Additional minor lenses of material with recordable ANC were noted within the underlying residual material at lithologies comprising clayey sands and some gravels.
- Net Acidity:
  - As per **Section 5.3.3** the action criteria for this investigation is 0.03 % Net Acidity. All samples analysed returned a Net Acidity of 0.04 %S except for the following marine sediment profiles:
    - BH20 between 0.3 and 1.43 mBSB with a Net Acidity of 0.05-0.15 %S;
    - BH19 seabed surface to 1.4 mBSB with a Net Acidity of 0.14-0.48 %S, and at 5.0 mBSB at an identified organic lithology with trace clay fines (1.28 %S); and
    - BH21 at between 1.5 and 1.9 mBSB with Net Acidity of 0.06-0.12 %S.
  - When the available ANC is factored in, all marine alluvial sediments showed a reduction in Net Acidity to levels at or below the action criteria, except for BH20 at 5.0-5.25 mBSB and 5.5-5.7 mBSB. This is the organic material identified at the alluvial residual interface.
    - The liming rate of that material (including ANC) is between 6.5 and 60 kg $CaCO_3$/tonne.

7.4.2 Metals

A total of 48 primary samples were collected from BH19, BH20 and BH21 and submitted for metals analysis including Aluminium, Antimony, Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Silver and Zinc.

A summary of analytical results exceeding the NODGDM (2002) screening level and the ILs from the adopted guidelines is given in **Table 7-4**. Additionally, some metals were recorded in samples at levels above the LOR but below the NODGDM (2002) screening level and the ILs, which have not been shown in the summary table.

Table 7-4 Potential Bridge (North) Metals Guideline Exceedance (mg/kg)

	Guidelines	Arsenic	Copper	Manganese	Nickel
	QEPA - EILs	20	60	500	60
	NEPM - HBILs 'F'	500	5000	7500	3000
	NODGDM (2002)	20	65	ne	21
	95% UCL	10.35	30.31	426.20	10.39
Location	Sample ID				
BH 19	BH19 18.4-18.83	26	6	6	<2

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BH 20	QC54 (Duplicate BH20 1.1-1.4)	23	14	158	13
BH 20	QC55 (Triplicate BH20 1.1-1.4)	24	15	183	14
BH 20	BH20 5.0-5.25	11	19	55	46
BH 20	BH20 12.1-12.53	<5	31	123	34
BH 20	QC58 (Duplicate BH20 12.5-13.0)	9	39	-	51
BH21	BH21 2.0-2.9	<5	278	10	4
BH21	BH21 8.5-8.9	<5	6	2200	12
BH21	BH21 9.6-10.0	16	10	727	10
BH21	BH21 10.7-11.1	35	31	-	18

Arsenic was detected above the NODGDM (2002) screening level and the QEPA EILs in BH19 at 18.4-18.83 mBSB. In BH20 at 1.1-1.4 mBSB arsenic was detected above the NODGDM (2002) screening level and the QEPA EILs in the duplicate (QC54) and triplicate (QC55) sample; however was only detected in the primary sample at a level below the NODGDM (2002) screening level and the QLD EPA EILs. Arsenic also exceeded this NODGDM (2002) screening level and the IL in BH21 at 10.7-11.1 mBSB.

Nickel exceeded the NODGDM (2002) screening level in BH20 at 5.0-5.25 in an organic clay transitioning into gravel and 12.1-12.53 mBSB in a clay lithology.

Exceedances were noted as being at seabed depths greater than 1.1 mBSB for arsenic, 2.0 mBSB for copper, 8.5 mBSB for manganese and 5.0 mBSB for nickel.

Aluminium was detected in the range of 680-13,800 mg/kg between all three boreholes in all samples analysed, to a maximum sample depth of 28.15 mBSB (BH19). The maximum detected aluminium concentration was in BH20 at 12.1-12.53 mBSB.

Iron was detected in the range of 1,040–38,00 mg/kg, with the maximum concentration also detected in BH20 at 12.1-15.53 mg/kg.

No immediate concentration trends are apparent with depth for aluminium or iron within the marine sediment profile.

7.4.3 Nutrients (Reduced Suite)

Samples from the potential northern bridge alignment area were analysed for carbon analytes only, as part of the URS investigation. Analytical results for TOC show that the concentration ranged from 0.02-0.22% (LOR 0.02%) with the maximum value being detected in BH19 at 0.3-0.5 mBSB.

7.4.4 Particle Size Analysis (PSA)

PSA results from samples collected from these locations indicate that clay and silt were the main component for samples along this alignment (for marine sediments). There appears to be a slight trend of increased clay and silt content within the clay lithologies with increased depth.

Clay content ranged from 18-66%, with highest concentration seen in BH20 at 8.6-8.78 mBSB. Silt concentration ranged from 15-70%, with the highest concentration seen in BH20 at 20.4-20.6 mBSB. Sand content ranged from 41-69% with the highest concentration of sand in BH19 (located on a shallow sand bank adjacent the mainland shore) at 20.2-20.35 mBSB. No immediate trend was noted aside from related changes in lithology.

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7.5 Potential Southern Bridge Alignment

7.5.1 Acid Sulfate Soils

Boreholes BH 24, BH25, BH25B and BH26 were drilled along the southern alignment of the potential bridge and pipeline crossing. In total, 29 samples were collected (including QA/QC split samples) at varying depths in different lithologies, to a maximum sample depth of 16.26 mBSB in BH26. Specifically, field screening pH tests were carried out on three samples collected from borehole BH25B from seabed surface to 2 mBSB. Full analytical ASS testing was carried out on all 29 samples.

- Indicative field ASS results (pH_F and pH_{FOX}):
  - For pH_F analysis the resulting pH values ranged from 8.5-9.0. These results, being greater than pH 4 indicate that the presence of AASS is unlikely.
  - For pH_{Fox}, the resulting pH values ranged from 5.2-5.8 indicating a moderate to lower likelihood of PASS. However, the lithology in this area within the first 1-2 mBSB is noted as having abundant shell fragments which likely act as a buffer.
- Actual and Retained Acidity (Existing Acidity):
  - pH KCl results indicated no actual acidity in any sample, lithology or depth, with pH KCl values ranging from 7.4-9.5.
  - These results were supported by sTAA values, which were less than laboratory limit of reporting (<0.02 %S), which is consistent with the saturated non oxidising conditions in that area.
- Potential Acidity (S_{Cr}):
  - Of the 29 samples analysed (including QA/QC field splits), 25 samples returned positive S_{Cr} results above the LOR, in the range of 0.04 to 1.35 %S.
  - Samples taken from BH24 2.9-3.3 mBSB, BH25 9.75-9.9 mBSB, BH25 11.9-12.3 mBSB and BH26 15.95-16.26 mBSB returned results below the LOR. These samples were obtained from gravels or siltstones and as such are extremely unlikely to contain any PASS.
- Acid Neutralising Capacity (ANC):
  - ANC was observed in all samples analysed from both boreholes in this area, with a range of results from 0.15 to 5.28 %S indicating potential inherent capacity to buffer sediments and neutralise acidic conditions. An indicative review of the results shows that the higher ANC values occur between 0 and 3.0 mBSB, where the material varies from sands to clays but in which there are consistent observations of shell fragments.
- Net Acidity:
  - As per **Section 5.3.3** the action criteria for this investigation is 0.03 % Net Acidity. All samples analysed returned a Net Acidity in excess of the trigger value when the ANC is not factored in, from 0.04 to 1.37 %S. A marked trend is noted at approximately 4.0 mBSB where the net acidity decreased significantly with a change in lithology from marine alluvial clays into extremely weathered residual siltstones.
  - When the ANC is factored in to the net acidity calculation, samples overall show less Net Acidity, with the range of calculated Net Acidity values reduced to 0.39-1.01 %S. With the inclusion of ANC, samples with Net Acidity still in excess of the trigger value were noted from BH26 in the depth range of 0.0-4.2 mBSB.
  - Boreholes BH24 and BH25 generally reflect the results from the northern alignment (located mid-channel) where the addition of ANC reduces net acidity in all samples to below action criteria.

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- Liming Rates
  - Liming rates for sediments with a net acidity above 0.03 %S (including ANC) between the depth profile of 0.0-4.2 mBSB was between 25 and 63 kg $CaCO_3$/tonne. The liming rate decreases with depth through silt at the surface to soft and then firm clay, before striking residual siltstones.

7.5.2 Metals

A total of 33 samples (including QA/QC) were collected from BH24, BH25, BH25B and BH26 and submitted for metals analysis including Aluminium, Antimony, Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Silver and Zinc. A summary of analytical results exceeding the NODGDM (2002) screening level and the ILs from the adopted guidelines is given in the **Table 7-5**. Additionally some metals were recorded in samples at levels above the LOR but below NODGDM (2002) screening level and the ILs. These have not been shown in the summary table.

Arsenic and manganese were detected above the NODGDM (2002) screening level and QEPA EILs in BH25 at 2.4-3.0 mBSB, with manganese also being reported above the QEPA EILs at 4.4-5.0 mBSB. BH25 comprises sands to a depth of approximately 4.5 mBSB where the lithology transitions into clay.

Copper was noted above the NODGDM (2002) screening level and QEPA EILs in QC16 (a triplicate sample of BH26 3.5-3.9 mBSB). Both the primary and duplicate sample however, reported concentrations of copper below the NODGDM (2002) screening level and ILs.

Mercury was detected in BH26 at 4.0-4.2 and 5.6-5.7 mBSB above the NODGDM (2002) screening level, with the material being an extremely weathered siltstone. Mercury was not detected above NODGDM (2002) screening level in the overlying clays.

Exceedances were noted as being at depths greater than 2.4 mBSB.

Aluminium was detected in the range of 760-17,500 mg/kg between all four boreholes, to a maximum depth of 16.26 mBSB (BH26). Iron was detected in the range of 1,070-32,600 mg/kg across all samples analysed. The maximum concentration for both aluminium and iron was from BH25B at 1.0-1.45 mBSB.

The primary lithology varied from clays and sands to gravels, overlying extremely weathered siltstones. No immediate aluminium or iron concentration trends are apparent with depth, within the marine sediment profile.

Table 7-5 Potential Bridge (South) Metals Guideline Exceedance (mg/kg)

	Guidelines	Arsenic	Copper	Manganese	Mercury
	QEPA - EILs	20	60	500	1
	NEPM - HBILs 'F'	500	5000	7500	75
	NODGDM (2002)	20	65	ne	0.15
	95% UCL	10.35	30.31	426.20	0.06
Location	Sample ID				
BH25	BH25 2.4-3.0	31	<5	530	<0.1
BH25	QC03 (Duplicate BH25 2.4-3.0)	8	<5	892	<0.1
BH25	QC04 (Triplicate BH25 2.4-3.0)	6	<5	531	<0.1
BH25	BH25 4.4-5.0	10	20	566	<0.1
BH26	QC16 (Triplicate BH26 3.5-3.9)	<5	507	-	<0.1
BH26	BH26 4.0-4.2	6	18	<5	0.2
BH26	BH26 5.6-5.7	<5	26	<5	0.2

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7.5.3 Nutrients (Reduced Suite)

Samples from the potential southern bridge alignment area were analysed for carbon analytes only, as part of the URS investigation. Analytical results for TOC show that the concentration ranged from 0.02-1.95% (LOR 0.02%) with the maximum value being detected in BH26 at 0.0-0.6 mBSB.

7.5.4 Particle Size Analysis (PSA)

Results from samples taken from boreholes along the potential southern bridge alignment indicate that:

- Of the 28 samples, 14 samples were classified in the field as clay (being the dominant primary lithology from the marine sediment samples analysed) and were collected from a depth range of between 0.0-5.0 mBSB. Clay and silt content at this depth range was between 42-63% and 34-42% respectively; and
- Sand was identified as the primary component of some interbedded lithologies and was classified in the field as clayey sands or poorly graded sands. Sand content in these lithologies ranged from 50-81%, with the highest being in BH25 at 2.4-3.0 mBSB.

7.6 Potential Spoil Disposal Retaining Wall

7.6.1 Acid Sulfate Soils

Boreholes BH29 and BH30 were drilled in the area investigated for a potential retaining wall for spoil disposal and were sampled to a maximum depth of 8.75 mBSB (BH30).

- Indicative field ASS results (pH_F and pH_{FOX}) for this area indicated that that:
  - For pH_F the resulting pH values ranged from 7.7-9.1. These results being greater than pH 4 indicate that the presence of AASS is unlikely;
  - For pH_{Fox}, the resulting pH values ranged from 1.1-6.0; however those values above pH 3 (indicating a reduced likelihood of PASS) were noted as being in the surface sediments with shell fragments present, likely acting as a buffer. In general pH_{Fox} results were less than pH 3, potentially indicating PASS;
  - Additionally, pH reductions from pH_F to pH_{Fox} were in the range of 2.8–7.6. Upon oxidation all samples experienced a drop in pH in excess of 1, which may indicate PASS; and
  - Samples showed a moderate to high reaction to hydrogen peroxide, which may indicate the presence of high level of sulphides or organic matter.
- Actual and Retained Acidity (Existing Acidity):
  - pH KCl results indicated no actual acidity in any sample, with pH KCl values ranging from 6.8-9.0.
  - These results were supported by sTAA values, which were less than the LOR (<0.02 %S), which is consistent with the saturated non oxidising conditions in that area.
- Potential Acidity (S_{Cr}):
  - Of the 25 samples analysed (including QA/QC field splits), 24 samples returned positive S_{Cr} results above the LOR, in the range of 0.02 to 2.00 %S, with a higher potential acidity observed within the depth profile range of 0.7-2.7 mBSB for BH29 and 1.0-6.15 mBSB for BH30.
- Acid Neutralising Capacity (ANC):
  - ANC was observed in all samples analysed from both boreholes in this area, with a range of results from 0.22 to 2.1 %S indicating potential inherent capacity to buffer sediments and

neutralise the acidic conditions. For both boreholes the ANC was elevated in the surface sediments and decreased with depth through the profile.

- Net Acidity:
  - As per **Section 5.3.3** the action criteria for this investigation is 0.03 % Net Acidity. All samples analysed returned a Net Acidity in excess of the trigger value (when available ANC is excluded) from 0.04 to 2.02 %S.
  - When the ANC is factored in, samples showed an overall reduction in Net Acidity. The range of values also decreased to 0.32 to 1.58 %S. It is noted that those samples where the inclusion of ANC reduces the Net Acidity to below criteria, include sediment to 1.0 mBSB in both boreholes where shell fragment was noted.
  - Those samples which were in excess of 0.03 %S (with the inclusion of ANC), were located in both boreholes between the depths of 0.7-6.15, to a maximum sample depth of 8.75 mBSB.
- Liming Rates
  - Liming rates for sediment between 0.7-6.15 mBSB where the Net Acidity was greater than 0.03%S (including ANC) were between 35 and 97 kg $CaCO_3$/tonne.

7.6.2 Metals

A total of 25 primary samples were collected from BH 29 and BH30 and submitted for metals analysis including Aluminium, Antimony, Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Silver and Zinc.

A summary of analytical results exceeding the NODGDM (2002) screening level and ILs from the adopted guidelines is given in the **Table 7-6**. Additionally, some metals were recorded in samples at levels above the LOR but below the NODGDM (2002) screening level and ILs. These have not been included in the summary table.

Exceedances for copper and manganese were noted from two samples in BH29 (2.2-2.7 mBSB and 4.1-4.4 mBSB). Additionally, an exceedance for both copper and manganese was noted from sample QC82 (a duplicate of BH30 3.8-4.8 mBSB); however the primary and triplicate samples associated with QC82 detected both metals below the ILs.

Exceedances were noted as being from depths greater than 2.2 mBSB.

Table 7-6 Potential Retaining Wall Metals Guideline Exceedance (mg/kg)

	Guidelines	Copper	Manganese
	QEPA - EILs	60	500
	NEPM - HBILs 'F'	5000	7500
	NODGDM (2002)	65	ne
	95% UCL	30.31	426.20
Location	Sample ID		
BH29	BH29 2.2-2.7	**76**	**64**
BH29	QC82 (Duplicate BH29 2.2-2.7)	**70**	**67**
BH29	BH29 4.1-4.4	**78**	**16**
BH30	QC87 (Duplicate BH30 3.8-4.8)	**78**	**652**

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Aluminium was detected in the range of 2,290-13,600 mg/kg between both boreholes, to a maximum sample depth of 8.3-8.75 mBSB (BH30). Iron was detected in the range of 1,300–29,400 mg/kg between both boreholes. The maximum detected concentration for both aluminium and iron was from borehole BH29 at 1.0-1.5 mBSB.

The primary lithology was consistently clays, from seabed surface to 8.73 mBSB. No immediate aluminium concentration trends were apparent with changing depth within the marine sediment profile.

7.6.3 Nutrients (Reduced Suite)

Samples from the retaining wall area boreholes were analysed for carbon analytes only.

TOC concentrations from BH 29 and BH30 ranged from 0.03-2.99%. The maximum value was recorded from BH30 at 6.0-6.15 mBSB, with the field soil classification of material at that depth noting a band of increased organic matter from 6.0-7.0 mBSB.

7.6.4 Particle Size Analysis (PSA)

The majority of samples collected from BH29 and BH30 to a depth of 9 mBSB were classified as clay and returned PSA results for clay in the range of 32-62%. Two samples were classified as having a sand based primary lithology. These were at shallower depths, from BH29 at 0.2-0.5 mBSB (59% sand) and 0.5-0.7 mBSB (54% sand).

7.7 Specific Analytical Parameters

7.7.1 Pore Water Ammonia

Analysis for Pore Water Ammonia was carried out upon advice from the QEPA, on four samples from three boreholes within the proposed dredge area. This was undertaken by GeoCoastal (2008), during the preliminary investigation. It should be noted that no screening levels or ILs were established for this parameter in the NODGDM (2002), the QEPA EILs or the NEPM HILs. As such, the ANZECC/ARMCANZ (2000) Guidelines for 95% species protection for marine environments for total ammonia-N (pore water ammonia) have been adopted. The guidelines provide a series of trigger values adjusted according to varying pH values.

Table 7-7 below shows a summary of the analytical results for pore water ammonia along with soil pH_F result for that sample (representing the insitu pore water pH condition) and the associated pH based trigger value.

Table 7-7 Pore Water Ammonia

Location		pH_F	Marine Trigger Value 95% Protection (µg/L as total ammonia - N)	Ammonia as N analytical results
				10 µg/L (LOR)
BH03	GC/GLNG #3_0-0.5	8.16	620	3540
BH05	GC/GLNG #5_5.5-6.5	7.43	2490	5580
BH12	GC/GLNG #12_0-0.3	7.58	1850	2630
BH12	GC/GLNG #12_1.0	7.52	2150	5020

All four pore water analytical results exceeded the respective ANZECC/ARMCANZ (2000) pH adjusted trigger value. It should be noted that the guideline allows for higher trigger values at lower pH's.

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GC/GLNG #3_0-0.5 is located at the north-western edge of the proposed dredge area (towards the centre of the channel) and was sampled for pore water at a depth of 0.0-0.5 mBSB, representing a seabed surface sample.

GC/GLNG #5_5.5-6.5 is located toward the middle of the proposed dredge area and was sampled from 5.5 to 6.5 mBSB, representing a sample from 13.5 to 14.5 –mLAT and thus the maximum depth of proposed dredging.

GC/GLNG #12 is located in China Bay and pore water was analysed from two depths, namely the seabed surface (0-0.3 mBSB) and from 1.0 mBSB.

Sediment samples from these locations and depths were also submitted for analysis of sediment ammonia as N.

GC/GLNG #3_0-0.5 and GC/GLNG #5_5.5-6.5 returned results below the LOR (20 mg/kg) for ammonia as N, of 20 mg/kg. GC/GLNG #12 0.0-0.5 and GC/GLNG #12 1.0m both returned analytical results for ammonia as N, at the LOR (20 mg/kg).

7.7.2 Organic Compounds

Sampling and analysis of organic compounds during this investigation was carried out for the following targeted parameters; TPH, BTEX, PAH, OC and OP pesticides, Phenolic Compounds, TBT, Triazine Pesticides, Carbamates Pesticides, Phenoxyacetic acid Pesticides and PCBs. Sampling of these compounds was carried out by both URS and GeoCoastal (2008) (see **Section 5.5.1**).

A summary of these results is given in **Table 7-8** which shows results above the LOR for every organic compound analysed, within all samples and boreholes, as per the following:

- Naphthalene (trace detection) was detected in 8 samples with a maximum level of 20 µg/kg, which is below the NODGDM (2002) guideline of 160 µg/kg. Compound 2-Methylnaphthalene (trace detection) was detected in 11 samples with a maximum level of 24 µg/kg, which is below the NODGDM (2002) guideline of 70 µg/kg. The maximum values for both compounds were recorded from the sample BH01 at 0.0-0.5 mBSB;
- Phenol (trace detection) was reported for 7 samples with a maximum analytical result of 30 µg/kg in BH03 at 0.0-0.5 mBSB, which is below the NEPM HIL of 42500 mg/kg;
- 4,4-DDT OC pesticide (trace detection) was reported for BH11 at 1.0-2.0 mBSB (1.78 µg/kg), BH12 at 0.5-1.0 mBSB (0.72 µg/kg) and BH 12 at 3.2-4.2mBSB (1.75 µg/kg), which were below the QEPA EIL of 0.2 mg/kg; and
- Two OC pesticides (DDT and Endrin) were initially reported above the ISQG-low screening level at BH11 (12.95-13.45 -mLAT) and BH12 (3.2-4.2 -mLAT). DDT was also detected below the screening level in one other sample. Australian Laboratory Services Pty Ltd (ALS) reanalysed these samples and confirmed that these results were false positives and that all samples are below the LOR for DDT and Endrin.

Section 7 Analytical Results

Table 7-8 Organic Compound Summary Table

Location	Sample ID	2-Methylnaphthalene	Chrysene	Naphthalene	Phenanthrene	Pyrene	Phenol
BH01	GC/GLNG #1_0-0.5	24	4	20	11	6	<10
BH01	GC/GLNG #1_0.5-1.0	18	<4	14	9	5	20
BH01	GC/GLNG #1_3.6-4.2	10	<4	7	4	<4	<10
BH03	GC/GLNG #3_0-0.5	21	<4	15	9	5	20
BH03	GC/GLNG #3_0-0.5	<5	<4	<5	<4	<4	30
BH03	GC/GLNG #3_0.5-1.0	9	<4	5	4	<4	<10
BH06	GC/GLNG #6_0-0.5	6	<4	8	<4	<4	20
BH06	GC/GLNG #6_4.6-5.6	<5	<4	<5	<4	<4	10
BH09	GC/GLNG #9_0-0.5	<5	<4	<5	<4	<4	20
BH10	GC/GLNG #10_0.5-1.0	15	<4	10	7	<4	<10
BH10	GC/GLNG #10_0-0.5	23	<4	18	9	4	<10
BH11	GC/GLNG #11_0.5-1.0	6	<4	<5	<4	<4	<10
BH11	GC/GLNG #11_0-0.5	5	<4	<5	<4	<4	<10
BH11	GC/GLNG #11_1.0-2.0	6	<4	<5	<4	<4	<10
BH12	GC/GLNG #12_0.5-1.0	<5	<4	<5	<4	<4	<10
BH12	GC/GLNG #12_3.2-4.2	<5	<4	<5	<4	<4	<10

Section 7 Analytical Results

7.7.3 Radionuclides

The specific radionuclide parameters which were analysed during this investigation were Uranium-238 (U-238), Lead-210 (Pb-210), Thorium-232 (Th-232), Radium-224 (RA-224), Radium-226 (Radium-226) and Potassium-40 (K-40).

A total of 34 primary samples and 10 field QA/QC split samples were collected from six bore holes in total; five from the proposed dredge area (BH02, BH02B, BH04, BH07, BH08B) and one from the potential southern bridge and pipeline alignment (BH24). Samples collected for radionuclide analyses ranged in depth from seabed surface to a maximum of 9.4 mBSB (BH2B) in the proposed dredge area and to a maximum depth of 5.8 mBSB along the potential southern bridge alignment (BH24). Lithologies sampled ranged from silts and clays to sands, and encompassed both marine alluvium and residual materials.

All radionuclide results for all samples analysed were below the NODGDM (2002) screening level value of 35 Bq/g.

7.8 Upper Confidence Levels (UCLs) and Background Levels for Metals

The calculation of the 95% Upper Confidence Level (UCL) is a statistical determination to establish an analytical concentration from a data set for a particular analyte, where 95% of the results within that data set are below the calculated ULC.

The analytical metals data obtained from all investigation locations, both URS and GeoCoastal 2008, at all depths, did not follow a discernable distribution at a 5% significance level. As such, the 95% Upper Confidence Levels (UCLs) have been calculated for a 95% Chebyshev (mean and standard deviation) UCL. The 95% UCLs are presented in **Table 7-9**, and are compared against the (ILs) from the three adopted guidelines.

No metal guideline (QEPA EILS, NEPM HILs or NODGDM 2002 screening levels) is exceeded by the calculated 95% UCLs for any metal except antimony (2.69 mg/kg), which exceeds the NODGM (2002) Screening Level of (2 mg/kg).

Additionally some metals analysed as part of this investigation did not return results above the LOR, or returned to few results above the LOR for statistical interpretation.

Table 7-9 Calculated UCLs for Metals for All Areas

Analyte	LOR	Units	QEPA EILs	NEPM HBILs 'F'	NODGDM (2002)	95% UCLs
Aluminum	50	mg/kg	ne	ne	ne	7529
Antimony	5	mg/kg	20	ne	2	2.69
Arsenic	5	mg/kg	20	500	20	10.35
Chromium	2	mg/kg	50	500	80	14.51
Copper	5	mg/kg	60	5000	65	30.31
Iron	50	mg/kg	ne	ne	ne	19564
Lead	5	mg/kg	300	1500	50	7.09
Manganese	5	mg/kg	500	7500	ne	426.20
Mercury	0.1	mg/kg	1	75	0.15	0.06
Nickel	2	mg/kg	60	3000	21	10.39
Zinc	5	mg/kg	200	35000	200	28.52

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It should be noted that no ILs are established under the adopted guidelines for aluminium and iron. For these parameters the TMBC was calculated using analytical results from all 197 primary samples analysed for aluminium and iron, collected by both URS and GeoCoastal (2002), from all areas of marine sediment investigation.

The TMBC for aluminium (12,918 mg/kg) was exceeded in 13 of the 197 samples (6.6% of primary samples). The TMBC for iron (33,870 mg/kg) was exceeded in 9 of the 197 samples (4.6% of primary samples), as shown in **Table 7-10**.

Exceedances of TMBC for aluminium and iron were noted at varying depths and location. No immediate trend was apparent as to the distribution laterally or vertically of these exceedances.

Table 7-10 Twice Mean Background Exceedances for Aluminium and Iron

		Aluminum (mg/kg)	Iron (mg/kg)
		TMBC 12,918 mg/kg	TMBC 33,870 mg/kg
Location	Depth (mBSB)		
BH01	0.5-1.0	7290	**38200**
BH12	0-0.5	**13800**	21100
BH 15	0.0-0.45	12800	**37200**
BH 16	6.2-6.5	4000	**37000**
BH 17	0.5-1.0	**13100**	25400
BH 18	13.0-13.25	11800	**35900**
BH 19	16.5-16.95	1760	**37600**
BH 20	12.1-12.5	**13800**	**38000**
BH25B	0.5-0.95	**17100**	30100
BH25B	1.0-1.45	**17500**	32600
BH27	0.4-0.8	11100	**44300**
BH28	2.4-3.4	**16800**	28700
BH28	3.5-4.4	**13300**	26400
BH28	5.3-5.7	**14900**	23400
BH29	0.7-1.0	**13200**	25600
BH29	1.0-1.5	**13600**	28300
BH31	0.18-0.2	**13000**	**39900**
BH31	0.2-0.3	8620	**37300**
BH32	1.5-1.8	**13300**	24400
BH32	2.5-3.2	**14800**	29700

Section 8 Field Data Validation and Quality Control

8.1 Field Split Samples Relative Percentage Difference

The Relative Percent Difference (RPD) is a calculation of the percentage difference between sets of primary, duplicate and triplicate samples.

In total, 242 primary samples were collected, with 33 duplicate samples (13% frequency) and 30 triplicate samples (12% frequency). This exceeds the target rate of 10% for QA/QC (**Section 5.5.2**).

The comparative guidelines adopted for this investigation include the "QLD EPA Draft Guidelines for Assessment and Management of Contaminated Lands in Queensland 1998" and the "NEPM" as well as the NODGM (2002), given that the location of spoil disposal was not within the requested scope of this report and may be onshore. As such, the application of the 50% criteria has been assumed as per the requirements of AS4482.1-2005, to permit for data validation to be more broadly applicable.

Australian Standard AS4482.1-2005 indicates that RPDs less than 50% are acceptable for quality assurance purposes but higher variations (and hence RPDs) can be expected for organic analyses and for low concentrations of analytes, although acceptable RPD limits have not been specified for these instances. As such, the following criteria have been applied:

- Pass: RPD <50%;
- Pass 1: RPD >50% and the highest analyte concentration in the sample set is between 5xLOR and 10xLOR; and
- Fail: RPD >50% and one or both of the analyte concentrations in the sample set exceed 10xLOR.

Summary tables for RPD results are presented in **Appendix E**.

There were a total of 29 RPD failures for primary/duplicate pair analyses, a total of 18 failures for primary/triplicate pair analyses and a total of 19 failures for duplicate/triplicate failures.

Differences between primary, duplicate and triplicate sample concentrations highlight sample heterogeneity and analyte concentration variability within the soil matrix. This is particularly apparent where sample recovery is poor and sample volume is minimal. Additionally, split sampling for duplicate and triplicate QA/QC requires homogenising composite samples to obtain adequate volumes for splitting.

Full homogenisation of composite samples may not be possible where:

- The material is not malleable, soft or loose;
- The lithology is of varying types within the intended composite sample; and
- When analysis is for volatile compounds and any excess handling or aeration may volatilise target compounds, resulting in inaccurate analytical results.

As such, the overall results of the RPD calculations between primary, duplicate and triplicate samples indicate that the analytical data is suitable for interpretive use.

8.2 Equipment Decontamination and Rinsates

As a quality control measure, equipment rinsate blank water samples were tested for various analytes during this investigation. In total, 30 rinsate samples were obtained by pouring laboratory supplied deionised water over re-usable sample collection equipment (trowel in most cases) and collecting the rinsate in a laboratory supplied container for analytical testing. Typically, one rinsate sample was collected on each day that field sampling was undertaken.

The objective of this practice is to establish that decontamination procedures are acceptable for analytical data reliance and as an indicative measure to assess possible cross-contamination between samples.

Full analytical results for rinsate samples are supplied in **Appendix E**.

Section 8 Field Data Validation and Quality Control

Ideally, all rinsate samples should report analyte concentrations below LOR. The samples with detectable concentrations of analytes are summarised in **Table 8-1**.

Table 8-1 Rinsate QA/QC Summary Table

Sample ID	Date Sampled	Batch No.	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Total Organic Carbon
			0.001 mg/L	0.0001 mg/L	0.001 mg/L	0.001 mg/L	0.001 mg/L	0.001 mg/L	0.005 mg/L	1 mg/L
QC02	30/07/2008	EB0810222	<0.001	**0.0002**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC05	4/08/2008	EB0810480	<0.001	**0.0064**	**0.002**	<0.001	<0.001	<0.001	**0.005**	**6**
QC06	5/08/2008	EB0810571	<0.001	**0.0007**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC13	10/08/2008	EB0810762	<0.001	**0.0003**	**0.013**	<0.001	<0.001	<0.001	<0.005	<1
QC 14	11/08/2008	EB0810824	<0.001	<0.0001	**0.012**	<0.001	<0.001	<0.001	<0.005	**1**
QC17	12/08/2008	EB0810850	<0.001	**0.0002**	<0.001	<0.001	<0.001	<0.001	<0.005	**2**
QC20	14/08/2008	EB0811004	**0.001**	<0.0001	**0.002**	<0.001	<0.001	**0.002**	<0.005	-
QC21	18/08/2008	EB0811130	<0.001	<0.0001	<0.001	<0.001	**0.001**	<0.001	**0.006**	-
QC28	19/08/2008	EB0811213	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	**0.01**	<1
QC33	20/08/2008	EB0811298	<0.001	**0.0014**	<0.001	<0.001	<0.001	<0.001	<0.005	**1**
QC 44	28/08/2008	EB0811787	<0.001	**0.0004**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC 47	29/08/2008	EB0811799	<0.001	**0.0198**	<0.001	**0.003**	<0.001	<0.001	<0.005	<1
QC49	1/09/2008	EB0811949	<0.001	<0.0001	<0.001	**0.003**	<0.001	<0.001	<0.005	<1
QC 50	2/09/2008	EB0812007	<0.001	<0.0001	<0.001	**0.003**	<0.001	<0.001	<0.005	<1
QC57	9/09/2008	EB0812358	<0.001	**0.0001**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC66	20/09/2008	EB0813051	<0.001	**0.0005**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC71	23/09/2008	EB0813167	<0.001	**0.0001**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC76	28/09/2008	EB0813420	<0.001	**0.0016**	<0.001	<0.001	<0.001	<0.001	**0.012**	<1
QC79	4/10/2008	EB0813733	<0.001	<0.0001	**0.001**	<0.001	<0.001	<0.001	<0.005	**1**
QC89	9/10/2008	EB0814114	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	**0.005**	<1
QC90	13/10/2008	EB0814331	<0.001	**0.0005**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC 94	15/10/2008	EB0814331	<0.001	**0.0003**	<0.001	<0.001	<0.001	<0.001	<0.005	<1

The analysis of all 30 equipment rinsate blank samples for PAHs, OC pesticides, OP pesticides, TBT and PCBs reported concentrations below LOR for these parameters.

Analytical results of rinsate testing for metals and TOC reported the following:

- Analytical detection of some metals and TOC approaching the respective LORs was reported for arsenic (1 rinsate), chromium (3 rinsates), lead (1 rinsate), nickel (1 rinsate) and TOC (4 rinsates). Generally, as analytical results approach LOR the accuracy diminishes. As such these results may not be an accurate assessment of the decontamination procedure and do not affect the outcome of this report.

Section 8 Field Data Validation and Quality Control

- Metals detected at concentrations which were not approaching the LOR are discussed as follows:
    - Copper was detected at 0.003 mg/L (LOR 0.001 mg/L) in three rinsate samples (QC47, QC49 and QC50) collected on three consecutive days of sampling. A review of the sediment analytical results for copper in those samples collected on the dates of positive rinsate results indicate that 2 reported copper above LOR at 26mg/kg (BH19 16.5-16.95 mBSB and 20.2-20.35 mBSB). This value is below the lowest ILs for copper (60 mg/kg) used in this investigation.
    - Zinc was detected in five rinsate samples (QC05, QC21, QC28 and QC76 and QC89). A review of the sediment analytical results for zinc in those samples collected on the dates of positive rinsate results indicate that zinc was detected above LOR. The maximum zinc concentration was from BH32 1.55-2.0 mBSB (as QC25 triplicate) with a result of 62 mg/kg. This value is below the lowest ILs for zinc (200 mg/kg) used in this investigation.
    - There was one positive result for TOC reported for QC05 (6 mg/L). A review of the analytical data for all samples collected that day indicates that TOC was detected in samples between 0.03-0.28 mg/kg; however no comparative guideline ILs have been established for TOC as part of this investigation. As such, these detections will not affect the outcome of this report.
    - Chromium was detected in three rinsate samples, QC05 (0.002 mg/L), QC20 (0.002 mg/L) and QC79 (0.001 mg/L), with results which were either at, or approaching, the LOR (0.001 mg/L). Additionally, chromium was detected in two rinsate samples (QC13 and QC14) collected on consecutive days. A review of the sediment analytical results for chromium in those samples collected on the dates of positive rinsate results indicate that the maximum chromium concentration was 29 mg/kg.This value is below the lowest ILs for chromium (50 mg/kg) used in this investigation.
    - Cadmium was detected in 14 rinsate samples (including some results approaching LOR); however after reviewing the analytical sediment sample data it was found that cadmium was not detected in any sediment sample above the LOR.

Based on the above, the detected parameters within the results for QA/QC rinsates will not affect the outcomes of this report or the analytical data presented herein. As such, the analytical data of sediment samples is considered acceptable and suitable for interpretive use.

Section 9 Conclusions

9.1 Geology and Lithology

Three main geological profiles were intersected during this investigation, which is comparable to the published geology for the area. The geological profiles encountered during this investigation generally comprised marine sediments *(Holocene aged estuarine alluvial)* and residual material overlying extremely weathered to fresh bedrock (*Wandilla Formation),* which ranges from siltstones/sandstones to low grade metamorphosed argillite. The geological profiles were generally not uniform in thickness and were not immediately apparent or distinct. Marine sediments varied from clays through to sands, with the seabed surface lithology often containing shell fragments, which decreased in concentration with depth down to 3 mBSB, in some locations. Thicker bands of marine sediment (before transition into residual) were generally found closer to mid channel, between the mainland and Curtis Island, and where is noted in areas where sandbanks were observed.

9.2 Acid Sulfate Soils – Proposed Dredge Area

The proposed GLNG capital dredge area and a small section of the adjacent MOF are the only sections of the proposed marine works which include removal and exposure of sediment.

Preliminary ASS investigations carried out by GeoCoastal (2008) had previously identified the area adjacent to the shoreline of China Bay as being a PASS risk. Along the main marine transect where dredging is proposed, all Holocene-aged sediments provided a negative Net Acidity indicating that they have excess buffering capacity. It was concluded that dredging of this sediment would provide no acid sulfate soils risk to the environment (GeoCoastal 2008).

The URS marine sediment investigation identified that throughout the area of investigation there was no indication as the presence of AASS.

The presence of possible horizons of PASS was noted in several areas. In the northern section of the proposed dredge area, where the seabed was at 4.3 m-LAT, some potential acidity in the marine alluvium was noted at an elevation of 16.1 –mLAT (a band 11.8 m thick); effectively the marine sediment profile. As the seabed slopes down toward the southern end of the dredge area (seabed level at 12 –mLAT) the band of potential acidity is approximately 4 m thick (again the marine alluvial sediment).

ANC was recorded in the marine sediments to depths of up to 3 metres. Shell content was noted throughout the marine sediment, decreasing with depth. Surface sediment ANC was likely to be the result of the shell content; however ANC was also present at depth, indicating potential microscopic sources of ANC. It should be noted that ANC is indicative of buffering capacity inherent in soils; however the availability of ANC *insitu* can be overestimated during laboratory analysis. Under natural conditions shell fragments are usually coarse with minimal surface area. Under laboratory conditions shell fragments are ground, increasing the surface area/volume ratio for reaction (neutralisation). Additionally, large shell fragments may often be coated in reaction by-products such as gypsum, rendering the bulk of the $CaCO_3$ of the shell unavailable for neutralisation. ANC can also be present in the microscopic range (such as foraminiferal content) which provide larger reactive surface area ratios.

The action criteria of 0.03 %S for net acidity was exceeded (when ANC was excluded) in marine sediments collected from the proposed dredge area (the main area of sediment disturbance and removal) primarily at depths from seabed to 6 mBSB. As such, ASS management would be required. With the inclusion of ANC the Net Acidity found in the dredge area was less than LOR (except for one sample), and below the action criteria.

The overall liming rate (excluding ANC) comprising of all samples analysed within the dredge area, ranged from 2 to 47 kg $CaCO_3$/tonne. Liming rate is a derived value calculated from the Net Acidity and can be calculated excluding or including ANC.

The inclusion of ANC into the calculation of liming rates, for all samples analysed, reduces the liming rate to <1 kg $CaCO_3$/tonne; except for BH5 at 1.8-2.0 mBSB (3 kg $CaCO_3$/tonne),

Section 9 Conclusions

As such, it is the availability of ANC through the marine sediment which governs the amount of net acidity and subsequently the need for treatment (liming).

9.3 Metals

Metals were reported in all areas of the investigation.

Guideline exceedances were recorded for antimony, arsenic, chromium, copper, manganese, mercury and nickel.

Recorded metals exceedances were consistently noted as being at depths greater than 1.0 mBSB. It is likely that the presence of many metals is naturally occurring, given that several metals were consistently present at higher concentrations within the residual material than the overlying marine sediment. It is noted that high metals concentrations were also reported in EIS studies for Curtis Island (LNG facility onshore study area) soils and groundwater. These results have been discussed in those respective reports and summarised in the relevant EIS chapter.

Arsenic was observed in marine sediments above guideline levels in several locations at various depths. The only recorded instance of arsenic concentrations exceeding NODGDM (2002) screening levels or ILs, where the depth was less then 1.0 mBSB, was in the areas proposed for the PLF and the MOF; these areas are in close proximity to the shore of Curtis Island.

Whilst no guidelines have been established for either iron or aluminium, both metals were present in notable concentrations.

Despite the likelihood of metals being naturally occurring, if the proposed dredging is carried out and sediment is brought to the surface, metals inherent in the material may be mobilised from either sorbed metals or dissolved metals in the spoil slurry waters, potentially posing a risk to any receiving environment where dredging waters are released. Any proposed treatment of ASS must also address the risk of dissolution of dissolved metals from leachates or dredging waters, caused by over neutralisation. This may lead to iron flocs or areas of high deposition of metals at the point of release into the receiving waters.

9.3.1 Upper Confidence Levels (UCLs) and Background Levels for Metals

The calculation of the 95% Upper Confidence Level (UCL) is a statistical determination to establish an analytical concentration from a data set for a particular analyte, where 95% of the results within that data set are below the calculated ULC.

No metal guideline (QEPA EILS, NEPM HILs or NODGDM 2002 screening levels) is exceeded by the calculated 95% UCLs for any metal except antimony (2.69 mg/kg), which exceeds the NODGM (2002) Screening Level of (2 mg/kg). Additionally some metals analysed as part of this investigation did not return results above the LOR, or returned to few results above the LOR for statistical interpretation.

It should be noted that no ILs are established under the adopted guidelines for aluminium and iron. For these parameters the TMBC was calculated using analytical results from all 197 primary samples analysed for aluminium and iron, collected by both URS and GeoCoastal (2002), from all areas of marine sediment investigation. The TMBC for aluminium (12,918 mg/kg) was exceeded in 13 of the 197 samples (6.6% of primary samples). The TMBC for iron (33,870 mg/kg) was exceeded in 9 of the 197 samples (4.6% of primary samples).

Exceedances of TMBC for aluminium and iron were noted at varying depths and location. No immediate trend was apparent as to the distribution laterally or vertically of these exceedances.

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9.4 Nutrients

No NODGDM (2002) screening levels or ILs were established for nutrients under the guidelines adopted for this investigation.

Generally, nitrate, nitrite and ammonia results in sediment samples were less than the LOR.

TKN was recorded in the range of 30-660 mg/kg. Borehole BH01 was reported to have the highest concentration of TKN and nitrogen within the proposed offshore dredge area, with the maximum TKN value observed at a depth of 0.0-0.5 mBSB (BH01).

Samples from BH 12 located in the tidal flats of China Bay recorded ammonia at the LOR (20 mg/kg) at depths of 0.0-0.5 and 0.5-1.0 mBSB. This depth profile from BH12 returned a TKN value of 920 mg/kg at 0.5-1.0m BSB, which is greater than TKN values noted within the proposed dredge area. This is likely due to an increased organic content within the surface seabed sediment on the tidal flats.

Total Phosphorus was detected in the range of 94-506 mg/kg (BH11 at 0.0-0.5 mBSB and BH06 at 4.6-5.6 mBSB respectively.

TOC was noted to decrease through the marine sediment profile with depth, as the presence of organic material noted in field observations also decreased. The concentration of TOC ranged from 0.02-1.43 %, with the highest value observed from BH18 at 2.6-3.0 and 3.0-3.2 mBSB.

9.5 Pore Water Ammonia

Analysis for Pore Water Ammonia was carried out upon advice from the QEPA, on four samples from three boreholes within the proposed dredge area, collected by GeoCoastal (2008) during the preliminary investigation. Results ranged from 2630 to 5580 µg/L. All four pore water analytical results exceeded the respective ANZECC/ARMCANZ (2000) pH adjusted trigger value. It should be noted that the guideline allows for higher trigger values at lower pH's.

9.6 Organic Compounds

Sampling and analysis of organic compounds during this investigation was carried out for the following targeted parameters; TPH, BTEX, PAH, OC and OP pesticides, Phenolic Compounds, TBT, Triazine Pesticides, Carbamates Pesticides, Phenoxyacetic acid Pesticides and PCBs.

Sampling of these compounds was carried out by both URS and GeoCoastal (2008). Results for these parameters were below the LOR for all samples except for:

- Naphthalene (trace detection) was detected in 8 samples and 2-Methylnaphthalene was detected in 11 samples at concentrations below the NODGM 2002 ILs;
- Phenol (trace detection) was reported for 7 samples at concentrations below the NEPM HILs; and
- Two OC pesticides (4,4-DDT and Endrin) were initially reported above the ISQG-low screening level at BH11 (12.95-13.45 -mLAT) and BH12 (3.2-4.2 -mLAT). DDT was also detected below the screening level in one other sample. ALS reanalysed these samples and confirmed that these results were false positives and that all samples are below the LOR for DDT and Endrin.

9.7 Radionuclides

All radionuclide results for all samples analysed were below the NODGDM (2002) screening level value of 35 Bq/g.

Section 10 Statement of Limitations

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Santos and only those third parties who have been authorised in writing by URS to rely on the 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 report. It is prepared in accordance with the scope of work and for the purpose outlined in **Section 1** of this report.

The methodology adopted and sources of information used by URS are outlined in this 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 report as provided to URS was false.

This report was prepared between **22/07/2008** and **22/01/2009**, 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 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.

This report contains information obtained by inspection, sampling, testing or other means of investigation. This information is directly relevant only to the points in the ground where they were obtained at the time of the assessment. The borehole logs indicate the inferred ground conditions only at the specific locations tested. The precision with which conditions are indicated depends largely on the frequency and method of sampling, and the uniformity of conditions as constrained by the project budget limitations. The behaviour of groundwater and some aspects of contaminants in soil and groundwater are complex. Our conclusions are based upon the analytical data presented in this report and our experience. Future advances in regard to the understanding of chemicals and their behaviour, and changes in regulations affecting their management, could impact on our conclusions and recommendations regarding their potential presence on this site.

Where conditions encountered at the site are subsequently found to differ significantly from those anticipated in this report, URS must be notified of any such findings and be provided with an opportunity to review the recommendations of this report.

Whilst to the best of our knowledge information contained in this report is accurate at the date of issue, subsurface conditions, including groundwater levels can change in a limited time. Therefore this document and the information contained herein should only be regarded as valid at the time of the investigation unless otherwise explicitly stated in this report.

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Tables

URS 2008 - Analytical Results Tables

URS 2008 Santos GLNG Analytical Results Tables

Table 1: Borehole 1-32 Acid Sulphate Soils (Chromium Suite)

Section	Borehole No.	Sample Date	pH_F value (0.1)	pH_{FOX} value (0.1)	Δ pH	pH_{FOX} Reaction Rate[1]	pH KCl	TAA (Titratable Actual Acidity)		S_{CR} (Chromium Reducible Sulfur)		ANC_{BT} (ANC by Back Titration)			Net Acidity[2] (includes ANC)		Net Acidity[3] (excludes ANC)	Liming Rate[4] (includes ANC)	Liming Rate[4] (excludes ANC)
							Method Code: 23A	Method Code: 23F		Method Code: 22B		Method Code: 19A2							
							0.1 pH Units	2 mole H^+/t	0.02 % S	0.02 % S	10 mole H^+/t	0.01 % $CaCO_3$	0.01 % S	10 mole H^+/t	0.02 % S	10 mole H^+/t	0.02 % S	1 kg$CaCO_3$/tonne	1 kg$CaCO_3$/tonne
BH1	GC/GLNG #1_0-0.1	7/06/2008	**8.07**	**6.64**	**1.43**	**2**	**9.0**	<2	<0.02	**0.19**	**120**	**5.09**	**1.63**	**1020**	<0.02	<10	**0.21**	<1	9
BH1	GC/GLNG #1_0.8-1.0	7/06/2008	**8.37**	**6.57**	**1.8**	**4**	**9.1**	<2	<0.02	**0.41**	**255**	**19**	**6.08**	**3800**	<0.02	<10	**0.43**	<1	19
BH1	GC/GLNG #1_1.8-2.0	7/06/2008	**8.32**	**6.9**	**1.42**	**2**	**8.8**	<2	<0.02	**0.58**	**362**	**23.1**	**7.4**	**4620**	<0.02	<10	**0.60**	<1	27
BH1	GC/GLNG #1_2.8-3.0	7/06/2008	**8.09**	**3.3**	**4.79**	-	**8.7**	<2	<0.02	**0.49**	**306**	**6.54**	**2.1**	**1310**	<0.02	<10	**0.51**	<1	23
BH1	GC/GLNG #1_3.3-3.5	7/06/2008	**7.95**	**7.17**	**0.78**	**1**	**9.0**	<2	<0.02	**0.16**	**101**	**6.94**	**2.22**	**1390**	<0.02	<10	**0.18**	<1	7
BH1	GC/GLNG #1_3.8-4.0	7/06/2008	**8.15**	**7.76**	**0.39**	**1**	**8.6**	<2	<0.02	**0.16**	**98**	**1.01**	**0.32**	**202**	<0.02	<10	**0.18**	<1	7
BH02	BH02 0.3-0.9	10/08/2008	na	na	na	na	**9.4**	<2	<0.02	**0.06**	**36**	**3.77**	**1.21**	**753**	<0.02	<10	**0.08**	<1	3
BH02	QC07(BH02 0.3-0.9)	10/08/2008	na	na	na	na	**9.6**	<2	<0.02	**0.03**	**16**	**2.74**	**0.88**	**547**	<0.02	<10	**0.05**	<1	1
BH02	QC08(BH02 0.3-0.9)	10/08/2008	na	na	na	na	**9.6**	<2	<0.02	<0.02	**12**	**3.58**	**1.14**	**715**	<0.02	<10	**0.04**	<1	1
BH02	BH02 1.9-2.3	10/08/2008	na	na	na	na	**9.1**	<2	<0.02	**0.11**	**67**	**5.03**	**1.61**	**1000**	<0.02	<10	**0.13**	<1	5
BH02	QC09(BH02 1.9-2.3)	10/08/2008	na	na	na	na	**9.2**	<2	<0.02	**0.16**	**102**	**6.7**	**2.15**	**1340**	<0.02	<10	**0.18**	<1	7
BH02	QC10(BH02 1.9-2.3)	10/08/2008	na	na	na	na	**9**	<2	<0.02	**0.33**	**208**	**7.17**	**2.3**	**1430**	<0.02	<10	**0.35**	<1	15
BH02	BH02 2.4-3.2	10/08/2008	na	na	na	na	**7.6**	<2	<0.02	<0.02	<10	**0.97**	**0.31**	**194**	<0.02	<10	**0.04**	<1	1
BH02	QC11(BH02 2.4-3.2)	10/08/2008	na	na	na	na	**9**	<2	<0.02	<0.02	<10	**0.91**	**0.29**	**182**	<0.02	<10	**0.04**	<1	1
BH02	QC12(BH02 2.4-3.2)	10/08/2008	na	na	na	na	**7.7**	<2	<0.02	<0.02	<10	**0.97**	**0.31**	**195**	<0.02	<10	**0.04**	<1	1
BH02	BH02 4.2-4.6	10/08/2008	na	na	na	na	**7.2**	<2	<0.02	<0.02	<10	**0.8**	**0.26**	**160**	<0.02	<10	**0.04**	<1	1
BH02	BH02 5.0-5.4	10/08/2008	na	na	na	na	**6.8**	<2	<0.02	<0.02	<10	**0.72**	**0.23**	**144**	<0.02	<10	**0.04**	<1	1
BH02	BH02 6.2-6.6	10/08/2008	na	na	na	na	**6.6**	<2	<0.02	<0.02	<10	**0.97**	**0.31**	**194**	<0.02	<10	**0.04**	<1	1
BH02B	BH02B 7.0-7.55	11/08/2008	na	na	na	na	**6.4**	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	1
BH02B	BH02B 7.6-7.8	11/08/2008	na	na	na	na	**8.9**	<2	<0.02	**0.02**	**14**	**0.5**	**0.16**	**101**	<0.02	<10	**0.04**	<1	1
BH02B	BH02B 7.8-8.0	11/08/2008	na	na	na	na	**7.5**	<2	<0.02	<0.02	<10	**0.35**	**0.11**	**70**	<0.02	<10	**0.04**	<1	1
BH02B	BH02B 9.3-9.4	11/08/2008	na	na	na	na	**8.8**	<2	<0.02	<0.02	<10	**0.28**	**0.09**	**55**	<0.02	<10	**0.04**	<1	1
BH3	GC/GLNG #3_0.9-1.1	8/06/2008	**8.16**	**7.09**	**1.07**	**2**	**9.4**	<2	<0.02	**0.08**	**51**	**13.7**	**4.38**	**2730**	<0.02	<10	**0.10**	<1	4
BH3	GC/GLNG #3_1.8-2.0	8/06/2008	**8.06**	**6.64**	**1.42**	**3**	**9.1**	<2	<0.02	**0.04**	**23**	**9.63**	**3.08**	**1920**	<0.02	<10	**0.06**	<1	2
BH3	GC/GLNG #3_2.8-3.0	8/06/2008	**8.12**	**6.71**	**1.41**	**3**	**8.9**	<2	<0.02	**0.38**	**238**	**9.47**	**3.03**	**1890**	<0.02	<10	**0.40**	<1	18
BH3	GC/GLNG #3_3.3-3.5	8/06/2008	**8.31**	**6.98**	**1.33**	**3**	**8.7**	<2	<0.02	**0.52**	**323**	**9.26**	**2.97**	**1850**	<0.02	<10	**0.54**	<1	24
BH3	GC/GLNG #3_3.8-4.0	8/06/2008	**8.35**	**6.92**	**1.43**	**3**	**8.6**	<2	<0.02	**0.9**	**560**	**6.57**	**2.1**	**1310**	<0.02	<10	**0.92**	<1	42
BH4	BH4 0.0-0.3	14/08/2008	na	na	na	na	**9.5**	<2	<0.02	**0.06**	**36**	**26.8**	**8.6**	**5370**	<0.02	<10	**0.08**	<1	3
BH4	BH4 1.5-2.0	14/08/2008	na	na	na	na	**9.2**	<2	<0.02	<0.02	<10	**0.91**	**0.29**	**182**	<0.02	<10	**0.04**	<1	1
BH4	QC18(BH4 1.5-2.0)	14/08/2008	na	na	na	na	**7.4**	<2	<0.02	<0.02	<10	**0.52**	**0.16**	**103**	<0.02	<10	**0.04**	<1	1
BH4	QC19(BH4 1.5-2.0)	14/08/2008	na	na	na	na	**8.9**	<2	<0.02	<0.02	<10	**0.79**	**0.25**	**157**	<0.02	<10	**0.04**	<1	1
BH4	BH4 2.0-2.2	14/08/2008	na	na	na	na	**9.4**	<2	<0.02	<0.02	<10	**1.01**	**0.32**	**201**	<0.02	<10	**0.04**	<1	1
BH4	BH4 2.2-2.5	14/08/2008	na	na	na	na	**9.3**	<2	<0.02	<0.02	<10	**0.44**	**0.14**	**88**	<0.02	<10	**0.04**	<1	1
BH4	BH4 2.5-2.95	14/08/2008	na	na	na	na	**7.9**	<2	<0.02	<0.02	<10	**1.11**	**0.35**	**221**	<0.02	<10	**0.04**	<1	1
BH4	BH4 3.2-3.7	14/08/2008	na	na	na	na	**9**	<2	<0.02	<0.02	<10	**0.55**	**0.18**	**110**	<0.02	<10	**0.04**	<1	1
BH5	GC/GLNG #5_0-0.1	9/06/2008	**6.94**	**6.43**	**0.51**	**3**	**9.1**	<2	<0.02	**0.06**	**40**	**5.6**	**1.79**	**1120**	<0.02	<10	**0.08**	<1	3
BH5	GC/GLNG #13_0-0.1	9/06/2008	**6.94**	**6.43**	**0.51**	**3**	**9**	<2	<0.02	**0.1**	**59**	**12.2**	**3.92**	**2440**	<0.02	<10	**0.12**	<1	5
BH5	GC/GLNG #5_1.0-1.2	9/06/2008	**7.71**	**5.66**	**2.05**	**4**	**8.7**	<2	<0.02	**0.62**	**384**	**28.3**	**9.08**	**5660**	<0.02	<10	**0.64**	<1	29
BH5	GC/GLNG #5_1.8-2.0	9/06/2008	**7.24**	**3.62**	**3.62**	**3**	**8.4**	<2	<0.02	**0.84**	**521**	**3.61**	**1.16**	**722**	**0.06**	**40**	**0.86**	**3**	39
BH5	GC/GLNG #5_2.3-2.5	9/06/2008	**7.38**	**5.91**	**1.47**	**3**	**8.6**	<2	<0.02	**0.7**	**438**	**14.3**	**4.58**	**2860**	<0.02	<10	**0.72**	<1	33
BH5	GC/GLNG #5_3.3-3.5	9/06/2008	**7.42**	**6.72**	**0.7**	**1**	**9**	<2	<0.02	**0.17**	**108**	**6.51**	**2.09**	**1300**	<0.02	<10	**0.19**	<1	8
BH5	GC/GLNG #5_4.3-4.5	9/06/2008	**7.11**	**6.32**	**0.79**	**2**	**9.2**	<2	<0.02	**0.11**	**70**	**11.8**	**3.79**	**2360**	<0.02	<10	**0.13**	<1	5
BH5	GC/GLNG #5_5.8-6.0	9/06/2008	**7.43**	**6.34**	**1.09**	-	**8.9**	<2	<0.02	**0.04**	**23**	**28.4**	**9.09**	**5670**	<0.02	<10	**0.06**	<1	2
BH6	GC/GLNG #6_0.3-0.5	6/06/2008	**8.28**	**6.19**	**2.09**	**1**	**8.6**	<2	<0.02	**0.71**	**446**	**18.2**	**5.83**	**3640**	<0.02	<10	**0.73**	<1	33
BH6	GC/GLNG #6_0.8-1.0	6/06/2008	**7.54**	**6.56**	**0.98**	**2**	**8.7**	<2	<0.02	**0.69**	**433**	**26.4**	**8.46**	**5280**	<0.02	<10	**0.71**	<1	32
BH6	GC/GLNG #6_1.8-2.0	6/06/2008	**6.97**	**5.68**	**1.29**	**4**	**8.8**	<2	<0.02	**0.45**	**282**	**17.6**	**5.65**	**3520**	<0.02	<10	**0.47**	<1	21
BH6	GC/GLNG #6_2.3-2.5	6/06/2008	**7.11**	**5.97**	**1.14**	**4**	**8.9**	<2	<0.02	**0.32**	**201**	**11.1**	**3.55**	**2210**	<0.02	<10	**0.34**	<1	15
BH6	GC/GLNG #6_3.3-3.5	6/06/2008	**7.58**	**5.86**	**1.72**	**3**	**9**	<2	<0.02	**0.08**	**53**	**3.9**	**1.25**	**779**	<0.02	<10	**0.10**	<1	4
BH6	GC/GLNG #6_4.3-4.5	6/06/2008	**7.25**	**6.38**	**0.87**	-	**8.8**	<2	<0.02	**0.02**	**15**	**0.77**	**0.25**	**154**	<0.02	<10	**0.04**	<1	1
BH07	BH07 0.0-0.5	27/07/2008	na	na	na	na	**9.2**	<2	<0.02	**0.17**	**108**	**12.3**	**3.94**	**2460**	<0.02	<10	**0.19**	<1	8
BH07	BH07 0.5-1.0	27/07/2008	na	na	na	na	**9**	<2	<0.02	**0.57**	**358**	**8.64**	**2.77**	**1730**	<0.02	<10	**0.59**	<1	27
BH07	BH07 1.0-1.5	27/07/2008	na	na	na	na	**9**	<2	<0.02	**0.34**	**213**	**14.7**	**4.71**	**2940**	<0.02	<10	**0.36**	<1	16
BH07	BH07 1.5-2.0	27/07/2008	na	na	na	na	**9**	<2	<0.02	**0.51**	**321**	**20.2**	**6.48**	**4040**	<0.02	<10	**0.53**	<1	24
BH07	BH07 2.2-2.7	27/07/2008	na	na	na	na	**9.2**	<2	<0.02	**0.25**	**155**	**12.7**	**4.06**	**2530**	<0.02	<10	**0.27**	<1	12
BH07	BH07 2.7-3.2	27/07/2008	na	na	na	na	**8.9**	<2	<0.02	**0.7**	**434**	**12**	**3.86**	**2410**	<0.02	<10	**0.72**	<1	33
BH07	BH07 3.2-3.5	27/07/2008	na	na	na	na	**9.1**	<2	<0.02	**0.51**	**316**	**23**	**7.36**	**4590**	<0.02	<10	**0.53**	<1	24
BH07	BH07 3.5-3.6	27/07/2008	na	na	na	na	**8.8**	<2	<0.02	**0.63**	**394**	**7.93**	**2.54**	**1580**	<0.02	<10	**0.65**	<1	29

Table 1: Borehole 1-32 Acid Sulphate Soils (Chromium Suite)

Section	Borehole No.	Sample Date	pH_F value (0.1)	pH_{FOX} value (0.1)	Δ pH	pH_{FOX} Reaction Rate[1]	pH KCl	TAA (Titratable Actual Acidity)		S_{CR} (Chromium Reducible Sulfur)		ANC_{BT} (ANC by Back Titration)			Net Acidity[2] (includes ANC)		Net Acidity[3] (excludes ANC)	Liming Rate[4] (includes ANC)	Liming Rate[4] (excludes ANC)
							Method Code: 23A	Method Code: 23F		Method Code: 22B		Method Code: 19A2							
							0.1 pH Units	2 mole H^+/t	0.02 % S	0.02 % S	10 mole H^+/t	0.01 % $CaCO_3$	0.01 % S	10 mole H^+/t	0.02 % S	10 mole H^+/t	0.02 % S	1 kg$CaCO_3$/tonne	1 kg$CaCO_3$/tonne
BH08B	BH08B 0.2-0.5	26/07/2008	na	na	na	na	**9.7**	<2	<0.02	**0.06**	**36**	**1.34**	**0.43**	**269**	<0.02	<10	**0.08**	<1	3
BH08B	BH08B 3.6-3.9	26/07/2008	na	na	na	na	**9.4**	<2	<0.02	**0.41**	**254**	**23.1**	**7.4**	**4620**	<0.02	<10	**0.43**	<1	19
BH08B	BH08B 4.3-4.6	26/07/2008	na	na	na	na	**8.5**	<2	<0.02	**0.59**	**366**	**6.21**	**1.99**	**1240**	<0.02	<10	**0.61**	<1	28
BH08B	BH08B 4.75-5	26/07/2008	na	na	na	na	**9.1**	<2	<0.02	**0.47**	**292**	**22**	**7.04**	**4390**	<0.02	<10	**0.49**	<1	22
BH9	GC/GLNG #9_0-0.1	7/06/2008	**7.49**	**8.35**	**-0.86**	**3**	**9.3**	<2	<0.02	<0.02	<10	**1.76**	**0.56**	**351**	<0.02	<10	**0.04**	<1	1
BH9	GC/GLNG #9_0.3-0.5	7/06/2008	**8.17**	**8.47**	**-0.3**	**3**	**9.5**	<2	<0.02	<0.02	10	**1.56**	**0.5**	**312**	<0.02	<10	**0.04**	<1	1
BH9	GC/GLNG #9_1.1-1.3	7/06/2008	**7.97**	**8.16**	**-0.19**	**1**	**9.1**	<2	<0.02	<0.02	<10	**1.95**	**0.62**	**389**	<0.02	<10	**0.04**	<1	1
BH9	GC/GLNG #9_1.8-2.0	7/06/2008	**8.21**	**7.6**	**0.61**	**1**	**9.4**	<2	<0.02	<0.02	<10	**0.77**	**0.25**	**154**	<0.02	<10	**0.04**	<1	1
BH9	GC/GLNG #9_3.3-3.5	7/06/2008	**8.21**	**8.28**	**-0.07**	**2**	**9.3**	<2	<0.02	<0.02	<10	**3.78**	**1.21**	**755**	<0.02	<10	**0.04**	<1	1
BH9	GC/GLNG #9_4.5-4.7	7/06/2008	**8.19**	**8.2**	**-0.01**	**3**	**8.4**	<2	<0.02	<0.02	<10	**3.11**	**1**	**622**	<0.02	<10	**0.04**	<1	1
BH10	GC/GLNG #10_0-0.1	8/06/2008	**7.57**	**8.25**	**-0.68**	**2**	**9.4**	<2	<0.02	<0.02	<10	**3.71**	**1.19**	**741**	<0.02	<10	**0.04**	<1	1
BH10	GC/GLNG #10_0.4-0.6	8/06/2008	**7.85**	**8.47**	**-0.62**	**2**	**9.1**	<2	<0.02	<0.02	<10	**7.43**	**2.38**	**1480**	<0.02	<10	**0.04**	<1	1
BH10	GC/GLNG #10_1.3-1.5	8/06/2008	**7.75**	**7.38**	**0.37**	**3**	**9.4**	<2	<0.02	<0.02	<10	**7.44**	**2.38**	**1480**	<0.02	<10	**0.04**	<1	1
BH10	GC/GLNG #10_2.4-2.6	8/06/2008	**7.88**	**6.92**	**0.96**	**-**	**8.7**	<2	<0.02	<0.02	<10	**6.88**	**2.2**	**1380**	<0.02	<10	**0.04**	<1	1
BH11	GC/GLNG #11_0.3-0.5	7/06/2008	**7.85**	**7.98**	**-0.13**	**2**	**9.5**	<2	<0.02	<0.02	<10	**3.97**	**1.27**	**793**	<0.02	<10	**0.04**	<1	1
BH11	GC/GLNG #11_0.8-1.0	7/06/2008	**7.84**	**8.08**	**-0.24**	**1**	**9.5**	<2	<0.02	<0.02	<10	**3.76**	**1.2**	**752**	<0.02	<10	**0.04**	<1	1
BH11	GC/GLNG #11_1.8-2.0	7/06/2008	**7.69**	**7.99**	**-0.3**	**3**	**9.4**	<2	<0.02	<0.02	<10	**3.25**	**1.04**	**649**	<0.02	<10	**0.04**	<1	1
BH12	GC/GLNG #12_0-0.1	8/06/2008	**7.58**	**3.27**	**4.31**	**3**	**8.5**	<2	<0.02	**1.03**	**645**	**8.23**	**2.64**	**1640**	<0.02	<10	**1.05**	<2	48
BH12	GC/GLNG #12_0.8-1.0	8/06/2008	**7.52**	**1.62**	**5.9**	**4**	**8.1**	<2	<0.02	**0.84**	**523**	**1.41**	**0.45**	**282**	**0.54**	**335**	**0.86**	**25**	39
BH12	GC/GLNG #12_1.8-2.0	8/06/2008	**7.66**	**1.9**	**5.76**	**3**	**7.3**	<2	<0.02	**1.82**	**1130**	**1.04**	**0.33**	**207**	**1.6**	**995**	**1.84**	**75**	85
BH12	GC/GLNG #12_2.8-3.0	8/06/2008	**7.62**	**1.82**	**5.8**	**4**	**6.8**	<2	<0.02	**2.71**	**1690**	**1.01**	**0.32**	**201**	**2.5**	**1560**	**2.73**	**117**	127
BH12	GC/GLNG #12_3.8-4.0	8/06/2008	**8.53**	**8.52**	**0.01**	**3**	**8.5**	<2	<0.02	<0.02	<10	**4.93**	**1.58**	**984**	<0.02	<10	**0.04**	<2	1
BH13	BH13 1.0-1.6	28/08/2008	na	na	na	na	**9.9**	<2	<0.02	**0.1**	**65**	**17.1**	**5.48**	**3420**	<0.02	<10	**0.12**	<1	5
BH13	BH13 1.6-2.3	28/08/2008	na	na	na	na	**9.6**	<2	<0.02	**0.16**	**104**	**24**	**7.69**	**4790**	<0.02	<10	**0.18**	<1	7
BH13	QC 42(BH13 1.6-2.3)	28/08/2008	na	na	na	na	**9.6**	<2	<0.02	**0.07**	**41**	**20.8**	**6.67**	**4160**	<0.02	<10	**0.09**	<1	3
BH13	QC 43(BH13 1.6-2.3)	28/08/2008	na	na	na	na	**9.5**	<2	<0.02	**0.12**	**74**	**18.9**	**6.06**	**3780**	<0.02	<10	**0.14**	<1	6
BH13	BH13 4.9-5.3	28/08/2008	na	na	na	na	**9.6**	<2	<0.02	<0.02	<10	**1.73**	**0.55**	**346**	<0.02	<10	**0.04**	<1	1
BH13	BH13 7.3-7.4	28/08/2008	na	na	na	na	**8.7**	<2	<0.02	<0.02	<10	**0.25**	**0.08**	**49**	<0.02	<10	**0.04**	<1	1
BH13	BH13 7.7-8.05	28/08/2008	na	na	na	na	**8.2**	<2	<0.02	<0.02	<10	**0.15**	**0.05**	**30**	<0.02	<10	**0.04**	<1	1
BH13	BH13 8.05-8.3	28/08/2008	na	na	na	na	**9.3**	<2	<0.02	<0.02	<10	**0.4**	**0.13**	**79**	<0.02	<10	**0.04**	<1	1
BH13	BH13 8.3-8.6	28/08/2008	na	na	na	na	**8.6**	<2	<0.02	<0.02	<10	**0.25**	**0.08**	**49**	<0.02	<10	**0.04**	<1	1
BH13	BH13 9.0-9.15	28/08/2008	na	na	na	na	**9.6**	<2	<0.02	**0.16**	**98**	**23.1**	**7.41**	**4620**	<0.02	<10	**0.18**	<1	7
BH13	BH13 11.2-11.3	28/08/2008	na	na	na	na	**9.6**	<2	<0.02	**0.1**	**63**	**22.4**	**7.19**	**4480**	<0.02	<10	**0.12**	<1	5
BH13	BH13 11.3-11.4	28/08/2008	na	na	na	na	**9.1**	<2	<0.02	**0.48**	**296**	**8.56**	**2.74**	**1710**	<0.02	<10	**0.50**	<1	22
BH13	BH13 11.9-12.07	28/08/2008	na	na	na	na	**9.4**	<2	<0.02	**0.17**	**105**	**10.4**	**3.32**	**2070**	<0.02	<10	**0.19**	<1	8
BH13	BH13 11.9-12.07_CUTTINGS	28/08/2008	na	na	na	na	**9.4**	<2	<0.02	<0.02	<10	**9.93**	**3.18**	**1980**	<0.02	<10	**0.04**	<1	1
BH13	BH13 12.95-14.3_CUTTINGS	28/08/2008	na	na	na	na	**9.5**	<2	<0.02	<0.02	<10	**6.04**	**1.93**	**1210**	<0.02	<10	**0.04**	<1	1
BH 14	BH14 1-1.5	27/08/2008	na	na	na	na	**9.5**	<2	<0.02	<0.02	<10	**15.6**	**4.99**	**3110**	<0.02	<10	**0.04**	<1	1
BH 14	BH14 1.6-2	27/08/2008	na	na	na	na	**9.2**	<2	<0.02	**0.1**	**59**	**8.64**	**2.77**	**1730**	<0.02	<10	**0.12**	<1	5
BH 14	QC39(BH14 1.6-2)	27/08/2008	na	na	na	na	**9.2**	<2	<0.02	**0.08**	**50**	**12.7**	**4.08**	**2540**	<0.02	<10	**0.10**	<1	4
BH 14	QC40(BH14 1.6-2)	27/08/2008	na	na	na	na	**9.2**	<2	<0.02	**0.14**	**88**	**8.34**	**2.67**	**1670**	<0.02	<10	**0.16**	<1	7
BH 14	BH14 3.5-4	27/08/2008	na	na	na	na	**8.9**	<2	<0.02	**0.42**	**262**	**13.9**	**4.44**	**2770**	<0.02	<10	**0.44**	<1	20
BH 14	BH14 4.1-4.6	27/08/2008	na	na	na	na	**8.7**	<2	<0.02	**0.53**	**333**	**6.81**	**2.18**	**1360**	<0.02	<10	**0.55**	<1	25
BH 14	BH14 5.3-5.5	27/08/2008	na	na	na	na	**8.8**	<2	<0.02	**0.04**	**23**	**0.64**	**0.21**	**128**	<0.02	<10	**0.06**	<1	2
BH 14	BH14 7.1-7.4	27/08/2008	na	na	na	na	**9.1**	<2	<0.02	<0.02	<10	**0.2**	**0.06**	**39**	<0.02	<10	**0.04**	<1	1
BH 14	BH14 7.8-8	27/08/2008	na	na	na	na	**7.6**	<2	<0.02	<0.02	<10	<0.01	<0.01	<10	<0.02	<10	**0.04**	<1	1
BH 14	BH14 8.2-8.5	27/08/2008	na	na	na	na	**7.2**	<2	<0.02	<0.02	<10	**0.49**	**0.16**	**99**	<0.02	<10	**0.04**	<1	1
BH 14	BH14 8.6-8.85	27/08/2008	na	na	na	na	**7**	<2	<0.02	<0.02	<10	**0.37**	**0.12**	**74**	<0.02	<10	**0.04**	<1	1

URS 2008 Santos GLNG Analytical Results Tables

Table 1: Borehole 1-32 Acid Sulphate Soils (Chromium Suite)

Section	Borehole No.	Sample Date	pH_F value (0.1)	pH_{FOX} value (0.1)	Δ pH	pH_{FOX} Reaction Rate[1]	pH KCl	TAA (Titratable Actual Acidity)		S_{CR} (Chromium Reducible Sulfur)		ANC_{BT} (ANC by Back Titration)			Net Acidity[2] (includes ANC)		Net Acidity[3] (excludes ANC)	Liming Rate[4] (includes ANC)	Liming Rate[4] (excludes ANC)
							Method Code: 23A	Method Code: 23F		Method Code: 22B		Method Code: 19A2							
							0.1 pH Units	2 mole H^+/t	0.02 % S	0.02 % S	10 mole H^+/t	0.01 % $CaCO_3$	0.01 % S	10 mole H^+/t	0.02 % S	10 mole H^+/t	0.02 % S	1 $kgCaCO_3$/tonne	1 $kgCaCO_3$/tonne
BH 15	BH15 0.5-0.95	20/08/2008	na	na	na	na	**7.9**	<2	<0.02	**0.98**	**610**	**0.92**	**0.3**	**185**	**0.78**	**487**	**1.00**	**36**	46
BH 15	BH15 0-0.45	20/08/2008	na	na	na	na	**8.2**	<2	<0.02	**0.92**	**571**	**9.98**	**3.2**	**1990**	<0.02	<10	**0.94**	<1	43
BH 15	QC29(BH15 0-0.45)	20/08/2008	na	na	na	na	**8.4**	<2	<0.02	**0.81**	**506**	**11.2**	**3.6**	**2250**	<0.02	<10	**0.83**	<1	38
BH 15	QC30(BH15 0-0.45)	20/08/2008	na	na	na	na	**8.4**	<2	<0.02	**0.82**	**513**	**9.03**	**2.89**	**1800**	<0.02	<10	**0.84**	<1	38
BH 15	BH15 1.0-1.45	20/08/2008	na	na	na	na	**7.9**	<2	<0.02	**0.2**	**124**	**1.05**	**0.34**	**209**	<0.02	<10	**0.22**	<1	9
BH 15	BH15 1.5-2.0	20/08/2008	na	na	na	na	**7.2**	<2	<0.02	**0.02**	**14**	**0.63**	**0.2**	**126**	<0.02	<10	**0.04**	<1	1
BH 15	QC31(BH15 1.5-2.0)	20/08/2008	na	na	na	na	**7.8**	<2	<0.02	<0.02	<10	<0.01	<0.01	<10	<0.02	<10	**0.04**	<1	1
BH 15	QC32(BH15 1.5-2.0)	20/08/2008	na	na	na	na	**7.4**	<2	<0.02	**0.05**	**29**	**0.9**	**0.29**	**180**	<0.02	<10	**0.07**	<1	2
BH 15	BH15 2.5-2.8	20/08/2008	na	na	na	na	**7.6**	<2	<0.02	**0.08**	**53**	**0.97**	**0.31**	**195**	<0.02	<10	**0.10**	<1	4
BH 15	BH15 2.85-3.0	20/08/2008	na	na	na	na	**5.9**	**2**	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	1
BH 15	BH15 3.0-3.2	20/08/2008	na	na	na	na	**7.2**	<2	<0.02	<0.02	<10	**0.22**	**0.07**	**44**	<0.02	<10	**0.04**	<1	1
BH 15	BH15 3.5-3.85	20/08/2008	na	na	na	na	**7.6**	<2	<0.02	<0.02	<10	**0.29**	**0.09**	**58**	<0.02	<10	**0.04**	<1	1
BH 15	BH15 4.0-5.0	20/08/2008	na	na	na	na	**7**	<2	<0.02	<0.02	<10	**0.13**	**0.04**	**27**	<0.02	<10	**0.04**	<1	1
BH 15	BH15 5.1-5.3	20/08/2008	na	na	na	na	**6.6**	<2	<0.02	<0.02	<10	**0.15**	**0.05**	**29**	<0.02	<10	**0.04**	<1	1
BH 16	BH16 0.5-0.95	19/08/2008	na	na	na	na	**8.6**	<2	<0.02	**0.68**	**422**	**6.16**	**1.97**	**1230**	<0.02	<10	**0.70**	<1	32
BH 16	BH16 1.0-1.45	19/08/2008	na	na	na	na	**7.8**	<2	<0.02	**0.61**	**379**	**1.39**	**0.44**	**278**	**0.31**	**194**	**0.63**	**14**	29
BH 16	QC26(BH16 1.0-1.45)	19/08/2008	na	na	na	na	**7.6**	<2	<0.02	**0.65**	**404**	**1.27**	**0.41**	**254**	**0.38**	**235**	**0.67**	**18**	30
BH 16	QC27(BH16 1.0-1.45)	19/08/2008	na	na	na	na	**7.8**	<2	<0.02	**0.52**	**325**	**1.12**	**0.36**	**224**	**0.28**	**175**	**0.54**	**13**	24
BH 16	BH16 1.5-2.0	19/08/2008	na	na	na	na	**7.4**	<2	<0.02	**0.5**	**311**	**1.52**	**0.49**	**304**	**0.17**	**109**	**0.52**	**8**	23
BH 16	BH16 3.4-3.6	19/08/2008	na	na	na	na	**7.4**	<2	<0.02	**0.54**	**338**	**3.57**	**1.14**	**714**	<0.02	<10	**0.56**	<1	25
BH 16	BH16 4.2-4.6	19/08/2008	na	na	na	na	**6.8**	<2	<0.02	<0.02	<10	**0.38**	**0.12**	**77**	<0.02	<10	**0.04**	<1	1
BH 16	BH16 5.7-6.0	19/08/2008	na	na	na	na	**6.3**	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	1
BH 16	BH16 6.2-6.5	19/08/2008	na	na	na	na	**5.5**	**5**	<0.02	<0.02	<10	-	-	-	<0.02	**11**	**0.04**	<1	1
BH 16	BH16 8.2-8.45	19/08/2008	na	na	na	na	**5.6**	**4**	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	1
BH 17	BH17 0.0-0.4	18/08/2008	na	na	na	na	**9.2**	<2	<0.02	**0.35**	**221**	**14.6**	**4.7**	**2930**	<0.02	<10	**0.37**	<1	16
BH 17	BH17 0.5-1.0	18/08/2008	na	na	na	na	**8.9**	<2	<0.02	**0.56**	**353**	**10.3**	**3.29**	**2050**	<0.02	<10	**0.58**	<1	26
BH 17	QC22(BH17 0.5-1.0)	18/08/2008	na	na	na	na	**8.9**	<2	<0.02	**0.5**	**314**	**11.4**	**3.64**	**2270**	<0.02	<10	**0.52**	<1	23
BH 17	QC23(BH17 0.5-1.0)	18/08/2008	na	na	na	na	**9**	<2	<0.02	**0.49**	**309**	**9.44**	**3.02**	**1880**	<0.02	<10	**0.51**	<1	23
BH 17	BH17 1.0-1.1	18/08/2008	na	na	na	na	**9.4**	<2	<0.02	**0.03**	**19**	**1.73**	**0.55**	**346**	<0.02	<10	**0.05**	<1	1
BH 17	BH17 1.2-1.5	18/08/2008	na	na	na	na	**8.4**	<2	<0.02	<0.02	**12**	**0.87**	**0.28**	**173**	<0.02	<10	**0.04**	<1	1
BH 17	BH17 1.55-2.0	18/08/2008	na	na	na	na	**7.8**	<2	<0.02	<0.02	<10	**0.86**	**0.27**	**171**	<0.02	<10	**0.04**	<1	1
BH 17	QC24(BH17 1.55-2.0)	18/08/2008	na	na	na	na	**8.6**	<2	<0.02	**0.02**	**14**	**1.11**	**0.36**	**222**	<0.02	<10	**0.04**	<1	1
BH 17	QC25(BH17 1.55-2.0)	18/08/2008	na	na	na	na	**7.2**	<2	<0.02	<0.02	<10	**0.77**	**0.25**	**154**	<0.02	<10	**0.04**	<1	1
BH 17	BH17 2.3-2.8	18/08/2008	na	na	na	na	**7.3**	<2	<0.02	<0.02	<10	**0.96**	**0.31**	**192**	<0.02	<10	**0.04**	<1	1
BH 17	BH17 3.0-3.5	18/08/2008	na	na	na	na	**6.6**	<2	<0.02	<0.02	<10	**1.46**	**0.47**	**292**	<0.02	<10	**0.04**	<1	1
BH 17	BH17 5.0-5.45	18/08/2008	na	na	na	na	**6.4**	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	1
BH 17	BH17 5.4-5.6	18/08/2008	na	na	na	na	**6.6**	<2	<0.02	<0.02	<10	**0.44**	**0.14**	**89**	<0.02	<10	**0.04**	<1	1
BH 17	BH17 9.6-9.8	18/08/2008	na	na	na	na	**6.4**	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	1

Table 1: Borehole 1-32 Acid Sulphate Soils (Chromium Suite)

Section	Borehole No.	Sample Date	pH_F value (0.1)	pH_{FOX} value (0.1)	Δ pH	pH_{FOX} Reaction Rate[1]	pH KCl	TAA (Titratable Actual Acidity)		S_{CR} (Chromium Reducible Sulfur)		ANC_{BT} (ANC by Back Titration)			Net Acidity[2] (includes ANC)		Net Acidity[3] (excludes ANC)	Liming Rate[4] (includes ANC)	Liming Rate[4] (excludes ANC)
							Method Code: 23A	Method Code: 23F		Method Code: 22B		Method Code: 19A2							
							0.1 pH Units	2 mole H^+/t	0.02 % S	0.02 % S	10 mole H^+/t	0.01 % $CaCO_3$	0.01 % S	10 mole H^+/t	0.02 % S	10 mole H^+/t	0.02 % S	1 $kgCaCO_3$/tonne	1 $kgCaCO_3$/tonne
BH 18	BH18 0.7-0.85	26/08/2008	na	na	na	na	**9.5**	<2	<0.02	**0.09**	**59**	**7.91**	**2.53**	**1580**	<0.02	<10	**0.11**	<1	4
BH 18	BH18 0.9-1.2	26/08/2008	na	na	na	na	**9.6**	<2	<0.02	**0.06**	**37**	**21.9**	**7.02**	**4380**	<0.02	<10	**0.08**	<1	3
BH 18	BH18 1.3-1.7	26/08/2008	na	na	na	na	**9.4**	<2	<0.02	**0.24**	**152**	**21.9**	**7.02**	**4380**	<0.02	<10	**0.26**	<1	11
BH 18	QC 34(BH18 1.3-1.7)	26/08/2008	na	na	na	na	**9.4**	<2	<0.02	**0.14**	**87**	**16.4**	**5.25**	**3280**	<0.02	<10	**0.16**	<1	7
BH 18	QC 35(BH18 1.3-1.7)	26/08/2008	na	na	na	na	**9.4**	<2	<0.02	**0.15**	**94**	**12.9**	**4.14**	**2580**	<0.02	<10	**0.17**	<1	7
BH 18	BH18 2.6-3.0	26/08/2008	na	na	na	na	**9.2**	<2	<0.02	**1**	**626**	**14.2**	**4.54**	**2830**	<0.02	<10	**1.02**	<1	47
BH 18	BH18 3.0-3.2	26/08/2008	na	na	na	na	**9**	<2	<0.02	**0.98**	**612**	**16.1**	**5.16**	**3220**	<0.02	<10	**1.00**	<1	46
BH 18	BH18 4.6-4.9	26/08/2008	na	na	na	na	**9.5**	<2	<0.02	**0.16**	**100**	**17.6**	**5.62**	**3510**	<0.02	<10	**0.18**	<1	7
BH 18	BH18 4.9-5.1	26/08/2008	na	na	na	na	**9**	<2	<0.02	**0.26**	**159**	**10.7**	**3.43**	**2140**	<0.02	<10	**0.28**	<1	12
BH 18	BH18 5.7-6.0	26/08/2008	na	na	na	na	**9.5**	<2	<0.02	**0.17**	**109**	**14.5**	**4.64**	**2890**	<0.02	<10	**0.19**	<1	8
BH 18	BH18 7.6-7.7	26/08/2008	na	na	na	na	**9**	<2	<0.02	**0.52**	**322**	**6.74**	**2.16**	**1350**	<0.02	<10	**0.54**	<1	24
BH 18	BH18 7.7-8.1	26/08/2008	na	na	na	na	**9.5**	<2	<0.02	**0.07**	**44**	**10.5**	**3.37**	**2100**	<0.02	<10	**0.09**	<1	3
BH 18	QC 36(BH18 7.7-8.1)	26/08/2008	na	na	na	na	**9.6**	<2	<0.02	**0.03**	**20**	**10.7**	**3.42**	**2130**	<0.02	<10	**0.05**	<1	1
BH 18	QC 37(BH18 7.7-8.1)	26/08/2008	na	na	na	na	**9.6**	<2	<0.02	**0.06**	**37**	**10.6**	**3.41**	**2130**	<0.02	<10	**0.08**	<1	3
BH 18	BH18 9.6-10.0	26/08/2008	na	na	na	na	**9.3**	<2	<0.02	**0.22**	**137**	**9.46**	**3.03**	**1890**	<0.02	<10	**0.24**	<1	10
BH 18	BH18 10.2-10.5	26/08/2008	na	na	na	na	**9.1**	<2	<0.02	**0.32**	**198**	**7.88**	**2.52**	**1570**	<0.02	<10	**0.34**	<1	15
BH 18	BH18 11.3-11.5	26/08/2008	na	na	na	na	**8.1**	<2	<0.02	<0.02	<10	**0.69**	**0.22**	**138**	<0.02	<10	**0.04**	<1	1
BH 18	BH18 12-12.4	26/08/2008	na	na	na	na	**7.6**	<2	<0.02	<0.02	<10	**0.81**	**0.26**	**163**	<0.02	<10	**0.04**	<1	1
BH 18	BH18 13.0-13.25	26/08/2008	na	na	na	na	**7.1**	<2	<0.02	<0.02	<10	**0.34**	**0.11**	**69**	<0.02	<10	**0.04**	<1	1
BH 18	BH18 14.0-14.5	26/08/2008	na	na	na	na	**6.9**	<2	<0.02	**0.02**	**15**	**0.37**	**0.12**	**74**	<0.02	<10	**0.04**	<1	1
BH 18	BH18 15.6-16.0	26/08/2008	na	na	na	na	**6.8**	<2	<0.02	<0.02	<10	**0.25**	**0.08**	**49**	<0.02	<10	**0.04**	<1	1
BH 18	BH18 16.2-16.5	26/08/2008	na	na	na	na	**7.1**	<2	<0.02	<0.02	<10	**0.05**	**0.02**	<10	<0.02	<10	**0.04**	<1	1
BH 19	BH19 0.3-0.5	29/08/2008	na	na	na	na	9.3	<2	<0.02	0.13	82	**9.05**	**2.9**	**1810**	<0.02	<10	**0.15**	<1	6
BH 19	BH19 0.5-0.9	29/08/2008	na	na	na	na	8.2	<2	<0.02	<0.02	<10	**0.72**	**0.23**	**144**	<0.02	<10	**0.04**	<1	<1
BH 19	QC 45(BH19 0.5-0.9)	29/08/2008	na	na	na	na	7.3	<2	<0.02	<0.02	<10	**0.82**	**0.26**	**164**	<0.02	<10	**0.04**	<1	<1
BH 19	QC 46(BH19 0.5-0.9)	29/08/2008	na	na	na	na	7.1	<2	<0.02	<0.02	<10	**0.45**	**0.14**	**89**	<0.02	<10	**0.04**	<1	<1
BH 19	BH19 1.3-1.43	29/08/2008	na	na	na	na	7.5	<2	<0.02	0.03	19	<0.01	<0.01	<10	**0.03**	**19**	**0.05**	1	1
BH 19	BH19 3.95-4.4	29/08/2008	na	na	na	na	8.4	<2	<0.02	<0.02	<10	<0.01	<0.01	<10	<0.02	<10	**0.04**	<1	<1
BH 19	BH19 14.9-15.14	1/09/2008	na	na	na	na	5.6	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 19	BH19 16.5-16.95	1/09/2008	na	na	na	na	5.5	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 19	BH19 18.4-18.83	1/09/2008	na	na	na	na	5.7	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 19	BH 19 20.2-20.35	2/09/2008	na	na	na	na	7.7	<2	<0.02	<0.02	<10	**0.1**	**0.03**	**20**	<0.02	<10	**0.04**	<1	<1
BH 19	BH 19 20.34-20.4	2/09/2008	na	na	na	na	7	<2	<0.02	<0.02	<10	**0.1**	**0.03**	**20**	<0.02	<10	**0.04**	<1	<1
BH 19	BH 19 20.4-20.6	2/09/2008	na	na	na	na	7.7	<2	<0.02	<0.02	<10	**0.12**	**0.04**	**25**	<0.02	<10	**0.04**	<1	<1
BH 19	BH 19 21.8-22.05	2/09/2008	na	na	na	na	6.3	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 19	BH 19 22.05-22.25	2/09/2008	na	na	na	na	7.1	<2	<0.02	<0.02	<10	**0.05**	**0.02**	<10	<0.02	<10	**0.04**	<1	<1
BH 19	BH 19 24.8-24.95	2/09/2008	na	na	na	na	6.7	<2	<0.02	<0.02	<10	**0.1**	**0.03**	**20**	<0.02	<10	**0.04**	<1	<1
BH 19	BH 19 24.95-25.1	2/09/2008	na	na	na	na	6.6	<2	<0.02	<0.02	<10	**0.1**	**0.03**	**20**	<0.02	<10	**0.04**	<1	<1
BH 19	BH 19 25.1-25.25	2/09/2008	na	na	na	na	6.8	<2	<0.02	<0.02	<10	**0.1**	**0.03**	**20**	<0.02	<10	**0.04**	<1	<1
BH 19	BH 19 26.2-26.65	2/09/2008	na	na	na	na	6.8	<2	<0.02	<0.02	<10	**0.05**	**0.02**	<10	<0.02	<10	**0.04**	<1	<1
BH 19	BH 19 27.7-28.15	2/09/2008	na	na	na	na	7	<2	<0.02	<0.02	<10	**0.1**	**0.03**	**20**	<0.02	<10	**0.04**	<1	<1
BH 19	QC 51(BH 19 27.7-28.15)	2/09/2008	na	na	na	na	7	<2	<0.02	<0.02	<10	**0.05**	**0.02**	<10	<0.02	<10	**0.04**	<1	<1
BH 19	QC 52(BH 19 27.7-28.15)	2/09/2008	na	na	na	na	7	<2	<0.02	<0.02	<10	**0.15**	**0.05**	**30**	<0.02	<10	**0.04**	<1	<1

Table 1: Borehole 1-32 Acid Sulphate Soils (Chromium Suite)

Section	Borehole No.	Sample Date	pH_F value (0.1)	pH_{FOX} value (0.1)	Δ pH	pH_{FOX} Reaction Rate[1]	pH KCl	TAA (Titratable Actual Acidity)		S_{CR} (Chromium Reducible Sulfur)		ANC_{BT} (ANC by Back Titration)			Net Acidity[2] (includes ANC)		Net Acidity[3] (excludes ANC)	Liming Rate[4] (includes ANC)	Liming Rate[4] (excludes ANC)
							Method Code: 23A	Method Code: 23F		Method Code: 22B		Method Code: 19A2							
							0.1 pH Units	2 mole H^+/t	0.02 % S	0.02 % S	10 mole H^+/t	0.01 % $CaCO_3$	0.01 % S	10 mole H^+/t	0.02 % S	10 mole H^+/t	0.02 % S	1 $kgCaCO_3$/tonne	1 $kgCaCO_3$/tonne
BH 20	BH20 0-0.2	8/09/2008	8.8	5.9	2.9	1	9	<2	<0.02	0.12	75	**19.6**	**6.27**	**3910**	<0.02	<10	**0.14**	<1	6
BH 20	BH20 1.1-1.4	8/09/2008	9.3	5.7	3.6	1	8.8	<2	<0.02	0.46	290	**5.86**	**1.88**	**1170**	<0.02	<10	**0.48**	<1	22
BH 20	QC54(BH20 1.1-1.4)	8/09/2008	8.9	5.4	3.5	1	8.9	<2	<0.02	0.45	283	**10.3**	**3.3**	**2060**	<0.02	<10	**0.47**	<1	21
BH 20	QC55(BH20 1.1-1.4)	8/09/2008	8.6	6	2.6	1	8.8	<2	<0.02	0.46	290	**11.1**	**3.55**	**2210**	<0.02	<10	**0.48**	<1	22
BH 20	BH20 1.4-1.8	8/09/2008	9.1	5.6	3.5	1	7.2	<2	<0.02	<0.02	<10	**0.32**	**0.1**	**64**	<0.02	<10	**0.04**	<1	<1
BH 20	BH20 1.8-2.0	8/09/2008	7.8	5.3	2.5	1	7.7	<2	<0.02	<0.02	<10	**0.44**	**0.14**	**89**	<0.02	<10	**0.04**	<1	<1
BH 20	BH20 2.35-2.55	8/09/2008	6.6	4.7	1.9	1	5.2	10	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 20	BH20 2.6-2.7	8/09/2008	6	4.4	1.6	1	5.3	10	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 20	BH20 3.0-3.5	8/09/2008	6.3	4.7	1.6	1	5.3	10	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 20	BH20 4.65-4.95	8/09/2008	7.1	4.5	2.6	1	6.2	5	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 20	BH20 5.0-5.25	8/09/2008	6.8	2.4	4.4	1	5.3	36	0.06	1.22	763	-	-	-	**1.28**	**799**	**1.28**	60	60
BH 20	BH20 5.5-5.70	8/09/2008	6.3	2.5	3.8	2	9	<2	<0.02	0.14	90	**0.2**	**0.06**	**39**	**0.1**	**63**	**0.16**	5	7
BH 20	BH20 8.6-8.78	8/09/2008	7.2	5	2.2	1	6.9	<2	<0.02	<0.02	<10	**0.44**	**0.14**	**89**	<0.02	<10	**0.04**	<1	<1
BH 20	BH20 10.7-11.0	9/09/2008	6.6	4.8	1.8	1	5.5	5	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 20	BH20 12.1-12.53	9/09/2008	6.4	4.9	1.5	1	5.8	2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 20	BH20 12.5-13.0	9/09/2008	6.6	5.1	1.5	1	6.3	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 20	QC58(BH20 12.5-13.0)	9/09/2008	7	5	2	1	6.2	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 20	QC59(BH20 12.5-13.0)	9/09/2008	6.7	5	1.7	1	6.1	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH 20	BH20 13.0-13.2	9/09/2008	6.7	5.2	1.5	1	6.5	<2	<0.02	<0.02	<10	**0.25**	**0.08**	**49**	<0.02	<10	**0.04**	<1	<1
BH21	BH21 1.5-1.6	20/09/2008	8.8	4.3	4.5	1	9.2	<2	<0.02	0.1	60	**19**	**6.08**	**3790**	<0.02	<10	**0.12**	<1	5
BH21	BH21 1.65-1.90	20/09/2008	9.4	5.5	3.9	1	8.8	<2	<0.02	0.04	27	**1.32**	**0.42**	**264**	<0.02	<10	**0.06**	<1	2
BH21	BH21 2.0-2.9	20/09/2008	9.4	5.5	3.9	1	7.1	<2	<0.02	<0.02	<10	**1.26**	**0.4**	**251**	<0.02	<10	**0.04**	<1	<1
BH21	QC62(BH21 2.0-2.9)	20/09/2008	8.1	5.8	2.3	1	8	<2	<0.02	<0.02	<10	**1.36**	**0.44**	**272**	<0.02	<10	**0.04**	<1	<1
BH21	QC63(BH21 2.0-2.9)	20/09/2008	8.2	5.7	2.5	1	8.3	<2	<0.02	<0.02	<10	**1.41**	**0.45**	**283**	<0.02	<10	**0.04**	<1	<1
BH21	BH21 2.5-2.9	20/09/2008	7.6	5	2.6	1	6	2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH21	BH21 2.95-3.2	20/09/2008	7.8	5	2.8	1	6.1	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH21	QC64(BH21 2.95-3.2)	20/09/2008	7.6	5.2	2.4	1	6.2	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH21	QC65(BH21 2.95-3.2)	20/09/2008	7.4	5.1	2.3	1	6.1	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH21	BH21 4.0-4.45	20/09/2008	7.3	5	2.3	1	6.2	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH21	BH21 5.6-6.05	20/09/2008	7.3	5.2	2.1	1	6.2	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH21	BH21 7.0-7.45	21/09/2008	7.3	5	2.3	1	6	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH21	BH21 7.8-8.2	21/09/2008	7.4	5.2	2.2	1	6.5	<2	<0.02	<0.02	<10	**0.58**	**0.18**	**115**	<0.02	<10	**0.04**	<1	<1
BH21	BH21 8.5-8.9	21/09/2008	7.5	5	2.5	1	6.5	<2	<0.02	<0.02	<10	**0.84**	**0.27**	**168**	<0.02	<10	**0.04**	<1	<1
BH21	BH21 9.6-10.0	21/09/2008	7.9	5.1	2.8	1	6.3	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH21	BH21 10.5-10.7	21/09/2008	7.7	5.1	2.6	4	6.4	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH21	BH21 10.7-11.1	21/09/2008	7.8	5.1	2.7	1	6.5	<2	<0.02	<0.02	<10	**0.37**	**0.12**	**73**	<0.02	<10	**0.04**	<1	<1
BH21	QC67(BH21 10.7-11.1)	21/09/2008	8.3	7.2	1.1	3	6.6	<2	<0.02	<0.02	<10	**2.15**	**0.69**	**429**	<0.02	<10	**0.04**	<1	<1
BH21	QC68(BH21 10.7-11.1)	21/09/2008	8.1	4.9	3.2	1	6.7	<2	<0.02	<0.02	<10	**1.31**	**0.42**	**262**	<0.02	<10	**0.04**	<1	<1
BH21	BH21 11.6-11.9	21/09/2008	7.9	5.4	2.5	1	6.6	<2	<0.02	<0.02	<10	**0.89**	**0.28**	**178**	<0.02	<10	**0.04**	<1	<1
BH21	BH21_14.0-14.4	22/09/2008	5.3	4.9	0.4	1	8.5	<2	<0.02	0.23	143	**0.88**	**0.28**	**175**	**0.04**	**26**	**0.25**	2	11
BH21	BH21_15.43-15.80	22/09/2008	6	4.7	1.3	1	8.8	<2	<0.02	0.1	60	**0.88**	**0.28**	**175**	<0.02	<10	**0.12**	<1	5
BH24	BH24 0.0-0.7	30/07/2008	na	na	na	na	9.3	<2	<0.02	0.12	77	**17.6**	**5.63**	**3510**	<0.02	<10	**0.14**	<1	6
BH24	BH24 0.7-1.7	30/07/2008	na	na	na	na	9	<2	<0.02	0.48	297	**13.3**	**4.25**	**2650**	<0.02	<10	**0.50**	<1	22
BH24	QC01(BH24 0.7-1.7)	30/07/2008	na	na	na	na	9	<2	<0.02	0.52	326	**17.8**	**5.7**	**3550**	<0.02	<10	**0.54**	<1	24
BH24	BH24 2.9-3.3	30/07/2008	na	na	na	na	8.9	<2	<0.02	<0.02	<10	**0.95**	**0.3**	**189**	<0.02	<10	**0.04**	<1	<1
BH25	BH25 2.4-3.0	4/08/2008	na	na	na	na	9.3	<2	<0.02	0.07	43	**17.8**	**5.71**	**3560**	<0.02	<10	**0.09**	<1	3
BH25	QC03(BH25 2.4-3.0)	4/08/2008	na	na	na	na	9.4	<2	<0.02	0.08	50	**12.3**	**3.94**	**2460**	<0.02	<10	**0.10**	<1	4
BH25	QC04(BH25 2.4-3.0)	4/08/2008	na	na	na	na	9.5	<2	<0.02	0.04	29	**18.2**	**5.82**	**3630**	<0.02	<10	**0.06**	<1	2
BH25	BH25 3.8-4.4	4/08/2008	na	na	na	na	8.8	<2	<0.02	0.52	324	**8.72**	**2.79**	**1740**	<0.02	<10	**0.54**	<1	24
BH25	BH25 4.4-5.0	4/08/2008	na	na	na	na	8.4	<2	<0.02	0.88	551	**4.24**	**1.36**	**847**	<0.02	<10	**0.90**	<1	41
BH25	BH25 5.4-5.8	4/08/2008	na	na	na	na	8.6	<2	<0.02	0.7	436	**4.24**	**1.36**	**846**	<0.02	<10	**0.72**	<1	33
BH25	BH25 5.8-6.2	4/08/2008	na	na	na	na	8.7	<2	<0.02	0.38	240	**9.21**	**2.95**	**1840**	<0.02	<10	**0.40**	<1	18
BH25	BH25 9.45-9.75	5/08/2008	na	na	na	na	9.4	<2	<0.02	0.06	38	**1.33**	**0.42**	**265**	<0.02	<10	**0.08**	<1	3
BH25	BH25 9.75-9.9	5/08/2008	na	na	na	na	8.7	<2	<0.02	<0.02	<10	**0.76**	**0.24**	**152**	<0.02	<10	**0.04**	<1	<1
BH25	BH25 11.9-12.3	5/08/2008	na	na	na	na	8	<2	<0.02	<0.02	<10	**0.58**	**0.18**	**115**	<0.02	<10	**0.04**	<1	<1
BH25B	BH25B 0.5-0.95	28/09/2008	9	5.8	3.2	1	8.7	<2	<0.02	0.48	301	**9.19**	**2.94**	**1840**	<0.02	<10	**0.50**	<1	22
BH25B	BH25B 1.0-1.45	28/09/2008	8.4	5.4	3	1	8.5	<2	<0.02	0.99	616	**4.35**	**1.39**	**869**	**0.06**	**36**	**1.01**	3	46
BH25B	BH25B 1.5-2.0	28/09/2008	8.5	5.2	3.3	1	8.6	<2	<0.02	0.7	434	**5**	**1.6**	**999**	<0.02	<10	**0.72**	<1	33

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Table 1: Borehole 1-32 Acid Sulphate Soils (Chromium Suite)

Section	Borehole No.	Sample Date	pH_F value (0.1)	pH_{FOX} value (0.1)	Δ pH	pH_{FOX} Reaction Rate[1]	pH KCl	TAA (Titratable Actual Acidity)		S_{CR} (Chromium Reducible Sulfur)		ANC_{BT} (ANC by Back Titration)			Net Acidity[2] (includes ANC)		Net Acidity[3] (excludes ANC)	Liming Rate[4] (includes ANC)	Liming Rate[4] (excludes ANC)
							Method Code: 23A	Method Code: 23F		Method Code: 22B		Method Code: 19A2							
							0.1 pH Units	2 mole H^+/t	0.02 % S	0.02 % S	10 mole H^+/t	0.01 % $CaCO_3$	0.01 % S	10 mole H^+/t	0.02 % S	10 mole H^+/t	0.02 % S	1 kg$CaCO_3$/tonne	1 kg$CaCO_3$/tonne
BH26	BH26 0.0-0.6	12/08/2008	na	na	na	na	8.3	<2	<0.02	1.35	841	**1.56**	**0.5**	**312**	**1.01**	**632**	**1.37**	47	63
BH26	BH26 0.7-1.0	12/08/2008	na	na	na	na	8.5	<2	<0.02	0.59	371	**1.04**	**0.33**	**208**	**0.37**	**232**	**0.61**	17	28
BH26	BH26 1.1-1.45	12/08/2008	na	na	na	na	7.8	<2	<0.02	1.03	643	**1.16**	**0.37**	**233**	**0.78**	**488**	**1.05**	37	48
BH26	BH26 1.5-2.0	12/08/2008	na	na	na	na	7.7	<2	<0.02	1.09	681	**1.42**	**0.45**	**284**	**0.79**	**492**	**1.11**	37	51
BH26	BH26 3.2-3.45	12/08/2008	na	na	na	na	8.1	<2	<0.02	0.74	463	**1.1**	**0.35**	**220**	**0.51**	**316**	**0.76**	24	35
BH26	BH26 3.5-3.9	12/08/2008	na	na	na	na	8.2	<2	<0.02	0.34	211	**0.96**	**0.31**	**192**	**0.13**	**83**	**0.36**	6	16
BH26	QC15(BH26 3.5-3.9)	12/08/2008	na	na	na	na	7.4	<2	<0.02	0.41	255	**0.77**	**0.25**	**154**	**0.24**	**153**	**0.43**	11	19
BH26	QC16(BH26 3.5-3.9)	12/08/2008	na	na	na	na	7.6	<2	<0.02	0.54	336	**0.99**	**0.32**	**198**	**0.33**	**205**	**0.56**	15	25
BH26	BH26 4.0-4.2	12/08/2008	na	na	na	na	8	<2	<0.02	0.54	338	**0.7**	**0.22**	**139**	**0.39**	**245**	**0.56**	18	25
BH26	BH26 5.6-5.7	12/08/2008	na	na	na	na	7.8	<2	<0.02	0.06	35	**0.91**	**0.29**	**182**	<0.02	<10	**0.08**	<1	3
BH26	BH26 13.0-13.12	12/08/2008	na	na	na	na	7.5	<2	<0.02	0.04	23	**0.63**	**0.2**	**127**	<0.02	<10	**0.06**	<1	2
BH26	BH26 15.95-16.26	12/08/2008	na	na	na	na	7.4	<2	<0.02	<0.02	<10	**0.48**	**0.15**	**96**	<0.02	<10	**0.04**	<1	<1
BH27	BH27 0.4-0.8	4/10/2008	8.8	1.8	7	4	8.7	<2	<0.02	0.63	395	**4.52**	**1.45**	**904**	<0.02	<10	**0.65**	<1	29
BH27	BH27 0.85-1.1	4/10/2008	7.5	5.6	1.9	2	7.1	<2	<0.02	0.02	14	**0.73**	**0.23**	**146**	<0.02	<10	**0.04**	<1	1
BH27	QC77(BH27 0.85-1.1)	4/10/2008	7.8	5.5	2.3	2	8.1	<2	<0.02	<0.02	<10	**0.15**	**0.05**	**30**	<0.02	<10	**0.04**	<1	<1
BH27	QC78(BH27 0.85-1.1)	4/10/2008	7.6	3	4.6	3	7.6	<2	<0.02	<0.02	<10	**0.02**	<0.01	<10	<0.02	<10	**0.04**	<1	<1
BH27	BH27 1.6-1.8	4/10/2008	6.8	5.1	1.7	2	6.2	<2	<0.02	0.04	27	-	-	-	**0.04**	**27**	**0.06**	2	2
BH27	BH27 2.0-2.3	4/10/2008	6.7	4.8	1.9	2	5.9	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH27	BH27 2.5-3.0	4/10/2008	6.6	4.8	1.8	2	5.9	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH27	BH27 3.7-4.35	4/10/2008	8.3	5.5	2.8	2	6.3	<2	<0.02	<0.02	<10	-	-	-	<0.02	<10	**0.04**	<1	<1
BH28	BH28 2.4-3.4	28/09/2008	8.4	5.6	2.8	1	8.6	<2	<0.02	0.62	386	**6.41**	**2.05**	**1280**	<0.02	<10	**0.64**	<1	29
BH28	QC72(BH28 2.4-3.4)	28/09/2008	8.4	5.6	2.8	1	8.3	<2	<0.02	0.81	507	**3.42**	**1.1**	**684**	**0.08**	**51**	**0.83**	4	38
BH28	QC73(BH28 2.4-3.4)	28/09/2008	8.5	5.6	2.9	1	8.6	<2	<0.02	0.87	543	**6.3**	**2.02**	**1260**	<0.02	<10	**0.89**	<1	41
BH28	BH28 3.5-4.4	28/09/2008	8.8	5.4	3.4	1	8.5	<2	<0.02	0.42	260	**3.04**	**0.98**	**608**	<0.02	<10	**0.44**	<1	20
BH28	BH28 5.3-5.7	28/09/2008	8.7	5.3	3.4	1	8.4	<2	<0.02	0.65	407	**2.83**	**0.9**	**565**	**0.05**	**30**	**0.67**	2	30
BH28	BH28 5.9-6.3	28/09/2008	9.8	5.8	4	1	8.6	<2	<0.02	0.04	22	**1.14**	**0.36**	**228**	<0.02	<10	**0.06**	<1	2
BH28	QC74(BH28 5.9-6.3)	28/09/2008	9.7	6.1	3.6	1	8.7	<2	<0.02	0.07	41	**0.92**	**0.3**	**185**	<0.02	<10	**0.09**	<1	3
BH28	QC75(BH28 5.9-6.3)	28/09/2008	9.4	6	3.4	1	8.5	<2	<0.02	0.06	35	**1.03**	**0.33**	**206**	<0.02	<10	**0.08**	<1	3
BH29	BH29 0.2-0.5	8/10/2008	8.8	6	2.8	1	9	<2	<0.02	0.2	127	**4.96**	**1.59**	**990**	<0.02	<10	**0.22**	<1	9
BH29	BH29 0.5-0.7	8/10/2008	8.9	1.4	7.5	3	8.8	<2	<0.02	0.43	269	**5.6**	**1.79**	**1120**	<0.02	<10	**0.45**	<1	20
BH29	BH29 0.7-1.0	8/10/2008	8.7	1.3	7.4	3	8.3	<2	<0.02	1.33	830	**1.9**	**0.61**	**380**	**0.92**	**577**	**1.35**	43	62
BH29	BH29 1.0-1.5	8/10/2008	8.3	1.1	7.2	3	7	<2	<0.02	1.6	996	**1.19**	**0.38**	**238**	**1.34**	**837**	**1.62**	63	75
BH29	QC80(BH29 1.0-1.5)	8/10/2008	8.7	5.6	3.1	1	7.3	<2	<0.02	1.24	775	**1.26**	**0.4**	**252**	**0.97**	**606**	**1.26**	46	58
BH29	QC81(BH29 1.0-1.5)	8/10/2008	8.9	5.1	3.8	1	6.8	<2	<0.02	1.83	1140	**1.16**	**0.37**	**233**	**1.58**	**987**	**1.85**	74	86
BH29	BH29 1.6-2.0	8/10/2008	8.1	1.2	6.9	3	7.1	<2	<0.02	1.47	918	**1.21**	**0.39**	**243**	**1.21**	**756**	**1.49**	57	69
BH29	BH29 2.2-2.7	8/10/2008	8.4	1.7	6.7	3	7.6	<2	<0.02	1.57	980	**1.02**	**0.33**	**203**	**1.35**	**844**	**1.59**	63	73
BH29	QC82(BH29 2.2-2.7)	8/10/2008	8.3	1.2	7.1	3	8	<2	<0.02	1.68	1050	**2.05**	**0.66**	**410**	**1.24**	**774**	**1.70**	58	79
BH29	QC83(BH29 2.2-2.7)	8/10/2008	8.1	1.3	6.8	1	8	<2	<0.02	2	1250	**1.95**	**0.62**	**390**	**1.58**	**988**	**2.02**	74	94
BH29	BH29 4.1-4.4	8/10/2008	8.4	5.5	2.9	1	7.6	<2	<0.02	0.03	19	**1.19**	**0.38**	**238**	<0.02	<10	**0.05**	<1	1
BH29	BH29 7.2-7.45	8/10/2008	8.4	2.3	6.1	3	7.4	<2	<0.02	0.02	14	**0.7**	**0.22**	**139**	<0.02	<10	**0.04**	<1	1

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Table 1: Borehole 1-32 Acid Sulphate Soils (Chromium Suite)

Section	Borehole No.	Sample Date	pH_F value (0.1)	pH_{FOX} value (0.1)	Δ pH	pH_{FOX} Reaction Rate[1]	pH KCl	TAA (Titratable Actual Acidity)		S_{CR} (Chromium Reducible Sulfur)		ANC_{BT} (ANC by Back Titration)			Net Acidity[2] (includes ANC)		Net Acidity[3] (excludes ANC)	Liming Rate[4] (includes ANC)	Liming Rate[4] (excludes ANC)
							Method Code: 23A	Method Code: 23F		Method Code: 22B		Method Code: 19A2							
							0.1 pH Units	2 mole H^+/t	0.02 % S	0.02 % S	10 mole H^+/t	0.01 % $CaCO_3$	0.01 % S	10 mole H^+/t	0.02 % S	10 mole H^+/t	0.02 % S	1 $kgCaCO_3$/tonne	1 $kgCaCO_3$/tonne
BH30	BH30 0.0-0.2	9/10/2008	8.1	5.2	2.9	2	8.8	<2	<0.02	0.03	17	**5.77**	**1.85**	**1150**	<0.02	<10	**0.05**	<1	1
BH30	BH30 0.6-0.9	9/10/2008	8.6	5.2	3.4	2	8.8	<2	<0.02	0.33	205	**6.57**	**2.1**	**1310**	<0.02	<10	**0.35**	<1	15
BH30	BH30 1.0-1.45	9/10/2008	8.5	2.3	6.2	2	8.2	<2	<0.02	1.01	628	**1.69**	**0.54**	**338**	**0.64**	**402**	**1.03**	30	47
BH30	QC85(BH30 1.0-1.45)	9/10/2008	8.7	1.1	7.6	2	8.5	<2	<0.02	0.74	462	**1.99**	**0.64**	**398**	**0.32**	**197**	**0.76**	15	35
BH30	QC86(BH30 1.0-1.45)	9/10/2008	8	1.7	6.3	2	8.5	<2	<0.02	0.86	535	**2.09**	**0.67**	**418**	**0.41**	**256**	**0.88**	19	40
BH30	BH30 1.3-2.0	9/10/2008	9.1	2.1	7	4	7.9	<2	<0.02	1.12	700	**1.64**	**0.53**	**329**	**0.77**	**481**	**1.14**	36	52
BH30	BH30 2.1-3.0	9/10/2008	8.2	1.8	6.4	2	7.8	<2	<0.02	0.94	588	**2.54**	**0.81**	**507**	**0.4**	**249**	**0.96**	19	44
BH30	BH30 3.8-4.8	9/10/2008	8.2	2.1	6.1	2	7.7	<2	<0.02	0.44	276	**2.69**	**0.86**	**537**	<0.02	<10	**0.46**	<1	21
BH30	QC87(BH30 3.8-4.8)	9/10/2008	7.8	3.2	4.6	2	8.5	<2	<0.02	0.4	250	**4.73**	**1.51**	**945**	<0.02	<10	**0.42**	<1	19
BH30	QC88(BH30 3.8-4.8)	9/10/2008	7.8	2.2	5.6	2	8.5	<2	<0.02	0.39	245	**4.18**	**1.34**	**835**	<0.02	<10	**0.41**	<1	18
BH30	BH30 5.2-5.8	9/10/2008	8	1.2	6.8	2	7.6	<2	<0.02	0.92	573	**1.4**	**0.45**	**279**	**0.62**	**387**	**0.94**	29	43
BH30	BH30 6.0-6.15	9/10/2008	8.1	1.3	6.8	2	7.8	<2	<0.02	1.59	995	**1.69**	**0.54**	**338**	**1.23**	**769**	**1.61**	58	74
BH30	BH30 8.3-8.75	9/10/2008	7.7	3.9	3.8	1	7.6	<2	<0.02	<0.02	<10	**0.9**	**0.29**	**180**	<0.02	<10	**0.04**	<1	<1
BH31	BH31 0.18-0.20	15/10/2008	7.5	1.7	5.8	4	8.5	<2	<0.02	<0.02	<10	**1.16**	**0.37**	**232**	<0.02	<10	**0.04**	<1	<1
BH31	BH31 0.2-0.3	15/10/2008	na	na	na	-	7.4	<2	<0.02	<0.02	<10	**0.83**	**0.26**	**165**	<0.02	<10	**0.04**	<1	<1
BH31	BH31 0.3-0.6	15/10/2008	na	na	na	-	7.6	<2	<0.02	<0.02	<10	**0.97**	**0.31**	**194**	<0.02	<10	**0.04**	<1	<1
BH31	BH31 2.0-2.3	15/10/2008	na	na	na	-	6.8	<2	<0.02	<0.02	<10	**0.82**	**0.26**	**163**	<0.02	<10	**0.04**	<1	<1
BH31	BH31 3.6-3.9	15/10/2008	na	na	na	-	6.2	<2	<0.02	<0.02	<10	<0.01	<0.01	<10	<0.02	<10	**0.04**	<1	<1
BH31	BH31 5.0-5.35	15/10/2008	na	na	na	-	6.9	<2	<0.02	<0.02	<10	**0.8**	**0.26**	**160**	<0.02	<10	**0.04**	<1	<1
BH32	BH32 0.7-1.0	15/10/2008	7.9	3.4	4.5	2	8.8	<2	<0.02	<0.02	<10	**1.27**	**0.41**	**254**	<0.02	<10	**0.04**	<1	<1
BH32	BH32 1.5-1.8	15/10/2008	7.8	1.2	6.6	2	8.2	<2	<0.02	<0.02	<10	**0.86**	**0.28**	**173**	<0.02	<10	**0.04**	<1	<1
BH32	QC 91(BH32 1.5-1.8)	15/10/2008	7.7	3.1	4.6	2	6.8	<2	<0.02	<0.02	<10	**0.78**	**0.25**	**156**	<0.02	<10	**0.04**	<1	<1
BH32	BH32 2.5-3.2	15/10/2008	7.9	1.2	6.7	4	7.9	<2	<0.02	<0.02	<10	**0.87**	**0.28**	**173**	<0.02	<10	**0.04**	<1	<1
BH32	QC 92(BH32 2.5-3.2)	15/10/2008	7.8	2	5.8	4	8	<2	<0.02	<0.02	<10	**0.87**	**0.28**	**174**	<0.02	<10	**0.04**	<1	<1
BH32	QC 93(BH32 2.5-3.2)	15/10/2008	8.5	1.3	7.2	4	8	<2	<0.02	<0.02	<10	**0.87**	**0.28**	**175**	<0.02	<10	**0.04**	<1	<1
BH32	BH32 3.8-4.1	15/10/2008	7.8	2.8	5	2	7.9	<2	<0.02	<0.02	<10	**0.85**	**0.27**	**169**	<0.02	<10	**0.04**	<1	<1
BH32	BH32 4.7-5.1	15/10/2008	8.6	3.2	5.4	2	8.7	<2	<0.02	<0.02	<10	**0.86**	**0.28**	**172**	<0.02	<10	**0.04**	<1	<1
BH32	BH32 6.2-6.65	15/10/2008	na	na	na	na	7.1	<2	<0.02	<0.02	<10	**0.78**	**0.25**	**157**	<0.02	<10	**0.04**	<1	<1
BH32	BH32 8.1-8.4	15/10/2008	6.3	5.1	1.2	2	6.6	<2	<0.02	<0.02	<10	**0.78**	**0.25**	**156**	<0.02	<10	**0.04**	<1	<1
BH32	BH32 9.3-9.6	15/10/2008	na	na	na	na	6.2	<2	<0.02	<0.02	<10	<0.01	<0.01	<10	<0.02	<10	**0.04**	<1	<1

1. pH_{FOX} Reaction Rate: 1 - slight, 2 - Moderate, 3 - Vigorous, 4 - Very vigorous
2. net acidity including ANC = (sTAA)+(S_{CR})+(sS_{NAS})-(ANC/Fineness Factor) or (sTAA)+(S_{POS})+(sS_{NAS})-(ANC/Fineness Factor)
3. net acidity excluding ANC = s-TAA + S_{CR} + s-S_{NAS} or s-TAA + S_{POS}+s-S_{NAS}
4. Liming rate = %S x 30.59 x 1.02 x 1.5 where 30.59 converts to H_2SO_4, 1.02 converts to $CaCO_3$ and 1.5 is the safety factor

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Table 2: Borehole 1-18 Organics

Location						BH01	BH01	BH01	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02B	BH02B	BH02B	BH02B	BH03
Sample ID						GC/GLNG #1_0-0.5	GC/GLNG #1_0.5-1.0	GC/GLNG #1_3.6-4.2	BH02 0.3-1.9	QC07	QC08	BH02 1.9-2.3	QC09	QC10	BH02 2.4-3.2	QC11	QC12	BH02 4.2-4.6	BH02 5.0-5.4	BH02 6.2-6.6	BH02B 7.0-7.55	BH02B 7.6-7.8	BH02B 7.8-8.0	BH02B 9.3-9.4	GC/GLNG #3_0-0.5
Date Sampled						7/06/2008	7/06/2008	7/06/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	11/08/2008	11/08/2008	11/08/2008	11/08/2008	8/06/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #1_0-0.5	GC/GLNG #1_0.5-1.0	GC/GLNG #1_3.6-4.2	BH02 0.3-1.9	BH02 0.3-1.9	BH02 0.3-1.9	BH02 1.9-2.3	BH02 1.9-2.3	BH02 1.9-2.3	BH02 2.4-3.2	BH02 2.4-3.2	BH02 2.4-3.2	BH02 4.2-4.6	BH02 5.0-5.4	BH02 6.2-6.6	BH02B 7.0-7.55	BH02B 7.6-7.8	BH02B 7.8-8.0	BH02B 9.3-9.4	GC/GLNG #3_0-0.5
Batch No.						EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810824_MRED	EB0810824_MRED	EB0810824_MRED	EB0810824_MRED	EB0807648_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
BTEX Compounds																									
Benzene	0.2	mg/kg	1	ne	ne	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.2
Toluene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Ethylbenzene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
m&pnaXylene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
onaXylene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Total Xylenes	0.4	mg/kg	ne	ne	ne	<1	<1	<1	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<1
Total BTEX	1	mg/kg	7	ne	ne	<2.2	<2.2	<2.2	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<2.2
Total Petroleum Hydrocarbons																									
C6-C9 fraction	2	mg/kg	100	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
C10-C14 fraction	50	mg/kg	100	ne	ne	<50	<50	<50	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<50
C15-C28 fraction	100	mg/kg	1000	ne	ne	<100	<100	<100	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<100
C29-C36 fraction	100	mg/kg	1000	ne	ne	<100	<100	<100	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<100
C10-C36 fraction	250	mg/kg	ne	ne	ne	<250	<250	<250	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<250
C6-C36 fraction	252	mg/kg	ne	ne	ne	<260	<260	<260	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<260
Polynuclear Aromatic Hydrocarbons																									
2-Methylnaphthalene	5	µg/kg	ne	ne	70	**24**	**18**	**10**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	**21**
Acenaphthene	0.5	mg/kg	ne	ne	0.016	na	na	na	<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	<2	na
Acenaphthene	4	µg/kg	ne	ne	16	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Acenaphthylene	0.5	mg/kg	ne	ne	ne	na	na	na	<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	<2	na
Acenaphthylene	4	µg/kg	ne	ne	ne	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Anthracene	0.5	mg/kg	ne	ne	0.085	na	na	na	<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	<2	na
Anthracene	4	µg/kg	ne	ne	85	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	na	na	na	<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	<2	na
Benzo(a)anthracene	4	µg/kg	ne	ne	261	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	na	na	na	<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	<2	na
Benzo(a)pyrene	4	µg/kg	1000	5000	430	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	na	na	na	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<4	na
Benzo(b&k)fluoranthene	8	µg/kg	ne	ne	ne	<8	<8	<8	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<8
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	na	na	na	<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	<2	na
Benzo(b)fluoranthene	4	µg/kg	ne	ne	ne	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Benzo(e)pyrene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(e)pyrene	4	µg/kg	ne	ne	ne	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	na	na	na	<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	<2	na
Benzo(g,h,i)perylene	4	µg/kg	ne	ne	ne	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	na	na	na	<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	<2	na
Benzo(k)fluoranthene	4	µg/kg	ne	ne	ne	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Chrysene	0.5	mg/kg	ne	ne	0.384	na	na	na	<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	<2	na
Chrysene	4	µg/kg	ne	ne	384	**4**	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Coronene	5	µg/kg	ne	ne	ne	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<5
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	na	na	na	<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	<2	na
Dibenz(a,h)anthracene	4	µg/kg	ne	ne	63	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Fluoranthene	0.5	mg/kg	ne	ne	0.6	na	na	na	<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	<2	na
Fluoranthene	4	µg/kg	ne	ne	600	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Fluorene	0.5	mg/kg	ne	ne	0.019	na	na	na	<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	<2	na
Fluorene	4	µg/kg	ne	ne	19	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	na	na	na	<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	<2	na
Indeno(1,2,3nacd)pyrene	4	µg/kg	ne	ne	ne	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Naphthalene	0.5	mg/kg	ne	ne	0.16	na	na	na	<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	<2	na
Naphthalene	5	µg/kg	ne	ne	160	**20**	**14**	**7**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	**15**
Perylene	4	µg/kg	ne	ne	ne	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<4
Phenanthrene	0.5	mg/kg	ne	ne	0.24	na	na	na	<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	<2	na
Phenanthrene	4	µg/kg	ne	ne	240	**11**	**9**	**4**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	**9**
Pyrene	0.5	mg/kg	ne	ne	0.665	na	na	na	<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	<2	na
Pyrene	4	µg/kg	ne	ne	665	**6**	**5**	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	**5**

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH01	BH01	BH01	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02B	BH02B	BH02B	BH02B	BH03
Sample ID						GC/GLNG #1_0-0.5	GC/GLNG #1_0.5-1.0	GC/GLNG #1_3.6-4.2	BH02 0.3-1.9	QC07	QC08	BH02 1.9-2.3	QC09	QC10	BH02 2.4-3.2	QC11	QC12	BH02 4.2-4.6	BH02 5.0-5.4	BH02 6.2-6.6	BH02B 7.0-7.55	BH02B 7.6-7.8	BH02B 7.8-8.0	BH02B 9.3-9.4	GC/GLNG #3_0-0.5
Date Sampled						7/06/2008	7/06/2008	7/06/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	11/08/2008	11/08/2008	11/08/2008	11/08/2008	8/06/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #1_0-0.5	GC/GLNG #1_0.5-1.0	GC/GLNG #1_3.6-4.2	BH02 0.3-1.9	BH02 0.3-1.9	BH02 0.3-1.9	BH02 1.9-2.3	BH02 1.9-2.3	BH02 1.9-2.3	BH02 2.4-3.2	BH02 2.4-3.2	BH02 2.4-3.2	BH02 4.2-4.6	BH02 5.0-5.4	BH02 6.2-6.6	BH02B 7.0-7.55	BH02B 7.6-7.8	BH02B 7.8-8.0	BH02B 9.3-9.4	GC/GLNG #3_0-0.5
Batch No.						EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810824_MRED	EB0810824_MRED	EB0810824_MRED	EB0810824_MRED	EB0807648_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Phenolic Compounds																									
2,4,5naTrichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
2,4,6naTrichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
2,4naDichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
2,4naDimethylphenol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
2,6naDichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
2naChlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
2naNitrophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
4naChlorona3naMethylphenol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
4naNitrophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Hexachlorophene	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
mnaCresol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
onaCresol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
pnaCresol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Pentachlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Phenol	10	µg/kg	ne	42500000	ne	<10	**20**	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	**20**
Tetrachlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Organotin Compounds																									
Tributyltin	0.5	µgSn/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	<0.5
Polychlorinated Biphenyls																									
Aroclor 1016	5	µg/kg	ne	ne	ne	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<5
Aroclor 1221	5	µg/kg	ne	ne	ne	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<5
Aroclor 1232	5	µg/kg	ne	ne	ne	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<5
Aroclor 1242	5	µg/kg	ne	ne	ne	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<5
Aroclor 1248	5	µg/kg	ne	ne	ne	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<5
Aroclor 1254	5	µg/kg	ne	ne	ne	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<5
Aroclor 1260	5	µg/kg	ne	ne	ne	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<5
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	na	na	na	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na
Polychlorinated biphenyls	5	µg/kg	ne	ne	ne	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<5
Organophosphorus Pesticides (OP)																									
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Azinphos Methyl	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Chlorfenvinphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Chlorfenvinphos (Z)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (Z)	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	10	µg/kg	ne	ne	ne	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<10
Organochlorine Pesticides (OC)																									
4,4naDDD	0.05	mg/kg	ne	ne	0.002	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
4,4naDDD	0.5	µg/kg	ne	ne	2	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
4,4naDDE	0.05	mg/kg	ne	ne	0.0022	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH01	BH01	BH01	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02B	BH02B	BH02B	BH02B	BH03
Sample ID						GC/GLNG #1_0-0.5	GC/GLNG #1_0.5-1.0	GC/GLNG #1_3.6-4.2	BH02 0.3-1.9	QC07	QC08	BH02 1.9-2.3	QC09	QC10	BH02 2.4-3.2	QC11	QC12	BH02 4.2-4.6	BH02 5.0-5.4	BH02 6.2-6.6	BH02B 7.0-7.55	BH02B 7.6-7.8	BH02B 7.8-8.0	BH02B 9.3-9.4	GC/GLNG #3_0-0.5
Date Sampled						7/06/2008	7/06/2008	7/06/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	11/08/2008	11/08/2008	11/08/2008	11/08/2008	8/06/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #1_0-0.5	GC/GLNG #1_0.5-1.0	GC/GLNG #1_3.6-4.2	BH02 0.3-1.9	BH02 0.3-1.9	BH02 0.3-1.9	BH02 1.9-2.3	BH02 1.9-2.3	BH02 1.9-2.3	BH02 2.4-3.2	BH02 2.4-3.2	BH02 2.4-3.2	BH02 4.2-4.6	BH02 5.0-5.4	BH02 6.2-6.6	BH02B 7.0-7.55	BH02B 7.6-7.8	BH02B 7.8-8.0	BH02B 9.3-9.4	GC/GLNG #3_0-0.5
Batch No.						EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810824_MRED	EB0810824_MRED	EB0810824_MRED	EB0810824_MRED	EB0807648_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
4,4naDDE	0.5	µg/kg	ne	ne	2.2	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
4,4naDDT	0.2	mg/kg	0.2	ne	ne	na	na	na	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na
4,4naDDT	0.5	µg/kg	200	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
anaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
anaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Aldrin	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldrin	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
bnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
bnaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Chlordane na cis	0.05	mg/kg	ne	ne	0.5	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Chlordane na cis	0.5	µg/kg	ne	ne	0.0005	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Chlordane na trans	0.05	mg/kg	ne	ne	0.5	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Chlordane na trans	0.5	µg/kg	ne	ne	0.0005	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Total Chlordane	nana	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Dieldrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Dieldrin	0.5	µg/kg	ne	ne	0.02	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Endosulfan	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Endosulfan 2	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 2	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Endosulfan sulfate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan sulfate	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Endrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Endrin	0.5	µg/kg	ne	ne	0.02	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Endrin aldehyde	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Endrin ketone	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Endrin ketone	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
gnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
gnaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Heptachlor	0.05	mg/kg	ne	50	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor	0.5	µg/kg	ne	50000	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Heptachlor epoxide	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor epoxide	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Hexachlorobenzene	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorobenzene	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Methoxychlor	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methoxychlor	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5
Triazine Pesticides																									
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Carbamate Pesticides																									
3naHydroxy Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.02
Aldicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.02
Bendiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.02
Carbaryl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.02
Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.02
Methiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.02
Methomyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.02
Oxamyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.02
Thiodicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.02
Phenoxyacetic Acid Herbicides																									
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National . Ocean Disposal Guidelines for dredged materials

ne: not established na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH03	BH03	BH03	BH03	BH04	BH04	BH04	BH04	BH04	BH04	BH04	BH04	BH05	BH05	BH05	BH06	BH06	BH06	BH07	BH07
Sample ID						GC/GLNG #3_0-0.5	GC/GLNG #3_0.5-1.0	GC/GLNG #3_0.9-1.2	GC/GLNG #3_6.0-6.9	BH4 0.0-0.3	BH4 1.5-2.0	QC18	QC19	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95	BH4 3.2-3.7	GC/GLNG #5_0-0.5	GC/GLNG #5_0.5-1.0	GC/GLNG #5_5.5-6.5	GC/GLNG #6_0-0.5	GC/GLNG #6_0.5-1.0	GC/GLNG #6_4.6-5.6	BH07 0.0-0.5	BH07 0.5-1.0
Date Sampled						8/06/2008	8/06/2008	8/06/2008	8/06/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	9/06/2008	9/06/2008	9/06/2008	6/06/2008	6/06/2008	6/06/2008	27/07/2008	27/07/2008
Sample Type						Duplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #3_0-0.5	GC/GLNG #3_0.5-1.0	GC/GLNG #3_0.9-1.2	GC/GLNG #3_6.0-6.9	BH4 0.0-0.3	BH4 1.5-2.0	BH4 1.5-2.0	BH4 1.5-2.0	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95	BH4 3.2-3.7	GC/GLNG #5_0-0.5	GC/GLNG #5_0.5-1.0	GC/GLNG #5_5.5-6.5	GC/GLNG #6_0-0.5	GC/GLNG #6_0.5-1.0	GC/GLNG #6_4.6-5.6	BH07 0.0-0.5	BH07 0.5-1.0
Batch No.						EB0807648_ MRED	EB0807648_ MRED	EB0807695_ MRED_VER	EB0807648_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0810023_ MRED	EB0810023_ MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
BTEX Compounds																									
Benzene	0.2	mg/kg	1	ne	ne	<0.2	<0.2	na	<0.2	na	na	na	na	na	na	na	na	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	na	na
Toluene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Ethylbenzene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
m&pnaXylene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
onaXylene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Total Xylenes	0.4	mg/kg	ne	ne	ne	<1	<1	na	<1	na	na	na	na	na	na	na	na	<1	<1	<1	<1	<1	<1	na	na
Total BTEX	1	mg/kg	7	ne	ne	<2.2	<2.2	na	<2.2	na	na	na	na	na	na	na	na	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	na	na
Total Petroleum Hydrocarbons																									
C6-C9 fraction	2	mg/kg	100	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
C10-C14 fraction	50	mg/kg	100	ne	ne	<50	<50	na	<50	na	na	na	na	na	na	na	na	<50	<50	<50	<50	<50	<50	na	na
C15-C28 fraction	100	mg/kg	1000	ne	ne	<100	<100	na	<100	na	na	na	na	na	na	na	na	<100	<100	<100	<100	<100	<100	na	na
C29-C36 fraction	100	mg/kg	1000	ne	ne	<100	<100	na	<100	na	na	na	na	na	na	na	na	<100	<100	<100	<100	<100	<100	na	na
C10-C36 fraction	250	mg/kg	ne	ne	ne	<250	<250	na	<250	na	na	na	na	na	na	na	na	<250	<250	<250	<250	<250	<250	na	na
C6-C36 fraction	252	mg/kg	ne	ne	ne	<260	<260	na	<260	na	na	na	na	na	na	na	na	<260	<260	<260	<260	<260	<260	na	na
Polynuclear Aromatic Hydrocarbons																									
2-Methylnaphthalene	5	µg/kg	ne	ne	70	<5	**9**	na	<5	na	na	na	na	na	na	na	na	<5	<5	<5	**6**	<5	<5	na	na
Acenaphthene	0.5	mg/kg	ne	ne	0.016	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Acenaphthene	4	µg/kg	ne	ne	16	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Acenaphthylene	0.5	mg/kg	ne	ne	ne	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Acenaphthylene	4	µg/kg	ne	ne	ne	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Anthracene	0.5	mg/kg	ne	ne	0.085	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Anthracene	4	µg/kg	ne	ne	85	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Benzo(a)anthracene	4	µg/kg	ne	ne	261	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Benzo(a)pyrene	4	µg/kg	1000	5000	430	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	na	na	na	na	<1	<1	<1	<1	<1	<1	<1	<1	na	na	na	na	na	na	<1	<1
Benzo(b&k)fluoranthene	8	µg/kg	ne	ne	ne	<8	<8	na	<8	na	na	na	na	na	na	na	na	<8	<8	<8	<8	<8	<8	na	na
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Benzo(b)fluoranthene	4	µg/kg	ne	ne	ne	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Benzo(e)pyrene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(e)pyrene	4	µg/kg	ne	ne	ne	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Benzo(g,h,i)perylene	4	µg/kg	ne	ne	ne	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Benzo(k)fluoranthene	4	µg/kg	ne	ne	ne	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Chrysene	0.5	mg/kg	ne	ne	0.384	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Chrysene	4	µg/kg	ne	ne	384	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Coronene	5	µg/kg	ne	ne	ne	<5	<5	na	<5	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	na	na
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Dibenz(a,h)anthracene	4	µg/kg	ne	ne	63	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Fluoranthene	0.5	mg/kg	ne	ne	0.6	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Fluoranthene	4	µg/kg	ne	ne	600	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Fluorene	0.5	mg/kg	ne	ne	0.019	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Fluorene	4	µg/kg	ne	ne	19	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Indeno(1,2,3nacd)pyrene	4	µg/kg	ne	ne	ne	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Naphthalene	0.5	mg/kg	ne	ne	0.16	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Naphthalene	5	µg/kg	ne	ne	160	<5	**5**	na	<5	na	na	na	na	na	na	na	na	<5	<5	<5	**8**	<5	<5	na	na
Perylene	4	µg/kg	ne	ne	ne	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Phenanthrene	0.5	mg/kg	ne	ne	0.24	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Phenanthrene	4	µg/kg	ne	ne	240	<4	**4**	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na
Pyrene	0.5	mg/kg	ne	ne	0.665	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5
Pyrene	4	µg/kg	ne	ne	665	<4	<4	na	<4	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH03	BH03	BH03	BH03	BH04	BH04	BH04	BH04	BH04	BH04	BH04	BH04	BH05	BH05	BH05	BH06	BH06	BH06	BH07	BH07
Sample ID						GC/GLNG #3_0-0.5	GC/GLNG #3_0.5-1.0	GC/GLNG #3_0.9-1.2	GC/GLNG #3_6.0-6.9	BH4 0.0-0.3	BH4 1.5-2.0	QC18	QC19	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95	BH4 3.2-3.7	GC/GLNG #5_0-0.5	GC/GLNG #5_0.5-1.0	GC/GLNG #5_5.5-6.5	GC/GLNG #6_0-0.5	GC/GLNG #6_0.5-1.0	GC/GLNG #6_4.6-5.6	BH07 0.0-0.5	BH07 0.5-1.0
Date Sampled						8/06/2008	8/06/2008	8/06/2008	8/06/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	9/06/2008	9/06/2008	9/06/2008	6/06/2008	6/06/2008	6/06/2008	27/07/2008	27/07/2008
Sample Type						Duplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #3_0-0.5	GC/GLNG #3_0.5-1.0	GC/GLNG #3_0.9-1.2	GC/GLNG #3_6.0-6.9	BH4 0.0-0.3	BH4 1.5-2.0	BH4 1.5-2.0	BH4 1.5-2.0	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95	BH4 3.2-3.7	GC/GLNG #5_0-0.5	GC/GLNG #5_0.5-1.0	GC/GLNG #5_5.5-6.5	GC/GLNG #6_0-0.5	GC/GLNG #6_0.5-1.0	GC/GLNG #6_4.6-5.6	BH07 0.0-0.5	BH07 0.5-1.0
Batch No.						EB0807648_ MRED	EB0807648_ MRED	EB0807695_ MRED_VER	EB0807648_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0810023_ MRED	EB0810023_ MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Phenolic Compounds																									
2,4,5naTrichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
2,4,6naTrichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
2,4naDichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
2,4naDimethylphenol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
2,6naDichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
2naChlorophenol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
2naNitrophenol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
4naChlorona3naMethylphenol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
4naNitrophenol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Hexachlorophene	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
mnaCresol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
onaCresol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
pnaCresol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Pentachlorophenol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Phenol	10	µg/kg	ne	42500000	ne	**30**	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	**20**	<10	**10**	na	na
Tetrachlorophenol	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Organotin Compounds																									
Tributyltin	0.5	µgSn/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Polychlorinated Biphenyls																									
Aroclor 1016	5	µg/kg	ne	ne	ne	<5	<5	na	<5	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	na	na
Aroclor 1221	5	µg/kg	ne	ne	ne	<5	<5	na	<5	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	na	na
Aroclor 1232	5	µg/kg	ne	ne	ne	<5	<5	na	<5	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	na	na
Aroclor 1242	5	µg/kg	ne	ne	ne	<5	<5	na	<5	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	na	na
Aroclor 1248	5	µg/kg	ne	ne	ne	<5	<5	na	<5	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	na	na
Aroclor 1254	5	µg/kg	ne	ne	ne	<5	<5	na	<5	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	na	na
Aroclor 1260	5	µg/kg	ne	ne	ne	<5	<5	na	<5	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	na	na
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	na	na	na	na	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na	na	na	<0.1	<0.1
Polychlorinated biphenyls	5	µg/kg	ne	ne	ne	<5	<5	na	<5	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	na	na
Organophosphorus Pesticides (OP)																									
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Azinphos Methyl	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Chlorfenvinphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos	10	µg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Chlorfenvinphos (Z)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (Z)	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	10	µg/kg	ne	ne	ne	<10	<10	na	<10	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	na	na
Organochlorine Pesticides (OC)																									
4,4naDDD	0.05	mg/kg	ne	ne	0.002	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05
4,4naDDD	0.5	µg/kg	ne	ne	2	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
4,4naDDE	0.05	mg/kg	ne	ne	0.0022	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH03	BH03	BH03	BH03	BH04	BH04	BH04	BH04	BH04	BH04	BH04	BH04	BH05	BH05	BH05	BH06	BH06	BH06	BH07	BH07
Sample ID						GC/GLNG #3_0-0.5	GC/GLNG #3_0.5-1.0	GC/GLNG #3_0.9-1.2	GC/GLNG #3_6.0-6.9	BH4 0.0-0.3	BH4 1.5-2.0	QC18	QC19	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95	BH4 3.2-3.7	GC/GLNG #5_0-0.5	GC/GLNG #5_0.5-1.0	GC/GLNG #5_5.5-6.5	GC/GLNG #6_0-0.5	GC/GLNG #6_0.5-1.0	GC/GLNG #6_4.6-5.6	BH07 0.0-0.5	BH07 0.5-1.0
Date Sampled						8/06/2008	8/06/2008	8/06/2008	8/06/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	9/06/2008	9/06/2008	9/06/2008	6/06/2008	6/06/2008	6/06/2008	27/07/2008	27/07/2008
Sample Type						Duplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #3_0-0.5	GC/GLNG #3_0.5-1.0	GC/GLNG #3_0.9-1.2	GC/GLNG #3_6.0-6.9	BH4 0.0-0.3	BH4 1.5-2.0	BH4 1.5-2.0	BH4 1.5-2.0	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95	BH4 3.2-3.7	GC/GLNG #5_0-0.5	GC/GLNG #5_0.5-1.0	GC/GLNG #5_5.5-6.5	GC/GLNG #6_0-0.5	GC/GLNG #6_0.5-1.0	GC/GLNG #6_4.6-5.6	BH07 0.0-0.5	BH07 0.5-1.0
Batch No.						EB0807648_ MRED	EB0807648_ MRED	EB0807695_ MRED_VER	EB0807648_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0810023_ MRED	EB0810023_ MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
4,4naDDE	0.5	µg/kg	ne	ne	2.2	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
4,4naDDT	0.2	mg/kg	0.2	ne	ne	na	na	na	na	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	<0.2	<0.2
4,4naDDT	0.5	µg/kg	200	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
anaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
anaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Aldrin	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Aldrin	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
bnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
bnaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Chlordane na cis	0.05	mg/kg	ne	ne	0.5	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05
Chlordane na cis	0.5	µg/kg	ne	ne	0.0005	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Chlordane na trans	0.05	mg/kg	ne	ne	0.5	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05
Chlordane na trans	0.5	µg/kg	ne	ne	0.0005	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Total Chlordane	nana	mg/kg	ne	ne	ne	na	na	na	na	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05
Dieldrin	0.5	µg/kg	ne	ne	0.02	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Endosulfan	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Endosulfan 2	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 2	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Endosulfan sulfate	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan sulfate	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Endrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05
Endrin	0.5	µg/kg	ne	ne	0.02	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05
Endrin aldehyde	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Endrin ketone	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05
Endrin ketone	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
gnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05
gnaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Heptachlor	0.05	mg/kg	ne	50	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor	0.5	µg/kg	ne	50000	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Heptachlor epoxide	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor epoxide	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Hexachlorobenzene	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorobenzene	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Methoxychlor	0.05	mg/kg	ne	ne	ne	na	na	na	na	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na	na
Methoxychlor	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	na	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Triazine Pesticides																									
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	<0.05	<0.05
Simazine	0.05	mg/kg	ne	ne	ne	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	<0.05	<0.05
Carbamate Pesticides																									
3naHydroxy Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldicarb	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bendiocarb	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbaryl	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methiocarb	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methomyl	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Oxamyl	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thiodicarb	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																									
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
MCPA	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
MCPB	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
Picloram	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	<0.02	<0.02

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National . Ocean Disposal Guidelines for dredged materials

ne: not established na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH08B	BH08B	BH08B	BH08B	BH08B	BH09	BH09	BH09	BH10	BH10	BH10	BH11
Sample ID						BH07 1.0-1.5	BH07 1.5-2.0	BH07 2.2-2.7	BH07 2.7-3.2	BH07 3.2-3.5	BH07 3.5-3.6	BH07 3.6-3.9	BH07 4.0-4.3	BH08B 0.2-0.5	BH08B 2.0-2.4	BH08B 3.6-3.9	BH08B 4.3-4.6	BH08B 4.75-5	GC/GLNG #9_0-0.5	GC/GLNG #9_0.5-1.0	GC/GLNG #9_4.0-5.0	GC/GLNG #10_0-0.5	GC/GLNG #10_0.5-1.0	GC/GLNG #10_1.5-2.5	GC/GLNG #11_0-0.5
Date Sampled						27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	26/07/2008	26/07/2008	26/07/2008	26/07/2008	26/07/2008	7/06/2008	7/06/2008	7/06/2008	8/06/2008	8/06/2008	8/06/2008	7/06/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH07 1.0-1.5	BH07 1.5-2.0	BH07 2.2-2.7	BH07 2.7-3.2	BH07 3.2-3.5	BH07 3.5-3.6	BH07 3.6-3.9	BH07 4.0-4.3	BH08B 0.2-0.5	BH08B 2.0-2.4	BH08B 3.6-3.9	BH08B 4.3-4.6	BH08B 4.75-5	GC/GLNG #9_0-0.5	GC/GLNG #9_0.5-1.0	GC/GLNG #9_4.0-5.0	GC/GLNG #10_0-0.5	GC/GLNG #10_0.5-1.0	GC/GLNG #10_1.5-2.5	GC/GLNG #11_0-0.5
Batch No.						EB0810023_MRED	EB0810023_MRED	EB0810023_MRED	EB0810023_MRED	EB0810023_MRED	EB0810023_MRED	EB0810023_MRED	EB0810023_MRED	EB0810023_MRED	EB0810023_MRED	EB0810023_MRED	EB0810023_MRED	EB0810023_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
BTEX Compounds																									
Benzene	0.2	mg/kg	1	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m&pnaXylene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
onaXylene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	0.4	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<1	<1	<1	<1	<1	<1	<1
Total BTEX	1	mg/kg	7	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Total Petroleum Hydrocarbons																									
C6-C9 fraction	2	mg/kg	100	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
C10-C14 fraction	50	mg/kg	100	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<50	<50	<50	<50	<50	<50	<50
C15-C28 fraction	100	mg/kg	1000	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<100	<100	<100	<100	<100	<100	<100
C29-C36 fraction	100	mg/kg	1000	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<100	<100	<100	<100	<100	<100	<100
C10-C36 fraction	250	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<250	<250	<250	<250	<250	<250	<250
C6-C36 fraction	252	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<260	<260	<260	<260	<260	<260	<260
Polynuclear Aromatic Hydrocarbons																									
2-Methylnaphthalene	5	µg/kg	ne	ne	70	na	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	**23**	**15**	<5	**5**
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Acenaphthene	4	µg/kg	ne	ne	16	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Acenaphthylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Anthracene	0.5	mg/kg	ne	ne	0.085	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Anthracene	4	µg/kg	ne	ne	85	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Benzo(a)anthracene	4	µg/kg	ne	ne	261	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Benzo(a)pyrene	4	µg/kg	1000	5000	430	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	na	na	<1	<1	<1	<1	<1	na	na	na	na	na	na	na
Benzo(b&k)fluoranthene	8	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<8	<8	<8	<8	<8	<8	<8
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Benzo(b)fluoranthene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Benzo(e)pyrene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(e)pyrene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Benzo(g,h,i)perylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Benzo(k)fluoranthene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Chrysene	0.5	mg/kg	ne	ne	0.384	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Chrysene	4	µg/kg	ne	ne	384	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Coronene	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	<5
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Dibenz(a,h)anthracene	4	µg/kg	ne	ne	63	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Fluoranthene	4	µg/kg	ne	ne	600	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Fluorene	0.5	mg/kg	ne	ne	0.019	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Fluorene	4	µg/kg	ne	ne	19	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Indeno(1,2,3nacd)pyrene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Naphthalene	0.5	mg/kg	ne	ne	0.16	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na
Naphthalene	5	µg/kg	ne	ne	160	na	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	**18**	**10**	<5	<5
Perylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	<4	<4	<4	<4
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na		na	na	na	na	na
Phenanthrene	4	µg/kg	ne	ne	240	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	**9**	**7**	<4	<4
Pyrene	0.5	mg/kg	ne	ne	0.665	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na		na	na	na	na	na
Pyrene	4	µg/kg	ne	ne	665	na	na	na	na	na	na	na	na	na	na	na	na	na	<4	<4	<4	**4**	<4	<4	<4

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH08B	BH08B	BH08B	BH08B	BH08B	BH09	BH09	BH09	BH10	BH10	BH10	BH11
Sample ID						BH07 1.0-1.5	BH07 1.5-2.0	BH07 2.2-2.7	BH07 2.7-3.2	BH07 3.2-3.5	BH07 3.5-3.6	BH07 3.6-3.9	BH07 4.0-4.3	BH08B 0.2-0.5	BH08B 2.0-2.4	BH08B 3.6-3.9	BH08B 4.3-4.6	BH08B 4.75-5	GC/GLNG #9_0-0.5	GC/GLNG #9_0.5-1.0	GC/GLNG #9_4.0-5.0	GC/GLNG #10_0-0.5	GC/GLNG #10_0.5-1.0	GC/GLNG #10_1.5-2.5	GC/GLNG #11_0-0.5
Date Sampled						27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	26/07/2008	26/07/2008	26/07/2008	26/07/2008	26/07/2008	7/06/2008	7/06/2008	7/06/2008	8/06/2008	8/06/2008	8/06/2008	7/06/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH07 1.0-1.5	BH07 1.5-2.0	BH07 2.2-2.7	BH07 2.7-3.2	BH07 3.2-3.5	BH07 3.5-3.6	BH07 3.6-3.9	BH07 4.0-4.3	BH08B 0.2-0.5	BH08B 2.0-2.4	BH08B 3.6-3.9	BH08B 4.3-4.6	BH08B 4.75-5	GC/GLNG #9_0-0.5	GC/GLNG #9_0.5-1.0	GC/GLNG #9_4.0-5.0	GC/GLNG #10_0-0.5	GC/GLNG #10_0.5-1.0	GC/GLNG #10_1.5-2.5	GC/GLNG #11_0-0.5
Batch No.						EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Phenolic Compounds																									
2,4,5naTrichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
2,4,6naTrichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
2,4naDichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
2,4naDimethylphenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
2,6naDichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
2naChlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
2naNitrophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
4naChlorona3naMethylphenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
4naNitrophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Hexachlorophene	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
mnaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
onaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
pnaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Pentachlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Phenol	10	µg/kg	ne	42500000	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	**20**	<10	<10	<10	<10	<10	<10
Tetrachlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Organotin Compounds																									
Tributyltin	0.5	µgSn/kg	ne	ne	ne	<0.5	<0.5	na	na	na	na	na	na	<0.5	<0.5	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Polychlorinated Biphenyls																									
Aroclor 1016	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	<5
Aroclor 1221	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	<5
Aroclor 1232	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	<5
Aroclor 1242	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	<5
Aroclor 1248	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	<5
Aroclor 1254	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	<5
Aroclor 1260	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	<5
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	na	na	na	na	na	na	<0.1	<0.1	na	na	na	na	na	na	na	na	na	na
Polychlorinated biphenyls	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5	<5	<5
Organophosphorus Pesticides (OP)																									
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Azinphos Methyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Chlorfenvinphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Chlorfenvinphos (Z)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (Z)	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<10	<10	<10	<10	<10	<10	<10
Organochlorine Pesticides (OC)																									
4,4naDDD	0.05	mg/kg	ne	ne	0.002	<0.05	<0.05	na	na	na	na	na	na	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na
4,4naDDD	0.5	µg/kg	ne	ne	2	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4,4naDDE	0.05	mg/kg	ne	ne	0.0022	<0.05	<0.05	na	na	na	na	na	na	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH08B	BH08B	BH08B	BH08B	BH08B	BH09	BH09	BH09	BH10	BH10	BH10	BH11
Sample ID						BH07 1.0-1.5	BH07 1.5-2.0	BH07 2.2-2.7	BH07 2.7-3.2	BH07 3.2-3.5	BH07 3.5-3.6	BH07 3.6-3.9	BH07 4.0-4.3	BH08B 0.2-0.5	BH08B 2.0-2.4	BH08B 3.6-3.9	BH08B 4.3-4.6	BH08B 4.75-5	GC/GLNG #9_0-0.5	GC/GLNG #9_0.5-1.0	GC/GLNG #9_4.0-5.0	GC/GLNG #10_0-0.5	GC/GLNG #10_0.5-1.0	GC/GLNG #10_1.5-2.5	GC/GLNG #11_0-0.5
Date Sampled						27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	26/07/2008	26/07/2008	26/07/2008	26/07/2008	26/07/2008	7/06/2008	7/06/2008	7/06/2008	8/06/2008	8/06/2008	8/06/2008	7/06/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH07 1.0-1.5	BH07 1.5-2.0	BH07 2.2-2.7	BH07 2.7-3.2	BH07 3.2-3.5	BH07 3.5-3.6	BH07 3.6-3.9	BH07 4.0-4.3	BH08B 0.2-0.5	BH08B 2.0-2.4	BH08B 3.6-3.9	BH08B 4.3-4.6	BH08B 4.75-5	GC/GLNG #9_0-0.5	GC/GLNG #9_0.5-1.0	GC/GLNG #9_4.0-5.0	GC/GLNG #10_0-0.5	GC/GLNG #10_0.5-1.0	GC/GLNG #10_1.5-2.5	GC/GLNG #11_0-0.5
Batch No.						EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
4,4naDDE	0.5	µg/kg	ne	ne	2.2	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4,4naDDT	0.2	mg/kg	0.2	ne	ne	<0.2	<0.2	na	na	na	na	na	na	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na
4,4naDDT	0.5	µg/kg	200	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
anaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
anaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldrin	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
bnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
bnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlordane na cis	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	na	na	na	na	na	na	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na
Chlordane na cis	0.5	µg/kg	ne	ne	0.0005	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlordane na trans	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	na	na	na	na	na	na	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na
Chlordane na trans	0.5	µg/kg	ne	ne	0.0005	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Chlordane	nana	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	na	na	na	na	na	na	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na
Dieldrin	0.5	µg/kg	ne	ne	0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan 2	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 2	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan sulfate	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	na	na	na	na	na	na	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na
Endrin	0.5	µg/kg	ne	ne	0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	na	na	na	na	na	na	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na
Endrin aldehyde	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin ketone	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	na	na	na	na	na	na	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na
Endrin ketone	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
gnaBHC	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	na	na	na	na	na	na	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na
gnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	0.05	mg/kg	ne	50	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor	0.5	µg/kg	ne	50000	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor epoxide	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorobenzene	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methoxychlor	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Triazine Pesticides																									
Atrazine	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Carbamate Pesticides																									
3naHydroxy Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bendiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbaryl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methomyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Oxamyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thiodicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																									
2,4,5naT	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National . Ocean Disposal Guidelines for dredged materials

ne: not established na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH11	BH11	BH12	BH12	BH12	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13
Sample ID						GC/GLNG #11_0.5-1.0	GC/GLNG #11_1.0-2.0	GC/GLNG #12_0-0.5	GC/GLNG #12_0.5-1.0	GC/GLNG #12_3.2-4.2	BH13 1.0-1.6	BH13 1.6-2.3	QC 42	QC 43	BH13 4.9-5.3	BH13 7.3-7.4	BH13 7.7-8.05	BH13 8.05-8.3	BH13 8.3-8.6	BH13 9.0-9.15	BH13 11.2-11.3	BH13 11.3-11.4	BH13 11.9-12.07	BH13 11.9-12.07_CUTTINGS	BH13 12.95-14.3_CUTTINGS
Date Sampled						7/06/2008	7/06/2008	8/06/2008	8/06/2008	8/06/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #11_0.5-1.0	GC/GLNG #11_1.0-2.0	GC/GLNG #12_0-0.5	GC/GLNG #12_0.5-1.0	GC/GLNG #12_3.2-4.2	BH13 1.0-1.6	BH13 1.6-2.3	BH13 1.6-2.3	BH13 1.6-2.3	BH13 4.9-5.3	BH13 7.3-7.4	BH13 7.7-8.05	BH13 8.05-8.3	BH13 8.3-8.6	BH13 9.0-9.15	BH13 11.2-11.3	BH13 11.3-11.4	BH13 11.9-12.07	BH13 11.9-12.07_CUTTINGS	BH13 12.95-14.3_CUTTINGS
Batch No.						EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
BTEX Compounds																									
Benzene	0.2	mg/kg	1	ne	ne	<0.2	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Toluene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethylbenzene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
m&pnaXylene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
onaXylene	0.2	mg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Xylenes	0.4	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total BTEX	1	mg/kg	7	ne	ne	<2.2	<2.2	<2.2	<2.2	<2.2	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Petroleum Hydrocarbons																									
C6-C9 fraction	2	mg/kg	100	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C10-C14 fraction	50	mg/kg	100	ne	ne	<50	<50	<50	<50	<50	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C15-C28 fraction	100	mg/kg	1000	ne	ne	<100	<100	<100	<100	<100	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C29-C36 fraction	100	mg/kg	1000	ne	ne	<100	<100	<100	<100	<100	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C10-C36 fraction	250	mg/kg	ne	ne	ne	<250	<250	<250	<250	<250	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C6-C36 fraction	252	mg/kg	ne	ne	ne	<260	<260	<260	<260	<260	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Polynuclear Aromatic Hydrocarbons																									
2-Methylnaphthalene	5	µg/kg	ne	ne	70	**6**	**6**	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Acenaphthene	0.5	mg/kg	ne	ne	0.016	na	na	na	na	na	<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
Acenaphthene	4	µg/kg	ne	ne	16	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Acenaphthylene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	<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
Acenaphthylene	4	µg/kg	ne	ne	ne	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Anthracene	0.5	mg/kg	ne	ne	0.085	na	na	na	na	na	<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
Anthracene	4	µg/kg	ne	ne	85	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	na	na	na	na	na	<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
Benzo(a)anthracene	4	µg/kg	ne	ne	261	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	na	na	na	na	na	<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
Benzo(a)pyrene	4	µg/kg	1000	5000	430	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	na	na	na	na	na	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b&k)fluoranthene	8	µg/kg	ne	ne	ne	<8	<8	<8	<8	<8	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	<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
Benzo(b)fluoranthene	4	µg/kg	ne	ne	ne	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(e)pyrene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(e)pyrene	4	µg/kg	ne	ne	ne	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	<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
Benzo(g,h,i)perylene	4	µg/kg	ne	ne	ne	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	<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
Benzo(k)fluoranthene	4	µg/kg	ne	ne	ne	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chrysene	0.5	mg/kg	ne	ne	0.384	na	na	na	na	na	<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
Chrysene	4	µg/kg	ne	ne	384	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Coronene	5	µg/kg	ne	ne	ne	<5	<5	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	na	na	na	na	na	<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
Dibenz(a,h)anthracene	4	µg/kg	ne	ne	63	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluoranthene	0.5	mg/kg	ne	ne	0.6	na	na	na	na	na	<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
Fluoranthene	4	µg/kg	ne	ne	600	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluorene	0.5	mg/kg	ne	ne	0.019	na	na	na	na	na	<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
Fluorene	4	µg/kg	ne	ne	19	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	<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
Indeno(1,2,3nacd)pyrene	4	µg/kg	ne	ne	ne	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Naphthalene	0.5	mg/kg	ne	ne	0.16	na	na	na	na	na	<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
Naphthalene	5	µg/kg	ne	ne	160	<5	<5	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Perylene	4	µg/kg	ne	ne	ne	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenanthrene	0.5	mg/kg	ne	ne	0.24	na	na	na	na	na	na	<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
Phenanthrene	4	µg/kg	ne	ne	240	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pyrene	0.5	mg/kg	ne	ne	0.665	na	na	na	na	na	na	<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
Pyrene	4	µg/kg	ne	ne	665	<4	<4	<4	<4	<4	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH11	BH11	BH12	BH12	BH12	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13
Sample ID						GC/GLNG #11_0.5-1.0	GC/GLNG #11_1.0-2.0	GC/GLNG #12_0-0.5	GC/GLNG #12_0.5-1.0	GC/GLNG #12_3.2-4.2	BH13 1.0-1.6	BH13 1.6-2.3	QC 42	QC 43	BH13 4.9-5.3	BH13 7.3-7.4	BH13 7.7-8.05	BH13 8.05-8.3	BH13 8.3-8.6	BH13 9.0-9.15	BH13 11.2-11.3	BH13 11.3-11.4	BH13 11.9-12.07	BH13 11.9-12.07_CUTTINGS	BH13 12.95-14.3_CUTTINGS
Date Sampled						7/06/2008	7/06/2008	8/06/2008	8/06/2008	8/06/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #11_0.5-1.0	GC/GLNG #11_1.0-2.0	GC/GLNG #12_0-0.5	GC/GLNG #12_0.5-1.0	GC/GLNG #12_3.2-4.2	BH13 1.0-1.6	BH13 1.6-2.3	BH13 1.6-2.3	BH13 1.6-2.3	BH13 4.9-5.3	BH13 7.3-7.4	BH13 7.7-8.05	BH13 8.05-8.3	BH13 8.3-8.6	BH13 9.0-9.15	BH13 11.2-11.3	BH13 11.3-11.4	BH13 11.9-12.07	BH13 11.9-12.07_CUTTINGS	BH13 12.95-14.3_CUTTINGS
Batch No.						EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Phenolic Compounds																									
2,4,5naTrichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,6naTrichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDimethylphenol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,6naDichlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2naChlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2naNitrophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorona3naMethylphenol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naNitrophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorophene	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
mnaCresol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
onaCresol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
pnaCresol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pentachlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenol	10	µg/kg	ne	42500000	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Tetrachlorophenol	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																									
Tributyltin	0.5	µgSn/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na
Polychlorinated Biphenyls																									
Aroclor 1016	5	µg/kg	ne	ne	ne	<5	<5	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1221	5	µg/kg	ne	ne	ne	<5	<5	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1232	5	µg/kg	ne	ne	ne	<5	<5	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1242	5	µg/kg	ne	ne	ne	<5	<5	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1248	5	µg/kg	ne	ne	ne	<5	<5	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1254	5	µg/kg	ne	ne	ne	<5	<5	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1260	5	µg/kg	ne	ne	ne	<5	<5	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na	na	na	na
Polychlorinated biphenyls	5	µg/kg	ne	ne	ne	<5	<5	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organophosphorus Pesticides (OP)																									
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Azinphos Methyl	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (Z)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (Z)	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	10	µg/kg	ne	ne	ne	<10	<10	<10	<10	<10	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organochlorine Pesticides (OC)																									
4,4naDDD	0.05	mg/kg	ne	ne	0.002	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na
4,4naDDD	0.5	µg/kg	ne	ne	2	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4,4naDDE	0.05	mg/kg	ne	ne	0.0022	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH11	BH11	BH12	BH12	BH12	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13
Sample ID						GC/GLNG #11_0.5-1.0	GC/GLNG #11_1.0-2.0	GC/GLNG #12_0-0.5	GC/GLNG #12_0.5-1.0	GC/GLNG #12_3.2-4.2	BH13 1.0-1.6	BH13 1.6-2.3	QC 42	QC 43	BH13 4.9-5.3	BH13 7.3-7.4	BH13 7.7-8.05	BH13 8.05-8.3	BH13 8.3-8.6	BH13 9.0-9.15	BH13 11.2-11.3	BH13 11.3-11.4	BH13 11.9-12.07	BH13 11.9-12.07_CUTTINGS	BH13 12.95-14.3_CUTTINGS
Date Sampled						7/06/2008	7/06/2008	8/06/2008	8/06/2008	8/06/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #11_0.5-1.0	GC/GLNG #11_1.0-2.0	GC/GLNG #12_0-0.5	GC/GLNG #12_0.5-1.0	GC/GLNG #12_3.2-4.2	BH13 1.0-1.6	BH13 1.6-2.3	BH13 1.6-2.3	BH13 1.6-2.3	BH13 4.9-5.3	BH13 7.3-7.4	BH13 7.7-8.05	BH13 8.05-8.3	BH13 8.3-8.6	BH13 9.0-9.15	BH13 11.2-11.3	BH13 11.3-11.4	BH13 11.9-12.07	BH13 11.9-12.07_CUTTINGS	BH13 12.95-14.3_CUTTINGS
Batch No.						EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
4,4naDDE	0.5	µg/kg	ne	ne	2.2	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4,4naDDT	0.2	mg/kg	0.2	ne	ne	na	na	na	na	na	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na
4,4naDDT	0.5	µg/kg	200	ne	ne	<0.5	**1.78**	<0.5	**0.72**	**1.75**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
anaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
anaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldrin	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldrin	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
bnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
bnaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane na cis	0.05	mg/kg	ne	ne	0.5	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na
Chlordane na cis	0.5	µg/kg	ne	ne	0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane na trans	0.05	mg/kg	ne	ne	0.5	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na
Chlordane na trans	0.5	µg/kg	ne	ne	0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Chlordane	nana	mg/kg	ne	ne	ne	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na
Dieldrin	0.5	µg/kg	ne	ne	0.02	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 2	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 2	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan sulfate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan sulfate	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na
Endrin	0.5	µg/kg	ne	ne	0.02	<0.5	**0.99**	<0.5	<0.5	**0.71**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na
Endrin aldehyde	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin ketone	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na
Endrin ketone	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
gnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na
gnaBHC	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor	0.05	mg/kg	ne	50	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor	0.5	µg/kg	ne	50000	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor epoxide	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor epoxide	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorobenzene	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorobenzene	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methoxychlor	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methoxychlor	0.5	µg/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triazine Pesticides																									
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbamate Pesticides																									
3naHydroxy Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bendiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbaryl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methomyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Oxamyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thiodicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																									
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National . Ocean Disposal Guidelines for dredged materials

ne: not established na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH 14	BH 14	BH 14	BH 14	BH 14	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15
Sample ID						BH14 1-1.5	BH14 1.6-2	QC39	QC40	BH14 3.5-4.0	BH15 0-0.45	QC29	QC30	BH15 0.5-0.95	BH15 1.0-1.45	BH15 1.5-2.0	QC31	QC32	BH15 2.5-2.8	BH15 2.85-3.0	BH15 3.0-3.2	BH15 3.5-3.85	BH15 4.0-5.0	BH15 5.1-5.3
Date Sampled						27/08/2008	27/08/2008	27/08/2008	27/08/2008	27/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH14 1-1.5	BH14 1.6-2	BH14 1.6-2	BH14 1.6-2	BH14 3.5-4	BH15 0-0.45	BH15 0-0.45	BH15 0-0.45	BH15 0.5-0.95	BH15 1.0-1.45	BH15 1.5-2.0	BH15 1.5-2.0	BH15 1.5-2.0	BH15 2.5-2.8	BH15 2.85-3.0	BH15 3.0-3.2	BH15 3.5-3.85	BH15 4.0-5.0	BH15 5.1-5.3
Batch No.						EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
BTEX Compounds																								
Benzene	0.2	mg/kg	1	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Toluene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethylbenzene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
m&pnaXylene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
onaXylene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Xylenes	0.4	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total BTEX	1	mg/kg	7	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Petroleum Hydrocarbons																								
C6-C9 fraction	2	mg/kg	100	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C10-C14 fraction	50	mg/kg	100	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C15-C28 fraction	100	mg/kg	1000	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C29-C36 fraction	100	mg/kg	1000	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C10-C36 fraction	250	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C6-C36 fraction	252	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Polynuclear Aromatic Hydrocarbons																								
2-Methylnaphthalene	5	µg/kg	ne	ne	70	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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	<0.5	<0.5	<0.5
Acenaphthene	4	µg/kg	ne	ne	16	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Acenaphthylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Anthracene	0.5	mg/kg	ne	ne	0.085	<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	<0.5	<0.5	<0.5
Anthracene	4	µg/kg	ne	ne	85	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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	<0.5	<0.5	<0.5
Benzo(a)anthracene	4	µg/kg	ne	ne	261	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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	<0.5	<0.5	<0.5
Benzo(a)pyrene	4	µg/kg	1000	5000	430	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b&k)fluoranthene	8	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(e)pyrene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(e)pyrene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chrysene	0.5	mg/kg	ne	ne	0.384	<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	<0.5	<0.5	<0.5
Chrysene	4	µg/kg	ne	ne	384	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Coronene	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	4	µg/kg	ne	ne	63	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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	<0.5	<0.5	<0.5
Fluoranthene	4	µg/kg	ne	ne	600	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluorene	0.5	mg/kg	ne	ne	0.019	<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	<0.5	<0.5	<0.5
Fluorene	4	µg/kg	ne	ne	19	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Indeno(1,2,3nacd)pyrene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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	<0.5	<0.5	<0.5
Naphthalene	5	µg/kg	ne	ne	160	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Perylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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	<0.5	<0.5	<0.5
Phenanthrene	4	µg/kg	ne	ne	240	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pyrene	0.5	mg/kg	ne	ne	0.665	<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	<0.5	<0.5	<0.5
Pyrene	4	µg/kg	ne	ne	665	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH 14	BH 14	BH 14	BH 14	BH 14	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15
Sample ID						BH14 1-1.5	BH14 1.6-2	QC39	QC40	BH14 3.5-4.0	BH15 0-0.45	QC29	QC30	BH15 0.5-0.95	BH15 1.0-1.45	BH15 1.5-2.0	QC31	QC32	BH15 2.5-2.8	BH15 2.85-3.0	BH15 3.0-3.2	BH15 3.5-3.85	BH15 4.0-5.0	BH15 5.1-5.3
Date Sampled						27/08/2008	27/08/2008	27/08/2008	27/08/2008	27/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH14 1-1.5	BH14 1.6-2	BH14 1.6-2	BH14 1.6-2	BH14 3.5-4	BH15 0-0.45	BH15 0-0.45	BH15 0-0.45	BH15 0.5-0.95	BH15 1.0-1.45	BH15 1.5-2.0	BH15 1.5-2.0	BH15 1.5-2.0	BH15 2.5-2.8	BH15 2.85-3.0	BH15 3.0-3.2	BH15 3.5-3.85	BH15 4.0-5.0	BH15 5.1-5.3
Batch No.						EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Phenolic Compounds																								
2,4,5naTrichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,6naTrichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDimethylphenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,6naDichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2naChlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2naNitrophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorona3naMethylphenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naNitrophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorophene	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
mnaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
onaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
pnaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pentachlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenol	10	µg/kg	ne	42500000	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Tetrachlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																								
Tributyltin	0.5	µgSn/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na
Polychlorinated Biphenyls																								
Aroclor 1016	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1221	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1232	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1242	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1248	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1254	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1260	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	<0.1	na	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	na
Polychlorinated biphenyls	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organophosphorus Pesticides (OP)																								
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Azinphos Methyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (Z)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (Z)	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organochlorine Pesticides (OC)																								
4,4naDDD	0.05	mg/kg	ne	ne	0.002	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na
4,4naDDD	0.5	µg/kg	ne	ne	2	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4,4naDDE	0.05	mg/kg	ne	ne	0.0022	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH 14	BH 14	BH 14	BH 14	BH 14	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15
Sample ID						BH14 1-1.5	BH14 1.6-2	QC39	QC40	BH14 3.5-4.0	BH15 0-0.45	QC29	QC30	BH15 0.5-0.95	BH15 1.0-1.45	BH15 1.5-2.0	QC31	QC32	BH15 2.5-2.8	BH15 2.85-3.0	BH15 3.0-3.2	BH15 3.5-3.85	BH15 4.0-5.0	BH15 5.1-5.3
Date Sampled						27/08/2008	27/08/2008	27/08/2008	27/08/2008	27/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH14 1-1.5	BH14 1.6-2	BH14 1.6-2	BH14 1.6-2	BH14 3.5-4	BH15 0-0.45	BH15 0-0.45	BH15 0-0.45	BH15 0.5-0.95	BH15 1.0-1.45	BH15 1.5-2.0	BH15 1.5-2.0	BH15 1.5-2.0	BH15 2.5-2.8	BH15 2.85-3.0	BH15 3.0-3.2	BH15 3.5-3.85	BH15 4.0-5.0	BH15 5.1-5.3
Batch No.						EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
4,4naDDE	0.5	µg/kg	ne	ne	2.2	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4,4naDDT	0.2	mg/kg	0.2	ne	ne	<0.2	<0.2	<0.2	<0.2	na	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na
4,4naDDT	0.5	µg/kg	200	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
anaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
anaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldrin	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldrin	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
bnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
bnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane na cis	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na
Chlordane na cis	0.5	µg/kg	ne	ne	0.0005	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane na trans	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na
Chlordane na trans	0.5	µg/kg	ne	ne	0.0005	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Chlordane	nana	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na
Dieldrin	0.5	µg/kg	ne	ne	0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 2	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 2	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan sulfate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan sulfate	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na
Endrin	0.5	µg/kg	ne	ne	0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na
Endrin aldehyde	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin ketone	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na
Endrin ketone	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
gnaBHC	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na
gnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor	0.05	mg/kg	ne	50	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor	0.5	µg/kg	ne	50000	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor epoxide	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor epoxide	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorobenzene	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorobenzene	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methoxychlor	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methoxychlor	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triazine Pesticides																								
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbamate Pesticides																								
3naHydroxy Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bendiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbaryl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methomyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Oxamyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thiodicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																								
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National . Ocean Disposal Guidelines for dredged materials

ne: not established na: not analysed

Location						BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17
Sample ID						BH16 0.5-0.95	BH16 1.0-1.45	QC26	QC27	BH16 1.5-2.0	BH16 3.4-3.6	BH16 4.2-4.6	BH16 5.7-6.0	BH16 6.2-6.5	BH16 8.2-8.45	BH17 0.0-0.4	BH17 0.5-1.0	QC22	QC23	BH17 1.0-1.1	BH17 1.2-1.5	BH17 1.55-2.0	QC24	QC25	BH17 2.3-2.8	BH17 3.0-3.5
Date Sampled						19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample
Primary Sample ID						BH16 0.5-0.95	BH16 1.0-1.45	BH16 1.0-1.45	BH16 1.0-1.45	BH16 1.5-2.0	BH16 3.4-3.6	BH16 4.2-4.6	BH16 5.7-6.0	BH16 6.2-6.5	BH16 8.2-8.45	BH17 0.0-0.4	BH17 0.5-1.0	BH17 0.5-1.0	BH17 0.5-1.0	BH17 1.0-1.1	BH17 1.2-1.5	BH17 1.55-2.0	BH17 1.55-2.0	BH17 1.55-2.0	BH17 2.3-2.8	BH17 3.0-3.5
Batch No.						EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																					
BTEX Compounds																										
Benzene	0.2	mg/kg	1	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Toluene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethylbenzene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
m&pnaXylene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
onaXylene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Xylenes	0.4	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total BTEX	1	mg/kg	7	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Petroleum Hydrocarbons																										
C6-C9 fraction	2	mg/kg	100	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C10-C14 fraction	50	mg/kg	100	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C15-C28 fraction	100	mg/kg	1000	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C29-C36 fraction	100	mg/kg	1000	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C10-C36 fraction	250	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C6-C36 fraction	252	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Polynuclear Aromatic Hydrocarbons																										
2-Methylnaphthalene	5	µg/kg	ne	ne	70	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Acenaphthene	4	µg/kg	ne	ne	16	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Acenaphthylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Anthracene	0.5	mg/kg	ne	ne	0.085	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Anthracene	4	µg/kg	ne	ne	85	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Benzo(a)anthracene	4	µg/kg	ne	ne	261	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Benzo(a)pyrene	4	µg/kg	1000	5000	430	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<4	<1	<1	<1	<4	<1	<1
Benzo(b&k)fluoranthene	8	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Benzo(b)fluoranthene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(e)pyrene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(e)pyrene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Benzo(g,h,i)perylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Benzo(k)fluoranthene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chrysene	0.5	mg/kg	ne	ne	0.384	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Chrysene	4	µg/kg	ne	ne	384	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Coronene	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Dibenz(a,h)anthracene	4	µg/kg	ne	ne	63	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Fluoranthene	4	µg/kg	ne	ne	600	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluorene	0.5	mg/kg	ne	ne	0.019	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Fluorene	4	µg/kg	ne	ne	19	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Indeno(1,2,3nacd)pyrene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Naphthalene	5	µg/kg	ne	ne	160	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Perylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Phenanthrene	4	µg/kg	ne	ne	240	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pyrene	0.5	mg/kg	ne	ne	0.665	<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	<2	<0.5	<0.5	<0.5	<2	<0.5	<0.5
Pyrene	4	µg/kg	ne	ne	665	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17
Sample ID						BH16 0.5-0.95	BH16 1.0-1.45	QC26	QC27	BH16 1.5-2.0	BH16 3.4-3.6	BH16 4.2-4.6	BH16 5.7-6.0	BH16 6.2-6.5	BH16 8.2-8.45	BH17 0.0-0.4	BH17 0.5-1.0	QC22	QC23	BH17 1.0-1.1	BH17 1.2-1.5	BH17 1.55-2.0	QC24	QC25	BH17 2.3-2.8	BH17 3.0-3.5
Date Sampled						19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample
Primary Sample ID						BH16 0.5-0.95	BH16 1.0-1.45	BH16 1.0-1.45	BH16 1.0-1.45	BH16 1.5-2.0	BH16 3.4-3.6	BH16 4.2-4.6	BH16 5.7-6.0	BH16 6.2-6.5	BH16 8.2-8.45	BH17 0.0-0.4	BH17 0.5-1.0	BH17 0.5-1.0	BH17 0.5-1.0	BH17 1.0-1.1	BH17 1.2-1.5	BH17 1.55-2.0	BH17 1.55-2.0	BH17 1.55-2.0	BH17 2.3-2.8	BH17 3.0-3.5
Batch No.						EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																					
Phenolic Compounds																										
2,4,5naTrichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,6naTrichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDimethylphenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,6naDichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2naChlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2naNitrophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorona3naMethylphenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naNitrophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorophene	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
mnaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
onaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
pnaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pentachlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenol	10	µg/kg	ne	42500000	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Tetrachlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																										
Tributyltin	0.5	µgSn/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na
Polychlorinated Biphenyls																										
Aroclor 1016	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1221	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1232	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1242	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1248	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1254	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1260	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	<0.1	<0.1	<0.1	<0.1	na	<0.1	<0.1	<0.1	na	na	na
Polychlorinated biphenyls	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organophosphorus Pesticides (OP)																										
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Azinphos Methyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (Z)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (Z)	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organochlorine Pesticides (OC)																										
4,4naDDD	0.05	mg/kg	ne	ne	0.002	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	na	na	na
4,4naDDD	0.5	µg/kg	ne	ne	2	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4,4naDDE	0.05	mg/kg	ne	ne	0.0022	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17
Sample ID						BH16 0.5-0.95	BH16 1.0-1.45	QC26	QC27	BH16 1.5-2.0	BH16 3.4-3.6	BH16 4.2-4.6	BH16 5.7-6.0	BH16 6.2-6.5	BH16 8.2-8.45	BH17 0.0-0.4	BH17 0.5-1.0	QC22	QC23	BH17 1.0-1.1	BH17 1.2-1.5	BH17 1.55-2.0	QC24	QC25	BH17 2.3-2.8	BH17 3.0-3.5
Date Sampled						19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample
Primary Sample ID						BH16 0.5-0.95	BH16 1.0-1.45	BH16 1.0-1.45	BH16 1.0-1.45	BH16 1.5-2.0	BH16 3.4-3.6	BH16 4.2-4.6	BH16 5.7-6.0	BH16 6.2-6.5	BH16 8.2-8.45	BH17 0.0-0.4	BH17 0.5-1.0	BH17 0.5-1.0	BH17 0.5-1.0	BH17 1.0-1.1	BH17 1.2-1.5	BH17 1.55-2.0	BH17 1.55-2.0	BH17 1.55-2.0	BH17 2.3-2.8	BH17 3.0-3.5
Batch No.						EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																					
4,4naDDE	0.5	µg/kg	ne	ne	2.2	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4,4naDDT	0.2	mg/kg	0.2	ne	ne	<0.2	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	<0.2	<0.2	<0.2	<0.2	na	<0.2	<0.2	<0.2	na	na	na
4,4naDDT	0.5	µg/kg	200	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
anaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
anaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldrin	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldrin	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
bnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
bnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane na cis	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	na	na	na
Chlordane na cis	0.5	µg/kg	ne	ne	0.0005	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane na trans	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	na	na	na
Chlordane na trans	0.5	µg/kg	ne	ne	0.0005	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Chlordane	nana	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	na	na	na
dnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	na	na	na
Dieldrin	0.5	µg/kg	ne	ne	0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 2	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 2	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan sulfate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan sulfate	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	na	na	na
Endrin	0.5	µg/kg	ne	ne	0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	na	na	na
Endrin aldehyde	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin ketone	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	na	na	na
Endrin ketone	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
gnaBHC	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	na	<0.05	<0.05	<0.05	na	na	na
gnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor	0.05	mg/kg	ne	50	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor	0.5	µg/kg	ne	50000	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor epoxide	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor epoxide	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorobenzene	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorobenzene	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methoxychlor	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methoxychlor	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triazine Pesticides																										
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbamate Pesticides																										
3naHydroxy Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bendiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbaryl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methomyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Oxamyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thiodicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																										
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National . Ocean Disposal Guidelines for dredged materials

ne: not established na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH 17	BH 17	BH 17	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18
Sample ID						BH17 5.0-5.45	BH17 5.4-5.6	BH17 9.6-9.8	BH18 0.7-0.85	BH18 0.9-1.2	BH18 1.3-1.7	QC 34	QC 35	BH18 2.6-3.0	BH18 3.0-3.2	BH18 4.6-4.9	BH18 4.9-5.1	BH18 5.7-6.0	BH18 7.6-7.7	BH18 7.7-8.1	QC 36	QC 37	BH18 9.6-10.0	BH18 10.2-10.5	BH18 11.3-11.5	BH18 12-12.4	BH18 13.0-13.25	BH18 14.0-14.5	BH18 15.6-16.0	BH18 16.2-16.5
Date Sampled						18/08/2008	18/08/2008	18/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH17 5.0-5.45	BH17 5.4-5.6	BH17 9.6-9.8	BH18 0.7-0.85	BH18 0.9-1.2	BH18 1.3-1.7	BH18 1.3-1.7	BH18 1.3-1.7	BH18 2.6-3.0	BH18 3.0-3.2	BH18 4.6-4.9	BH18 4.9-5.1	BH18 5.7-6.0	BH18 7.6-7.7	BH18 7.7-8.1	BH18 7.7-8.1	BH18 7.7-8.1	BH18 9.6-10.0	BH18 10.2-10.5	BH18 11.3-11.5	BH18 12-12.4	BH18 13.0-13.25	BH18 14.0-14.5	BH18 15.6-16.0	BH18 16.2-16.5
Batch No.						EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																								
BTEX Compounds																													
Benzene	0.2	mg/kg	1	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Toluene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethylbenzene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
m&pnaXylene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
onaXylene	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Xylenes	0.4	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total BTEX	1	mg/kg	7	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Petroleum Hydrocarbons																													
C6-C9 fraction	2	mg/kg	100	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C10-C14 fraction	50	mg/kg	100	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C15-C28 fraction	100	mg/kg	1000	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C29-C36 fraction	100	mg/kg	1000	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C10-C36 fraction	250	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
C6-C36 fraction	252	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Polynuclear Aromatic Hydrocarbons																													
2-Methylnaphthalene	5	µg/kg	ne	ne	70	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	4	µg/kg	ne	ne	16	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Anthracene	0.5	mg/kg	ne	ne	0.085	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	4	µg/kg	ne	ne	85	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	4	µg/kg	ne	ne	261	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	4	µg/kg	1000	5000	430	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b&k)fluoranthene	8	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(e)pyrene	0.5	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(e)pyrene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chrysene	0.5	mg/kg	ne	ne	0.384	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	4	µg/kg	ne	ne	384	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Coronene	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	4	µg/kg	ne	ne	63	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	4	µg/kg	ne	ne	600	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluorene	0.5	mg/kg	ne	ne	0.019	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	4	µg/kg	ne	ne	19	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3nacd)pyrene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	5	µg/kg	ne	ne	160	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Perylene	4	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	4	µg/kg	ne	ne	240	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pyrene	0.5	mg/kg	ne	ne	0.665	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	4	µg/kg	ne	ne	665	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH 17	BH 17	BH 17	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18
Sample ID						BH17 5.0-5.45	BH17 5.4-5.6	BH17 9.6-9.8	BH18 0.7-0.85	BH18 0.9-1.2	BH18 1.3-1.7	QC 34	QC 35	BH18 2.6-3.0	BH18 3.0-3.2	BH18 4.6-4.9	BH18 4.9-5.1	BH18 5.7-6.0	BH18 7.6-7.7	BH18 7.7-8.1	QC 36	QC 37	BH18 9.6-10.0	BH18 10.2-10.5	BH18 11.3-11.5	BH18 12-12.4	BH18 13.0-13.25	BH18 14.0-14.5	BH18 15.6-16.0	BH18 16.2-16.5
Date Sampled						18/08/2008	18/08/2008	18/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH17 5.0-5.45	BH17 5.4-5.6	BH17 9.6-9.8	BH18 0.7-0.85	BH18 0.9-1.2	BH18 1.3-1.7	BH18 1.3-1.7	BH18 1.3-1.7	BH18 2.6-3.0	BH18 3.0-3.2	BH18 4.6-4.9	BH18 4.9-5.1	BH18 5.7-6.0	BH18 7.6-7.7	BH18 7.7-8.1	BH18 7.7-8.1	BH18 7.7-8.1	BH18 9.6-10.0	BH18 10.2-10.5	BH18 11.3-11.5	BH18 12-12.4	BH18 13.0-13.25	BH18 14.0-14.5	BH18 15.6-16.0	BH18 16.2-16.5
Batch No.						EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																									
Phenolic Compounds																														
2,4,5naTrichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,6naTrichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDimethylphenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,6naDichlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2naChlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2naNitrophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorona3naMethylphenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naNitrophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorophene	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
mnaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
onaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
pnaCresol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pentachlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenol	10	µg/kg	ne	42500000	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Tetrachlorophenol	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																														
Tributyltin	0.5	µgSn/kg	ne	ne	ne	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Polychlorinated Biphenyls																														
Aroclor 1016	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1221	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1232	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1242	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1248	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1254	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aroclor 1260	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	na	na	na	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Polychlorinated biphenyls	5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organophosphorus Pesticides (OP)																														
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Azinphos Methyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (E)	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (Z)	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorfenvinphos (Z)	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	10	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organochlorine Pesticides (OC)																														
4,4naDDD	0.05	mg/kg	ne	ne	0.002	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4,4naDDD	0.5	µg/kg	ne	ne	2	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4,4naDDE	0.05	mg/kg	ne	ne	0.0022	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 2: Borehole 1-18 Organics

Location						BH 17	BH 17	BH 17	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18
Sample ID						BH17 5.0-5.45	BH17 5.4-5.6	BH17 9.6-9.8	BH18 0.7-0.85	BH18 0.9-1.2	BH18 1.3-1.7	QC 34	QC 35	BH18 2.6-3.0	BH18 3.0-3.2	BH18 4.6-4.9	BH18 4.9-5.1	BH18 5.7-6.0	BH18 7.6-7.7	BH18 7.7-8.1	QC 36	QC 37	BH18 9.6-10.0	BH18 10.2-10.5	BH18 11.3-11.5	BH18 12-12.4	BH18 13.0-13.25	BH18 14.0-14.5	BH18 15.6-16.0	BH18 16.2-16.5
Date Sampled						18/08/2008	18/08/2008	18/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH17 5.0-5.45	BH17 5.4-5.6	BH17 9.6-9.8	BH18 0.7-0.85	BH18 0.9-1.2	BH18 1.3-1.7	BH18 1.3-1.7	BH18 1.3-1.7	BH18 2.6-3.0	BH18 3.0-3.2	BH18 4.6-4.9	BH18 4.9-5.1	BH18 5.7-6.0	BH18 7.6-7.7	BH18 7.7-8.1	BH18 7.7-8.1	BH18 7.7-8.1	BH18 9.6-10.0	BH18 10.2-10.5	BH18 11.3-11.5	BH18 12-12.4	BH18 13.0-13.25	BH18 14.0-14.5	BH18 15.6-16.0	BH18 16.2-16.5
Batch No.						EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																								
4,4naDDE	0.5	µg/kg	ne	ne	2.2	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4,4naDDT	0.2	mg/kg	0.2	ne	ne	na	na	na	<0.2	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4,4naDDT	0.5	µg/kg	200	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
anaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
anaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldrin	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldrin	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
bnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
bnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane na cis	0.05	mg/kg	ne	ne	0.5	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane na cis	0.5	µg/kg	ne	ne	0.0005	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane na trans	0.05	mg/kg	ne	ne	0.5	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane na trans	0.5	µg/kg	ne	ne	0.0005	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Chlordane	nana	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
dnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dieldrin	0.5	µg/kg	ne	ne	0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 1	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 2	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan 2	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan sulfate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endosulfan sulfate	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin	0.5	µg/kg	ne	ne	0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin aldehyde	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin ketone	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Endrin ketone	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
gnaBHC	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
gnaBHC	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor	0.05	mg/kg	ne	50	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor	0.5	µg/kg	ne	50000	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor epoxide	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Heptachlor epoxide	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorobenzene	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Hexachlorobenzene	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methoxychlor	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methoxychlor	0.5	µg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triazine Pesticides																														
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbamate Pesticides																														
3naHydroxy Carboturan	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Aldicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bendiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbaryl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbofuran	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methiocarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methomyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Oxamyl	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thiodicarb	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																														
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National . Ocean Disposal Guidelines for dredged materials

ne: not established na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19
Sample ID						BH19 0.3-0.5	BH19 0.5-0.9	QC 45	QC 46	BH19 1.3-1.43	BH19 14.9-15.14	BH19 16.5-16.95	BH19 18.4-18.83	BH 19 21.8-22.05	BH 19 22.05-22.25	BH 19 24.8-24.95	BH 19 24.95-25.1	BH 19 25.1-25.25	BH 19 26.2-26.65	BH 19 27.7-28.15	QC 51
Date Sampled						29/08/2008	29/08/2008	29/08/2008	29/08/2008	29/08/2008	1/09/2008	1/09/2008	1/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample
Primary Sample ID						BH19 0.3-0.5	BH19 0.5-0.9	BH19 0.5-0.9	BH19 0.5-0.9	BH19 1.3-1.43	BH19 14.9-15.14	BH19 16.5-16.95	BH19 18.4-18.83	BH 19 21.8-22.05	BH 19 22.05-22.25	BH 19 24.8-24.95	BH 19 24.95-25.1	BH 19 25.1-25.25	BH 19 26.2-26.65	BH 19 27.7-28.15	BH 19 27.7-28.15
Batch No.						EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811949_MRED	EB0811949_MRED	EB0811949_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																
Polynuclear Aromatic Hydrocarbons																					
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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
Anthracene	0.5	mg/kg	ne	ne	0.085	<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
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Chrysene	0.5	mg/kg	ne	ne	0.384	<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
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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
Fluorene	0.5	mg/kg	ne	ne	0.019	<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
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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
Pyrene	0.5	mg/kg	ne	ne	0.665	<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
Organochlorine Pesticides (OC)																					
4,4-DDD	0.05	mg/kg	ne	ne	0.002	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
4,4-DDE	0.05	mg/kg	ne	ne	0.0022	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
4,4-DDT	0.2	mg/kg	0.2	ne	ne	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane - cis	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Chlordane -trans	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Total Chlordane	nana	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Endrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Endrin ketone	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
g-BHC	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19
Sample ID						BH19 0.3-0.5	BH19 0.5-0.9	QC 45	QC 46	BH19 1.3-1.43	BH19 14.9-15.14	BH19 16.5-16.95	BH19 18.4-18.83	BH 19 21.8-22.05	BH 19 22.05-22.25	BH 19 24.8-24.95	BH 19 24.95-25.1	BH 19 25.1-25.25	BH 19 26.2-26.65	BH 19 27.7-28.15	QC 51
Date Sampled						29/08/2008	29/08/2008	29/08/2008	29/08/2008	29/08/2008	1/09/2008	1/09/2008	1/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample
Primary Sample ID						BH19 0.3-0.5	BH19 0.5-0.9	BH19 0.5-0.9	BH19 0.5-0.9	BH19 1.3-1.43	BH19 14.9-15.14	BH19 16.5-16.95	BH19 18.4-18.83	BH 19 21.8-22.05	BH 19 22.05-22.25	BH 19 24.8-24.95	BH 19 24.95-25.1	BH 19 25.1-25.25	BH 19 26.2-26.65	BH 19 27.7-28.15	BH 19 27.7-28.15
Batch No.						EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811949_MRED	EB0811949_MRED	EB0811949_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																
Organophosphorus Pesticides (OP)																					
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																					
Tributyltin	0.5	µgSn/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	na	na	na
Polychlorinated Biphenyls																					
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na	na	na	na	na
Triazine Pesticides																					
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																					
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

Location						BH 19	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20
Sample ID						QC 52	BH20 0-0.2	BH20 1.1-1.4	QC54	QC55	BH20 1.4-1.8	BH20 1.8-2.0	BH20 2.35-2.55	BH20 2.6-2.7	BH20 3.0-3.5	BH20 4.65-4.95	BH20 5.0-5.25	BH20 5.5-5.70	BH20 8.6-8.78	BH20 10.7-11.0
Date Sampled						2/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	9/09/2008
Sample Type						Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH 19 27.7-28.15	BH20 0-0.2	BH20 1.1-1.4	BH20 1.1-1.4	BH20 1.1-1.4	BH20 1.4-1.8	BH20 1.8-2.0	BH20 2.35-2.55	BH20 2.6-2.7	BH20 3.0-3.5	BH20 4.65-4.95	BH20 5.0-5.25	BH20 5.5-5.70	BH20 8.6-8.78	BH20 10.7-11.0
Batch No.						EB0812007_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812358_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**															
Polynuclear Aromatic Hydrocarbons																				
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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
Anthracene	0.5	mg/kg	ne	ne	0.085	<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
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Chrysene	0.5	mg/kg	ne	ne	0.384	<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
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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
Fluorene	0.5	mg/kg	ne	ne	0.019	<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
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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
Pyrene	0.5	mg/kg	ne	ne	0.665	<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
Organochlorine Pesticides (OC)																				
4,4-DDD	0.05	mg/kg	ne	ne	0.002	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
4,4-DDE	0.05	mg/kg	ne	ne	0.0022	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
4,4-DDT	0.2	mg/kg	0.2	ne	ne	na	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na
Chlordane - cis	0.05	mg/kg	ne	ne	0.5	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Chlordane -trans	0.05	mg/kg	ne	ne	0.5	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Total Chlordane	nana	mg/kg	ne	ne	ne	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Endrin	0.05	mg/kg	ne	ne	0.00002	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
Endrin ketone	0.05	mg/kg	ne	ne	ne	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na
g-BHC	0.05	mg/kg	ne	ne	ne	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH 19	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20
Sample ID						QC 52	BH20 0-0.2	BH20 1.1-1.4	QC54	QC55	BH20 1.4-1.8	BH20 1.8-2.0	BH20 2.35-2.55	BH20 2.6-2.7	BH20 3.0-3.5	BH20 4.65-4.95	BH20 5.0-5.25	BH20 5.5-5.70	BH20 8.6-8.78	BH20 10.7-11.0
Date Sampled						2/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	9/09/2008
Sample Type						Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH 19 27.7-28.15	BH20 0-0.2	BH20 1.1-1.4	BH20 1.1-1.4	BH20 1.1-1.4	BH20 1.4-1.8	BH20 1.8-2.0	BH20 2.35-2.55	BH20 2.6-2.7	BH20 3.0-3.5	BH20 4.65-4.95	BH20 5.0-5.25	BH20 5.5-5.70	BH20 8.6-8.78	BH20 10.7-11.0
Batch No.						EB0812007_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812358_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**															
Organophosphorus Pesticides (OP)																				
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																				
Tributyltin	0.5	µgSn/kg	ne	ne	ne	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na
Polychlorinated Biphenyls																				
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	na	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na
Triazine Pesticides																				
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																				
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Leve
Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na
Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Gu

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH 20	BH 20	BH 20	BH 20	BH 20	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21
Sample ID						BH20 12.1-12.53	BH20 12.5-13.0	QC58	QC59	BH20 13.0-13.2	BH21 1.5-1.6	BH21 1.65-1.90	BH21 2.0-2.9	QC62	QC63	BH21 2.5-2.9	BH21 2.95-3.2	QC64	QC65	BH21 4.0-4.45
Date Sampled						9/09/2008	9/09/2008	9/09/2008	9/09/2008	9/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample
Primary Sample ID						BH20 12.1-12.53	BH20 12.5-13.0	BH20 12.5-13.0	BH20 12.5-13.0	BH20 13.0-13.2	BH21 1.5-1.6	BH21 1.65-1.90	BH21 2.0-2.9	BH21 2.0-2.9	BH21 2.0-2.9	BH21 2.5-2.9	BH21 2.95-3.2	BH21 2.95-3.2	BH21 2.95-3.2	BH21 4.0-4.45
Batch No.						EB0812358_MRED	EB0812358_MRED	EB0812358_MRED	EB0812358_MRED	EB0812358_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**															
Polynuclear Aromatic Hydrocarbons																				
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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
Anthracene	0.5	mg/kg	ne	ne	0.085	<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
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Chrysene	0.5	mg/kg	ne	ne	0.384	<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
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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
Fluorene	0.5	mg/kg	ne	ne	0.019	<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
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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
Pyrene	0.5	mg/kg	ne	ne	0.665	<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
Organochlorine Pesticides (OC)																				
4,4-DDD	0.05	mg/kg	ne	ne	0.002	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na
4,4-DDE	0.05	mg/kg	ne	ne	0.0022	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na
4,4-DDT	0.2	mg/kg	0.2	ne	ne	na	na	na	na	na	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	na	na	na	na
Chlordane - cis	0.05	mg/kg	ne	ne	0.5	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na
Chlordane -trans	0.05	mg/kg	ne	ne	0.5	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na
Total Chlordane	nana	mg/kg	ne	ne	ne	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na
Endrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na
Endrin ketone	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na
g-BHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH 20	BH 20	BH 20	BH 20	BH 20	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21
Sample ID						BH20 12.1-12.53	BH20 12.5-13.0	QC58	QC59	BH20 13.0-13.2	BH21 1.5-1.6	BH21 1.65-1.90	BH21 2.0-2.9	QC62	QC63	BH21 2.5-2.9	BH21 2.95-3.2	QC64	QC65	BH21 4.0-4.45
Date Sampled						9/09/2008	9/09/2008	9/09/2008	9/09/2008	9/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample
Primary Sample ID						BH20 12.1-12.53	BH20 12.5-13.0	BH20 12.5-13.0	BH20 12.5-13.0	BH20 13.0-13.2	BH21 1.5-1.6	BH21 1.65-1.90	BH21 2.0-2.9	BH21 2.0-2.9	BH21 2.0-2.9	BH21 2.5-2.9	BH21 2.95-3.2	BH21 2.95-3.2	BH21 2.95-3.2	BH21 4.0-4.45
Batch No.						EB0812358_MRED	EB0812358_MRED	EB0812358_MRED	EB0812358_MRED	EB0812358_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**															
Organophosphorus Pesticides (OP)																				
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																				
Tributyltin	0.5	µgSn/kg	ne	ne	ne	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na
Polychlorinated Biphenyls																				
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na	na
Triazine Pesticides																				
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																				
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Leve
Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na
Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Gu

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH24	BH24	BH24	BH24
Sample ID						BH21 5.6-6.05	BH21 7.0-7.45	BH21 7.8-8.2	BH21 8.5-8.9	BH21 9.6-10.0	BH21 10.5-10.7	BH21 10.7-11.1	QC67	QC68	BH21 11.6-11.9	BH21_14.0-14.4	BH21_15.43-15.80	BH24 0.0-0.7	BH24 0.7-1.7	QC01	BH24 2.9-3.3
Date Sampled						20/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	22/09/2008	22/09/2008	30/07/2008	30/07/2008	30/07/2008	30/07/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Primary Sample
Primary Sample ID						BH21 5.6-6.05	BH21 7.0-7.45	BH21 7.8-8.2	BH21 8.5-8.9	BH21 9.6-10.0	BH21 10.5-10.7	BH21 10.7-11.1	BH21 10.7-11.1	BH21 10.7-11.1	BH21 11.6-11.9	BH21_14.0-14.4	BH21_15.43-15.80	BH24 0.0-0.7	BH24 0.7-1.7	BH24 0.7-1.7	BH24 2.9-3.3
Batch No.						EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813167_MRED	EB0813167_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																
Polynuclear Aromatic Hydrocarbons																					
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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
Anthracene	0.5	mg/kg	ne	ne	0.085	<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
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Chrysene	0.5	mg/kg	ne	ne	0.384	<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
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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
Fluorene	0.5	mg/kg	ne	ne	0.019	<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
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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
Pyrene	0.5	mg/kg	ne	ne	0.665	<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
Organochlorine Pesticides (OC)																					
4,4-DDD	0.05	mg/kg	ne	ne	0.002	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	na
4,4-DDE	0.05	mg/kg	ne	ne	0.0022	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	na
4,4-DDT	0.2	mg/kg	0.2	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.2	<0.2	<0.2	na
Chlordane - cis	0.05	mg/kg	ne	ne	0.5	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	na
Chlordane -trans	0.05	mg/kg	ne	ne	0.5	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	na
Total Chlordane	nana	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.43	<0.48	<0.49	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	na
Endrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	na
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	na
Endrin ketone	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	na
g-BHC	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	na

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH24	BH24	BH24	BH24
Sample ID						BH21 5.6-6.05	BH21 7.0-7.45	BH21 7.8-8.2	BH21 8.5-8.9	BH21 9.6-10.0	BH21 10.5-10.7	BH21 10.7-11.1	QC67	QC68	BH21 11.6-11.9	BH21_14.0-14.4	BH21_15.43-15.80	BH24 0.0-0.7	BH24 0.7-1.7	QC01	BH24 2.9-3.3
Date Sampled						20/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	22/09/2008	22/09/2008	30/07/2008	30/07/2008	30/07/2008	30/07/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Primary Sample
Primary Sample ID						BH21 5.6-6.05	BH21 7.0-7.45	BH21 7.8-8.2	BH21 8.5-8.9	BH21 9.6-10.0	BH21 10.5-10.7	BH21 10.7-11.1	BH21 10.7-11.1	BH21 10.7-11.1	BH21 11.6-11.9	BH21_14.0-14.4	BH21_15.43-15.80	BH24 0.0-0.7	BH24 0.7-1.7	BH24 0.7-1.7	BH24 2.9-3.3
Batch No.						EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813167_MRED	EB0813167_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																
Organophosphorus Pesticides (OP)																					
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																					
Tributyltin	0.5	µgSn/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	na
Polychlorinated Biphenyls																					
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.1	<0.1	<0.1	na
Triazine Pesticides																					
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	na
Phenoxyacetic Acid Herbicides																					
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.02	<0.02	<0.02	na

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Leve
Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na
Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Gu

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH24	BH24	BH24	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25B	BH25B	BH25B
Sample ID						BH24 4.0-4.4	BH24 5.5-5.8	BH24 6.6-6.8	BH25 2.4-3.0	QC03	QC04	BH25 3.0-3.8	BH25 3.8-4.4	BH25 4.4-5.0	BH25 5.4-5.8	BH25 5.8-6.2	BH25 9.45-9.75	BH25 9.75-9.9	BH25 11.9-12.3	BH25B 0.5-0.95	BH25B 1.0-1.45	BH25B 1.5-2.0
Date Sampled						30/07/2008	30/07/2008	30/07/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	5/08/2008	5/08/2008	5/08/2008	28/09/2008	28/09/2008	28/09/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH24 4.0-4.4	BH24 5.5-5.8	BH24 6.6-6.8	BH25 2.4-3.0	BH25 2.4-3.0	BH25 2.4-3.0	BH25 3.0-3.8	BH25 3.8-4.4	BH25 4.4-5.0	BH25 5.4-5.8	BH25 5.8-6.2	BH25 9.45-9.75	BH25 9.75-9.9	BH25 11.9-12.3	BH25B 0.5-0.95	BH25B 1.0-1.45	BH25B 1.5-2.0
Batch No.						EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810571_MRED	EB0810571_MRED	EB0810571_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																	
Polynuclear Aromatic Hydrocarbons																						
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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	<0.5
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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	<0.5
Anthracene	0.5	mg/kg	ne	ne	0.085	<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	<0.5
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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	<0.5
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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	<0.5
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<0.5
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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	<0.5
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<0.5
Chrysene	0.5	mg/kg	ne	ne	0.384	<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	<0.5
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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	<0.5
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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	<0.5
Fluorene	0.5	mg/kg	ne	ne	0.019	<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	<0.5
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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	<0.5
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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	<0.5
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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	<0.5
Pyrene	0.5	mg/kg	ne	ne	0.665	<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	<0.5
Organochlorine Pesticides (OC)																						
4,4-DDD	0.05	mg/kg	ne	ne	0.002	na	na	na	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05
4,4-DDE	0.05	mg/kg	ne	ne	0.0022	na	na	na	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05
4,4-DDT	0.2	mg/kg	0.2	ne	ne	na	na	na	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	<0.2	<0.2	<0.2
Chlordane - cis	0.05	mg/kg	ne	ne	0.5	na	na	na	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05
Chlordane -trans	0.05	mg/kg	ne	ne	0.5	na	na	na	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05
Total Chlordane	nana	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05
Endrin	0.05	mg/kg	ne	ne	0.00002	na	na	na	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05
Endrin ketone	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05
g-BHC	0.05	mg/kg	ne	ne	ne	na	na	na	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH24	BH24	BH24	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25B	BH25B	BH25B
Sample ID						BH24 4.0-4.4	BH24 5.5-5.8	BH24 6.6-6.8	BH25 2.4-3.0	QC03	QC04	BH25 3.0-3.8	BH25 3.8-4.4	BH25 4.4-5.0	BH25 5.4-5.8	BH25 5.8-6.2	BH25 9.45-9.75	BH25 9.75-9.9	BH25 11.9-12.3	BH25B 0.5-0.95	BH25B 1.0-1.45	BH25B 1.5-2.0
Date Sampled						30/07/2008	30/07/2008	30/07/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	5/08/2008	5/08/2008	5/08/2008	28/09/2008	28/09/2008	28/09/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH24 4.0-4.4	BH24 5.5-5.8	BH24 6.6-6.8	BH25 2.4-3.0	BH25 2.4-3.0	BH25 2.4-3.0	BH25 3.0-3.8	BH25 3.8-4.4	BH25 4.4-5.0	BH25 5.4-5.8	BH25 5.8-6.2	BH25 9.45-9.75	BH25 9.75-9.9	BH25 11.9-12.3	BH25B 0.5-0.95	BH25B 1.0-1.45	BH25B 1.5-2.0
Batch No.						EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810571_MRED	EB0810571_MRED	EB0810571_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																	
Organophosphorus Pesticides (OP)																						
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																						
Tributyltin	0.5	µgSn/kg	ne	ne	ne	na	na	na	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5
Polychlorinated Biphenyls																						
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	na	na	na	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na	<0.1	<0.1	<0.1
Triazine Pesticides																						
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																						
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Leve
Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na
Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Gu

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH27	BH27	BH27	BH27
Sample ID						BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45	BH26 3.5-3.9	QC15	QC16	BH26 4.0-4.2	BH26 5.6-5.7	BH26 13.0-13.12	BH26 15.95-16.26	BH27 0.4-0.8	BH27 0.85-1.1	QC77	QC78
Date Sampled						12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	4/10/2008	4/10/2008	4/10/2008	4/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample
Primary Sample ID						BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45	BH26 3.5-3.9	BH26 3.5-3.9	BH26 3.5-3.9	BH26 4.0-4.2	BH26 5.6-5.7	BH26 13.0-13.12	BH26 15.95-16.26	BH27 0.4-0.8	BH27 0.85-1.1	BH27 0.85-1.1	BH27 0.85-1.1
Batch No.						EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																
Polynuclear Aromatic Hydrocarbons																					
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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
Anthracene	0.5	mg/kg	ne	ne	0.085	<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
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Chrysene	0.5	mg/kg	ne	ne	0.384	<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
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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
Fluorene	0.5	mg/kg	ne	ne	0.019	<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
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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
Pyrene	0.5	mg/kg	ne	ne	0.665	<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
Organochlorine Pesticides (OC)																					
4,4-DDD	0.05	mg/kg	ne	ne	0.002	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
4,4-DDE	0.05	mg/kg	ne	ne	0.0022	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
4,4-DDT	0.2	mg/kg	0.2	ne	ne	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	<0.2	<0.2	<0.2	<0.2
Chlordane - cis	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
Chlordane -trans	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
Total Chlordane	nana	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
Endrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
Endrin ketone	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
g-BHC	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH27	BH27	BH27	BH27
Sample ID						BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45	BH26 3.5-3.9	QC15	QC16	BH26 4.0-4.2	BH26 5.6-5.7	BH26 13.0-13.12	BH26 15.95-16.26	BH27 0.4-0.8	BH27 0.85-1.1	QC77	QC78
Date Sampled						12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	4/10/2008	4/10/2008	4/10/2008	4/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample
Primary Sample ID						BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45	BH26 3.5-3.9	BH26 3.5-3.9	BH26 3.5-3.9	BH26 4.0-4.2	BH26 5.6-5.7	BH26 13.0-13.12	BH26 15.95-16.26	BH27 0.4-0.8	BH27 0.85-1.1	BH27 0.85-1.1	BH27 0.85-1.1
Batch No.						EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																
Organophosphorus Pesticides (OP)																					
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	<0.05	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																					
Tributyltin	0.5	µgSn/kg	ne	ne	ne	<0.5	<0.5	<0.5	<0.5	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5
Polychlorinated Biphenyls																					
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na	<0.1	<0.1	<0.1	<0.1
Triazine Pesticides																					
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																					
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Leve
Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na
Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Gu

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH27	BH27	BH27	BH27	BH28	BH28	BH28	BH28	BH28	BH28	BH28	BH28	BH29	BH29	BH29	BH29
Sample ID						BH27 1.6-1.8	BH27 2.0-2.3	BH27 2.5-3.0	BH27 3.7-4.35	BH28 2.4-3.4	QC72	QC73	BH28 3.5-4.4	BH28 5.3-5.7	BH28 5.9-6.3	QC74	QC75	BH29 0.2-0.5	BH29 0.5-0.7	BH29 0.7-1.0	BH29 1.0-1.5
Date Sampled						4/10/2008	4/10/2008	4/10/2008	4/10/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH27 1.6-1.8	BH27 2.0-2.3	BH27 2.5-3.0	BH27 3.7-4.35	BH28 2.4-3.4	BH28 2.4-3.4	BH28 2.4-3.4	BH28 3.5-4.4	BH28 5.3-5.7	BH28 5.9-6.3	BH28 5.9-6.3	BH28 5.9-6.3	BH29 0.2-0.5	BH29 0.5-0.7	BH29 0.7-1.0	BH29 1.0-1.5
Batch No.						EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																
Polynuclear Aromatic Hydrocarbons																					
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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
Anthracene	0.5	mg/kg	ne	ne	0.085	<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
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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
Chrysene	0.5	mg/kg	ne	ne	0.384	<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
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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
Fluorene	0.5	mg/kg	ne	ne	0.019	<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
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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
Pyrene	0.5	mg/kg	ne	ne	0.665	<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
Organochlorine Pesticides (OC)																					
4,4-DDD	0.05	mg/kg	ne	ne	0.002	<0.05	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
4,4-DDE	0.05	mg/kg	ne	ne	0.0022	<0.05	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
4,4-DDT	0.2	mg/kg	0.2	ne	ne	<0.2	na	na	na	na	na	na	na	na	na	na	na	<0.2	<0.2	<0.2	<0.2
Chlordane - cis	0.05	mg/kg	ne	ne	0.5	<0.05	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
Chlordane -trans	0.05	mg/kg	ne	ne	0.5	<0.05	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
Total Chlordane	nana	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
Dieldrin	0.05	mg/kg	ne	ne	0.00002	<0.05	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
Endrin	0.05	mg/kg	ne	ne	0.00002	<0.05	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	<0.05	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
Endrin ketone	0.05	mg/kg	ne	ne	ne	<0.05	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05
g-BHC	0.05	mg/kg	ne	ne	ne	<0.05	na	na	na	na	na	na	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH27	BH27	BH27	BH27	BH28	BH28	BH28	BH28	BH28	BH28	BH28	BH28	BH29	BH29	BH29	BH29
Sample ID						BH27 1.6-1.8	BH27 2.0-2.3	BH27 2.5-3.0	BH27 3.7-4.35	BH28 2.4-3.4	QC72	QC73	BH28 3.5-4.4	BH28 5.3-5.7	BH28 5.9-6.3	QC74	QC75	BH29 0.2-0.5	BH29 0.5-0.7	BH29 0.7-1.0	BH29 1.0-1.5
Date Sampled						4/10/2008	4/10/2008	4/10/2008	4/10/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH27 1.6-1.8	BH27 2.0-2.3	BH27 2.5-3.0	BH27 3.7-4.35	BH28 2.4-3.4	BH28 2.4-3.4	BH28 2.4-3.4	BH28 3.5-4.4	BH28 5.3-5.7	BH28 5.9-6.3	BH28 5.9-6.3	BH28 5.9-6.3	BH29 0.2-0.5	BH29 0.5-0.7	BH29 0.7-1.0	BH29 1.0-1.5
Batch No.						EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																
Organophosphorus Pesticides (OP)																					
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																					
Tributyltin	0.5	µgSn/kg	ne	ne	ne	<0.5	na	na	na	na	na	na	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5
Polychlorinated Biphenyls																					
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	<0.1	na	na	na	na	na	na	na	na	na	na	na	<0.1	<0.1	<0.1	<0.1
Triazine Pesticides																					
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																					
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Leve
Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na
Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Gu

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH29	BH29	BH29	BH29	BH29	BH29	BH29	BH29	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30
Sample ID						QC80	QC81	BH29 1.6-2.0	BH29 2.2-2.7	QC82	QC83	BH29 4.1-4.4	BH29 7.2-7.45	BH30 0.0-0.2	BH30 0.6-0.9	BH30 1.0-1.45	QC85	QC86	BH30 1.3-2.0	BH30 2.1-3.0	BH30 3.8-4.8	QC87	QC88	BH30 5.2-5.8
Date Sampled						8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008
Sample Type						Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample
Primary Sample ID						BH29 1.0-1.5	BH29 1.0-1.5	BH29 1.6-2.0	BH29 2.2-2.7	BH29 2.2-2.7	BH29 2.2-2.7	BH29 4.1-4.4	BH29 7.2-7.45	BH30 0.0-0.2	BH30 0.6-0.9	BH30 1.0-1.45	BH30 1.0-1.45	BH30 1.0-1.45	BH30 1.3-2.0	BH30 2.1-3.0	BH30 3.8-4.8	BH30 3.8-4.8	BH30 3.8-4.8	BH30 5.2-5.8
Batch No.						EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Polynuclear Aromatic Hydrocarbons																								
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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	<0.5	<0.5
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Anthracene	0.5	mg/kg	ne	ne	0.085	<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	<0.5	<0.5	<0.5
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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	<0.5	<0.5	<0.5
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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	<0.5	<0.5	<0.5
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Chrysene	0.5	mg/kg	ne	ne	0.384	<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	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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	<0.5	<0.5	<0.5
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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	<0.5	<0.5	<0.5
Fluorene	0.5	mg/kg	ne	ne	0.019	<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	<0.5	<0.5	<0.5
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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	<0.5	<0.5	<0.5
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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	<0.5	<0.5	<0.5
Pyrene	0.5	mg/kg	ne	ne	0.665	<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	<0.5	<0.5	<0.5
Organochlorine Pesticides (OC)																								
4,4-DDD	0.05	mg/kg	ne	ne	0.002	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na
4,4-DDE	0.05	mg/kg	ne	ne	0.0022	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na
4,4-DDT	0.2	mg/kg	0.2	ne	ne	<0.2	<0.2	<0.2	na	na	na	na	na	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	na	na	na	na	na
Chlordane - cis	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na
Chlordane -trans	0.05	mg/kg	ne	ne	0.5	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na
Total Chlordane	nana	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na
Endrin	0.05	mg/kg	ne	ne	0.00002	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na
Endrin ketone	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na
g-BHC	0.05	mg/kg	ne	ne	ne	<0.05	<0.05	<0.05	na	na	na	na	na	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH29	BH29	BH29	BH29	BH29	BH29	BH29	BH29	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30
Sample ID						QC80	QC81	BH29 1.6-2.0	BH29 2.2-2.7	QC82	QC83	BH29 4.1-4.4	BH29 7.2-7.45	BH30 0.0-0.2	BH30 0.6-0.9	BH30 1.0-1.45	QC85	QC86	BH30 1.3-2.0	BH30 2.1-3.0	BH30 3.8-4.8	QC87	QC88	BH30 5.2-5.8
Date Sampled						8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008
Sample Type						Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample
Primary Sample ID						BH29 1.0-1.5	BH29 1.0-1.5	BH29 1.6-2.0	BH29 2.2-2.7	BH29 2.2-2.7	BH29 2.2-2.7	BH29 4.1-4.4	BH29 7.2-7.45	BH30 0.0-0.2	BH30 0.6-0.9	BH30 1.0-1.45	BH30 1.0-1.45	BH30 1.0-1.45	BH30 1.3-2.0	BH30 2.1-3.0	BH30 3.8-4.8	BH30 3.8-4.8	BH30 3.8-4.8	BH30 5.2-5.8
Batch No.						EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																		
Organophosphorus Pesticides (OP)																							
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																							
Tributyltin	0.5	µgSn/kg	ne	ne	ne	<0.5	<0.5	<0.5	na	na	na	na	na	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	na	na	na	na
Polychlorinated Biphenyls																							
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	na	na	na	na	na	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na	na
Triazine Pesticides																							
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																							
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Leve
Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na
Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Gu

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH30	BH30	BH31	BH31	BH31	BH31	BH31	BH31	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32
Sample ID						BH30 6.0-6.15	BH30 8.3-8.75	BH31 0.18-0.20	BH31 0.2-0.3	BH31 0.3-0.6	BH31 2.0-2.3	BH31 3.6-3.9	BH31 5.0-5.35	BH32 0.7-1.0	BH32 1.5-1.8	QC 91	BH32 2.5-3.2	QC 92	QC 93	BH32 3.8-4.1	BH32 4.7-5.1	BH32 6.2-6.65	BH32 8.1-8.4	BH32 9.3-9.6
Date Sampled						9/10/2008	9/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH30 6.0-6.15	BH30 8.3-8.75	BH31 0.18-0.20	BH31 0.2-0.3	BH31 0.3-0.6	BH31 2.0-2.3	BH31 3.6-3.9	BH31 5.0-5.35	BH32 0.7-1.0	BH32 1.5-1.8	BH32 1.5-1.8	BH32 2.5-3.2	BH32 2.5-3.2	BH32 2.5-3.2	BH32 3.8-4.1	BH32 4.7-5.1	BH32 6.2-6.65	BH32 8.1-8.4	BH32 9.3-9.6
Batch No.						EB0814114_MRED	EB0814114_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Polynuclear Aromatic Hydrocarbons																								
Acenaphthene	0.5	mg/kg	ne	ne	0.016	<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	<0.5	<0.5	<0.5
Acenaphthylene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Anthracene	0.5	mg/kg	ne	ne	0.085	<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	<0.5	<0.5	<0.5
Benzo(a)anthracene	0.5	mg/kg	ne	ne	0.261	<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	<0.5	<0.5	<0.5
Benzo(a)pyrene	0.5	mg/kg	1	5	0.43	<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	<0.5	<0.5	<0.5
Benzo(b&k)fluoranthene	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Chrysene	0.5	mg/kg	ne	ne	0.384	<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	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	0.5	mg/kg	ne	ne	0.063	<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	<0.5	<0.5	<0.5
Fluoranthene	0.5	mg/kg	ne	ne	0.6	<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	<0.5	<0.5	<0.5
Fluorene	0.5	mg/kg	ne	ne	0.019	<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	<0.5	<0.5	<0.5
Indeno(1,2,3nacd)pyrene	0.5	mg/kg	ne	ne	ne	<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	<0.5	<0.5	<0.5
Naphthalene	0.5	mg/kg	ne	ne	0.16	<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	<0.5	<0.5	<0.5
Phenanthrene	0.5	mg/kg	ne	ne	0.24	<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	<0.5	<0.5	<0.5
Pyrene	0.5	mg/kg	ne	ne	0.665	<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	<0.5	<0.5	<0.5
Organochlorine Pesticides (OC)																								
4,4-DDD	0.05	mg/kg	ne	ne	0.002	na	na	<0.05	<0.05	<0.05	na	na	na	<0.05	<0.05	<0.05	na	<0.05	<0.05	na	na	na	na	na
4,4-DDE	0.05	mg/kg	ne	ne	0.0022	na	na	<0.05	<0.05	<0.05	na	na	na	<0.05	<0.05	<0.05	na	<0.05	<0.05	na	na	na	na	na
4,4-DDT	0.2	mg/kg	0.2	ne	ne	na	na	<0.2	<0.2	<0.2	na	na	na	<0.2	<0.2	<0.2	na	<0.2	<0.2	na	na	na	na	na
Chlordane - cis	0.05	mg/kg	ne	ne	0.5	na	na	<0.05	<0.05	<0.05	na	na	na	<0.05	<0.05	<0.05	na	<0.05	<0.05	na	na	na	na	na
Chlordane -trans	0.05	mg/kg	ne	ne	0.5	na	na	<0.05	<0.05	<0.05	na	na	na	<0.05	<0.05	<0.05	na	<0.05	<0.05	na	na	na	na	na
Total Chlordane	nana	mg/kg	ne	ne	ne	na	na	<0.05	<0.05	<0.05	na	na	na	<0.05	<0.05	<0.05	na	<0.05	<0.05	na	na	na	na	na
Dieldrin	0.05	mg/kg	ne	ne	0.00002	na	na	<0.05	<0.05	<0.05	na	na	na	<0.05	<0.05	<0.05	na	<0.05	<0.05	na	na	na	na	na
Endrin	0.05	mg/kg	ne	ne	0.00002	na	na	<0.05	<0.05	<0.05	na	na	na	<0.05	<0.05	<0.05	na	<0.05	<0.05	na	na	na	na	na
Endrin aldehyde	0.05	mg/kg	ne	ne	ne	na	na	<0.05	<0.05	<0.05	na	na	na	<0.05	<0.05	<0.05	na	<0.05	<0.05	na	na	na	na	na
Endrin ketone	0.05	mg/kg	ne	ne	ne	na	na	<0.05	<0.05	<0.05	na	na	na	<0.05	<0.05	<0.05	na	<0.05	<0.05	na	na	na	na	na
g-BHC	0.05	mg/kg	ne	ne	ne	na	na	<0.05	<0.05	<0.05	na	na	na	<0.05	<0.05	<0.05	na	<0.05	<0.05	na	na	na	na	na

URS 2008 Santos GLNG Analytical Results Tables
Table 3: Borehole 19-32 Organics

Location						BH30	BH30	BH31	BH31	BH31	BH31	BH31	BH31	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32
Sample ID						BH30 6.0-6.15	BH30 8.3-8.75	BH31 0.18-0.20	BH31 0.2-0.3	BH31 0.3-0.6	BH31 2.0-2.3	BH31 3.6-3.9	BH31 5.0-5.35	BH32 0.7-1.0	BH32 1.5-1.8	QC 91	BH32 2.5-3.2	QC 92	QC 93	BH32 3.8-4.1	BH32 4.7-5.1	BH32 6.2-6.65	BH32 8.1-8.4	BH32 9.3-9.6
Date Sampled						9/10/2008	9/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH30 6.0-6.15	BH30 8.3-8.75	BH31 0.18-0.20	BH31 0.2-0.3	BH31 0.3-0.6	BH31 2.0-2.3	BH31 3.6-3.9	BH31 5.0-5.35	BH32 0.7-1.0	BH32 1.5-1.8	BH32 1.5-1.8	BH32 2.5-3.2	BH32 2.5-3.2	BH32 2.5-3.2	BH32 3.8-4.1	BH32 4.7-5.1	BH32 6.2-6.65	BH32 8.1-8.4	BH32 9.3-9.6
Batch No.						EB0814114_MRED	EB0814114_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Organophosphorus Pesticides (OP)																								
Azinphos Methyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Bromophosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Carbophenothion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chlorpyrifosnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
DemetonnaSnamethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Diazinon	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichlorvos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dimethoate	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ethion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenamiphos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fenthion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Malathion	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Monocrotophos	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathion	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Parathionnamethyl	0.2	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pirimphosnaethyl	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Prothiofos	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Organotin Compounds																								
Tributyltin	0.5	µgSn/kg	ne	ne	ne	na	na	<0.5	na	<0.5	na	na	na	<0.5	<0.5	<0.5	na	<0.5	<0.5	na	na	na	na	na
Polychlorinated Biphenyls																								
Polychlorinated biphenyls	0.1	mg/kg	ne	ne	ne	na	na	<0.1	<0.1	<0.1	na	na	na	<0.1	<0.1	<0.1	na	<0.1	<0.1	na	na	na	na	na
Triazine Pesticides																								
Atrazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Simazine	0.05	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phenoxyacetic Acid Herbicides																								
2,4,5naT	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4,5naTP (Silvex)	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naD	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
2,4naDP	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
4naChlorophenoxy acetic acid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Clopyralid	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dicamba	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Fluroxypyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPA	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MCPB	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mecoprop	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Picloram	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Triclopyr	0.02	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Leve
Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na
Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Gu

URS 2008 Santos GLNG Analytical Results Tables
Table 4: Borehole 1-18 Particle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH01	BH01	BH01	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02	BH02B	BH02B	BH02B	BH02B
Sample ID						GC/GLNG #1_0-0.5	GC/GLNG #1_0.5-1.0	GC/GLNG #1_3.6-4.2	BH02 0.3-1.9	QC07	QC08	BH02 1.9-2.3	QC09	QC10	BH02 2.4-3.2	QC11	QC12	BH02 4.2-4.6	BH02 5.0-5.4	BH02 6.2-6.6	BH02B 7.0-7.55	BH02B 7.6-7.8	BH02B 7.8-8.0	BH02B 9.3-9.4
Date Sampled						7/06/2008	7/06/2008	7/06/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	10/08/2008	11/08/2008	11/08/2008	11/08/2008	11/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #1_0-0.5	GC/GLNG #1_0.5-1.0	GC/GLNG #1_3.6-4.2	BH02 0.3-1.9	BH02 0.3-1.9	BH02 0.3-1.9	BH02 1.9-2.3	BH02 1.9-2.3	BH02 1.9-2.3	BH02 2.4-3.2	BH02 2.4-3.2	BH02 2.4-3.2	BH02 4.2-4.6	BH02 5.0-5.4	BH02 6.2-6.6	BH02B 7.0-7.55	BH02B 7.6-7.8	BH02B 7.8-8.0	BH02B 9.3-9.4
Batch No.						EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810762_MRED	EB0810824_MRED	EB0810824_MRED	EB0810824_MRED	EB0810824_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Moisture Content																								
Moisture Content	1	%	ne	ne	ne	**41.1**	**36.2**	**14.8**	**23.3**	**20.3**	**20.1**	**26.5**	**23.5**	**27.7**	**18.5**	**16.3**	**16.7**	**16.3**	**16.6**	**20.8**	**18.1**	**18.3**	**15**	**6.6**
Physico-Chemical Parameters																								
Clay (<2 µm)	1	%	ne	ne	ne	17%	17%	28%	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Silt (2na63 µm)	1	%	ne	ne	ne	14%	11%	31%	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Sand (63µmna2mm)	1	%	ne	ne	ne	na	na	na	78%	91%	84%	55%	59%	51%	35%	35%	37%	38%	38%	9%	5%	34%	13%	na
Gravel (>2mm)	1	%	ne	ne	ne	na	na	na	4%	1%	3%	14%	10%	14%	0%	0%	0%	0%	0%	0%	0%	8%	73%	na
Metals (Total)																								
Aluminium	50	mg/kg	ne	ne	ne	**4630**	**7290**	**5690**	**2810**	**1580**	**1430**	**5210**	**4710**	**5900**	na	na	na	**6190**	**4380**	**9810**	**3330**	na	**1200**	**1460**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**8**
Arsenic	5	mg/kg	20	500	20	**7**	**15**	**16**	**6**	<5	<5	**10**	**11**	**12**	<5	<5	<5	<5	<5	<5	<5	<5	**5**	<6
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3
Chromium	2	mg/kg	50	500	80	**10**	**18**	**14**	**8**	**6**	**6**	**11**	**12**	**13**	**29**	**18**	**15**	**13**	**7**	**16**	**5**	**3**	**3**	**11**
Copper	5	mg/kg	60	5000	65	**8**	**11**	**11**	**6**	<5	**5**	**11**	**9**	**11**	**31**	**35**	**31**	**26**	**12**	**38**	**7**	**7**	**7**	**15**
Iron	50	mg/kg	ne	ne	ne	**12100**	**38200**	**28000**	**12500**	**6660**	**6520**	**14600**	**13800**	**15400**	na	na	na	**20700**	**8780**	**24900**	**2250**	na	**3140**	**4720**
Lead	5	mg/kg	300	1500	50	<5	**9**	**10**	<5	<5	<5	**5**	<5	**5**	<5	**6**	**6**	<5	<5	**6**	<5	<5	**6**	<6
Manganese	5	mg/kg	500	7500	ne	**374**	**546**	**119**	**184**	**226**	**263**	**1110**	**393**	**414**	na	na	na	**1340**	**81**	**310**	**87**	na	**8**	**22**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3
Nickel	2	mg/kg	60	3000	21	**6**	**15**	**5**	**4**	**4**	**4**	**7**	**8**	**8**	**20**	**16**	**15**	**12**	**4**	**13**	<2	<2	<2	<6
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<6
Total Cyanide	1	mg/kg	ne	ne	ne	**3**	**2**	<1	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**21**	**33**	**24**	**12**	**7**	**7**	**22**	**17**	**20**	**40**	**40**	**34**	**31**	**20**	**47**	**5**	<5	<5	**14**
Nutrients																								
Total Carbon	0.02	%	ne	ne	ne	na	na	na	**0.56**	**0.3**	**0.38**	**0.9**	**0.95**	**1.27**	**0.06**	**0.04**	**0.05**	**0.04**	**0.04**	**0.2**	**0.03**	**0.12**	**0.03**	**0.05**
Total Organic Carbon	0.02	%	ne	ne	ne	**0.65**	**0.53**	**0.07**	**0.14**	**0.07**	**0.05**	**0.43**	**0.27**	**0.44**	**0.06**	**0.04**	**0.05**	**0.04**	**0.04**	**0.18**	**0.03**	**0.06**	**0.03**	**0.03**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	**0.42**	**0.23**	**0.33**	**0.47**	**0.68**	**0.83**	<0.02	<0.02	<0.02	<0.02	<0.02	**0.02**	<0.02	**0.06**	<0.02	**0.02**
Nitrate and Nitrite (as N)	0.1	mg/kg	ne	ne	ne	**0.1**	<0.1	<0.1	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrite (as N)	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ammonia as N	20	mg/kg	ne	ne	ne	<20	<20	<20	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrate (as N)	0.1	mg/kg	ne	ne	ne	**0.1**	<0.1	<0.1	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Kjeldahl Nitrogen as N	20	mg/kg	ne	ne	ne	**660**	**620**	**100**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Nitrogen as N	20	mg/kg	ne	ne	ne	**660**	**620**	**100**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phosphorus (total)	20	mg/kg	ne	ne	ne	**315**	**300**	**281**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																								
Una238[1]		Bq/g	ne	ne	35	na	na	na	**0.010±0.003**	**0.012±0.005**	**0.013±0.007**	**0.011±0.004**	**0.008±0.003**	**0.015±0.004**	**0.015±0.004**	**0.015±0.004**	**0.011±0.004**	**0.013±0.006**	**0.023±0.004**	**0.015±0.004**	**0.042±0.004**	**0.036±0.005**	**0.008±0.003**	**0.013±0.003**
Pbna210		Bq/g	ne	ne		na	na	na	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**0.040±0.020**	**0.040±0.020**	**N/D**	**N/D**
Thna232[2]		Bq/g	ne	ne		na	na	na	**0.013±0.009**	**0.020±0.010**	**0.020±0.010**	**<0.020**	**0.013±0.008**	**<0.020**	**<0.020**	**0.020±0.009**	**0.020±0.010**	**0.020±0.010**	**<0.020**	**0.020±0.010**	**0.035±0.008**	**0.029±0.008**	**0.014±0.008**	**0.018±0.008**
Rana224[3]		Bq/g	ne	ne		na	na	na	**0.010±0.003**	**0.013±0.003**	**0.011±0.005**	**0.015±0.004**	**0.014±0.003**	**0.017±0.004**	**0.017±0.003**	**0.015±0.004**	**0.014±0.004**	**0.016±0.004**	**0.022±0.003**	**0.019±0.004**	**0.031±0.003**	**0.032±0.003**	**0.012±0.003**	**0.015±0.003**
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	**0.340±0.050**	**0.340±0.060**	**0.420±0.090**	**0.450±0.070**	**0.330±0.040**	**0.370±0.060**	**0.280±0.060**	**0.210±0.050**	**0.200±0.060**	**0.390±0.070**	**0.230±0.050**	**0290±0.060**	**0.250±0.040**	**0.200±0.040**	**0.210±0.040**	**0.110±0.040**

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 4: Borehole 1-18 Particle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH03	BH03	BH03	BH03	BH03	BH04	BH04	BH04	BH04	BH04	BH04	BH04	BH04	BH05	BH05	BH05	BH06	BH06	BH06
Sample ID						GC/GLNG #3_0-0.5	GC/GLNG #3_0-0.5	GC/GLNG #3_0.5-1.0	GC/GLNG #3_0.9-1.2	GC/GLNG #3_6.0-6.9	BH4 0.0-0.3	BH4 1.5-2.0	QC18	QC19	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95	BH4 3.2-3.7	GC/GLNG #5_0-0.5	GC/GLNG #5_0.5-1.0	GC/GLNG #5_5.5-6.5	GC/GLNG #6_0-0.5	GC/GLNG #6_0.5-1.0	GC/GLNG #6_4.6-5.6
Date Sampled						8/06/2008	8/06/2008	8/06/2008	8/06/2008	8/06/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	14/08/2008	9/06/2008	9/06/2008	9/06/2008	6/06/2008	6/06/2008	6/06/2008
Sample Type						Primary Sample	Duplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #3_0-0.5	GC/GLNG #3_0-0.5	GC/GLNG #3_0.5-1.0	GC/GLNG #3_0.9-1.2	GC/GLNG #3_6.0-6.9	BH4 0.0-0.3	BH4 1.5-2.0	BH4 1.5-2.0	BH4 1.5-2.0	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95	BH4 3.2-3.7	GC/GLNG #5_0-0.5	GC/GLNG #5_0.5-1.0	GC/GLNG #5_5.5-6.5	GC/GLNG #6_0-0.5	GC/GLNG #6_0.5-1.0	GC/GLNG #6_4.6-5.6
Batch No.						EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807695_ MRED_VER	EB0807648_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0811004_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Moisture Content																								
Moisture Content	1	%	ne	ne	ne	**33.8**	**37.1**	**23.9**	**17.6**	**28.7**	**25.2**	**11**	**12.1**	**18**	**20.4**	**19.9**	**18.5**	**12.9**	**32.2**	**34.9**	**15.5**	**44.1**	**37.4**	**16.8**
Physico-Chemical Parameters																								
Clay (<2 µm)	1	%	ne	ne	ne	14%	14%	7%	na	15%	12%	25%	31%	35%	39%	29%	27%	19%	23%	22%	6%	19%	23%	1%
Silt (2na63 µm)	1	%	ne	ne	ne	7%	8%	3%	na	22%	7%	45%	39%	35%	38%	31%	37%	45%	15%	16%	5%	16%	18%	2%
Sand (63µmna2mm)	1	%	ne	ne	ne	na	na	na	na	na	47%	12%	19%	12%	19%	25%	34%	9%	na	na	na	na	na	na
Gravel (>2mm)	1	%	ne	ne	ne	na	na	na	na	na	34%	18%	11%	18%	4%	15%	2%	27%	na	na	na	na	na	na
Metals (Total)																								
Aluminium	50	mg/kg	ne	ne	ne	**4240**	**9570**	**3770**	na	**4040**	**4600**	**4030**	**3960**	**3800**	**3200**	na	na	**4520**	**7010**	**7630**	**2830**	**6880**	**8410**	**4060**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	na	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**11**	**13**	**12**	na	<5	**13**	**5**	<5	<5	<5	<5	**6**	<5	**8**	**9**	<5	**12**	**10**	**6**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	na	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**12**	**19**	**10**	na	**6**	**13**	**3**	**4**	**3**	<2	**9**	**4**	**3**	**14**	**15**	**6**	**13**	**16**	**8**
Copper	5	mg/kg	60	5000	65	**7**	**15**	**6**	na	**6**	**8**	**14**	**11**	<5	<5	**11**	**15**	**16**	**12**	**14**	**18**	**17**	**18**	**21**
Iron	50	mg/kg	ne	ne	ne	**14800**	**21300**	**14800**	na	**5570**	**19500**	**20400**	**17200**	**6170**	**2210**	na	na	**19100**	**16400**	**17200**	**11300**	**21600**	**19600**	**21500**
Lead	5	mg/kg	300	1500	50	<5	**7**	<5	na	<5	<5	<5	<5	**9**	<5	**9**	**20**	<5	**5**	**6**	<5	**5**	**6**	<5
Manganese	5	mg/kg	500	7500	ne	**725**	**359**	**604**	na	**27**	**469**	**92**	**50**	**25**	**9**	na	na	**135**	**305**	**291**	**292**	**330**	**329**	**112**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	na	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**6**	**10**	**6**	na	**3**	**7**	**3**	**3**	<2	<2	**6**	**5**	**6**	**7**	**8**	**5**	**8**	**9**	**7**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	na	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	<1	<1	<1	na	<1	na	na	na	na	na	na	na	na	<1	<1	<1	<1	<1	<1
Zinc	5	mg/kg	200	35000	200	**19**	**36**	**16**	na	**20**	**15**	**17**	**17**	**12**	**6**	**18**	**36**	**32**	**23**	**24**	**12**	**21**	**28**	**18**
Nutrients																								
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	**3.42**	**0.07**	**0.03**	**0.06**	**0.08**	**0.1**	**0.1**	<0.02	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**0.48**	**0.39**	**0.14**	na	**0.07**	**0.28**	**0.05**	**0.03**	**0.03**	**0.04**	**0.08**	**0.05**	<0.02	**0.58**	**0.56**	**0.12**	**0.6**	**0.58**	**0.05**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	**3.14**	**0.02**	<0.02	**0.03**	**0.04**	**0.02**	**0.05**	<0.02	na	na	na	na	na	na
Nitrate and Nitrite (as N)	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	na	<0.1	na	na	na	na	na	na	na	na	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrite (as N)	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	na	<0.1	na	na	na	na	na	na	na	na	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ammonia as N	20	mg/kg	ne	ne	ne	<20	<20	<20	na	<20	na	na	na	na	na	na	na	na	<20	<20	<20	**20**	<20	<20
Nitrate (as N)	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	na	<0.1	na	na	na	na	na	na	na	na	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen as N	20	mg/kg	ne	ne	ne	**380**	**420**	**70**	na	**50**	na	na	na	na	na	na	na	na	**550**	**340**	**50**	**400**	**380**	**50**
Total Nitrogen as N	20	mg/kg	ne	ne	ne	**380**	**420**	**70**	na	**50**	na	na	na	na	na	na	na	na	**550**	**340**	**50**	**400**	**380**	**50**
Phosphorus (total)	20	mg/kg	ne	ne	ne	**345**	**309**	**254**	na	**116**	na	na	na	na	na	na	na	na	**281**	**223**	**177**	**289**	**255**	**506**
Radionuclides																								
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	**<0.030**	**0.030±0.020**	**<0.050**	**<0.050**	**<0.040**	**<0.080**	**<0.050**	**<0.040**	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	**<0.010**	**0.036±0.007**	**0.029±0.009**	**0.040±0.010**	**0.030±0.010**	**0.030±0.020**	**0.040±0.010**	**0.031±0.009**	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	**<0.003**	**0.038±0.003**	**0.033±0.005**	**0.035±0.004**	**0.032±0.004**	**0.036±0.005**	**0.036±0.004**	**0.032±0.004**	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	**<0.005**	**0.023±0.003**	**0.029±0.009**	**0.040±0.010**	**0.030±0.010**	**0.030±0.020**	**0.040±0.010**	**0.031±0.009**	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	**<0.060**	**0.610±0.050**	**0.560±0.070**	**0.550±0.060**	**0.520±0.060**	**0.550±0.090**	**0.530±0.070**	**0.760±0.060**	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 4: Borehole 1-18 Particle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH07	BH08B	BH08B	BH08B	BH08B	BH08B	BH09	BH09	BH09
Sample ID						BH07 0.0-0.5	BH07 0.5-1.0	BH07 1.0-1.5	BH07 1.5-2.0	BH07 2.2-2.7	BH07 2.7-3.2	BH07 3.2-3.5	BH07 3.5-3.6	BH07 3.6-3.9	BH07 4.0-4.3	BH07 4.3-4.8	BH08B 0.2-0.5	BH08B 2.0-2.4	BH08B 3.6-3.9	BH08B 4.3-4.6	BH08B 4.75-5	GC/GLNG #9_0-0.5	GC/GLNG #9_0.5-1.0	GC/GLNG #9_4.0-5.0
Date Sampled						27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	27/07/2008	26/07/2008	26/07/2008	26/07/2008	26/07/2008	26/07/2008	7/06/2008	7/06/2008	7/06/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH07 0.0-0.5	BH07 0.5-1.0	BH07 1.0-1.5	BH07 1.5-2.0	BH07 2.2-2.7	BH07 2.7-3.2	BH07 3.2-3.5	BH07 3.5-3.6	BH07 3.6-3.9	BH07 4.0-4.3	BH07 4.3-4.8	BH08B 0.2-0.5	BH08B 2.0-2.4	BH08B 3.6-3.9	BH08B 4.3-4.6	BH08B 4.75-5	GC/GLNG #9_0-0.5	GC/GLNG #9_0.5-1.0	GC/GLNG #9_4.0-5.0
Batch No.						EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0810023_ MRED	EB0807648_ MRED	EB0807648_ MRED	EB0807648_ MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Moisture Content																								
Moisture Content	1	%	ne	ne	ne	**32.8**	**30.7**	**38**	**32.3**	**36.2**	**32.9**	**30**	**35.8**	**12.2**	**8.5**	**10.1**	**20.4**	**32.5**	**34.4**	**36.4**	**29.5**	**19.1**	**13.9**	**19.2**
Physico-Chemical Parameters																								
Clay (<2 µm)	1	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	3%	1%	5%
Silt (2na63 µm)	1	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	4%	1%	4%
Sand (63µmna2mm)	1	%	ne	ne	ne	67%	53%	34%	45%	60%	39%	42%	33%	na	na	na	76%	na	59%	15%	43%	na	na	na
Gravel (>2mm)	1	%	ne	ne	ne	6%	4%	4%	19%	8%	12%	16%	30%	na	na	na	15%	na	7%	1%	18%	na	na	na
Metals (Total)																								
Aluminium	50	mg/kg	ne	ne	ne	**7870**	**7870**	**7870**	**7870**	na	na	**8330**	na	na	na	na	**2480**	**6970**	**9470**	**12400**	**6050**	**3430**	**2170**	**2850**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	na	na	na	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**9**	**9**	**14**	**12**	**11**	**13**	**10**	**9**	na	na	na	<5	**11**	**11**	**8**	**11**	<5	<5	<5
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	na	na	na	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**15**	**16**	**18**	**18**	**17**	**15**	**16**	**20**	na	na	na	**6**	**14**	**18**	**24**	**12**	**7**	**6**	**8**
Copper	5	mg/kg	60	5000	65	**12**	**14**	**14**	**30**	**12**	**96**	**117**	**23**	na	na	na	**6**	**10**	**14**	**18**	**10**	**8**	**5**	**10**
Iron	50	mg/kg	ne	ne	ne	**19800**	**19800**	**22800**	**21100**	na	na	**18400**	na	na	na	na	**8790**	**18000**	**21400**	**23500**	**13800**	**11400**	**8240**	**11600**
Lead	5	mg/kg	300	1500	50	**6**	**5**	**7**	**7**	**6**	**6**	**7**	**8**	na	na	na	<5	**5**	**7**	**9**	<5	<5	<5	<5
Manganese	5	mg/kg	500	7500	ne	**236**	**248**	**371**	**334**	na	na	**274**	na	na	na	na	**155**	**442**	**260**	**227**	**373**	**288**	**141**	**984**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**8**	**9**	**10**	**10**	**9**	**9**	**8**	**11**	na	na	na	**4**	**8**	**10**	**12**	**6**	**5**	**4**	**4**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	na	na	na	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<1	<1	<1
Zinc	5	mg/kg	200	35000	200	**25**	**23**	**26**	**30**	**24**	**43**	**47**	**34**	na	na	na	**11**	**18**	**28**	**36**	**13**	**16**	**11**	**15**
Nutrients																								
Total Carbon	0.02	%	ne	ne	ne	**1.94**	**1.71**	**2.5**	**2.99**	**2.02**	**2.25**	**3.51**	**1.61**	**0.06**	**0.06**	**0.03**	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**0.36**	**0.71**	**0.63**	**0.49**	**0.38**	**0.73**	**0.5**	**0.62**	**0.05**	**0.05**	**0.03**	**0.04**	**0.5**	**0.28**	**0.82**	**0.4**	**0.21**	**0.03**	**0.06**
Total Inorganic Carbon	0.02	%	ne	ne	ne	**1.58**	**1**	**1.87**	**2.5**	**1.64**	**1.52**	**3.01**	**0.99**	<0.02	<0.02	<0.02	na	na	na	na	na	na	na	na
Nitrate and Nitrite (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.1	<0.1	<0.1
Nitrite (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.1	<0.1	<0.1
Ammonia as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<20	<20	<20
Nitrate (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	**50**	<20	<20
Total Nitrogen as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	**50**	<20	<20
Phosphorus (total)	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	**186**	**114**	**223**
Radionuclides																								
Una238[1]		Bq/g	ne	ne	35	**0.012±0.003**	**0.015±0.003**	**0.014±0.004**	**0.018±0.004**	**0.016±0.003**	**0.015±0.003**	**0.018±0.002**	**0.027±0.004**	**0.029±0.003**	**0.030±0.003**	**0.031±0.004**	**0.016±0.002**	**0.011±0.002**	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		**0.021±0.008**	**0.025±0.008**	**0.03±0.01**	**0.02±0.01**	**0.019±0.009**	**0.024±0.007**	**0.025±0.007**	**0.03±0.01**	**0.020±0.008**	**0.025±0.009**	**0.023±0.009**	**0.014±0.006**	**0.03±0.01**	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		**0.023±0.003**	**0.025±0.003**	**0.026±0.004**	**0.029±0.004**	**0.025±0.003**	**0.021±0.003**	**0.021±0.003**	**0.025±0.004**	**0.011±0.003**	**0.015±0.003**	**0.013±0.003**	**0.015±0.003**	**0.019±0.003**	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		**0.34±0.05**	**0.39±0.05**	**0.40±0.06**	**0.37±0.06**	**0.36±0.05**	**0.31±0.04**	**0.34±0.04**	**0.38±0.06**	**0.22±0.04**	**0.32±0.05**	**0.21±0.05**	**0.34±0.03**	**0.38±0.06**	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 4: Borehole 1-18 Particle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH10	BH10	BH10	BH11	BH11	BH11	BH12	BH12	BH12	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13	BH13
Sample ID						GC/GLNG #10_0-0.5	GC/GLNG #10_0.5-1.0	GC/GLNG #10_1.5-2.5	GC/GLNG #11_0-0.5	GC/GLNG #11_0.5-1.0	GC/GLNG #11_1.0-2.0	GC/GLNG #12_0-0.5	GC/GLNG #12_0.5-1.0	GC/GLNG #12_3.2-4.2	BH13 1.0-1.6	BH13 1.6-2.3	QC 42	QC 43	BH13 4.9-5.3	BH13 7.3-7.4	BH13 7.7-8.05	BH13 8.05-8.3	BH13 8.3-8.6	BH13 9.0-9.15	BH13 11.2-11.3
Date Sampled						8/06/2008	8/06/2008	8/06/2008	7/06/2008	7/06/2008	7/06/2008	8/06/2008	8/06/2008	8/06/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008	28/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						GC/GLNG #10_0-0.5	GC/GLNG #10_0.5-1.0	GC/GLNG #10_1.5-2.5	GC/GLNG #11_0-0.5	GC/GLNG #11_0.5-1.0	GC/GLNG #11_1.0-2.0	GC/GLNG #12_0-0.5	GC/GLNG #12_0.5-1.0	GC/GLNG #12_3.2-4.2	BH13 1.0-1.6	BH13 1.6-2.3	BH13 1.6-2.3	BH13 1.6-2.3	BH13 4.9-5.3	BH13 7.3-7.4	BH13 7.7-8.05	BH13 8.05-8.3	BH13 8.3-8.6	BH13 9.0-9.15	BH13 11.2-11.3
Batch No.						EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0807648_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Moisture Content																								
Moisture Content	1	%	ne	ne	ne	**23.1**	**17.4**	**16.3**	**21.7**	**19**	**18**	**52.1**	**44.7**	**26.6**	**22.2**	**21.2**	**21.9**	**25.2**	**19.5**	**22.5**	**31.6**	**17.6**	**15.7**	**15**	**14.2**
Physico-Chemical Parameters																								
Clay (<2 µm)	1	%	ne	ne	ne	5%	7%	8%	1%	1%	1%	35%	42%	56%	4%	4%	3%	5%	7%	6%	19%	6%	3%	6%	6%
Silt (2na63 µm)	1	%	ne	ne	ne	9%	10%	13%	1%	<1%	4%	45%	52%	38%	5%	3%	5%	8%	11%	9%	27%	10%	9%	9%	8%
Sand (63µmna2mm)	1	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	83%	83%	85%	77%	73%	77%	31%	40%	46%	48%	72%
Gravel (>2mm)	1	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	8%	10%	7%	10%	9%	8%	23%	44%	42%	37%	14%
Metals (Total)																								
Aluminium	50	mg/kg	ne	ne	ne	**6070**	**3430**	**2500**	**1730**	**1360**	**1600**	**13800**	**12700**	**12000**	**2580**	**2840**	**4600**	**2660**	**2490**	**4660**	na	**4600**	na	**3300**	**3200**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**5**	**5**	<5	<5	<5	<5	**10**	**13**	<5	**18**	**26**	**14**	**22**	**11**	**10**	**9**	**8**	**11**	**7**	**9**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**11**	**10**	**7**	**8**	**5**	**4**	**23**	**22**	**13**	**8**	**7**	**11**	**6**	**7**	**10**	**20**	**11**	**10**	**9**	**8**
Copper	5	mg/kg	60	5000	65	**15**	**10**	**7**	<5	<5	<5	**33**	**34**	**38**	<5	<5	**7**	<5	<5	**11**	**25**	**15**	**20**	**16**	**6**
Iron	50	mg/kg	ne	ne	ne	**15700**	**13300**	**8600**	**6160**	**5600**	**5930**	**21100**	**31000**	**11600**	**16500**	**15800**	**16800**	**12900**	**10200**	**14100**	na	**14800**	na	**15500**	**16000**
Lead	5	mg/kg	300	1500	50	<5	<5	<5	<5	<5	<5	**10**	**10**	**9**	<5	<5	<5	<5	<5	<5	**8**	**7**	**8**	**5**	<5
Manganese	5	mg/kg	500	7500	ne	**433**	**251**	**231**	**167**	**78**	**85**	**222**	**354**	**339**	**1730**	**808**	**624**	**934**	**934**	**840**	na	**472**	na	**2490**	**76**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**8**	**7**	**4**	**4**	**2**	**3**	**13**	**14**	**7**	**6**	**5**	**7**	**5**	**5**	**6**	**10**	**13**	**16**	**9**	**7**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	<1	<1	<1	<1	<1	<1	**4**	<1	<1	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**50**	**21**	**11**	**9**	**7**	**7**	**42**	**41**	**26**	**10**	**6**	**14**	**6**	<5	**12**	**30**	**18**	**27**	**14**	**17**
Nutrients																								
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**0.06**	**0.04**	**0.05**	**0.03**	**0.03**	**0.03**	**2.2**	**1.31**	**0.37**	**0.09**	**0.28**	**0.15**	**0.4**	**0.25**	**0.28**	**0.48**	**0.19**	**0.11**	**0.09**	**0.02**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrate and Nitrite (as N)	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na	na	na	na
Nitrite (as N)	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na	na	na	na
Ammonia as N	20	mg/kg	ne	ne	ne	<20	<20	<20	<20	<20	<20	**20**	**20**	<20	na	na	na	na	na	na	na	na	na	na	na
Nitrate (as N)	0.1	mg/kg	ne	ne	ne	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na	na	na	na	na	na	na	na	na
Total Kjeldahl Nitrogen as N	20	mg/kg	ne	ne	ne	**70**	**30**	<20	<20	<20	**30**	**920**	**540**	**200**	na	na	na	na	na	na	na	na	na	na	na
Total Nitrogen as N	20	mg/kg	ne	ne	ne	**70**	**30**	<20	<20	<20	**30**	**920**	**540**	**200**	na	na	na	na	na	na	na	na	na	na	na
Phosphorus (total)	20	mg/kg	ne	ne	ne	**226**	**183**	**151**	**94**	**97**	**171**	**292**	**220**	**117**	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																								
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 4: Borehole 1-18 Particle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH13	BH13	BH13	BH13	BH 14	BH 14	BH 14	BH 14	BH 14	BH 14	BH 14	BH 14	BH 14	BH 14	BH 15	BH 15	BH 15
Sample ID						BH13 11.3-11.4	BH13 11.9-12.07	BH13 11.9-12.07_CUTTINGS	BH13 12.95-14.3_CUTTINGS	BH14 1-1.5	BH14 1.6-2	QC39	QC40	BH14 3.5-4.0	BH14 4.1-4.6	BH14 5.3-5.5	BH14 7.1-7.4	BH14 7.8-8	BH14 8.2-8.5	BH14 8.6-8.85	BH15 0-0.45	QC29	QC30
Date Sampled						28/08/2008	28/08/2008	28/08/2008	28/08/2008	27/08/2008	27/08/2008	27/08/2008	27/08/2008	27/08/2008	27/08/2008	27/08/2008	27/08/2008	27/08/2008	27/08/2008	27/08/2008	20/08/2008	20/08/2008	20/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample
Primary Sample ID						BH13 11.3-11.4	BH13 11.9-12.07	BH13 11.9-12.07_CUTTINGS	BH13 12.95-14.3_CUTTINGS	BH14 1-1.5	BH14 1.6-2	BH14 1.6-2	BH14 1.6-2	BH14 3.5-4	BH14 4.1-4.6	BH14 5.3-5.5	BH14 7.1-7.4	BH14 7.8-8	BH14 8.2-8.5	BH14 8.6-8.85	BH15 0-0.45	BH15 0-0.45	BH15 0-0.45
Batch No.						EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811787_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811673_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																		
Moisture Content																							
Moisture Content	1	%	ne	ne	ne	**16.1**	**19.5**	**15.5**	**21**	**23.8**	**22.3**	**24.2**	**23.8**	**23.6**	**31.8**	**19.1**	**16.2**	**16.4**	**18.5**	**23.3**	**61.8**	**46.4**	**55.7**
Physico-Chemical Parameters																							
Clay (<2 µm)	1	%	ne	ne	ne	8%	6%	8%	6%	5%	12%	12%	10%	35%	30%	23%	10%	25%	81%	62%	30%	35%	26%
Silt (2na63 µm)	1	%	ne	ne	ne	8%	7%	1%	8%	4%	9%	9%	6%	27%	34%	29%	11%	11%	15%	32%	42%	32%	44%
Sand (63µmna2mm)	1	%	ne	ne	ne	68%	75%	89%	79%	85%	77%	76%	80%	36%	26%	39%	70%	53%	4%	6%	21%	20%	17%
Gravel (>2mm)	1	%	ne	ne	ne	16%	12%	2%	7%	6%	2%	3%	4%	2%	10%	9%	9%	11%	0%	0%	7%	13%	13%
Metals (Total)																							
Aluminium	50	mg/kg	ne	ne	ne	na	**3030**	na	**3940**	**2800**	**4160**	**4940**	**4170**	**6200**	na	**5240**	**1300**	na	**9030**	na	**12800**	**8900**	**11900**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**28**	**23**	**12**	**8**	**13**	**12**	**15**	**12**	**11**	**12**	<5	<5	**11**	<5	**5**	**49**	**22**	**35**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**10**	**7**	**10**	**8**	**7**	**10**	**11**	**11**	**13**	**18**	**8**	**66**	**12**	**24**	**16**	**28**	**27**	**24**
Copper	5	mg/kg	60	5000	65	**10**	**12**	**8**	**10**	**5**	**8**	**10**	**8**	**10**	**17**	**33**	**6**	**23**	**21**	**21**	**23**	**17**	**22**
Iron	50	mg/kg	ne	ne	ne	na	**32400**	na	**26000**	**12800**	**15400**	**17400**	**15700**	**15100**	na	**13600**	**12400**	na	**22000**	na	**37200**	**21900**	**31000**
Lead	5	mg/kg	300	1500	50	**6**	<5	<5	**5**	<5	<5	<5	<5	**5**	**7**	**6**	<5	**8**	**14**	**11**	**11**	**8**	**11**
Manganese	5	mg/kg	500	7500	ne	na	**170**	na	**188**	**442**	**325**	**233**	**342**	**282**	na	**67**	**122**	na	**99**	na	**313**	**214**	**274**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.2**	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**11**	**11**	**11**	**15**	**4**	**6**	**7**	**7**	**14**	**10**	**6**	**6**	**68**	**23**	**22**	**18**	**15**	**15**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**28**	**24**	**28**	**31**	**12**	**17**	**20**	**19**	**20**	**28**	**21**	**17**	**156**	**47**	**54**	**63**	**40**	**55**
Nutrients																							
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	<0.02	**0.04**	**0.08**	**0.04**	**0.3**	**0.28**	**0.28**	**0.24**	**0.37**	**0.5**	**0.14**	**0.03**	**0.05**	**0.18**	**0.06**	**1.47**	**1.83**	**1.7**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrate and Nitrite (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrite (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ammonia as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrate (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Kjeldahl Nitrogen as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Nitrogen as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phosphorus (total)	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																							
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 4: Borehole 1-18 Particle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 15	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16	BH 16
Sample ID						BH15 0.5-0.95	BH15 1.0-1.45	BH15 1.5-2.0	QC31	QC32	BH15 2.5-2.8	BH15 2.85-3.0	BH15 3.0-3.2	BH15 3.5-3.85	BH15 4.0-5.0	BH15 5.1-5.3	BH16 0.5-0.95	BH16 1.0-1.45	QC26	QC27	BH16 1.5-2.0	BH16 3.4-3.6	BH16 4.2-4.6	BH16 5.7-6.0
Date Sampled						20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	20/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008	19/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH15 0.5-0.95	BH15 1.0-1.45	BH15 1.5-2.0	BH15 1.5-2.0	BH15 1.5-2.0	BH15 2.5-2.8	BH15 2.85-3.0	BH15 3.0-3.2	BH15 3.5-3.85	BH15 4.0-5.0	BH15 5.1-5.3	BH16 0.5-0.95	BH16 1.0-1.45	BH16 1.0-1.45	BH16 1.0-1.45	BH16 1.5-2.0	BH16 3.4-3.6	BH16 4.2-4.6	BH16 5.7-6.0
Batch No.						EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811298_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED	EB0811213_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Moisture Content																								
Moisture Content	1	%	ne	ne	ne	**49.6**	**25.3**	**21.4**	**20.2**	**16**	**19.2**	**12.4**	**12**	**6.4**	**21**	**11.1**	**47.4**	**41.3**	**41.8**	**40.6**	**38.4**	**29.2**	**21**	**25.4**
Physico-Chemical Parameters																								
Clay (<2 µm)	1	%	ne	ne	ne	55%	48%	46%	41%	44%	44%	26%	na	na	6%	6%	39%	51%	46%	43%	48%	37%	41%	30%
Silt (2na63 µm)	1	%	ne	ne	ne	41%	38%	35%	38%	45%	44%	14%	na	na	8%	4%	39%	44%	44%	52%	43%	41%	40%	42%
Sand (63µmna2mm)	1	%	ne	ne	ne	4%	13%	18%	20%	10%	12%	54%	na	na	81%	88%	17%	5%	9%	5%	9%	17%	19%	27%
Gravel (>2mm)	1	%	ne	ne	ne	0%	1%	1%	1%	1%	0%	6%	na	na	5%	2%	5%	0%	1%	0%	0%	5%	0%	1%
Metals (Total)																								
Aluminium	50	mg/kg	ne	ne	ne	**11200**	**9040**	**6050**	**6320**	**5230**	na	na	**3900**	na	**1230**	**1510**	**10600**	**10500**	**10800**	**10700**	**9360**	**6230**	**2730**	**2400**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**12**	**9**	<5	<5	<5	<5	<5	<5	<5	<5	**10**	**17**	**8**	**8**	**6**	**8**	**14**	<5	<5
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**19**	**9**	**7**	**8**	**6**	**7**	**68**	**7**	**2**	**3**	**10**	**19**	**16**	**16**	**16**	**14**	**15**	**3**	<2
Copper	5	mg/kg	60	5000	65	**24**	**52**	**28**	**66**	**40**	**51**	**23**	**13**	<5	**7**	**15**	**21**	**27**	**26**	**27**	**25**	**30**	<5	<5
Iron	50	mg/kg	ne	ne	ne	**22800**	**10000**	**5310**	**10200**	**6990**	na	na	**10600**	na	**5240**	**9430**	**22400**	**18200**	**17100**	**16500**	**18700**	**11800**	**830**	**800**
Lead	5	mg/kg	300	1500	50	**9**	**10**	**6**	**6**	<5	<5	<5	<5	<5	<5	<5	**9**	**9**	**8**	**8**	**8**	**7**	<5	<5
Manganese	5	mg/kg	500	7500	ne	**405**	**871**	**33**	**49**	**53**	na	na	**48**	na	**15**	**22**	**232**	**507**	**162**	**220**	**363**	**186**	<5	<5
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**11**	**27**	**7**	**9**	**8**	**6**	**14**	**4**	<2	<2	**24**	**11**	**10**	**10**	**9**	**9**	**8**	<2	<2
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**35**	**14**	**22**	**25**	**18**	**20**	**16**	**17**	<5	<5	<5	**37**	**31**	**30**	**30**	**29**	**19**	<5	<5
Nutrients																								
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**1.29**	**0.56**	**0.23**	**0.23**	**0.39**	**0.28**	**0.04**	**0.04**	**0.03**	**0.03**	**0.04**	**1.37**	**0.72**	**0.87**	**0.6**	**0.69**	**0.35**	**0.04**	**0.03**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrate and Nitrite (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrite (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ammonia as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrate (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Kjeldahl Nitrogen as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Nitrogen as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phosphorus (total)	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																								
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 4: Borehole 1-18 Particle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH 16	BH 16	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 17	BH 18	BH 18	BH 18	BH 18
Sample ID						BH16 6.2-6.5	BH16 8.2-8.45	BH17 0.0-0.4	BH17 0.5-1.0	QC22	QC23	BH17 1.0-1.1	BH17 1.2-1.5	BH17 1.55-2.0	QC24	QC25	BH17 2.3-2.8	BH17 3.0-3.5	BH17 5.0-5.45	BH17 5.4-5.6	BH17 9.6-9.8	BH18 0.7-0.85	BH18 0.9-1.2	BH18 1.3-1.7	QC 34
Date Sampled						19/08/2008	19/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	18/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample
Primary Sample ID						BH16 6.2-6.5	BH16 8.2-8.45	BH17 0.0-0.4	BH17 0.5-1.0	BH17 0.5-1.0	BH17 0.5-1.0	BH17 1.0-1.1	BH17 1.2-1.5	BH17 1.55-2.0	BH17 1.55-2.0	BH17 1.55-2.0	BH17 2.3-2.8	BH17 3.0-3.5	BH17 5.0-5.45	BH17 5.4-5.6	BH17 9.6-9.8	BH18 0.7-0.85	BH18 0.9-1.2	BH18 1.3-1.7	BH18 1.3-1.7
Batch No.						EB0811213_MRED	EB0811213_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811130_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Moisture Content																									
Moisture Content	1	%	ne	ne	ne	**25.6**	**27.6**	**38.5**	**41.4**	**29.7**	**35.6**	**14.9**	**20.2**	**19.6**	**19.6**	**19.7**	**22.9**	**21.6**	**25.2**	**19.3**	**14.4**	**28.5**	**21.9**	**27**	**21.1**
Physico-Chemical Parameters																									
Clay (<2 µm)	1	%	ne	ne	ne	18%	40%	27%	31%	27%	26%	16%	32%	38%	38%	37%	44%	50%	44%	25%	33%	7%	5%	11%	9%
Silt (2na63 µm)	1	%	ne	ne	ne	23%	38%	23%	28%	23%	24%	19%	43%	48%	57%	50%	44%	46%	40%	30%	30%	3%	0%	5%	4%
Sand (63µmna2mm)	1	%	ne	ne	ne	44%	18%	41%	32%	37%	36%	40%	21%	14%	5%	13%	12%	4%	16%	45%	32%	89%	82%	76%	85%
Gravel (>2mm)	1	%	ne	ne	ne	15%	4%	9%	9%	13%	14%	25%	4%	0%	0%	0%	0%	0%	0%	0%	5%	1%	13%	8%	2%
Metals (Total)																									
Aluminium	50	mg/kg	ne	ne	ne	**4000**	**3140**	**8160**	**13100**	**10800**	**10800**	<50	**9910**	**10300**	**9240**	**11300**	na	**9800**	**8510**	na	**3880**	**3260**	**2170**	**3480**	**3200**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**21**	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**16**	<5	**16**	**15**	**12**	**8**	<5	<5	<5	<5	<5	**6**	<5	**7**	<5	**10**	**10**	**12**	**11**	**11**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**20**	**5**	**16**	**24**	**20**	**22**	<2	**14**	**15**	**16**	**18**	**14**	**14**	**15**	**8**	**24**	**9**	**7**	**8**	**8**
Copper	5	mg/kg	60	5000	65	**36**	<5	**12**	**20**	**16**	**15**	<5	**32**	**32**	**28**	**36**	**42**	**29**	**31**	**5**	**19**	<5	<5	**5**	<5
Iron	50	mg/kg	ne	ne	ne	**37000**	**2480**	**17300**	**25400**	**20000**	**19100**	<50	**22200**	**21300**	**21100**	**24100**	na	**25000**	**25800**	na	**18200**	**14400**	**12200**	**12900**	**13700**
Lead	5	mg/kg	300	1500	50	**5**	<5	**6**	**11**	**8**	**9**	<5	**6**	<5	**6**	**6**	**6**	**6**	**9**	**5**	**7**	<5	<5	<5	<5
Manganese	5	mg/kg	500	7500	ne	<5	<5	**474**	**424**	**347**	**385**	<5	**237**	**261**	**275**	**304**	na	**428**	**691**	na	**146**	**623**	**812**	**999**	**817**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**2**	<2	**10**	**13**	**11**	**12**	<2	**18**	**21**	**18**	**23**	**15**	**12**	**12**	**2**	**7**	**5**	**4**	**5**	**5**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**10**	<5	**23**	**39**	**32**	**34**	<5	**58**	**55**	**50**	**62**	**52**	**53**	**48**	**11**	**14**	**15**	**7**	**10**	**11**
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**0.05**	<0.01	**0.6**	**0.82**	**0.73**	**0.88**	**0.07**	**0.12**	**0.14**	**0.13**	**0.04**	**0.07**	**0.17**	**0.1**	**0.02**	<0.01	**0.41**	**0.15**	**0.39**	**0.29**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrate and Nitrite (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrite (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ammonia as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrate (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Kjeldahl Nitrogen as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Nitrogen as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phosphorus (total)	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 4: Borehole 1-18 Particle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18	BH 18
Sample ID						QC 35	BH18 2.6-3.0	BH18 3.0-3.2	BH18 4.6-4.9	BH18 4.9-5.1	BH18 5.7-6.0	BH18 7.6-7.7	BH18 7.7-8.1	QC 36	QC 37	BH18 9.6-10.0	BH18 10.2-10.5	BH18 11.3-11.5	BH18 12-12.4	BH18 13.0-13.25	BH18 14.0-14.5	BH18 15.6-16.0	BH18 16.2-16.5
Date Sampled						26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008	26/08/2008
Sample Type						Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH18 1.3-1.7	BH18 2.6-3.0	BH18 3.0-3.2	BH18 4.6-4.9	BH18 4.9-5.1	BH18 5.7-6.0	BH18 7.6-7.7	BH18 7.7-8.1	BH18 7.7-8.1	BH18 7.7-8.1	BH18 9.6-10.0	BH18 10.2-10.5	BH18 11.3-11.5	BH18 12-12.4	BH18 13.0-13.25	BH18 14.0-14.5	BH18 15.6-16.0	BH18 16.2-16.5
Batch No.						EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED	EB0811611_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																	
Moisture Content																						
Moisture Content	1	%	ne	ne	ne	**23.2**	**21.9**	**26.8**	**21.9**	**20.6**	**20.4**	**22.4**	**16.5**	**15.8**	**13.7**	**29.4**	**27.2**	**22.4**	**18.4**	**19.9**	**19.5**	**21.8**	**17.5**
Physico-Chemical Parameters																						
Clay (<2 µm)	1	%	ne	ne	ne	9%	7%	5%	13%	27%	48%	45%	49%	48%	26%	7%	13%	8%	8%	20%	7%	46%	4%
Silt (2na63 µm)	1	%	ne	ne	ne	5%	4%	0%	8%	18%	49%	48%	42%	40%	25%	8%	13%	8%	5%	11%	4%	25%	4%
Sand (63µmna2mm)	1	%	ne	ne	ne	72%	78%	84%	63%	49%	3%	7%	9%	12%	49%	85%	68%	78%	71%	62%	82%	27%	80%
Gravel (>2mm)	1	%	ne	ne	ne	14%	11%	11%	16%	6%	0%	0%	0%	0%	0%	0%	6%	6%	16%	7%	7%	2%	12%
Metals (Total)																						
Aluminium	50	mg/kg	ne	ne	ne	**4130**	na	**2880**	**3720**	na	**3270**	**6100**	na	na	na	**7370**	**7610**	**10700**	**10800**	**11800**	**10800**	**4780**	**1420**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**12**	**13**	**37**	**12**	**13**	**20**	**11**	**5**	**5**	<5	**10**	**16**	<5	<5	**5**	<5	**16**	**14**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**11**	**10**	**11**	**11**	**12**	**10**	**12**	**8**	**8**	**6**	**15**	**15**	**17**	**15**	**16**	**15**	**8**	**6**
Copper	5	mg/kg	60	5000	65	**7**	**5**	**7**	**6**	**8**	**5**	**13**	<5	<5	<5	**12**	**17**	**63**	**34**	**52**	**32**	**42**	<5
Iron	50	mg/kg	ne	ne	ne	**17300**	na	**21900**	**14200**	na	**13300**	**15600**	na	na	na	**18300**	**20600**	**26500**	**26800**	**35900**	**22800**	**19000**	**11600**
Lead	5	mg/kg	300	1500	50	<5	<5	<5	<5	<5	<5	**5**	<5	<5	<5	**6**	**8**	**9**	**6**	**10**	**6**	**7**	**6**
Manganese	5	mg/kg	500	7500	ne	**429**	na	**607**	**1400**	na	**733**	**155**	na	na	na	**217**	**461**	**3750**	**222**	**1670**	**191**	**275**	**12**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**6**	**6**	**7**	**6**	**7**	**6**	**6**	**4**	**4**	**3**	**8**	**9**	**20**	**12**	**14**	**8**	**25**	<2
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**17**	**10**	**12**	**11**	**15**	**9**	**19**	**8**	**8**	**5**	**23**	**25**	**58**	**49**	**56**	**38**	**44**	**5**
Nutrients																						
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**0.4**	**1.43**	**1.43**	**0.3**	**0.4**	**0.28**	**0.67**	**0.09**	**0.06**	**0.09**	**0.32**	**0.46**	**0.05**	**0.08**	**0.08**	**0.05**	**0.05**	**0.02**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrate and Nitrite (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrite (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Ammonia as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Nitrate (as N)	0.1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Kjeldahl Nitrogen as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Nitrogen as N	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Phosphorus (total)	20	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																						
Una238[1]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19
Sample ID						BH19 0.3-0.5	BH19 0.5-0.9	QC 45	QC 46	BH19 1.3-1.43	BH19 3.95-4.4	BH19 14.9-15.14	BH19 16.5-16.95	BH19 18.4-18.83	BH 19 20.2-20.35	BH 19 20.34-20.4	BH 19 20.4-20.6	BH 19 21.8-22.05	BH 19 22.05-22.25	BH 19 24.8-24.95	BH 19 24.95-25.1	BH 19 25.1-25.25	BH 19 26.2-26.65	BH 19 27.7-28.15	QC 51
Date Sampled						29/08/2008	29/08/2008	29/08/2008	29/08/2008	29/08/2008	29/08/2008	1/09/2008	1/09/2008	1/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample
Primary Sample ID						BH19 0.3-0.5	BH19 0.5-0.9	BH19 0.5-0.9	BH19 0.5-0.9	BH19 1.3-1.43	BH19 3.95-4.4	BH19 14.9-15.14	BH19 16.5-16.95	BH19 18.4-18.83	BH 19 20.2-20.35	BH 19 20.34-20.4	BH 19 20.4-20.6	BH 19 21.8-22.05	BH 19 22.05-22.25	BH 19 24.8-24.95	BH 19 24.95-25.1	BH 19 25.1-25.25	BH 19 26.2-26.65	BH 19 27.7-28.15	BH 19 27.7-28.15
Batch No.						EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811949_MRED	EB0811949_MRED	EB0811949_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Moisture Content																								
Moisture Content	1	%	ne	ne	ne	**16.2**	**19.1**	**17.8**	**15.2**	**17.3**	**17.4**	**15.2**	**19.1**	**15.7**	**16.6**	**13.5**	**15.3**	**17.2**	**15.2**	**16.4**	**15.1**	**11.8**	**13.3**	**16.3**	**15**
Physico-Chemical Parameters																								
Clay (<2 µm)	1	%	ne	ne	ne	4%	54%	52%	51%	na	24%	18%	29%	36%	13%	18%	24%	39%	33%	34%	24%	17%	31%	27%	34%
Silt (2na63 µm)	1	%	ne	ne	ne	18%	29%	26%	24%	na	35%	34%	60%	49%	18%	41%	70%	47%	60%	51%	35%	31%	59%	66%	60%
Sand (63µmna2mm)	1	%	ne	ne	ne	15%	17%	22%	25%	na	41%	47%	11%	15%	69%	41%	6%	14%	7%	15%	41%	51%	10%	7%	6%
Gravel (>2mm)	1	%	ne	ne	ne	63%	0%	0%	0%	na	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Metals (Total)																								
Aluminium	50	mg/kg	ne	ne	ne	**6530**	**7480**	**7710**	**5840**	**1920**	**930**	**1020**	**1760**	**1380**	**680**	na	na	**1790**	**1840**	**1510**	na	**800**	**1510**	**1550**	**1820**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**8**	**6**	**8**	**9**	<5	**6**	**5**	<5	**26**	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**15**	**21**	**23**	**22**	**18**	**7**	**4**	**10**	**3**	**21**	**4**	**2**	**7**	**9**	**4**	**4**	**4**	**5**	**4**	**5**
Copper	5	mg/kg	60	5000	65	**11**	**10**	**10**	**6**	**6**	<5	<5	**26**	**6**	**26**	<5	<5	<5	**6**	<5	<5	<5	<5	<5	<5
Iron	50	mg/kg	ne	ne	ne	**13000**	**22100**	**28600**	**29500**	**10400**	**4420**	**3190**	**37600**	**4080**	**14300**	na	na	**1740**	**3970**	**1040**	na	**1610**	**1120**	**1140**	**1970**
Lead	5	mg/kg	300	1500	50	<5	<5	<5	**5**	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**6**
Manganese	5	mg/kg	500	7500	ne	**117**	**30**	**43**	**45**	**11**	<5	<5	**22**	**6**	**92**	na	na	**7**	**18**	<5	na	<5	<5	<5	<5
Mercury	0.1	mg/kg	1	75	0.15	<0.1	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**5**	**2**	**2**	<2	<2	<2	<2	<2	<2	**14**	<2	<2	<2	**3**	<2	<2	<2	**2**	<2	<2
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**12**	<5	<5	<5	<5	<5	<5	**12**	<5	**9**	<5	<5	<5	**8**	**5**	<5	<5	**6**	<5	<5
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	**0.03**	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**0.22**	**0.06**	**0.05**	**0.05**	**0.03**	**0.03**	**0.04**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	<0.02	**0.02**	**0.02**	**0.02**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	<0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH 19	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20
Sample ID						QC 52	BH20 0-0.2	BH20 1.1-1.4	QC54	QC55	BH20 1.4-1.8	BH20 1.8-2.0	BH20 2.35-2.55	BH20 2.6-2.7	BH20 3.0-3.5	BH20 4.65-4.95	BH20 5.0-5.25	BH20 5.5-5.70	BH20 8.6-8.78	BH20 10.7-11.0	BH20 12.1-12.53	BH20 12.5-13.0	QC58	QC59	BH20 13.0-13.2
Date Sampled						2/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	9/09/2008	9/09/2008	9/09/2008	9/09/2008	9/09/2008
Sample Type						Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample
Primary Sample ID						BH 19 27.7-28.15	BH20 0-0.2	BH20 1.1-1.4	BH20 1.1-1.4	BH20 1.1-1.4	BH20 1.4-1.8	BH20 1.8-2.0	BH20 2.35-2.55	BH20 2.6-2.7	BH20 3.0-3.5	BH20 4.65-4.95	BH20 5.0-5.25	BH20 5.5-5.70	BH20 8.6-8.78	BH20 10.7-11.0	BH20 12.1-12.53	BH20 12.5-13.0	BH20 12.5-13.0	BH20 12.5-13.0	BH20 13.0-13.2
Batch No.						EB0812007_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812313_MRED	EB0812358_MRED	EB0812358_MRED	EB0812358_MRED	EB0812358_MRED	EB0812358_MRED	EB0812358_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Moisture Content																									
Moisture Content	1	%	ne	ne	ne	**16.8**	**21.6**	**26.7**	**29.3**	**38.6**	**10.1**	**5.2**	**12.5**	**15.4**	**10.4**	**13.1**	**30.9**	**8.2**	**20.6**	**20.1**	**20.8**	**19.2**	**19.1**	**15.7**	**16.2**
Physico-Chemical Parameters																									
Clay (<2 µm)	1	%	ne	ne	ne	27%	23%	39%	32%	35%	57%	41%	44%	50%	53%	57%	13%	5%	66%	57%	50%	49%	45%	55%	20%
Silt (2na63 µm)	1	%	ne	ne	ne	66%	11%	23%	16%	8%	41%	29%	23%	31%	44%	37%	15%	5%	21%	32%	46%	47%	50%	34%	39%
Sand (63µmna2mm)	1	%	ne	ne	ne	7%	51%	34%	38%	45%	2%	30%	33%	19%	3%	6%	14%	32%	13%	10%	4%	4%	5%	10%	14%
Gravel (>2mm)	1	%	ne	ne	ne	0%	15%	4%	14%	12%	0%	0%	0%	0%	0%	0%	58%	58%	0%	1%	0%	0%	0%	1%	27%
Metals (Total)																									
Aluminium	50	mg/kg	ne	ne	ne	**1410**	**6220**	**11700**	**8470**	**10200**	**6970**	**4370**	na	na	**5550**	**6090**	**3620**	na	**6290**	**10100**	**13800**	na	na	na	**6960**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	<5	**14**	**16**	**23**	**24**	**18**	<5	<5	<5	<5	<5	**11**	<5	**5**	**6**	<5	<5	**9**	<5	<5
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**4**	**19**	**28**	**28**	**27**	**23**	**10**	**19**	**12**	**12**	**14**	**10**	**5**	**5**	**10**	**15**	**6**	**10**	**6**	**6**
Copper	5	mg/kg	60	5000	65	<5	**9**	**16**	**14**	**15**	**28**	**13**	**14**	**7**	**13**	**40**	**19**	<5	**12**	**23**	**31**	<5	**39**	**7**	**6**
Iron	50	mg/kg	ne	ne	ne	**1080**	**21900**	**27800**	**33200**	**30900**	**31500**	**6610**	na	na	**3200**	**1500**	**27500**	na	**18900**	**31200**	**38000**	na	na	na	**12600**
Lead	5	mg/kg	300	1500	50	<5	**6**	**10**	**10**	**10**	**11**	**6**	**10**	**9**	**8**	**11**	**8**	<5	<5	**5**	**5**	<5	**6**	<5	<5
Manganese	5	mg/kg	500	7500	ne	<5	**146**	**155**	**158**	**183**	**19**	**6**	na	na	**7**	**10**	**55**	na	**26**	**95**	**123**	na	na	na	**42**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	<2	**8**	**16**	**13**	**14**	**2**	<2	**2**	<2	**2**	**4**	**46**	**13**	**11**	**20**	**34**	**8**	**51**	**12**	**9**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	<5	**21**	**37**	**28**	**31**	**15**	**8**	**8**	**8**	**12**	**62**	**49**	**38**	**31**	**49**	**80**	**29**	**88**	**31**	**28**
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**0.05**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21
Sample ID						BH21 1.5-1.6	BH21 1.65-1.90	BH21 2.0-2.9	QC62	QC63	BH21 2.5-2.9	BH21 2.95-3.2	QC64	QC65	BH21 4.0-4.45	BH21 5.6-6.05	BH21 7.0-7.45	BH21 7.8-8.2	BH21 8.5-8.9	BH21 9.6-10.0	BH21 10.5-10.7	BH21 10.7-11.1	QC67	QC68	BH21 11.6-11.9
Date Sampled						20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample
Primary Sample ID						BH21 1.5-1.6	BH21 1.65-1.90	BH21 2.0-2.9	BH21 2.0-2.9	BH21 2.0-2.9	BH21 2.5-2.9	BH21 2.95-3.2	BH21 2.95-3.2	BH21 2.95-3.2	BH21 4.0-4.45	BH21 5.6-6.05	BH21 7.0-7.45	BH21 7.8-8.2	BH21 8.5-8.9	BH21 9.6-10.0	BH21 10.5-10.7	BH21 10.7-11.1	BH21 10.7-11.1	BH21 10.7-11.1	BH21 11.6-11.9
Batch No.						EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Moisture Content																								
Moisture Content	1	%	ne	ne	ne	**25.4**	**24.6**	**21.9**	**21.8**	**20.4**	**17.6**	**15.8**	**16.6**	**17.2**	**17.7**	**17.7**	**19.2**	**16.1**	**14.4**	**17.8**	**17.6**	**16.7**	**15.3**	**17.2**	**23.2**
Physico-Chemical Parameters																								
Clay (<2 µm)	1	%	ne	ne	ne	13%	59%	47%	46%	54%	50%	48%	31%	27%	32%	36%	39%	39%	39%	59%	56%	57%	59%	52%	45%
Silt (2na63 µm)	1	%	ne	ne	ne	5%	32%	48%	48%	43%	49%	46%	42%	15%	15%	30%	29%	22%	25%	37%	35%	33%	34%	43%	50%
Sand (63µmna2mm)	1	%	ne	ne	ne	65%	9%	5%	6%	3%	1%	6%	26%	56%	52%	33%	32%	39%	36%	4%	9%	8%	7%	5%	5%
Gravel (>2mm)	1	%	ne	ne	ne	17%	0%	0%	0%	0%	0%	0%	1%	2%	1%	1%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Metals (Total)																								
Aluminium	50	mg/kg	ne	ne	ne	**3740**	**7480**	**7050**	**6940**	**7100**	na	**4220**	**5090**	**5540**	**5720**	**6030**	**6130**	na	**3500**	**4140**	na	na	na	na	**5690**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**10**	<5	<5	<5	<5	<5	<5	**7**	<5	<5	<5	**11**	**12**	<5	**16**	**7**	**35**	<5	**10**	<5
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**8**	**9**	**9**	**9**	**9**	**8**	**6**	**10**	**10**	**6**	**9**	**13**	**8**	**6**	**7**	**10**	**13**	**9**	**9**	**10**
Copper	5	mg/kg	60	5000	65	**7**	**13**	**278**	**28**	**15**	**18**	**8**	**10**	**11**	**8**	**14**	**13**	**19**	**6**	**10**	**8**	**31**	<5	**10**	<5
Iron	50	mg/kg	ne	ne	ne	**8390**	**6150**	**4410**	**7610**	**9760**	na	**2850**	**8360**	**12600**	**6040**	**11300**	**14700**	na	**4410**	**20300**	na	na	na	na	**4260**
Lead	5	mg/kg	300	1500	50	<5	**6**	**9**	**14**	**8**	**8**	**7**	**9**	**11**	**8**	**8**	**12**	**14**	<5	**7**	**8**	**13**	**9**	**9**	**8**
Manganese	5	mg/kg	500	7500	ne	**303**	**19**	**10**	**18**	**25**	na	**8**	**29**	**47**	**26**	**40**	**63**	na	**2200**	**727**	na	na	na	na	**100**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**5**	**2**	**4**	**4**	**4**	**3**	<2	**4**	**4**	**2**	**3**	**6**	**14**	**12**	**10**	**6**	**18**	**3**	**6**	**2**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**12**	**8**	**10**	**11**	**12**	**13**	**6**	**10**	**13**	**6**	**8**	**14**	**29**	**14**	**25**	**18**	**31**	**12**	**19**	**12**
Nutrients																								
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																								
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

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Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

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ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH21	BH21	BH24	BH24	BH24	BH24	BH24	BH24	BH24	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25
Sample ID						BH21_14.0-14.4	BH21_15.43-15.80	BH24 0.0-0.7	BH24 0.7-1.7	QC01	BH24 2.9-3.3	BH24 4.0-4.4	BH24 5.5-5.8	BH24 6.6-6.8	BH25 2.4-3.0	QC03	QC04	BH25 3.0-3.8	BH25 3.8-4.4	BH25 4.4-5.0	BH25 5.4-5.8	BH25 5.8-6.2	BH25 9.45-9.75	BH25 9.75-9.9	BH25 11.9-12.3
Date Sampled						22/09/2008	22/09/2008	30/07/2008	30/07/2008	30/07/2008	30/07/2008	30/07/2008	30/07/2008	30/07/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	5/08/2008	5/08/2008	5/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH21_14.0-14.4	BH21_15.43-15.80	BH24 0.0-0.7	BH24 0.7-1.7	BH24 0.7-1.7	BH24 2.9-3.3	BH24 4.0-4.4	BH24 5.5-5.8	BH24 6.6-6.8	BH25 2.4-3.0	BH25 2.4-3.0	BH25 2.4-3.0	BH25 3.0-3.8	BH25 3.8-4.4	BH25 4.4-5.0	BH25 5.4-5.8	BH25 5.8-6.2	BH25 9.45-9.75	BH25 9.75-9.9	BH25 11.9-12.3
Batch No.						EB0813167_MRED	EB0813167_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810571_MRED	EB0810571_MRED	EB0810571_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Moisture Content																									
Moisture Content	1	%	ne	ne	ne	**18.2**	**19.8**	**26.2**	**31.2**	**32.5**	**17.4**	**7.2**	**16.3**	**16.9**	**24.3**	**21.8**	**20.1**	**9.2**	**30.8**	**36**	**32.8**	**24.6**	**16.3**	**13.6**	**9**
Physico-Chemical Parameters																									
Clay (<2 µm)	1	%	ne	ne	ne	32%	25%	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Silt (2na63 µm)	1	%	ne	ne	ne	24%	28%	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Sand (63µmna2mm)	1	%	ne	ne	ne	44%	31%	54%	39%	42%	2%	36%	79%	69%	81%	84%	76%	na	50%	9%	31%	49%	na	na	na
Gravel (>2mm)	1	%	ne	ne	ne	0%	16%	26%	26%	17%	0%	46%	5%	0%	12%	10%	18%	na	11%	0%	3%	8%	na	na	na
Metals (Total)																									
Aluminium	50	mg/kg	ne	ne	ne	**1260**	**3400**	**4430**	**6850**	**6380**	**5460**	na	na	**760**	**1390**	**1550**	**1550**	**1180**	na	**12400**	**9880**	na	**1200**	na	**800**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**16**	<5	**14**	**16**	**19**	**16**	<5	<5	<5	**31**	**8**	**6**	**8**	**11**	**10**	**8**	**6**	<5	<5	<5
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**5**	**6**	**13**	**15**	**18**	**14**	**11**	**5**	**2**	**4**	**4**	**3**	**4**	**14**	**19**	**16**	**9**	**32**	**7**	**5**
Copper	5	mg/kg	60	5000	65	**10**	**5**	**8**	**13**	**12**	**19**	<5	<5	**16**	<5	<5	<5	<5	**11**	**20**	**16**	**10**	**39**	**7**	**6**
Iron	50	mg/kg	ne	ne	ne	**10100**	**2140**	**24300**	**25600**	**27700**	**23400**	na	na	**1240**	**10700**	**7760**	**5980**	**6910**	na	**22300**	**19200**	na	**20500**	na	**1070**
Lead	5	mg/kg	300	1500	50	**9**	<5	<5	**7**	**6**	**5**	<5	<5	<5	<5	<5	<5	<5	**6**	**9**	**8**	**5**	<5	<5	<5
Manganese	5	mg/kg	500	7500	ne	**68**	**13**	**172**	**245**	**202**	**127**	na	na	<5	**530**	**892**	**531**	**359**	na	**566**	**241**	na	**240**	na	<5
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**5**	<2	**6**	**8**	**9**	**11**	<2	<2	<2	**4**	**3**	**2**	**2**	**8**	**10**	**8**	**5**	**21**	**4**	<2
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**9**	<5	**17**	**23**	**24**	**26**	**6**	<5	**8**	<5	<5	<5	<5	**23**	**35**	**29**	**13**	**14**	<5	<5
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	**2.78**	**2.26**	**2.11**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	na	na	**0.33**	**0.64**	**0.71**	**0.07**	**0.06**	**0.04**	na	**0.22**	**0.17**	**0.09**	**0.13**	**0.57**	**0.7**	**0.46**	**0.47**	**0.12**	**0.07**	**0.02**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	**2.45**	**1.62**	**1.4**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	**0.011±0.004**	**0.014±0.004**	**0.016±0.003**	**0.024±0.004**	**0.013±0.003**	**0.024±0.004**	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	**0.020±0.010**	**0.030±0.010**	**0.028±0.008**	**0.040±0.010**	**0.014±0.007**	**N/D**	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	**0.020±0.004**	**0.023±0.004**	**0.023±0.003**	**0.032±0.004**	**0.008±0.003**	**0.016±0.003**	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	**0.560±0.060**	**0.460±0.070**	**0.360±0.040**	**0.280±0.050**	**0.130±0.040**	**0.160±0.050**	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH25B	BH25B	BH25B	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH27	BH27	BH27	BH27	BH27
Sample ID						BH25B 0.5-0.95	BH25B 1.0-1.45	BH25B 1.5-2.0	BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45	BH26 3.5-3.9	QC15	QC16	BH26 4.0-4.2	BH26 5.6-5.7	BH26 13.0-13.12	BH26 15.95-16.26	BH27 0.4-0.8	BH27 0.85-1.1	QC77	QC78	BH27 1.6-1.8
Date Sampled						28/09/2008	28/09/2008	28/09/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	4/10/2008	4/10/2008	4/10/2008	4/10/2008	4/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample
Primary Sample ID						BH25B 0.5-0.95	BH25B 1.0-1.45	BH25B 1.5-2.0	BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45	BH26 3.5-3.9	BH26 3.5-3.9	BH26 3.5-3.9	BH26 4.0-4.2	BH26 5.6-5.7	BH26 13.0-13.12	BH26 15.95-16.26	BH27 0.4-0.8	BH27 0.85-1.1	BH27 0.85-1.1	BH27 0.85-1.1	BH27 1.6-1.8
Batch No.						EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Moisture Content																									
Moisture Content	1	%	ne	ne	ne	**46.7**	**48.2**	**43.8**	**52**	**41.6**	**42.5**	**42.5**	**21.8**	**22.6**	**21.5**	**22.2**	**20.5**	**17.4**	**15.9**	**16.4**	**47**	**14.6**	**17.3**	**16.2**	**5.6**
Physico-Chemical Parameters																									
Clay (<2 µm)	1	%	ne	ne	ne	51%	51%	55%	59%	63%	61%	62%	42%	48%	na	na	na	na	47%	39%	42%	38%	53%	33%	32%
Silt (2na63 µm)	1	%	ne	ne	ne	34%	31%	30%	31%	35%	34%	34%	42%	39%	na	na	na	na	33%	48%	24%	21%	27%	27%	19%
Sand (63µmna2mm)	1	%	ne	ne	ne	13%	18%	14%	10%	2%	5%	4%	11%	11%	na	na	na	na	18%	11%	19%	16%	13%	13%	13%
Gravel (>2mm)	1	%	ne	ne	ne	2%	0%	1%	0%	0%	0%	0%	5%	2%	na	na	na	na	2%	2%	15%	25%	7%	27%	36%
Metals (Total)																									
Aluminium	50	mg/kg	ne	ne	ne	**17100**	**17500**	**12900**	**6810**	**8520**	**7520**	**7770**	**3390**	na	na	na	**2040**	**1400**	**2870**	**2060**	**11100**	NA	**7960**	**9770**	**1760**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**14**	**12**	**12**	**18**	<5	<5	<5	<5	<5	**6**	<5	**6**	<5	**15**	**5**	**26**	**8**	**9**	**12**	**6**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**28**	**27**	**22**	**31**	**14**	**15**	**14**	**5**	**7**	**6**	**7**	<2	**2**	<2	<2	**23**	**11**	**6**	**16**	<2
Copper	5	mg/kg	60	5000	65	**29**	**36**	**24**	**26**	**30**	**30**	**29**	**33**	**33**	**28**	**507**	**18**	**26**	**20**	**16**	**16**	**37**	**26**	**39**	**5**
Iron	50	mg/kg	ne	ne	ne	**30100**	**32600**	**24700**	**20800**	**10800**	**12300**	**12800**	**6480**	na	na	na	**4670**	**1610**	**20900**	**4030**	**44300**	NA	**26200**	**37100**	**8030**
Lead	5	mg/kg	300	1500	50	**12**	**11**	**10**	**9**	**9**	**8**	**8**	**7**	**6**	**6**	**7**	<5	<5	**6**	<5	**10**	**8**	**10**	**12**	<5
Manganese	5	mg/kg	500	7500	ne	**459**	**331**	**420**	**208**	**151**	**137**	**205**	**26**	na	na	na	<5	<5	**84**	**8**	**396**	NA	**82**	**159**	**22**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.2**	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1
Nickel	2	mg/kg	60	3000	21	**17**	**16**	**13**	**18**	**8**	**9**	**8**	**2**	<2	<2	<2	<2	<2	**9**	<2	**14**	**12**	**10**	**14**	<2
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	na	na	na	na	na	na	na	na	na	na	na	na	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**50**	**53**	**39**	**27**	**31**	**27**	**27**	**5**	<5	<5	**110**	<5	<5	**44**	**16**	**59**	**24**	**49**	**25**	**18**
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	na	na	na	**1.95**	**0.75**	**0.96**	**1.23**	**0.41**	**0.32**	**0.29**	**0.23**	**0.11**	**0.14**	**0.03**	**0.02**	na	na	na	na	na
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH27	BH27	BH27	BH28	BH28	BH28	BH28	BH28	BH28	BH28	BH28	BH29	BH29	BH29	BH29	BH29	BH29	BH29	BH29	BH29
Sample ID						BH27 2.0-2.3	BH27 2.5-3.0	BH27 3.7-4.35	BH28 2.4-3.4	QC72	QC73	BH28 3.5-4.4	BH28 5.3-5.7	BH28 5.9-6.3	QC74	QC75	BH29 0.2-0.5	BH29 0.5-0.7	BH29 0.7-1.0	BH29 1.0-1.5	QC80	QC81	BH29 1.6-2.0	BH29 2.2-2.7	QC82
Date Sampled						4/10/2008	4/10/2008	4/10/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample
Primary Sample ID						BH27 2.0-2.3	BH27 2.5-3.0	BH27 3.7-4.35	BH28 2.4-3.4	BH28 2.4-3.4	BH28 2.4-3.4	BH28 3.5-4.4	BH28 5.3-5.7	BH28 5.9-6.3	BH28 5.9-6.3	BH28 5.9-6.3	BH29 0.2-0.5	BH29 0.5-0.7	BH29 0.7-1.0	BH29 1.0-1.5	BH29 1.0-1.5	BH29 1.0-1.5	BH29 1.6-2.0	BH29 2.2-2.7	BH29 2.2-2.7
Batch No.						EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Moisture Content																									
Moisture Content	1	%	ne	ne	ne	**23.1**	**15.4**	**17.9**	**45.3**	**47.4**	**43.6**	**42.2**	**41.2**	**19.9**	**21.9**	**20.2**	**33.1**	**39.8**	**48.6**	**44.6**	**47.2**	**49.2**	**43.4**	**42.2**	**33.6**
Physico-Chemical Parameters																									
Clay (<2 µm)	1	%	ne	ne	ne	24%	9%	9%	53%	55%	55%	57%	51%	36%	37%	33%	21%	24%	51%	54%	60%	59%	62%	54%	61%
Silt (2na63 µm)	1	%	ne	ne	ne	36%	35%	10%	30%	36%	35%	40%	34%	55%	50%	44%	19%	19%	39%	41%	38%	37%	33%	36%	34%
Sand (63µmna2mm)	1	%	ne	ne	ne	26%	19%	13%	15%	8%	10%	3%	15%	9%	13%	23%	59%	54%	8%	5%	2%	4%	5%	8%	5%
Gravel (>2mm)	1	%	ne	ne	ne	14%	37%	68%	2%	1%	0%	0%	0%	0%	0%	0%	1%	3%	2%	0%	0%	0%	0%	2%	0%
Metals (Total)																									
Aluminium	50	mg/kg	ne	ne	ne	**4340**	**3440**	**3300**	**16800**	**18400**	**15200**	**13300**	**14900**	**5610**	**7550**	**5860**	**6180**	**8870**	**13200**	**13600**	**12700**	**13400**	**12000**	**9880**	**8090**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	**11**	**7**	**8**	**14**	**12**	**12**	**11**	**13**	**6**	**6**	<5	**11**	**14**	**8**	**11**	**12**	**12**	**6**	**6**	**6**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**3**	<2	**2**	**29**	**28**	**26**	**22**	**24**	**8**	**17**	**15**	**16**	**19**	**23**	**23**	**23**	**23**	**18**	**13**	**12**
Copper	5	mg/kg	60	5000	65	**14**	**11**	**15**	**25**	**36**	**25**	**27**	**29**	**16**	**55**	**31**	**8**	**14**	**34**	**37**	**35**	**36**	**36**	**76**	**70**
Iron	50	mg/kg	ne	ne	ne	**24800**	**16600**	**17200**	**28700**	**31200**	**27800**	**26400**	**23400**	**6620**	**31900**	**18600**	**24300**	**27500**	**25600**	**28300**	**25200**	**29400**	**23200**	**20500**	**18400**
Lead	5	mg/kg	300	1500	50	**6**	**6**	**7**	**12**	**11**	**10**	**10**	**11**	**7**	**28**	**16**	**6**	**8**	**12**	**12**	**12**	**12**	**10**	**10**	**9**
Manganese	5	mg/kg	500	7500	ne	**45**	**41**	**44**	**320**	**336**	**449**	**920**	**441**	**22**	**370**	**307**	**321**	**323**	**280**	**210**	**256**	**339**	**197**	**64**	**67**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**3**	**2**	**2**	**18**	**17**	**16**	**13**	**14**	**4**	**10**	**4**	**8**	**10**	**12**	**14**	**13**	**14**	**11**	**7**	**6**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**36**	**36**	**34**	**46**	**55**	**46**	**40**	**43**	**10**	**24**	**16**	**43**	**42**	**42**	**43**	**40**	**43**	**38**	**29**	**24**
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	**0.61**	**0.64**	**1.6**	**1.33**	**1.59**	**1.89**	**1.21**	**0.47**	**1.79**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH29	BH29	BH29	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH31	BH31	BH31	BH31
Sample ID						QC83	BH29 4.1-4.4	BH29 7.2-7.45	BH30 0.0-0.2	BH30 0.6-0.9	BH30 1.0-1.45	QC85	QC86	BH30 1.3-2.0	BH30 2.1-3.0	BH30 3.8-4.8	QC87	QC88	BH30 5.2-5.8	BH30 6.0-6.15	BH30 8.3-8.75	BH31 0.18-0.20	BH31 0.2-0.3	BH31 0.3-0.6	BH31 2.0-2.3
Date Sampled						8/10/2008	8/10/2008	8/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008
Sample Type						Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH29 2.2-2.7	BH29 4.1-4.4	BH29 7.2-7.45	BH30 0.0-0.2	BH30 0.6-0.9	BH30 1.0-1.45	BH30 1.0-1.45	BH30 1.0-1.45	BH30 1.3-2.0	BH30 2.1-3.0	BH30 3.8-4.8	BH30 3.8-4.8	BH30 3.8-4.8	BH30 5.2-5.8	BH30 6.0-6.15	BH30 8.3-8.75	BH31 0.18-0.20	BH31 0.2-0.3	BH31 0.3-0.6	BH31 2.0-2.3
Batch No.						EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Moisture Content																									
Moisture Content	1	%	ne	ne	ne	**34.9**	**30.2**	**25.1**	**51.9**	**39.9**	**43.1**	**41.7**	**43.2**	**44.2**	**40.8**	**40.4**	**39.1**	**38.8**	**36.4**	**37.9**	**23.2**	**54.6**	**17.4**	**12.6**	**19**
Physico-Chemical Parameters																									
Clay (<2 µm)	1	%	ne	ne	ne	63%	55%	51%	36%	32%	54%	54%	52%	60%	61%	52%	55%	50%	58%	51%	35%	36%	14%	34%	27%
Silt (2na63 µm)	1	%	ne	ne	ne	31%	38%	38%	37%	40%	42%	38%	38%	32%	31%	36%	33%	38%	38%	36%	38%	30%	23%	39%	32%
Sand (63µmna2mm)	1	%	ne	ne	ne	6%	7%	11%	26%	27%	4%	8%	10%	8%	8%	12%	12%	12%	4%	11%	20%	27%	17%	23%	25%
Gravel (>2mm)	1	%	ne	ne	ne	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	7%	7%	46%	4%	16%
Metals (Total)																									
Aluminium	50	mg/kg	ne	ne	ne	**9880**	**8910**	**2290**	**8380**	**7520**	**10900**	**9830**	**9620**	**10500**	**9740**	**9950**	**9730**	**10100**	**8870**	**9900**	**4920**	**13000**	**8620**	**9770**	**3910**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	<5	<5	<5	**17**	**16**	**14**	**12**	**11**	**8**	**9**	**7**	**8**	**8**	**8**	**11**	**18**	**33**	**27**	**12**	**10**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**13**	**12**	<2	**18**	**16**	**18**	**16**	**16**	**18**	**15**	**15**	**15**	**16**	**11**	**10**	**24**	**27**	**21**	**14**	**4**
Copper	5	mg/kg	60	5000	65	**55**	**78**	<5	**16**	**15**	**30**	**29**	**29**	**30**	**34**	**36**	**78**	**44**	**38**	**60**	**20**	**27**	**39**	**41**	**18**
Iron	50	mg/kg	ne	ne	ne	**19400**	**8330**	**1300**	**20800**	**18800**	**19400**	**17700**	**18900**	**21300**	**19800**	**19800**	**24100**	**21200**	**27500**	**20800**	**27200**	**39900**	**37300**	**31800**	**21500**
Lead	5	mg/kg	300	1500	50	**8**	**12**	<5	**8**	**8**	**9**	**9**	**10**	**10**	**8**	**9**	**9**	**9**	**7**	**10**	**11**	**11**	**18**	**22**	**7**
Manganese	5	mg/kg	500	7500	ne	**50**	**16**	<5	**289**	**205**	**116**	**148**	**118**	**170**	**337**	**490**	**652**	**495**	**255**	**148**	**148**	**448**	**1860**	**2400**	**55**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**6**	**3**	<2	**10**	**9**	**11**	**10**	**10**	**10**	**10**	**10**	**10**	**11**	**10**	**13**	**20**	**16**	**21**	**45**	**4**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**20**	**16**	<5	**38**	**33**	**36**	**33**	**32**	**33**	**33**	**34**	**39**	**36**	**31**	**33**	**27**	**51**	**29**	**26**	**23**
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**2.82**	**0.31**	**0.03**	**1.28**	**1.13**	**0.94**	**0.85**	**0.75**	**0.82**	**1.15**	**0.98**	**0.88**	**0.88**	**0.96**	**2.99**	**0.03**	**1.5**	**0.26**	**0.12**	<0.02
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH31	BH31	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32
Sample ID						BH31 3.6-3.9	BH31 5.0-5.35	BH32 0.7-1.0	BH32 1.5-1.8	QC 91	BH32 2.5-3.2	QC 92	QC 93	BH32 3.8-4.1	BH32 4.7-5.1	BH32 6.2-6.65	BH32 8.1-8.4	BH32 9.3-9.6
Date Sampled						15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH31 3.6-3.9	BH31 5.0-5.35	BH32 0.7-1.0	BH32 1.5-1.8	BH32 1.5-1.8	BH32 2.5-3.2	BH32 2.5-3.2	BH32 2.5-3.2	BH32 3.8-4.1	BH32 4.7-5.1	BH32 6.2-6.65	BH32 8.1-8.4	BH32 9.3-9.6
Batch No.						EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**													
Moisture Content																		
Moisture Content	1	%	ne	ne	ne	**13.4**	**13.1**	**48.9**	**44.2**	**43.5**	**41.6**	**41.2**	**40.5**	**41.2**	**20.5**	**21.1**	**15.9**	**10.3**
Physico-Chemical Parameters																		
Clay (<2 µm)	1	%	ne	ne	ne	12%	31%	40%	53%	54%	58%	56%	58%	57%	34%	50%	32%	30%
Silt (2na63 µm)	1	%	ne	ne	ne	35%	56%	43%	44%	39%	38%	34%	34%	37%	42%	34%	33%	51%
Sand (63µmna2mm)	1	%	ne	ne	ne	21%	12%	14%	3%	7%	4%	10%	8%	6%	22%	16%	34%	13%
Gravel (>2mm)	1	%	ne	ne	ne	32%	1%	3%	0%	0%	0%	0%	0%	0%	2%	0%	1%	6%
Metals (Total)																		
Aluminium	50	mg/kg	ne	ne	ne	**3110**	**4140**	**11400**	**13300**	**12000**	**14800**	**13400**	**12300**	**11700**	**2800**	**2380**	**3100**	**5700**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	20	<5	<5	**23**	**10**	**9**	**12**	**10**	**9**	**9**	<5	**6**	<5	**8**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**2**	**3**	**26**	**21**	**19**	**20**	**20**	**18**	**18**	<2	<2	**2**	**3**
Copper	5	mg/kg	60	5000	65	**7**	**21**	**22**	**31**	**28**	**42**	**40**	**35**	**28**	**7**	<5	<5	**16**
Iron	50	mg/kg	ne	ne	ne	**10500**	**11200**	**28700**	**24400**	**22500**	**29700**	**37600**	**23600**	**18900**	**2400**	**6570**	**5900**	**19300**
Lead	5	mg/kg	300	1500	50	<5	**8**	**12**	**10**	**9**	**8**	**8**	**8**	**9**	<5	<5	<5	**9**
Manganese	5	mg/kg	500	7500	ne	**39**	**41**	**273**	**423**	**232**	**539**	**405**	**337**	**191**	**15**	**20**	**5**	**84**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**2**	**3**	**13**	**12**	**11**	**13**	**12**	**12**	**10**	**2**	<2	**2**	**5**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**20**	**32**	**44**	**39**	**35**	**46**	**40**	**38**	**34**	<5	<5	**11**	**42**
Nutrients																		
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	<0.02	**0.08**	**1.3**	**0.71**	**0.66**	**0.68**	**0.62**	**0.63**	**0.72**	<0.02	<0.02	<0.02	**0.02**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																		
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19	BH 19
Sample ID						BH19 0.3-0.5	BH19 0.5-0.9	QC 45	QC 46	BH19 1.3-1.43	BH19 3.95-4.4	BH19 14.9-15.14	BH19 16.5-16.95	BH19 18.4-18.83	BH 19 20.2-20.35	BH 19 20.34-20.4	BH 19 20.4-20.6	BH 19 21.8-22.05	BH 19 22.05-22.25	BH 19 24.8-24.95	BH 19 24.95-25.1	BH 19 25.1-25.25	BH 19 26.2-26.65	BH 19 27.7-28.15	QC 51
Date Sampled						29/08/2008	29/08/2008	29/08/2008	29/08/2008	29/08/2008	29/08/2008	1/09/2008	1/09/2008	1/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008	2/09/2008
Sample Type						Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample
Primary Sample ID						BH19 0.3-0.5	BH19 0.5-0.9	BH19 0.5-0.9	BH19 0.5-0.9	BH19 1.3-1.43	BH19 3.95-4.4	BH19 14.9-15.14	BH19 16.5-16.95	BH19 18.4-18.83	BH 19 20.2-20.35	BH 19 20.34-20.4	BH 19 20.4-20.6	BH 19 21.8-22.05	BH 19 22.05-22.25	BH 19 24.8-24.95	BH 19 24.95-25.1	BH 19 25.1-25.25	BH 19 26.2-26.65	BH 19 27.7-28.15	BH 19 27.7-28.15
Batch No.						EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811799_MRED	EB0811949_MRED	EB0811949_MRED	EB0811949_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED	EB0812007_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Moisture Content																								
Moisture Content	1	%	ne	ne	ne	**16.2**	**19.1**	**17.8**	**15.2**	**17.3**	**17.4**	**15.2**	**19.1**	**15.7**	**16.6**	**13.5**	**15.3**	**17.2**	**15.2**	**16.4**	**15.1**	**11.8**	**13.3**	**16.3**	**15**
Physico-Chemical Parameters																								
Clay (<2 µm)	1	%	ne	ne	ne	4%	54%	52%	51%	na	24%	18%	29%	36%	13%	18%	24%	39%	33%	34%	24%	17%	31%	27%	34%
Silt (2na63 µm)	1	%	ne	ne	ne	18%	29%	26%	24%	na	35%	34%	60%	49%	18%	41%	70%	47%	60%	51%	35%	31%	59%	66%	60%
Sand (63µmna2mm)	1	%	ne	ne	ne	15%	17%	22%	25%	na	41%	47%	11%	15%	69%	41%	6%	14%	7%	15%	41%	51%	10%	7%	6%
Gravel (>2mm)	1	%	ne	ne	ne	63%	0%	0%	0%	na	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Metals (Total)																								
Aluminium	50	mg/kg	ne	ne	ne	**6530**	**7480**	**7710**	**5840**	**1920**	**930**	**1020**	**1760**	**1380**	**680**	na	na	**1790**	**1840**	**1510**	na	**800**	**1510**	**1550**	**1820**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	ne	**8**	**6**	**8**	**9**	<5	**6**	**5**	<5	**26**	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**15**	**21**	**23**	**22**	**18**	**7**	**4**	**10**	**3**	**21**	**4**	**2**	**7**	**9**	**4**	**4**	**4**	**5**	**4**	**5**
Copper	5	mg/kg	60	5000	65	**11**	**10**	**10**	**6**	**6**	<5	<5	**26**	**6**	**26**	<5	<5	<5	**6**	<5	<5	<5	<5	<5	<5
Iron	50	mg/kg	ne	ne	ne	**13000**	**22100**	**28600**	**29500**	**10400**	**4420**	**3190**	**37600**	**4080**	**14300**	na	na	**1740**	**3970**	**1040**	na	**1610**	**1120**	**1140**	**1970**
Lead	5	mg/kg	300	1500	50	<5	<5	<5	**5**	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**6**
Manganese	5	mg/kg	500	7500	ne	**117**	**30**	**43**	**45**	**11**	<5	<5	**22**	**6**	**92**	na	na	**7**	**18**	<5	na	<5	<5	<5	<5
Mercury	0.1	mg/kg	1	75	0.15	<0.1	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**5**	**2**	**2**	<2	<2	<2	<2	<2	<2	**14**	<2	<2	<2	**3**	<2	<2	<2	**2**	<2	<2
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**12**	<5	<5	<5	<5	<5	<5	**12**	<5	**9**	<5	<5	<5	**8**	**5**	<5	<5	**6**	<5	<5
Nutrients																								
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	**0.03**	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**0.22**	**0.06**	**0.05**	**0.05**	**0.03**	**0.03**	**0.04**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	<0.02	**0.02**	**0.02**	**0.02**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	<0.02	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																								
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

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URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH 19	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20	BH 20
Sample ID						QC 52	BH20 0-0.2	BH20 1.1-1.4	QC54	QC55	BH20 1.4-1.8	BH20 1.8-2.0	BH20 2.35-2.55	BH20 2.6-2.7	BH20 3.0-3.5	BH20 4.65-4.95	BH20 5.0-5.25	BH20 5.5-5.70	BH20 8.6-8.78	BH20 10.7-11.0	BH20 12.1-12.53	BH20 12.5-13.0	QC58	QC59	BH20 13.0-13.2
Date Sampled						2/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	8/09/2008	9/09/2008	9/09/2008	9/09/2008	9/09/2008	9/09/2008
Sample Type						Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample
Primary Sample ID						BH 19 27.7-28.15	BH20 0-0.2	BH20 1.1-1.4	BH20 1.1-1.4	BH20 1.1-1.4	BH20 1.4-1.8	BH20 1.8-2.0	BH20 2.35-2.55	BH20 2.6-2.7	BH20 3.0-3.5	BH20 4.65-4.95	BH20 5.0-5.25	BH20 5.5-5.70	BH20 8.6-8.78	BH20 10.7-11.0	BH20 12.1-12.53	BH20 12.5-13.0	BH20 12.5-13.0	BH20 12.5-13.0	BH20 13.0-13.2
Batch No.						EB0812007_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812313_ MRED	EB0812358_ MRED	EB0812358_ MRED	EB0812358_ MRED	EB0812358_ MRED	EB0812358_ MRED	EB0812358_ MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Moisture Content																									
Moisture Content	1	%	ne	ne	ne	**16.8**	**21.6**	**26.7**	**29.3**	**38.6**	**10.1**	**5.2**	**12.5**	**15.4**	**10.4**	**13.1**	**30.9**	**8.2**	**20.6**	**20.1**	**20.8**	**19.2**	**19.1**	**15.7**	**16.2**
Physico-Chemical Parameters																									
Clay (<2 µm)	1	%	ne	ne	ne	27%	23%	39%	32%	35%	57%	41%	44%	50%	53%	57%	13%	5%	66%	57%	50%	49%	45%	55%	20%
Silt (2na63 µm)	1	%	ne	ne	ne	66%	11%	23%	16%	8%	41%	29%	23%	31%	44%	37%	15%	5%	21%	32%	46%	47%	50%	34%	39%
Sand (63µmna2mm)	1	%	ne	ne	ne	7%	51%	34%	38%	45%	2%	30%	33%	19%	3%	6%	14%	32%	13%	10%	4%	4%	5%	10%	14%
Gravel (>2mm)	1	%	ne	ne	ne	0%	15%	4%	14%	12%	0%	0%	0%	0%	0%	0%	58%	58%	0%	1%	0%	0%	0%	1%	27%
Metals (Total)																									
Aluminium	50	mg/kg	ne	ne	ne	**1410**	**6220**	**11700**	**8470**	**10200**	**6970**	**4370**	na	na	**5550**	**6090**	**3620**	na	**6290**	**10100**	**13800**	na	na	na	**6960**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	ne	<5	**14**	**16**	**23**	**24**	**18**	<5	<5	<5	<5	<5	**11**	<5	**5**	**6**	<5	<5	**9**	<5	<5
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**4**	**19**	**28**	**28**	**27**	**23**	**10**	**19**	**12**	**12**	**14**	**10**	**5**	**5**	**10**	**15**	**6**	**10**	**6**	**6**
Copper	5	mg/kg	60	5000	65	<5	**9**	**16**	**14**	**15**	**28**	**13**	**14**	**7**	**13**	**40**	**19**	<5	**12**	**23**	**31**	<5	**39**	**7**	**6**
Iron	50	mg/kg	ne	ne	ne	**1080**	**21900**	**27800**	**33200**	**30900**	**31500**	**6610**	na	na	**3200**	**1500**	**27500**	na	**18900**	**31200**	**38000**	na	na	na	**12600**
Lead	5	mg/kg	300	1500	50	<5	**6**	**10**	**10**	**10**	**11**	**6**	**10**	**9**	**8**	**11**	**8**	<5	<5	**5**	**5**	<5	**6**	<5	<5
Manganese	5	mg/kg	500	7500	ne	<5	**146**	**155**	**158**	**183**	**19**	**6**	na	na	**7**	**10**	**55**	na	**26**	**95**	**123**	na	na	na	**42**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	<2	**8**	**16**	**13**	**14**	**2**	<2	**2**	<2	**2**	**4**	**46**	**13**	**11**	**20**	**34**	**8**	**51**	**12**	**9**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	<5	**21**	**37**	**28**	**31**	**15**	**8**	**8**	**8**	**12**	**62**	**49**	**38**	**31**	**49**	**80**	**29**	**88**	**31**	**28**
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**0.05**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

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ne: not established

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URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21	BH21
Sample ID						BH21 1.5-1.6	BH21 1.65-1.90	BH21 2.0-2.9	QC62	QC63	BH21 2.5-2.9	BH21 2.95-3.2	QC64	QC65	BH21 4.0-4.45	BH21 5.6-6.05	BH21 7.0-7.45	BH21 7.8-8.2	BH21 8.5-8.9	BH21 9.6-10.0	BH21 10.5-10.7	BH21 10.7-11.1	QC67	QC68	BH21 11.6-11.9
Date Sampled						20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	20/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008	21/09/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample
Primary Sample ID						BH21 1.5-1.6	BH21 1.65-1.90	BH21 2.0-2.9	BH21 2.0-2.9	BH21 2.0-2.9	BH21 2.5-2.9	BH21 2.95-3.2	BH21 2.95-3.2	BH21 2.95-3.2	BH21 4.0-4.45	BH21 5.6-6.05	BH21 7.0-7.45	BH21 7.8-8.2	BH21 8.5-8.9	BH21 9.6-10.0	BH21 10.5-10.7	BH21 10.7-11.1	BH21 10.7-11.1	BH21 10.7-11.1	BH21 11.6-11.9
Batch No.						EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED	EB0813051_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																			
Moisture Content																								
Moisture Content	1	%	ne	ne	ne	**25.4**	**24.6**	**21.9**	**21.8**	**20.4**	**17.6**	**15.8**	**16.6**	**17.2**	**17.7**	**17.7**	**19.2**	**16.1**	**14.4**	**17.8**	**17.6**	**16.7**	**15.3**	**17.2**	**23.2**
Physico-Chemical Parameters																								
Clay (<2 µm)	1	%	ne	ne	ne	13%	59%	47%	46%	54%	50%	48%	31%	27%	32%	36%	39%	39%	39%	59%	56%	57%	59%	52%	45%
Silt (2na63 µm)	1	%	ne	ne	ne	5%	32%	48%	48%	43%	49%	46%	42%	15%	15%	30%	29%	22%	25%	37%	35%	33%	34%	43%	50%
Sand (63µmna2mm)	1	%	ne	ne	ne	65%	9%	5%	6%	3%	1%	6%	26%	56%	52%	33%	32%	39%	36%	4%	9%	8%	7%	5%	5%
Gravel (>2mm)	1	%	ne	ne	ne	17%	0%	0%	0%	0%	0%	0%	1%	2%	1%	1%	0%	0%	0%	0%	0%	2%	0%	0%	0%
Metals (Total)																								
Aluminium	50	mg/kg	ne	ne	ne	**3740**	**7480**	**7050**	**6940**	**7100**	na	**4220**	**5090**	**5540**	**5720**	**6030**	**6130**	na	**3500**	**4140**	na	na	na	na	**5690**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	ne	**10**	<5	<5	<5	<5	<5	<5	**7**	<5	<5	<5	**11**	**12**	<5	**16**	**7**	**35**	<5	**10**	<5
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**8**	**9**	**9**	**9**	**9**	**8**	**6**	**10**	**10**	**6**	**9**	**13**	**8**	**6**	**7**	**10**	**13**	**9**	**9**	**10**
Copper	5	mg/kg	60	5000	65	**7**	**13**	**278**	**28**	**15**	**18**	**8**	**10**	**11**	**8**	**14**	**13**	**19**	**6**	**10**	**8**	**31**	<5	**10**	<5
Iron	50	mg/kg	ne	ne	ne	**8390**	**6150**	**4410**	**7610**	**9760**	na	**2850**	**8360**	**12600**	**6040**	**11300**	**14700**	na	**4410**	**20300**	na	na	na	na	**4260**
Lead	5	mg/kg	300	1500	50	<5	**6**	**9**	**14**	**8**	**8**	**7**	**9**	**11**	**8**	**8**	**12**	**14**	<5	**7**	**8**	**13**	**9**	**9**	**8**
Manganese	5	mg/kg	500	7500	ne	**303**	**19**	**10**	**18**	**25**	na	**8**	**29**	**47**	**26**	**40**	**63**	na	**2200**	**727**	na	na	na	na	**100**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**5**	**2**	**4**	**4**	**4**	**3**	<2	**4**	**4**	**2**	**3**	**6**	**14**	**12**	**10**	**6**	**18**	**3**	**6**	**2**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**12**	**8**	**10**	**11**	**12**	**13**	**6**	**10**	**13**	**6**	**8**	**14**	**29**	**14**	**25**	**18**	**31**	**12**	**19**	**12**
Nutrients																								
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																								
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

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ne: not established

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URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH21	BH21	BH24	BH24	BH24	BH24	BH24	BH24	BH24	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25	BH25
Sample ID						BH21_14.0-14.4	BH21_15.43-15.80	BH24 0.0-0.7	BH24 0.7-1.7	QC01	BH24 2.9-3.3	BH24 4.0-4.4	BH24 5.5-5.8	BH24 6.6-6.8	BH25 2.4-3.0	QC03	QC04	BH25 3.0-3.8	BH25 3.8-4.4	BH25 4.4-5.0	BH25 5.4-5.8	BH25 5.8-6.2	BH25 9.45-9.75	BH25 9.75-9.9	BH25 11.9-12.3
Date Sampled						22/09/2008	22/09/2008	30/07/2008	30/07/2008	30/07/2008	30/07/2008	30/07/2008	30/07/2008	30/07/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	4/08/2008	5/08/2008	5/08/2008	5/08/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH21_14.0-14.4	BH21_15.43-15.80	BH24 0.0-0.7	BH24 0.7-1.7	BH24 0.7-1.7	BH24 2.9-3.3	BH24 4.0-4.4	BH24 5.5-5.8	BH24 6.6-6.8	BH25 2.4-3.0	BH25 2.4-3.0	BH25 2.4-3.0	BH25 3.0-3.8	BH25 3.8-4.4	BH25 4.4-5.0	BH25 5.4-5.8	BH25 5.8-6.2	BH25 9.45-9.75	BH25 9.75-9.9	BH25 11.9-12.3
Batch No.						EB0813167_MRED	EB0813167_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810222_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810480_MRED	EB0810571_MRED	EB0810571_MRED	EB0810571_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Moisture Content																									
Moisture Content	1	%	ne	ne	ne	**18.2**	**19.8**	**26.2**	**31.2**	**32.5**	**17.4**	**7.2**	**16.3**	**16.9**	**24.3**	**21.8**	**20.1**	**9.2**	**30.8**	**36**	**32.8**	**24.6**	**16.3**	**13.6**	**9**
Physico-Chemical Parameters																									
Clay (<2 µm)	1	%	ne	ne	ne	32%	25%	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Silt (2na63 µm)	1	%	ne	ne	ne	24%	28%	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Sand (63µmna2mm)	1	%	ne	ne	ne	44%	31%	54%	39%	42%	2%	36%	79%	69%	81%	84%	76%	na	50%	9%	31%	49%	na	na	na
Gravel (>2mm)	1	%	ne	ne	ne	0%	16%	26%	26%	17%	0%	46%	5%	0%	12%	10%	18%	na	11%	0%	3%	8%	na	na	na
Metals (Total)																									
Aluminium	50	mg/kg	ne	ne	ne	**1260**	**3400**	**4430**	**6850**	**6380**	**5460**	na	na	**760**	**1390**	**1550**	**1550**	**1180**	na	**12400**	**9880**	na	**1200**	na	**800**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	ne	**16**	<5	**14**	**16**	**19**	**16**	<5	<5	<5	**31**	**8**	**6**	**8**	**11**	**10**	**8**	**6**	<5	<5	<5
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**5**	**6**	**13**	**15**	**18**	**14**	**11**	**5**	**2**	**4**	**4**	**3**	**4**	**14**	**19**	**16**	**9**	**32**	**7**	**5**
Copper	5	mg/kg	60	5000	65	**10**	**5**	**8**	**13**	**12**	**19**	<5	<5	**16**	<5	<5	<5	<5	**11**	**20**	**16**	**10**	**39**	**7**	**6**
Iron	50	mg/kg	ne	ne	ne	**10100**	**2140**	**24300**	**25600**	**27700**	**23400**	na	na	**1240**	**10700**	**7760**	**5980**	**6910**	na	**22300**	**19200**	na	**20500**	na	**1070**
Lead	5	mg/kg	300	1500	50	**9**	<5	<5	**7**	**6**	**5**	<5	<5	<5	<5	<5	<5	<5	**6**	**9**	**8**	**5**	<5	<5	<5
Manganese	5	mg/kg	500	7500	ne	**68**	**13**	**172**	**245**	**202**	**127**	na	na	<5	**530**	**892**	**531**	**359**	na	**566**	**241**	na	**240**	na	<5
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**5**	<2	**6**	**8**	**9**	**11**	<2	<2	<2	**4**	**3**	**2**	**2**	**8**	**10**	**8**	**5**	**21**	**4**	<2
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**9**	<5	**17**	**23**	**24**	**26**	**6**	<5	**8**	<5	<5	<5	<5	**23**	**35**	**29**	**13**	**14**	<5	<5
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	**2.78**	**2.26**	**2.11**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	na	na	**0.33**	**0.64**	**0.71**	**0.07**	**0.06**	**0.04**	na	**0.22**	**0.17**	**0.09**	**0.13**	**0.57**	**0.7**	**0.46**	**0.47**	**0.12**	**0.07**	**0.02**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	**2.45**	**1.62**	**1.4**	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	**0.011±0.004**	**0.014±0.004**	**0.016±0.003**	**0.024±0.004**	**0.013±0.003**	**0.024±0.004**	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	**0.020±0.010**	**0.030±0.010**	**0.028±0.008**	**0.040±0.010**	**0.014±0.007**	**N/D**	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	**0.020±0.004**	**0.023±0.004**	**0.023±0.003**	**0.032±0.004**	**0.008±0.003**	**0.016±0.003**	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	**0.560±0.060**	**0.460±0.070**	**0.360±0.040**	**0.280±0.050**	**0.130±0.040**	**0.160±0.050**	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH25B	BH25B	BH25B	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH26	BH27	BH27	BH27	BH27	BH27
Sample ID						BH25B 0.5-0.95	BH25B 1.0-1.45	BH25B 1.5-2.0	BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45	BH26 3.5-3.9	QC15	QC16	BH26 4.0-4.2	BH26 5.6-5.7	BH26 13.0-13.12	BH26 15.95-16.26	BH27 0.4-0.8	BH27 0.85-1.1	QC77	QC78	BH27 1.6-1.8
Date Sampled						28/09/2008	28/09/2008	28/09/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	12/08/2008	4/10/2008	4/10/2008	4/10/2008	4/10/2008	4/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample
Primary Sample ID						BH25B 0.5-0.95	BH25B 1.0-1.45	BH25B 1.5-2.0	BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45	BH26 3.5-3.9	BH26 3.5-3.9	BH26 3.5-3.9	BH26 4.0-4.2	BH26 5.6-5.7	BH26 13.0-13.12	BH26 15.95-16.26	BH27 0.4-0.8	BH27 0.85-1.1	BH27 0.85-1.1	BH27 0.85-1.1	BH27 1.6-1.8
Batch No.						EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0810850_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813733_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Moisture Content																									
Moisture Content	1	%	ne	ne	ne	**46.7**	**48.2**	**43.8**	**52**	**41.6**	**42.5**	**42.5**	**21.8**	**22.6**	**21.5**	**22.2**	**20.5**	**17.4**	**15.9**	**16.4**	**47**	**14.6**	**17.3**	**16.2**	**5.6**
Physico-Chemical Parameters																									
Clay (<2 µm)	1	%	ne	ne	ne	51%	51%	55%	59%	63%	61%	62%	42%	48%	na	na	na	na	47%	39%	42%	38%	53%	33%	32%
Silt (2na63 µm)	1	%	ne	ne	ne	34%	31%	30%	31%	35%	34%	34%	42%	39%	na	na	na	na	33%	48%	24%	21%	27%	27%	19%
Sand (63µmna2mm)	1	%	ne	ne	ne	13%	18%	14%	10%	2%	5%	4%	11%	11%	na	na	na	na	18%	11%	19%	16%	13%	13%	13%
Gravel (>2mm)	1	%	ne	ne	ne	2%	0%	1%	0%	0%	0%	0%	5%	2%	na	na	na	na	2%	2%	15%	25%	7%	27%	36%
Metals (Total)																									
Aluminium	50	mg/kg	ne	ne	ne	**17100**	**17500**	**12900**	**6810**	**8520**	**7520**	**7770**	**3390**	na	na	na	**2040**	**1400**	**2870**	**2060**	**11100**	NA	**7960**	**9770**	**1760**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	na	na	na	na	na	na	na	na	na	na	na	na	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	ne	**14**	**12**	**12**	**18**	<5	<5	<5	<5	<5	**6**	<5	**6**	<5	**15**	**5**	**26**	**8**	**9**	**12**	**6**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**28**	**27**	**22**	**31**	**14**	**15**	**14**	**5**	**7**	**6**	**7**	<2	**2**	<2	<2	**23**	**11**	**6**	**16**	<2
Copper	5	mg/kg	60	5000	65	**29**	**36**	**24**	**26**	**30**	**30**	**29**	**33**	**33**	**28**	**507**	**18**	**26**	**20**	**16**	**16**	**37**	**26**	**39**	**5**
Iron	50	mg/kg	ne	ne	ne	**30100**	**32600**	**24700**	**20800**	**10800**	**12300**	**12800**	**6480**	na	na	na	**4670**	**1610**	**20900**	**4030**	**44300**	NA	**26200**	**37100**	**8030**
Lead	5	mg/kg	300	1500	50	**12**	**11**	**10**	**9**	**9**	**8**	**8**	**7**	**6**	**6**	**7**	<5	<5	**6**	<5	**10**	**8**	**10**	**12**	<5
Manganese	5	mg/kg	500	7500	ne	**459**	**331**	**420**	**208**	**151**	**137**	**205**	**26**	na	na	na	<5	<5	**84**	**8**	**396**	NA	**82**	**159**	**22**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.2**	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1
Nickel	2	mg/kg	60	3000	21	**17**	**16**	**13**	**18**	**8**	**9**	**8**	**2**	<2	<2	<2	<2	<2	**9**	<2	**14**	**12**	**10**	**14**	<2
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	na	na	na	na	na	na	na	na	na	na	na	na	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**50**	**53**	**39**	**27**	**31**	**27**	**27**	**5**	<5	<5	**110**	<5	<5	**44**	**16**	**59**	**24**	**49**	**25**	**18**
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	na	na	na	**1.95**	**0.75**	**0.96**	**1.23**	**0.41**	**0.32**	**0.29**	**0.23**	**0.11**	**0.14**	**0.03**	**0.02**	na	na	na	na	na
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH27	BH27	BH27	BH28	BH28	BH28	BH28	BH28	BH28	BH28	BH28	BH29	BH29	BH29	BH29	BH29	BH29	BH29	BH29	BH29
Sample ID						BH27 2.0-2.3	BH27 2.5-3.0	BH27 3.7-4.35	BH28 2.4-3.4	QC72	QC73	BH28 3.5-4.4	BH28 5.3-5.7	BH28 5.9-6.3	QC74	QC75	BH29 0.2-0.5	BH29 0.5-0.7	BH29 0.7-1.0	BH29 1.0-1.5	QC80	QC81	BH29 1.6-2.0	BH29 2.2-2.7	QC82
Date Sampled						4/10/2008	4/10/2008	4/10/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	28/09/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008	8/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Duplicate Sample
Primary Sample ID						BH27 2.0-2.3	BH27 2.5-3.0	BH27 3.7-4.35	BH28 2.4-3.4	BH28 2.4-3.4	BH28 2.4-3.4	BH28 3.5-4.4	BH28 5.3-5.7	BH28 5.9-6.3	BH28 5.9-6.3	BH28 5.9-6.3	BH29 0.2-0.5	BH29 0.5-0.7	BH29 0.7-1.0	BH29 1.0-1.5	BH29 1.0-1.5	BH29 1.0-1.5	BH29 1.6-2.0	BH29 2.2-2.7	BH29 2.2-2.7
Batch No.						EB0813733_MRED	EB0813733_MRED	EB0813733_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0813420_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814076_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Moisture Content																									
Moisture Content	1	%	ne	ne	ne	**23.1**	**15.4**	**17.9**	**45.3**	**47.4**	**43.6**	**42.2**	**41.2**	**19.9**	**21.9**	**20.2**	**33.1**	**39.8**	**48.6**	**44.6**	**47.2**	**49.2**	**43.4**	**42.2**	**33.6**
Physico-Chemical Parameters																									
Clay (<2 µm)	1	%	ne	ne	ne	24%	9%	9%	53%	55%	55%	57%	51%	36%	37%	33%	21%	24%	51%	54%	60%	59%	62%	54%	61%
Silt (2na63 µm)	1	%	ne	ne	ne	36%	35%	10%	30%	36%	35%	40%	34%	55%	50%	44%	19%	19%	39%	41%	38%	37%	33%	36%	34%
Sand (63µmna2mm)	1	%	ne	ne	ne	26%	19%	13%	15%	8%	10%	3%	15%	9%	13%	23%	59%	54%	8%	5%	2%	4%	5%	8%	5%
Gravel (>2mm)	1	%	ne	ne	ne	14%	37%	68%	2%	1%	0%	0%	0%	0%	0%	0%	1%	3%	2%	0%	0%	0%	0%	2%	0%
Metals (Total)																									
Aluminium	50	mg/kg	ne	ne	ne	**4340**	**3440**	**3300**	**16800**	**18400**	**15200**	**13300**	**14900**	**5610**	**7550**	**5860**	**6180**	**8870**	**13200**	**13600**	**12700**	**13400**	**12000**	**9880**	**8090**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	ne	**11**	**7**	**8**	**14**	**12**	**12**	**11**	**13**	**6**	**6**	<5	**11**	**14**	**8**	**11**	**12**	**12**	**6**	**6**	**6**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**3**	<2	**2**	**29**	**28**	**26**	**22**	**24**	**8**	**17**	**15**	**16**	**19**	**23**	**23**	**23**	**23**	**18**	**13**	**12**
Copper	5	mg/kg	60	5000	65	**14**	**11**	**15**	**25**	**36**	**25**	**27**	**29**	**16**	**55**	**31**	**8**	**14**	**34**	**37**	**35**	**36**	**36**	**76**	**70**
Iron	50	mg/kg	ne	ne	ne	**24800**	**16600**	**17200**	**28700**	**31200**	**27800**	**26400**	**23400**	**6620**	**31900**	**18600**	**24300**	**27500**	**25600**	**28300**	**25200**	**29400**	**23200**	**20500**	**18400**
Lead	5	mg/kg	300	1500	50	**6**	**6**	**7**	**12**	**11**	**10**	**10**	**11**	**7**	**28**	**16**	**6**	**8**	**12**	**12**	**12**	**12**	**10**	**10**	**9**
Manganese	5	mg/kg	500	7500	ne	**45**	**41**	**44**	**320**	**336**	**449**	**920**	**441**	**22**	**370**	**307**	**321**	**323**	**280**	**210**	**256**	**339**	**197**	**64**	**67**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**3**	**2**	**2**	**18**	**17**	**16**	**13**	**14**	**4**	**10**	**4**	**8**	**10**	**12**	**14**	**13**	**14**	**11**	**7**	**6**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**36**	**36**	**34**	**46**	**55**	**46**	**40**	**43**	**10**	**24**	**16**	**43**	**42**	**42**	**43**	**40**	**43**	**38**	**29**	**24**
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	**0.61**	**0.64**	**1.6**	**1.33**	**1.59**	**1.89**	**1.21**	**0.47**	**1.79**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH29	BH29	BH29	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH30	BH31	BH31	BH31	BH31
Sample ID						QC83	BH29 4.1-4.4	BH29 7.2-7.45	BH30 0.0-0.2	BH30 0.6-0.9	BH30 1.0-1.45	QC85	QC86	BH30 1.3-2.0	BH30 2.1-3.0	BH30 3.8-4.8	QC87	QC88	BH30 5.2-5.8	BH30 6.0-6.15	BH30 8.3-8.75	BH31 0.18-0.20	BH31 0.2-0.3	BH31 0.3-0.6	BH31 2.0-2.3
Date Sampled						8/10/2008	8/10/2008	8/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	9/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008
Sample Type						Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH29 2.2-2.7	BH29 4.1-4.4	BH29 7.2-7.45	BH30 0.0-0.2	BH30 0.6-0.9	BH30 1.0-1.45	BH30 1.0-1.45	BH30 1.0-1.45	BH30 1.3-2.0	BH30 2.1-3.0	BH30 3.8-4.8	BH30 3.8-4.8	BH30 3.8-4.8	BH30 5.2-5.8	BH30 6.0-6.15	BH30 8.3-8.75	BH31 0.18-0.20	BH31 0.2-0.3	BH31 0.3-0.6	BH31 2.0-2.3
Batch No.						EB0814076_MRED	EB0814076_MRED	EB0814076_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814114_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**																				
Moisture Content																									
Moisture Content	1	%	ne	ne	ne	**34.9**	**30.2**	**25.1**	**51.9**	**39.9**	**43.1**	**41.7**	**43.2**	**44.2**	**40.8**	**40.4**	**39.1**	**38.8**	**36.4**	**37.9**	**23.2**	**54.6**	**17.4**	**12.6**	**19**
Physico-Chemical Parameters																									
Clay (<2 µm)	1	%	ne	ne	ne	63%	55%	51%	36%	32%	54%	54%	52%	60%	61%	52%	55%	50%	58%	51%	35%	36%	14%	34%	27%
Silt (2na63 µm)	1	%	ne	ne	ne	31%	38%	38%	37%	40%	42%	38%	38%	32%	31%	36%	33%	38%	38%	36%	38%	30%	23%	39%	32%
Sand (63µmna2mm)	1	%	ne	ne	ne	6%	7%	11%	26%	27%	4%	8%	10%	8%	8%	12%	12%	12%	4%	11%	20%	27%	17%	23%	25%
Gravel (>2mm)	1	%	ne	ne	ne	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	7%	7%	46%	4%	16%
Metals (Total)																									
Aluminium	50	mg/kg	ne	ne	ne	**9880**	**8910**	**2290**	**8380**	**7520**	**10900**	**9830**	**9620**	**10500**	**9740**	**9950**	**9730**	**10100**	**8870**	**9900**	**4920**	**13000**	**8620**	**9770**	**3910**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	ne	<5	<5	<5	**17**	**16**	**14**	**12**	**11**	**8**	**9**	**7**	**8**	**8**	**8**	**11**	**18**	**33**	**27**	**12**	**10**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**13**	**12**	<2	**18**	**16**	**18**	**16**	**16**	**18**	**15**	**15**	**15**	**16**	**11**	**10**	**24**	**27**	**21**	**14**	**4**
Copper	5	mg/kg	60	5000	65	**55**	**78**	<5	**16**	**15**	**30**	**29**	**29**	**30**	**34**	**36**	**78**	**44**	**38**	**60**	**20**	**27**	**39**	**41**	**18**
Iron	50	mg/kg	ne	ne	ne	**19400**	**8330**	**1300**	**20800**	**18800**	**19400**	**17700**	**18900**	**21300**	**19800**	**19800**	**24100**	**21200**	**27500**	**20800**	**27200**	**39900**	**37300**	**31800**	**21500**
Lead	5	mg/kg	300	1500	50	**8**	**12**	<5	**8**	**8**	**9**	**9**	**10**	**10**	**8**	**9**	**9**	**9**	**7**	**10**	**11**	**11**	**18**	**22**	**7**
Manganese	5	mg/kg	500	7500	ne	**50**	**16**	<5	**289**	**205**	**116**	**148**	**118**	**170**	**337**	**490**	**652**	**495**	**255**	**148**	**148**	**448**	**1860**	**2400**	**55**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**6**	**3**	<2	**10**	**9**	**11**	**10**	**10**	**10**	**10**	**10**	**10**	**11**	**10**	**13**	**20**	**16**	**21**	**45**	**4**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**20**	**16**	<5	**38**	**33**	**36**	**33**	**32**	**33**	**33**	**34**	**39**	**36**	**31**	**33**	**27**	**51**	**29**	**26**	**23**
Nutrients																									
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	**2.82**	**0.31**	**0.03**	**1.28**	**1.13**	**0.94**	**0.85**	**0.75**	**0.82**	**1.15**	**0.98**	**0.88**	**0.88**	**0.96**	**2.99**	**0.03**	**1.5**	**0.26**	**0.12**	<0.02
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																									
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 Santos GLNG Analytical Results Tables
Table 5: Borehole 19-32 Partilcle Size Distribution, Metals, Nutrients and Radionuclides

Location						BH31	BH31	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32	BH32
Sample ID						BH31 3.6-3.9	BH31 5.0-5.35	BH32 0.7-1.0	BH32 1.5-1.8	QC 91	BH32 2.5-3.2	QC 92	QC 93	BH32 3.8-4.1	BH32 4.7-5.1	BH32 6.2-6.65	BH32 8.1-8.4	BH32 9.3-9.6
Date Sampled						15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008	15/10/2008
Sample Type						Primary Sample	Primary Sample	Primary Sample	Primary Sample	Duplicate Sample	Primary Sample	Duplicate Sample	Triplicate Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample	Primary Sample
Primary Sample ID						BH31 3.6-3.9	BH31 5.0-5.35	BH32 0.7-1.0	BH32 1.5-1.8	BH32 1.5-1.8	BH32 2.5-3.2	BH32 2.5-3.2	BH32 2.5-3.2	BH32 3.8-4.1	BH32 4.7-5.1	BH32 6.2-6.65	BH32 8.1-8.4	BH32 9.3-9.6
Batch No.						EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED	EB0814331_MRED
Analyte	**LOR**	**Units**	**QEPA EILs**	**NEPM HBILs 'F'**	**NODGDM (2002)**													
Moisture Content																		
Moisture Content	1	%	ne	ne	ne	**13.4**	**13.1**	**48.9**	**44.2**	**43.5**	**41.6**	**41.2**	**40.5**	**41.2**	**20.5**	**21.1**	**15.9**	**10.3**
Physico-Chemical Parameters																		
Clay (<2 µm)	1	%	ne	ne	ne	12%	31%	40%	53%	54%	58%	56%	58%	57%	34%	50%	32%	30%
Silt (2na63 µm)	1	%	ne	ne	ne	35%	56%	43%	44%	39%	38%	34%	34%	37%	42%	34%	33%	51%
Sand (63µmna2mm)	1	%	ne	ne	ne	21%	12%	14%	3%	7%	4%	10%	8%	6%	22%	16%	34%	13%
Gravel (>2mm)	1	%	ne	ne	ne	32%	1%	3%	0%	0%	0%	0%	0%	0%	2%	0%	1%	6%
Metals (Total)																		
Aluminium	50	mg/kg	ne	ne	ne	**3110**	**4140**	**11400**	**13300**	**12000**	**14800**	**13400**	**12300**	**11700**	**2800**	**2380**	**3100**	**5700**
Antimony	5	mg/kg	20	ne	2	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	5	mg/kg	20	500	ne	<5	<5	**23**	**10**	**9**	**12**	**10**	**9**	**9**	<5	**6**	<5	**8**
Cadmium	1	mg/kg	3	100	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	mg/kg	50	500	80	**2**	**3**	**26**	**21**	**19**	**20**	**20**	**18**	**18**	<2	<2	**2**	**3**
Copper	5	mg/kg	60	5000	65	**7**	**21**	**22**	**31**	**28**	**42**	**40**	**35**	**28**	**7**	<5	<5	**16**
Iron	50	mg/kg	ne	ne	ne	**10500**	**11200**	**28700**	**24400**	**22500**	**29700**	**37600**	**23600**	**18900**	**2400**	**6570**	**5900**	**19300**
Lead	5	mg/kg	300	1500	50	<5	**8**	**12**	**10**	**9**	**8**	**8**	**8**	**9**	<5	<5	<5	**9**
Manganese	5	mg/kg	500	7500	ne	**39**	**41**	**273**	**423**	**232**	**539**	**405**	**337**	**191**	**15**	**20**	**5**	**84**
Mercury	0.1	mg/kg	1	75	0.15	<0.1	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	2	mg/kg	60	3000	21	**2**	**3**	**13**	**12**	**11**	**13**	**12**	**12**	**10**	**2**	<2	**2**	**5**
Silver	2	mg/kg	ne	ne	1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Total Cyanide	1	mg/kg	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na
Zinc	5	mg/kg	200	35000	200	**20**	**32**	**44**	**39**	**35**	**46**	**40**	**38**	**34**	<5	<5	**11**	**42**
Nutrients																		
Total Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na
Total Organic Carbon	0.02	%	ne	ne	ne	<0.02	**0.08**	**1.3**	**0.71**	**0.66**	**0.68**	**0.62**	**0.63**	**0.72**	<0.02	<0.02	<0.02	**0.02**
Total Inorganic Carbon	0.02	%	ne	ne	ne	na	na	na	na	na	na	na	na	na	na	na	na	na
Radionuclides																		
Una238[1]		Bq/g	ne	ne	35	na	na	na	na	na	na	na	na	na	na	na	na	na
Pbna210		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na
Thna232[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na
Rana224[3]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na
Rana226[2]		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na
Kna40		Bq/g	ne	ne		na	na	na	na	na	na	na	na	na	na	na	na	na

Notes:

Exceeds the Queensland Environmental Protection Agency 1998 Environmental Investigation Levels

Exceeds the National Environment Protection Council 1999 Healthnabased Investigation Levels na Commercial/Industrial

Exceeds the National Ocean disposal guidelines for dredged mat 2002 National Ocean Disposal Guidelines for dredged materials.

ne: not established

na: not analysed

URS 2008 - Investigation Photograph



Plate 1: Looking east across the Targinie Channel



Plate 2: View of the tug boat manoeuvring the drill rig barge

URS 2008 - Investigation Photograph



Plate 3: The drilling derrick and drill head

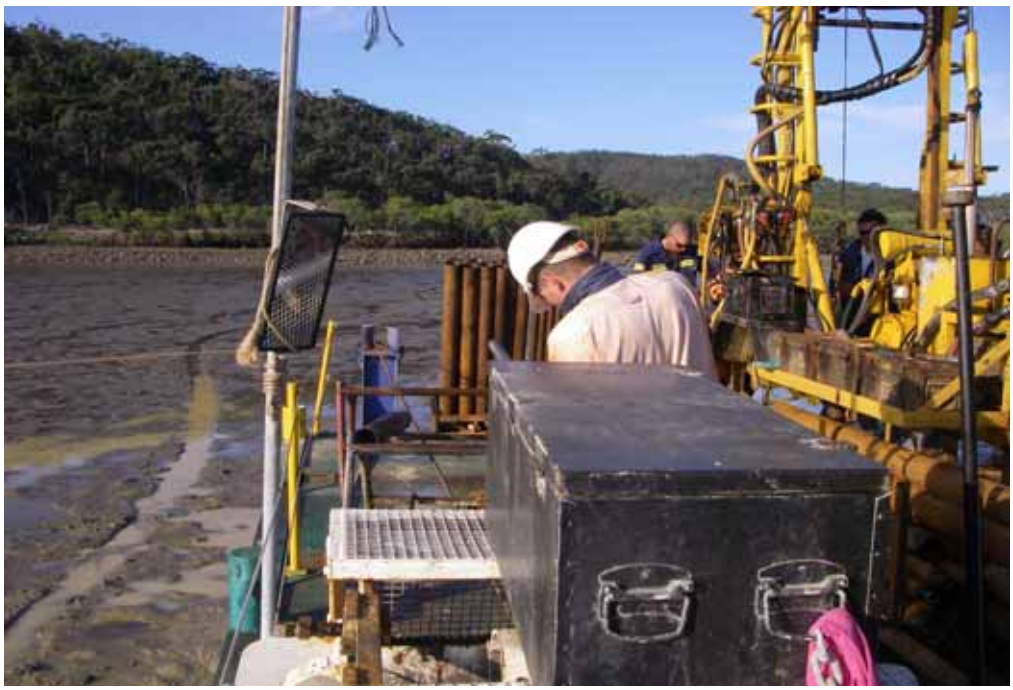

Plate 4: View looking east to Curtis Island from China Bay. Note the tidal flats.

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Plate 5: Seabed from the shore of Curtis Island near Laird Point (shell fragments)



Plate 6: Seabed from the shore of the mainland at Friends Point (shell and gravel)

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Plate 7: **BH02 1.2-3.2 m (below seabed)**



Plate 8: **BH13 0.7-2.5 m (below seabed)**

URS 2008 - Investigation Photograph



Plate 9: **BH13 7.7-8.8 m (below seabed)**



Plate 10: **BH14 0.0-2.0 m (below seabed)**

URS 2008 - Investigation Photograph



Plate 11: BH14 2.6-4.6 m (below seabed)



Plate 12: BH15 2.0-3.0 m (below seabed)

URS 2008 - Investigation Photograph



Plate 13: BH16 0.0-2.0 m (below seabed)



Plate 14: BH17 0.0-1.8 m (below seabed)

URS 2008 - Investigation Photograph



Plate 15: BH17 1.8-2.25 m (below seabed) SPT1



Plate 16: BH17 6.2-6.45 m (below seabed)

URS 2008 - Investigation Photograph



Plate 17: BH18 0.0-1.7 m (below seabed)



Plate 18: BH20 0.0-2.0 m (below seabed)

URS 2008 - Investigation Photograph



Plate 19: BH20 SPT @ 2.25 m (below seabed)



Plate 20: BH20 SPT @ 12.10 m (below seabed)

URS 2008 - Investigation Photograph



Plate 21: BH21 0.4-2.4 m (below seabed)



Plate 22: BH21 2.4-3.2 m (below seabed)

URS 2008 - Investigation Photograph



Plate 23: BH21 4.0-4.45 m (below seabed)



Plate 24: BH21 11.1-11.55 m (below seabed)

URS 2008 - Investigation Photograph



Plate 25: BH21 18.9-24.6 -mLAT Core Run



Plate 26: BH21 24.6-28.5 -mLAT Core Run

URS 2008 - Investigation Photograph



Plate 27: BH20 0.0-2.0 m (below seabed)



Plate 28: BH30 2.0-3.6 m (below seabed)

Figures

URS 2008 – Investigation Figures

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Client

URS

LNG

Project

GLADSTONE LNG PROJECT
MARINE SEDIMENT INVESTIGATION

Drawn: RG | Approved: JB | Date: 28-01-2009

Job No: **4262 6220** | File No: 42626220-g-501.wor

Title

MARINE SEDIMENT INVESTIGATION OVERVIEW

Figure: **1** | Rev: A

A4

Source: This map may contain data which is sourced and Copyright. Refer to Section 18.2 of the EIS for Ownership and Copyright.

ID	Easting	Northing	Longitude	Latitude
BH01	316425	7368679	151.198349	-23.782592
BH02	316689	7368463	151.200912	-23.784573
BH02B	316693	7368461	151.200951	-23.784591
BH03	316460	7368301	151.198645	-23.786009
BH04	316969	7368270	151.203635	-23.786347
BH05	317074	7368002	151.204632	-23.788779
BH06	317331	7367796	151.207127	-23.790668
BH07	317423	7367428	151.207984	-23.794000
BH08A	317725	7367159	151.210914	-23.796463
BH08B	317728	7367160	151.210944	-23.796455
BH09	318109	7367056	151.214669	-23.797437
BH10	318361	7366824	151.217113	-23.799560
BH11	318654	7366665	151.219968	-23.801029
BH12	317536	7368611	151.209240	-23.783333
BH13	316759	7367998	151.201541	-23.788779
BH14	317139	7367692	151.205231	-23.791585
BH15	317747	7368079	151.211244	-23.788160
BH16	317125	7368707	151.205219	-23.782419
BH17	317377	7367975	151.207601	-23.789057
BH18	316363	7368158	151.197675	-23.787289
BH19	312567	7372537	151.160990	-23.747316
BH19B	312567	7372538	151.160990	-23.747307
BH20	313066	7372614	151.165894	-23.746679
BH21	313574	7372644	151.170880	-23.746467
BH24	312926	7372220	151.164471	-23.750220
BH25	313477	7372227	151.169876	-23.750221
BH25B	313475	7372228	151.169856	-23.750212
BH26	314028	7372234	151.175281	-23.750222
BH27	317743	7367967	151.211191	-23.789171
BH27B	317742	7367968	151.211181	-23.789162
BH28	316930	7368499	151.203280	-23.784275
BH28B	316930	7368496	151.203280	-23.784302
BH29	319316	7367379	151.226551	-23.794657
BH30	319596	7367551	151.229320	-23.793136
BH31	317089	7368792	151.204877	-23.781648
BH32	317031	7368698	151.204296	-23.782490
BH33	316986	7368625	151.203845	-23.783144
BH34	316813	7368667	151.202153	-23.782745
BH35	317091	7368464	151.204856	-23.784609
BH36	317596	7367817	151.209730	-23.790508

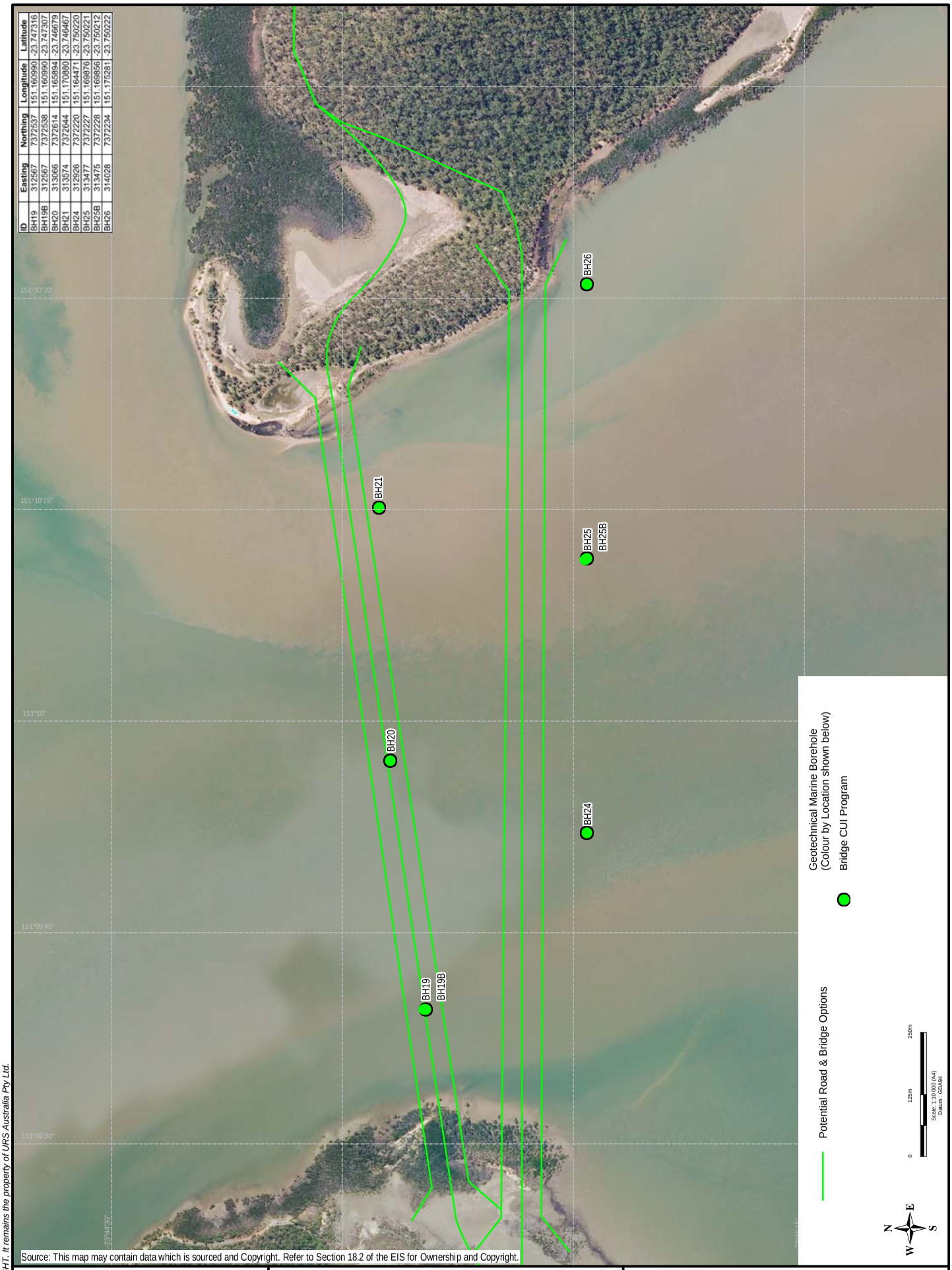
Potential Road & Bridge Options
Study Area
Geocoastal (Australia) Pty Ltd
Connell Wagner Pty Ltd

Geotechnical Marine Borehole
(Colour by Location shown below)
Bridge CUI Program
Dredge Area
Dredge Bund
PLF/Jetty
MOF

N W E S

0 500 1000m

Scale: 1:40 000 (A4)
Datum : GDA94



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Client

Project
GLADSTONE LNG PROJECT
MARINE SEDIMENT INVESTIGATION

Title
MARINE SEDIMENT INVESTIGATION
POTENTIAL BRIDGE AND PIPELINE

Drawn: RG	Approved: JB	Date: 28-01-2009	
Job No: **4262 6220**	File No: 42626220-g-719.wor		

Figure: **2**

Rev: A

A4

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Client

Project

GLADSTONE LNG PROJECT
MARINE SEDIMENT INVESTIGATION

Title

MARINE SEDIMENT INVESTIGATION
DREDGE AREA/BUND
PLF/JETTY AND MOF

Drawn: RG | Approved: JB | Date: 28-01-2009

Job No: **4262 6220** | File No: 42626220-g-720.wor

Figure: **3** | Rev: A | **A4**

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ID	Easting	Northing	Longitude	Latitude
BH01	316425	7368679	151.198349	-23.782592
BH02	316689	7368463	151.200912	-23.784573
BH02B	316693	7368461	151.200951	-23.784591
BH03	316460	7368301	151.198645	-23.786009
BH04	316969	7368270	151.203635	-23.786347
BH05	317074	7368002	151.204632	-23.788779
BH06	317331	7367796	151.207127	-23.790668
BH07	317423	7367428	151.207984	-23.794000
BH08A	317725	7367159	151.210914	-23.796463
BH08B	317728	7367160	151.210944	-23.796455
BH09	318109	7367056	151.214669	-23.797437
BH10	318361	7366824	151.217113	-23.799560
BH11	318654	7366665	151.219968	-23.801029
BH12	317536	7368611	151.209240	-23.783333
BH13	316759	7367998	151.201541	-23.788779
BH14	317139	7367692	151.205231	-23.791585
BH15	317747	7368079	151.211244	-23.788160
BH15	317747	7368079	151.211244	-23.788160
BH16	317125	7368707	151.205219	-23.782419
BH17	317377	7367975	151.207601	-23.789057
BH18	316363	7368158	151.197675	-23.787289
BH27	317743	7367967	151.211191	-23.789171
BH27B	317742	7367968	151.211181	-23.789162
BH28	316930	7368499	151.203280	-23.784275
BH28B	316930	7368496	151.203280	-23.784302
BH29	319316	7367379	151.226551	-23.794657
BH30	319596	7367551	151.229320	-23.793136
BH31	317089	7368792	151.204877	-23.781648
BH32	317031	7368698	151.204296	-23.782490
BH33	316986	7368625	151.203845	-23.783144
BH34	316813	7368667	151.202153	-23.782745
BH35	317091	7368464	151.204856	-23.784609
BH36	317596	7367817	151.209730	-23.790508

Potential Road & Bridge Options
Study Area
Geocoastal (Australia) Pty Ltd
Connell Wagner Pty Ltd

Geotechnical Marine Borehole
(Colour by Location shown below)
Dredge Area
Dredge Bund
PLF/Jetty
MOF

N
W E
S

0 250m 500m

Scale: 1:20,000 (A4)
Datum: GDA94

Appendix A URS 2008 - Drilling Logs

URS 2008 Santos GLNG

Borehole Log Summary

BH No.	Engineer Contractor	Date Started	Date Finished	Location			Seabed Elevation		Hole Depth		Lithology Depths (m BSB)			Lithology Depths (m LAT)			Primary Samples	Comments
				Northing	Easting	Position	m LAT	m AHD	m BSB	m LAT	Marine Sediment Depth (m BSB)	Residual Rock Depth (m BSB)	XW/DW/Bedrock Depth (m BSB)	Marine Sediment Depth (m LAT)	Residual Rock Depth (m LAT)	XW/DW/Bedrock Depth (m LAT)		
BH01	GeoCoastal	07-Jun-08	07-Jun-08	7368680	316464	Dredge Area	-7.15	-9.418	4.25	-11.4	0.0 to 3.6	3.6 to 4.25	NE	-7.15 to -10.75	-10.75 to -11.4	NE	3	
BH02	URS/CW	10-Aug-08	10-Aug-08	7368460	316691	Dredge Area	-7.30	-9.568	6.60	-13.9	0.0 to 2.4	2.4 to 6.6	NE	-7.3 to -9.7	-9.7 to -13.9	NE	6	BH02 had to be redrilled due to an anchor movement. Redrilled as BH02B
BH02B	URS/CW	11-Aug-08	11-Aug-08	7368461	316693	Dredge Area	-7.30	-9.568	9.40	-16.7	NE	6.6 to 9.4	NE	NE	-13.9 to -16.7	NE	4	Due to relocating Drill Search rock rolled to 13.90m LAT.
BH03	GeoCoastal	08-Jun-08	08-Jun-08	7368324	316452	Dredge Area	-6.52	-8.788	6.90	-13.42	0.0 to 5.95	5.95 to 6.9	NE	-6.52 to -12.47	-12.47 to -13.42	NE	6	
BH04	URS/CW	14-Aug-08	15-Aug-08	7368272	316968	Dredge Area	-4.20	-6.468	12.70	-16.9	0.0 to 2.2	2.2 to 2.95	2.95 - 12.7	-4.2 to -6.4	-6.4 to -7.15	-7.15 to -16.9	5	
BH05	GeoCoastal	09-Jun-08	09-Jun-08	7368005	317071	Dredge Area	-7.86	-10.128	6.60	-14.46	0.0 to 6.6	NE	NE	-7.86 to -14.46	NE	NE	3	
BH06	GeoCoastal	06-Jun-08	06-Jun-08	7367768	317334	Dredge Area	-9.40	-11.668	6.00	-15.4	0.0 to 5.5	5.5 to 6.0	NE	-9.4 to -14.9	-14.9 to -15.4	NE	3	
BH07	URS/CW	27-Jul-08	27-Jul-08	7367426	317422	Dredge Area	-11.8	-14.068	4.80	-16.6	0.0 to 3.5	3.5 to 4.8	NE	-11.8 to -15.3	-15.3 to -16.6	NE	10	
BH08A	URS/CW	22-Jul-08	22-Jul-08	7367162	317726	Dredge Area	-11.2	-13.468	3.05	-14.25	0.0 to 3.05	NE	NE	-11.2 to -14.25	NE	NE	0	BH08A had to be redrilled due to an anchor movement. Redrilled as BH08B.
BH08B	URS/CW	26-Jul-08	26-Jul-08	7367160	317728	Dredge Area	-11.1	-13.368	5.55	-16.65	0.0 to 5.0	5.0 to 5.55	NE	-11.1 to -16.1	-16.1 to -16.65	NE	5	BH08B was completely redrilled.
BH09	GeoCoastal	07-Jun-08	07-Aug-08	7367060	318110	Dredge Area	-10.17	-12.438	5.00	-15.7	0.0 to 5.0	NE	NE	-10.17 to -15.17	NE	NE	3	
BH10	GeoCoastal	08-Jun-08	08-Jun-08	7366821	318339	Dredge Area	-12.57	-14.838	2.60	-15.7	0.0 to 2.6	NE	NE	-12.57 to -15.17	NE	NE	2	
BH11	GeoCoastal	07-Jun-08	07-Jun-08	7366655	318652	Dredge Area	-12.45	-14.718	2.60	-15.05	0.0 to 2.6	NE	NE	-12.45 to -15.05	NE	NE	3	
BH12	GeoCoastal	08-Jun-08	08-Jun-08	7368609	317540	Dredge Area	0	-2.268	4.20	-4.2	0.0 to 3.75	3.75 to 4.2	NE	0.0 to -3.75	-3.75 to -4.2	NE	3	
BH13	URS/CW	28-Aug-08	28-Aug-08	7368000	316757	Dredge Area	-2.7	-4.968	14.30	-17.0	0.0 to 11.2	11.2 to 14.3	NE	-2.7 to -13.9	-13.9 to -17.0	NE	12	
BH14	URS/CW	27-Aug-08	27-Aug-08	7367695	317138	Dredge Area	-8.5	-10.768	9.05	-17.55	0.0 to 7.05	7.05 to 9.05	NE	-8.5 to -15.55	-15.55 to -17.55	NE	9	
BH15	URS/CW	20-Aug-08	20-Aug-08	7368078	317748	MOF	+0.37	-1.898	7.80	-7.43	0.0 to 3.0	3.0 to 5.45	5.45 to 7.8	0.37 to -2.63	-2.63 to -5.08	-5.08 to 7.43	9	
BH16	URS/CW	19-Aug-08	19-Aug-08	7368705	317126	PLF	+1.05	-1.218	8.45	-7.95	0.0 to 4.6	4.6 to 8.45	NE	1.05 to -3.55	-3.55 to -7.4	NE	8	
BH17	URS/CW	18-Aug-08	18-Aug-08	7367975	317377	Dredge Area	-8.03	-10.298	11.00	-19.03	0.0 to 1.12	1.12 to 11.0	NE	-8.03 to -9.15	-9.15 to -19.03	NE	10	
BH18	URS/CW	26-Aug-08	26-Aug-08	7368156	316364	Dredge Area	+0.3	-1.968	16.45	-16.2	0.0 to 10.7	10.7 to 16.45	NE	0.3 to -10.4	-10.4 to -16.15	NE	18	
BH19	URS/CW	29-Aug-08	03-Sep-08	7372535	312564	Bridge - North	-0.7	-2.968	33.59	-34.29	0.0 to 3.6	3.6 to 28.6	28.6 to 33.59	-0.7 to -4.3	-4.3 to -29.30	-29.30 to -34.29	26	BH19 had to be redrilled due to potential risk of damaging casing during bad weather. Redrilled as BH19B.
BH19B	URS/CW	06-Sep-08	07-Sep-08	7372538	312567	Bridge - North	-0.7	-2.968	44.2	-44.9	NE	NE	33.59 to 44.20	NE	NE	-34.29 to -44.9	1	Due to relocating Drill Search rock rolled to 35.85m LAT
BH20	URS/CW	08-Sep-08	17-Sep-08	7372613	313066	Bridge - North	-11.38	-13.648	42.5	-53.88	0.0 to 5.5	5.5 to 15.0	15.0 to 42.5	-11.38 to -16.88	-16.88 to -26.38	-26.38 to -53.88	20	
BH21	URS/CW	20-Sep-08	24-Oct-08	7372704	313571	Bridge - North	-2.5	-4.768	31.15	-33.65	0.0 to 1.90	1.90 to 16.1	16.1 to 31.15	-2.5 to -4.4	-4.4 to -18.6	-18.6 to -33.65	17	
BH24	URS/CW	30-Jul-08	03-Aug-06	7372220	312930	Bridge - South	-10.60	-12.868	33.7	-44.3	0.0 to 6.7	6.7 to 14.05	14.05 - 33.7	-10.60 to -17.30	-17.30 to -24.65	-24.65 to -44.3	6	
BH25	URS/CW	04-Aug-08	07-Aug-08	7372224	313481	Bridge - South	-4.0	-6.268	22.9	-26.9	0.0 to 13.0	13.0 to 14.85	14.85 to 22.9	-4.0 to -17.0	-17.0 to -18.85	-18.85 to -26.9	9	BH25 had to be redrilled due to the casing cracking when barge was pulled off location for the evening. Redrilled as BH25B
BH25B	URS/CW	07-Aug-08	08-Aug-08	7372228	313475	Bridge - South	-4.0	-6.268	31	-35.0	NE	NE	22.9 to 31.0	NE	NE	-26.9 to -35.0	2	Due to relocating Drill Search rock rolled to 22.80m LAT
BH26	URS/CW	12-Aug-08	13-Aug-08	7372231	314025	Bridge - South	+1.6	-0.668	30.7	-29.1	0.0 to 3.2	NE	3.2 to 30.7	1.6 to -2.45	NE	-2.45 to -29.1	11	
BH27	URS/CW	04-Oct-08	04-Oct-08	7367968	317742	MOF	-0.1	-2.368	5.45	-5.55	0.0 to 1.6	1.6 to 2.3	2.3 to 5.45	-0.1 to -1.7	-1.7 to -2.4	-2.4 to -5.55	6	BH27 had to be redrilled due to an anchor movement. Redrilled as BH27B.
BH27B	URS/CW	05-Oct-08	06-Oct-08	7367967	317743	MOF	-0.1	-2.368	20	-20.1	NE	NE	7.0 to 20.0	NE	NE	-7.10 to -20.01	0	Due to relocating Drill Search rock rolled to 7.0m LAT
BH28	URS/CW	28-Sep-08	28-Sep-08	7368500	316931	PLF	-6.2	-8.468	6.3	-12.5	0.0 to 5.9	5.9 to 6.3	NE	-6.2 to -12.1	-12.1 to -12.50	NE	4	BH28 had to be redrilled due to an anchor movement. Redrilled as BH28B.
BH28B	URS/CW	28-Sep-08	02-Oct-08	7368496	316930	PLF	-6.2	-8.468	31.4	-37.6	NE	5.9 to 11.3	11.3 to 31.4	NE	-13.5 to -17.5	-17.5 to -37.6	4	Due to relocating Drill Search push tubed the first 2.0m and then rock rolled to 13.5m LAT
BH29	URS/CW	08-Oct-08	08-Oct-08	7367380	319317	Retaining Wall	+1.1	-1.168	15	-13.9	0.0 to 4.1	4.1 to 8.4	8.4 to 15.0	1.1 to -3.0	-3.0 to -7.3	-7.3 to -13.9	8	
BH30	URS/CW	09-Oct-08	09-Oct-08	7367551	319597	Retaining Wall	+1.00	-1.268	15	-14.0	0.0 to 8.3	8.3 to 15.0	NE	1.0 to -7.3	-7.3 to 14.0	NE	9	
BH31	URS/CW	13-Oct-08	14-Oct-08	7368763	317089	PLF	+0.55	-1.718	20	-19.45	0.0 to 0.3	0.3 to 5.0	5.0 to 20.0	0.55 to +0.15	+0.15 to -4.45	-4.45 to -19.45	6	
BH32	URS/CW	15-Oct-08	15-Oct-08	7368698	317031	PLF	+0.56	-1.708	20	-19.44	0.0 to 4.7	4.7 to 7.7	7.7 to 20.0	0.56 to -4.14	-4.14 to -7.14	-7.14 to -19.44	8	
BH33	CW	18-Oct-08	20-Oct-08	7368627	316983	PLF	1	-1.268	25.1	-24.1	0.0 to 12.2	12.2 to 17.7	17.7 to 25.10	1.0 to -11.2	-11.2 to -16.7	-16.7 to -24.1	0	URS were present during the drilling of BH33. All information has been given by Connell Wagner
BH34A/B	CW	21-Oct-08	22-Oct-08	7368667	316814	PLF	0.6	-1.668	30	-29.4	0.0 to 8.0	8.0 to 18.0	18.0 to 30.0	-7.4 to -17.4	-17.4 to -24.2	-24.2 to -29.4	0	URS were present during the drilling of BH34A/B. All information has been given by Connell Wagner
BH35	CW	27-Oct-08	29-Oct-08	317093	7368464	PLF	-5	-7.268	26.3	-31.3	0.0 to 6.0	NE	6.0 to 26.3	-5.0 to -11.0	NE	-11.0 to -31.3	0	URS were present during the drilling of BH35. All information has been given by Connell Wagner
BH36	CW	29-Oct-08	03-Nov-08	317597	7367814	PLF	-10.4	-12.668	18.5	-28.9	0.0 to 11.1	11.1 to 15.5	15.5 to 18.5	-10.4 to -21.50	-21.5 to -25.90	-25.90 to -28.90	0	URS were present during the drilling of BH36. All information has been given by Connell Wagner
																TOTAL	**256**	

SITE: GC/GLNG OFF#01

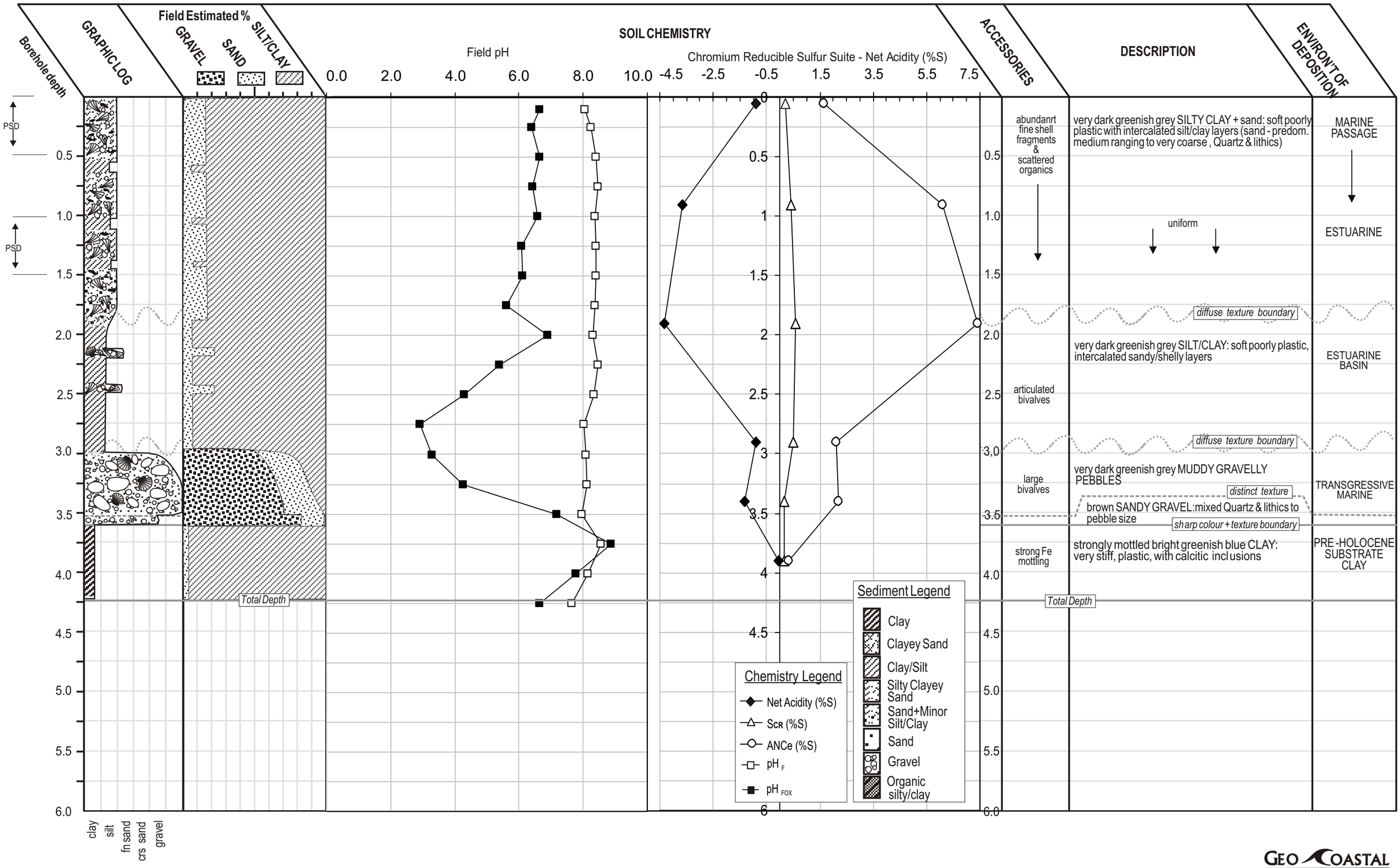
FEATURE: Marine Channel

DATE: 7/6/08

Seabed Core #01

LOCATION: Offshore Sthn Curtis Island, Qld
WGS 84 23° 46.955' Lat. 151° 11.906' Long. **Depth below LAT:** -7.15m

SAMPLING METHOD: GeoCoastal Pneumatic/Hydraulic Vibracorer



GEO COASTAL Australia

URS Australia Pty Ltd

Soil Bore BH02

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **10-8-08** Date Finished: **10-8-08**	Relative Level: -7.30 mLAT Relative Level: -9.568 mAHD Coordinates: 316691.05 mE 7368460.35 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-8 / 0		Gravelly SAND. Loose brown with fine to medium sized gravel, sub-angular, trace coarse gravel and trace shell fragments.			F-C	SA				SP
	0.30	BH02_0.3-1.9 QC07 QC08												
				-9 / 1		SAND. Loose brown with trace fine sized gravel and shell fragments.			F-C	SA-SR				SP
	1.90	BH02_1.9-2.3 QC09 QC10				Clayey SAND. Loose grey brown tinged green, some fine to medium sized gravel, sub-angular, trace shell fragments.			F-C	SA-R		M		SC
	2.50	BH02_2.5-3.0 QC11 QC12		-10 / 2		Sandy CLAY. Stiff orange brown, some fine to medium grained sand, sub-angular to rounded.						H		CL
				-11 / 3		Clayey SAND. Medium dense, grey brown tinged green, some fine to medium sized gravel, sub-angular, trace shell fragments.			F-C	SA-R		M		SC
	4.20	BH02_4.2-4.6		-12 / 4		Clayey SAND. Very dense light grey mottled orange brown, occasionally mottled black. / Clayey SAND. As previous with decreasing clay content .			F F	R R		M L		SC SC
	5.00	BH02_5.0-5.4		-13 / 5										
	6.20	BH02_6.2-6.6		-14 / 6		Clayey SAND. As previous with increasing clay content.			F	R		M		SC
						Sandy CLAY. Stiff dark brown mottled orange, some rounded fine grained sand.			F	R		H		CL
				-15 / 7		Redrilled due to anchor movement. See BH02B for indicative underlying geology.								

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH02B

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **11-8-08** Date Finished: **11-8-08**	Relative Level: -7.3 mLAT Relative Level: -9.568 mAHD Coordinates: 316692.89 mE 7368460.77 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA									
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-8 / 0										
				-9 / 1										
				-10 / 2										
				-11 / 3										
				-12 / 4										
				-13 / 5										
				-14 / 6	NO RECOVERY	See BH02 for indicative overlying geology. BH02B was rock rolled to 6.6m.						H		NOR
												H		CL
	7.00					Sandy CLAY. Dark brown, mottled orange, some fine sand.						H		CH
		BH02B_7.0-7.55		-15 / 7		CLAY. Very stiff brown with trace fine sand.						H		CH
	7.60					CLAY. Very stiff light brown.								
		BH02B_7.6-7.8				Sandy CLAY. Very stiff brown tinged yellow, some fine to coarse sub-angular to sub-rounded sand, some fine						M		CL
	7.80	BH02B_7.8-8.0							F-C	SA				GP

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH02B

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **11-8-08** Date Finished: **11-8-08**	Relative Level: -7.3 mLAT Relative Level: -9.568 mAHD Coordinates: 316692.89 mE 7368460.77 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
					8		to medium grained gravel, sub-angular to sub-rounded.			F-M	SR-R				SW
				-16			Sandy GRAVEL. Very dense brown tinged yellow, some fine to coarse grained sand, sub-angular to rounded, trace cobbles and trace clay.								
					9		SAND. Very dense, brown tinged yellow.								
■	9.30	BH02B_9.3-9.4					Sandy GRAVEL. Very dense brown tinged yellow, some fine to coarse grained sand, sub-angular to rounded, some clay fines, low to medium plasticity.			F-C	SA				GP
				-17	10										
				-18	11										
				-19	12										
				-20	13										
				-21	14										
				-22	15										
				-23											

REMARKS:

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SITE: GC/GLNG OFF#03

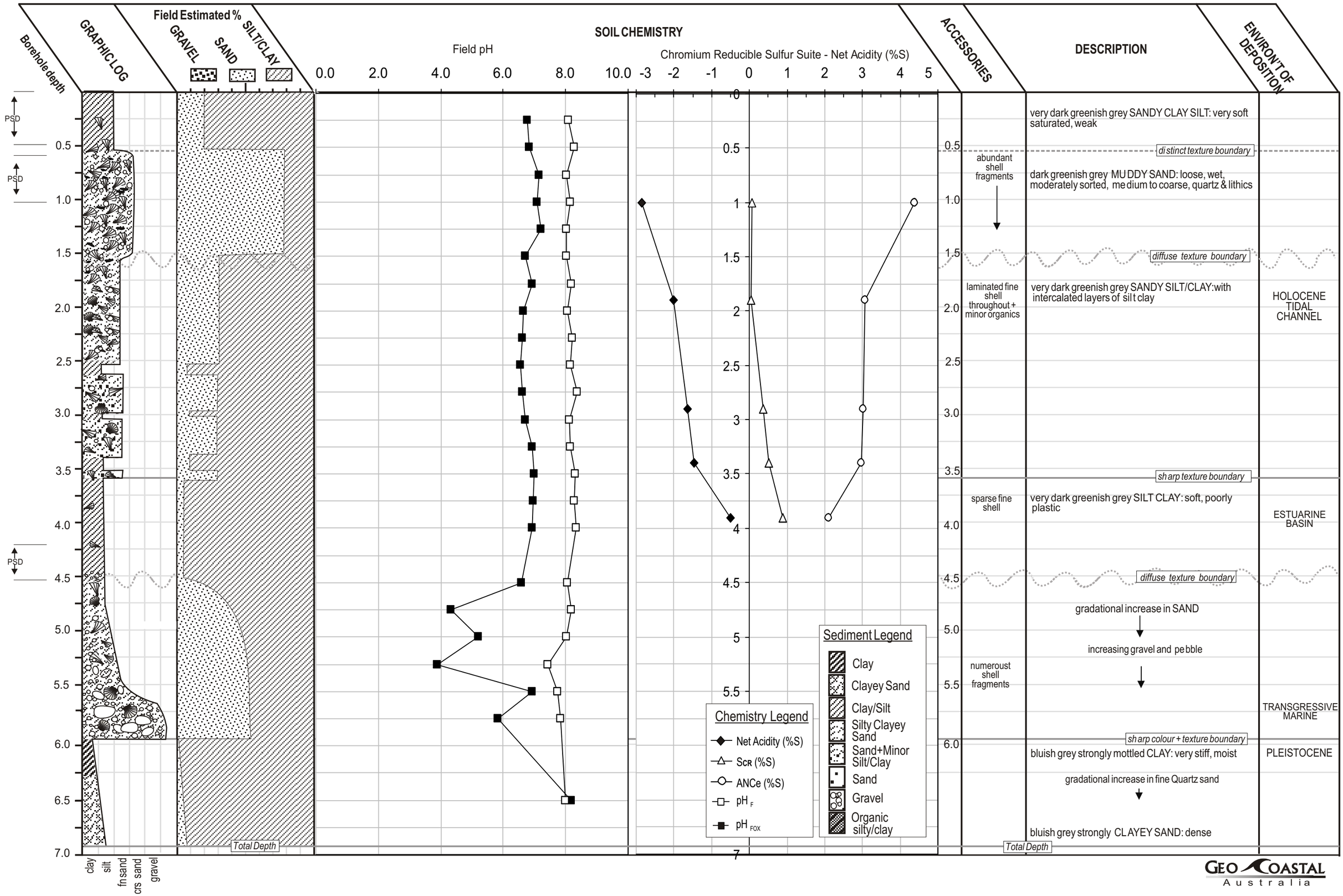
FEATURE: Marine Channel

DATE: 8/6/08

Seabed Core #03

LOCATION: Offshore Sthn Curtis Island, Qld
WGS 84 23° 47.158' Lat. 151° 11.914' Long. **Depth below LAT:** -6.52m

SAMPLING METHOD: GeoCoastal Pneumatic/Hydraulic Vibracorer



GEO COASTAL Australia

URS Australia Pty Ltd

Soil Bore BH04

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **14-8-08** Date Finished: **15-8-08**	Relative Level: -4.20 mLAT Relative Level: -6.468 mAHD Coordinates: 316967.89 mE 7368271.55 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	0.00	BH04_0.0-0.3		-5 / 0		Sandy Gravel. Very dense grey. Sand is fine to coarse, some silt and some shell fragments.			F-COB	A-SR				GP
						Core Loss. No recovery.								NOR
	1.50	BH04_1.5-2.0 QC18 QC19		-6 / 1	NO RECOVERY	CLAY. Firm Light green with trace fine sand and trace medium angular gravel.						M L		CL CL
	2.00	BH04_2.0-2.2				CLAY. As above but mottled orange with some lenses of sandy clay, sand is fine grained.						M H		CL CL
	2.20 2.50	BH04_2.2-2.5 BH04_2.5-2.95		-7 / 2		CLAY. As above but light orange. Some medium to cobble sized, angular to sub angular gravels.						H H		CL CL
						CLAY. Soft, very light green, some coarse sand, some gravels, fine to coarse, angular to sub-rounded, trace cobbled size.								
	3.20	BH04_3.2-3.7		-8 / 3	NO RECOVERY	Gravelly CLAY. Soft, light orange. Gravel is fine to medium, angular to sub-angular, some fine to coarse sand and minor coarse gravel.								NOR STS
						Sandy CLAY. Firm, light grey green, mottled orange, sand is fine to medium, minor fine to medium sub-angular gravels.								
				-9 / 4	NO RECOVERY	Core Loss. Core Loss. No recovery.								NOR
						SILTSTONE. Distinctly weathered, low strength, light grey green mottled orange.								STS
				-10 / 5		Core Loss. No recovery.								SS
						SILTSTONE. Distinctly weathered, low strength, light grey green mottled light brown.								
				-11 / 6		SANDSTONE. Extremely weathered, medium strength light brown sandstone. Weak bands noted filled with clay. Becoming fine grained at 7.30m.								
				-12 / 7										

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH04

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **14-8-08** Date Finished: **15-8-08**	Relative Level: -4.20 mLAT Relative Level: -6.468 mAHD Coordinates: 316967.89 mE 7368271.55 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-13	8										
					9										
				-14			SILTSTONE. Distinctly weathered, medium strength light grey mottled orange brown. Very closely spaced defects.								STS
				-15	10										
					11		SANDSTONE. Distinctly weathered, medium strength grey brown, fine grained, very closely spaced defects.								SS
				-16			SILTSTONE. Distinctly weathered, medium strength, grey, very closely spaced defects.								STS
					12										
				-17											
					13										
				-18											
					14										
				-19											
					15										
				-20											

REMARKS:

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SITE: GC/GLNG OFF#05

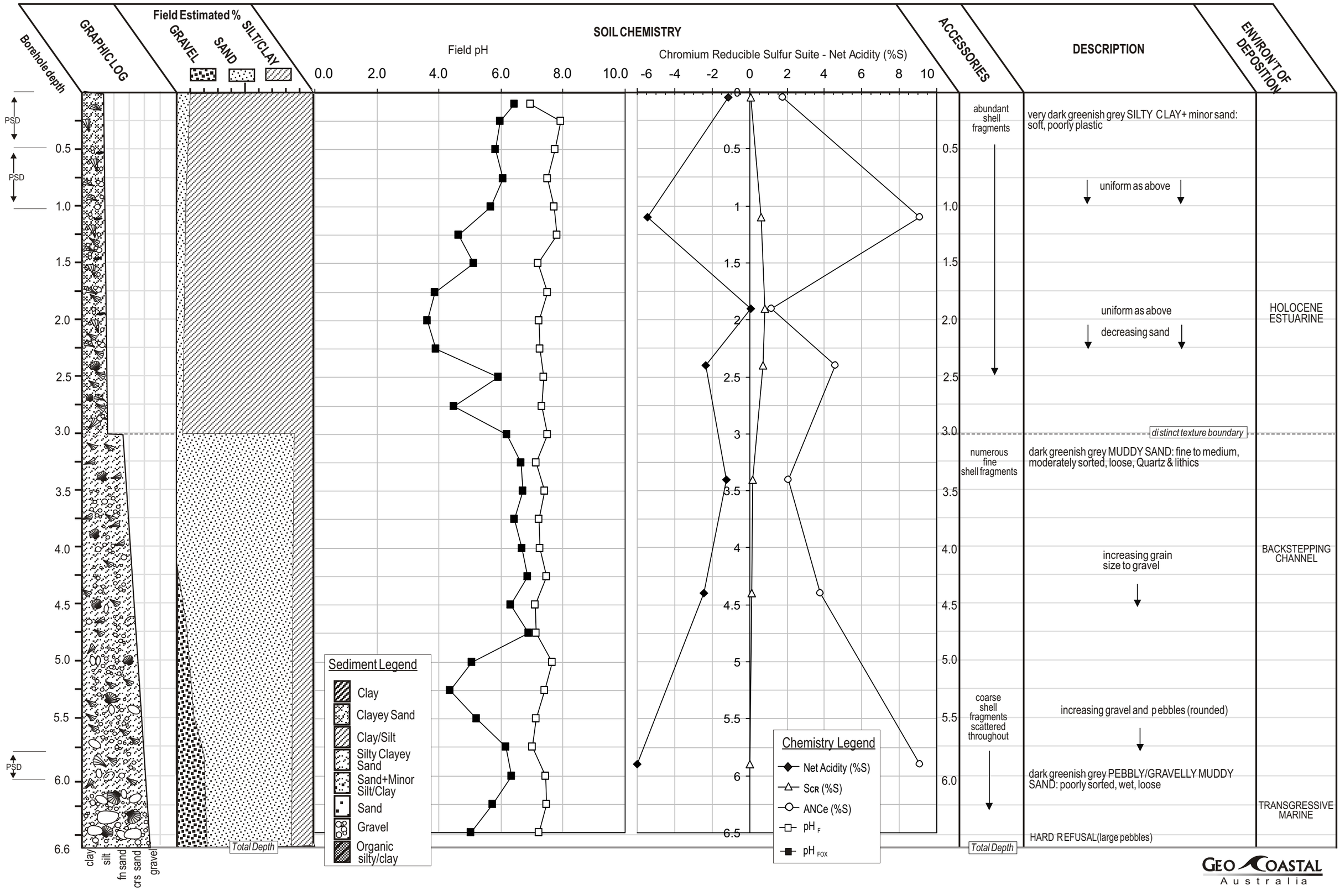
FEATURE: Marine Channel

DATE: 9/6/08

Seabed Core #05

LOCATION: Offshore Sthn Curtis Island, Qld
WGS 84 23° 47.325' Lat. 151° 12.276' Long. **Depth below LAT:** -7.86m

SAMPLING METHOD: GeoCoastal Pneumatic/Hydraulic Vibracorer



GEO COASTAL Australia

SITE: GC/GLNG OFF#06

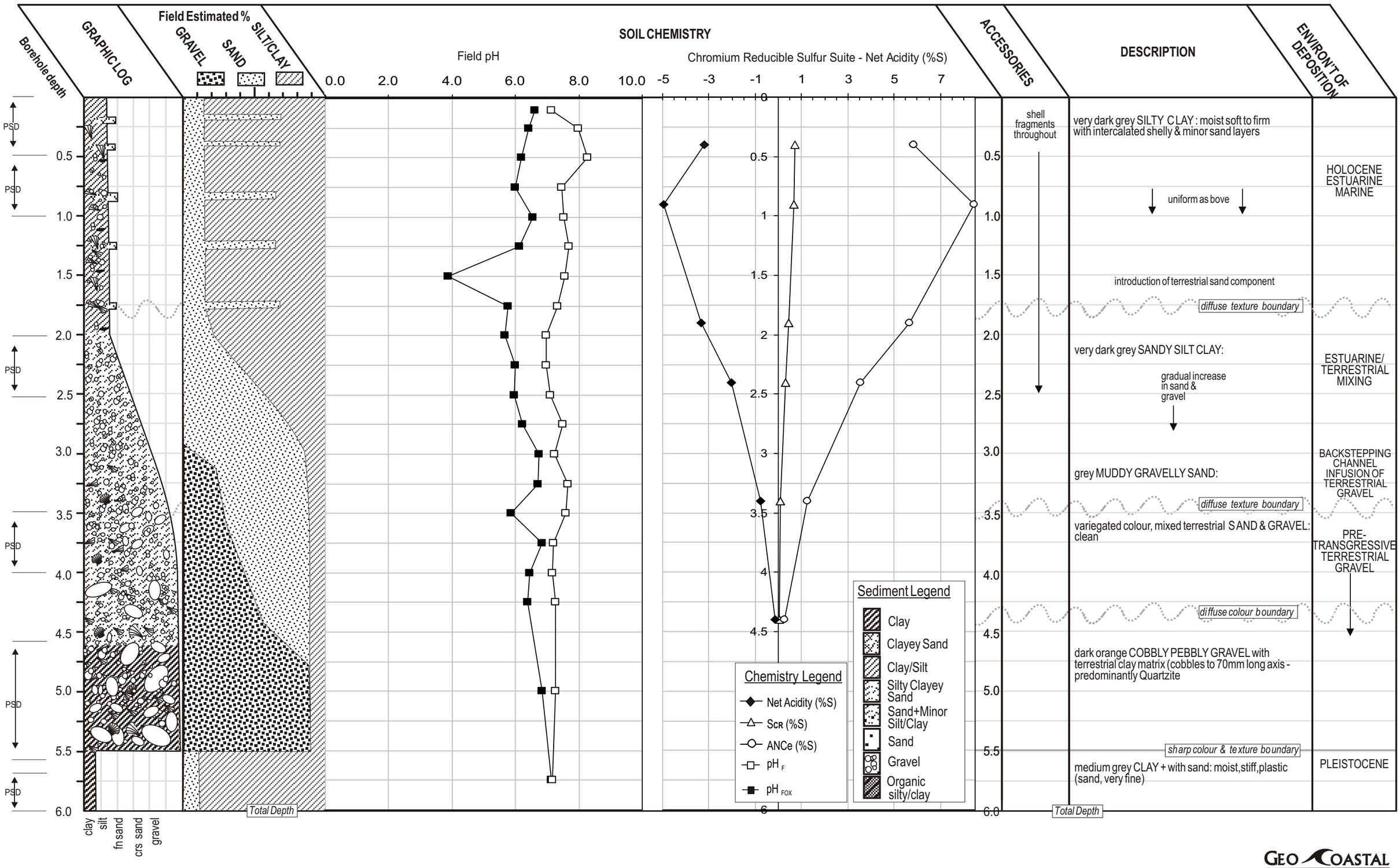
FEATURE: Marine Channel

DATE: 6/6/08

Seabed Core #06

LOCATION: Offshore Sthn Curtis Island, Qld
WGS 84 23° 47.455' Lat. 151° 12.429' Long. **Depth below LAT:** -9.40m

SAMPLING METHOD: GeoCoastal Pneumatic/Hydraulic Vibracorer



GEO COASTAL Australia

URS Australia Pty Ltd

Soil Bore BH07

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **DWL(CW)/JD(URS)** Checked By: Date Started: **27-7-08** Date Finished: **27-7-08**	Relative Level: -11.8 mLAT Relative Level: -14.068 mAHD Coordinates: 317422.4 mE 7367425.9 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	0.00	BH07_0.0-0.5		-12	0		Silty SAND. Very loose, brown with greenish tinge. Trace medium grained sand, shell fragments present.			F			L		SM
	0.50	BH07_0.5-1.0					Silty CLAY. Soft, wet, dark grey, some lenses of decomposed organics, faint odour, some fine grained sand,						L		CL
	1.00	BH07_1.0-1.5		-13	1		trace medium grained sand, shell fragments present, up to 15mm.						L-M		CL
	1.50	BH07_1.5-2.0					Sandy CLAY. Soft to firm dark grey. Sand is fine grained with trace medium grained. Some silt and some shell fragments present, up to 40mm in size.						M		CL
	2.20	BH07_2.2-2.7		-14	2		INTERBEDDED CLAY and SANDY CLAY. Soft to firm dark grey, interbedded lenses of sandy clay and clay, each lense up to 30mm to 50mm thick, fine grained sand, silt, shell fragments up to 5mm present in sandy clay lenses.						L		CL
	2.70	BH07_2.7-3.2					Sandy CLAY. Soft dark grey, sand is fine grained, trace medium grained, shell fragments present, up to 70mm in size.						L		CL
	3.20	BH07_3.2-3.5		-15	3		CLAY. Firm dark grey,, trace fine grained sand, shell fragments present up to 15mm in size.						L		CL
	3.50												M		CL
	3.60	BH07_3.5-3.6					Sandy CLAY. Firm dark grey, sand is fine to coarse grained sand, trace fine to coarse sized gravel, sand and gravel are sub-rounded, shell fragments present up to 15mm.			F-C	SA-SR		L		GC
	4.00	BH07_3.6-3.9											M		GC
	4.30	BH07_4.0-4.3		-16	4		INTERBEDDED CLAY and SANDY CLAY. Firm, dark grey, interbedded lenses of sandy CLAY and CLAY, each lense up to 40mm to 70mm thick, fine to coarse grained sand, trace fine to coarse sized gravel, sub-rounded, shell fragments up to 15mm in sandy clay lenses.								
		BH07_4.3-4.8		-17	5		Gravelly Clayey SAND. Dense, well graded, moist, greenish grey mottled orange brown, fine and trace medium sized gravel, sub-angular to rounded.								
				-18	6		Gravelly Sandy CLAY. Dense, moist orange brown, fine to coarse grained sand, sub-rounded to rounded. Fine and trace medium to coarse sized gravel. sub-angular to sub-rounded.								
				-19	7										

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH08

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **DWL(CW)/JD(URS)** Checked By: Date Started: **22-7-08** Date Finished: **22-7-08**	Relative Level: -11.2 mLAT Relative Level: -13.468 mAHD Coordinates: 317725.6 mE 7367161.8 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				0	NO RECOVERY	Core Loss. No recovery								NOR
				-12 / 1		Clayey GRAVEL. Loose brown and olive brown, trace fine sized gravel, trace organics.			M-C	SA-R		L		GC
				-13 / 2		SAND. Dense brown, trace clay fines, trace fine to medium sized gravel, sub-angular, shell fragments present.			F-C	SA-SR				SW
				-14 / 3		CLAY. Very soft wet dark grey, some fine grained sand, some shell fragments up to 5mm present.						L		CL
						Redrilled due to anchor movement.								
				-15 / 4										
				-16 / 5										
				-17 / 6										
				-18 / 7										
				-19										

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH08B

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **DWL(CW)/JD(URS)** Checked By: Date Started: **26-7-08** Date Finished: **26-7-08**	Relative Level: -11.1 mLAT Relative Level: -13.368 mAHD Coordinates: 317727.6 mE 7367159.8 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-12 / 0		GRAVEL. Very loose greenish brown, trace clay fines, trace shell fragments.			F-C F-M	SR A-SR		M		GW GW
	0.20	BH08B_0.2-0.5				Gravelly SAND. Very loose greenish brown, trace coarse grained sand, fine to medium sub-rounded sized gravel, shell fragments present.			F-M M-C F	SA-SR SA				SW GW SW NOR
				-12 / 1	NO RECOVERY	SAND. Loose greenish brown, trace clay fines, trace coarse sand and fine sized gravel, angular to sub-rounded.								
						Gravelly SAND. Dense brown, trace fine grained sand, fine to coarse sized gravel, sub-angular to sub-rounded, trace shell fragments.								
	2.00	BH08B_2.0-2.4		-13 / 2		SAND. Medium dense brown, trace medium to coarse grained sand, sub-angular, trace shell fragments.						L		CL
						Core Loss. No recovery								
				-14 / 3		CLAY. Very soft, wet, dark grey, trace fine grained sand and fine sized gravel, sub rounded, shell fragments present.								
	3.60	BH08B_3.6-3.9				CLAY. Soft dark grey, shell fragments present up to 15mm.						L		CL
				-15 / 4		CLAY. As above with trace shell fragments, firm.						M		CL CL
	4.30	BH08B_4.3-4.6				CLAY. Firm to stiff dark grey.			F-M	SR				CL
	4.75	BH08B_4.75-5.0				INTERBEDDED CLAY and SANDY CLAY. Interbedded lenses of firm to stiff sandy clay and clay, each lense up to 20mm thick.								CL
				-16 / 5		INTERBEDDED CLAY and SANDY CLAY. As above with shell fragments, up to 40mm, trace fine grained sand to medium sized gravel, sub rounded, firm to stiff.						M		CL
				-17 / 6		Gravelly CLAY. Stiff dark grey with reddish brown gravel, Gravel is fine sized, trace medium sized gravel, sub-angular to sub-rounded.								
				-18 / 7										
				-19										

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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SITE: GC/GLNG OFF#09

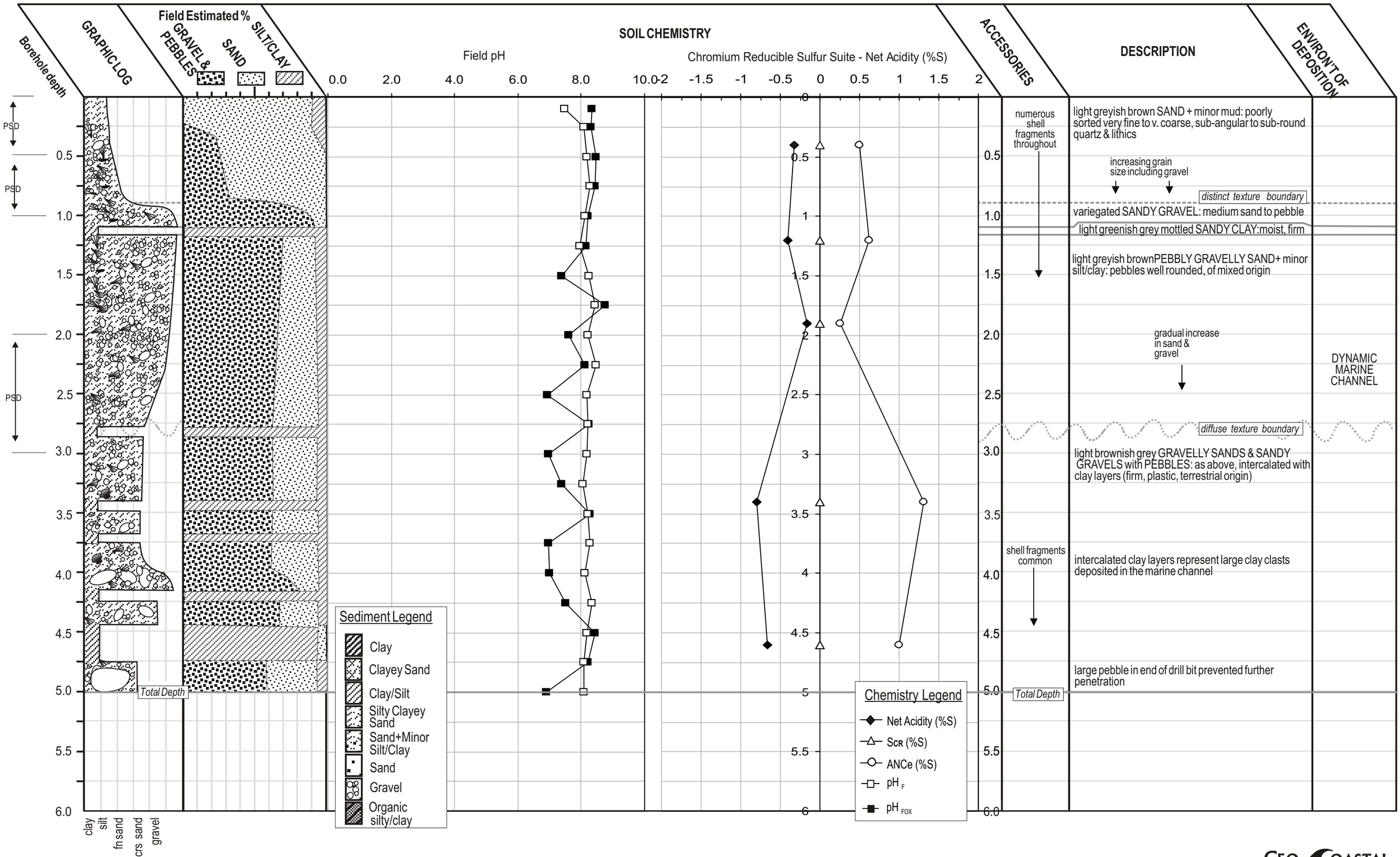
FEATURE: Marine Channel

DATE: 7/6/08

Seabed Core #09

LOCATION: Offshore Sthn Curtis Island, Qld
WGS 84 23° 47.844' Lat. 151° 12.881' Long. **Depth below LAT:** -10.17m

SAMPLING METHOD: GeoCoastal Pneumatic/Hydraulic Vibracorer



GEO COASTAL Australia

SITE: GC/GLNG OFF#10

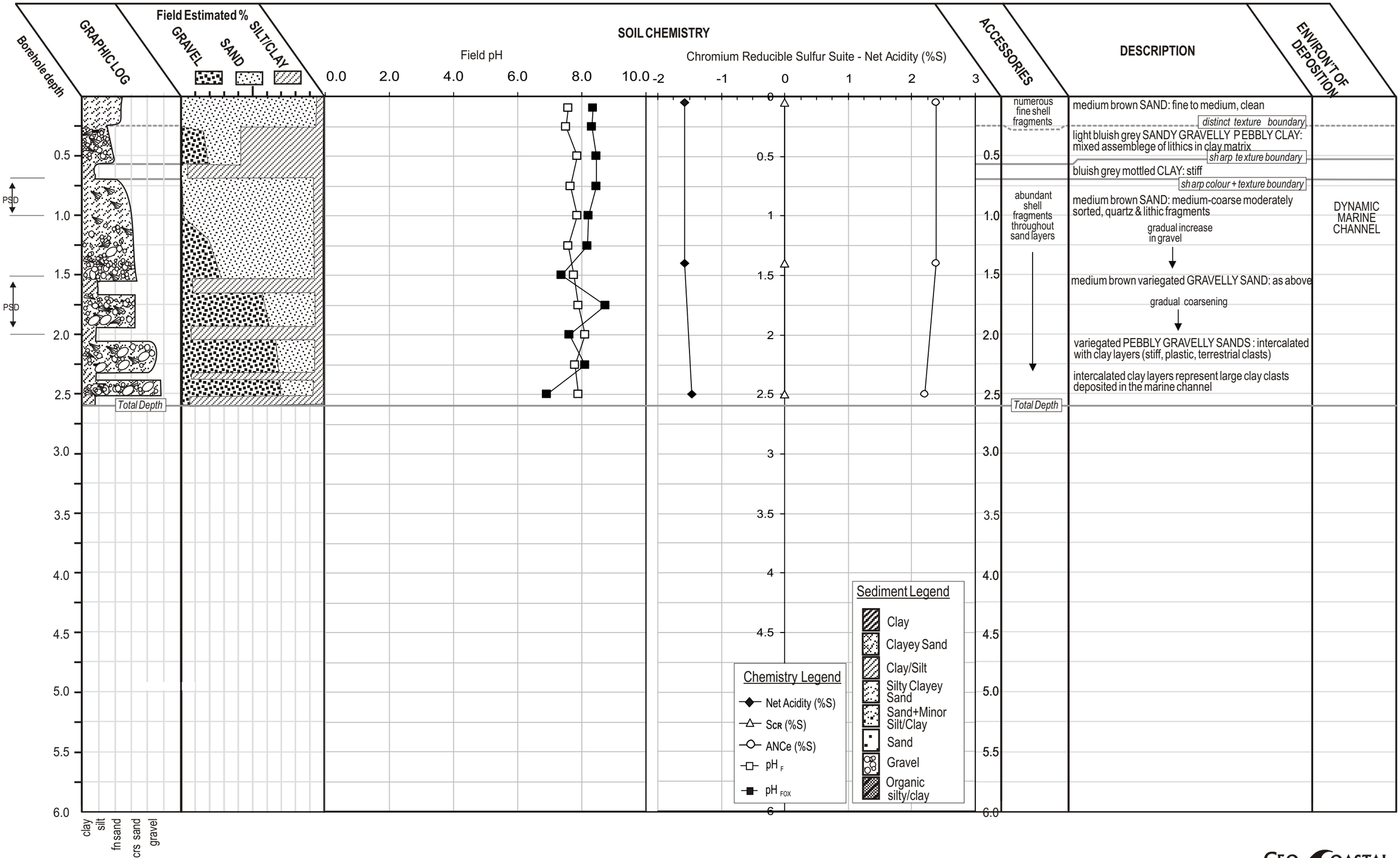
FEATURE: Marine Channel

DATE: 8/6/08

Seabed Core #10

LOCATION: Offshore Sthn Curtis Island, Qld
WGS 84 23° 47.975' Lat. 151° 13.014' Long. **Depth below LAT:** -12.57m

SAMPLING METHOD: GeoCoastal Pneumatic/Hydraulic Vibracorer



GEO COASTAL Australia

SITE: GC/GLNG OFF#11

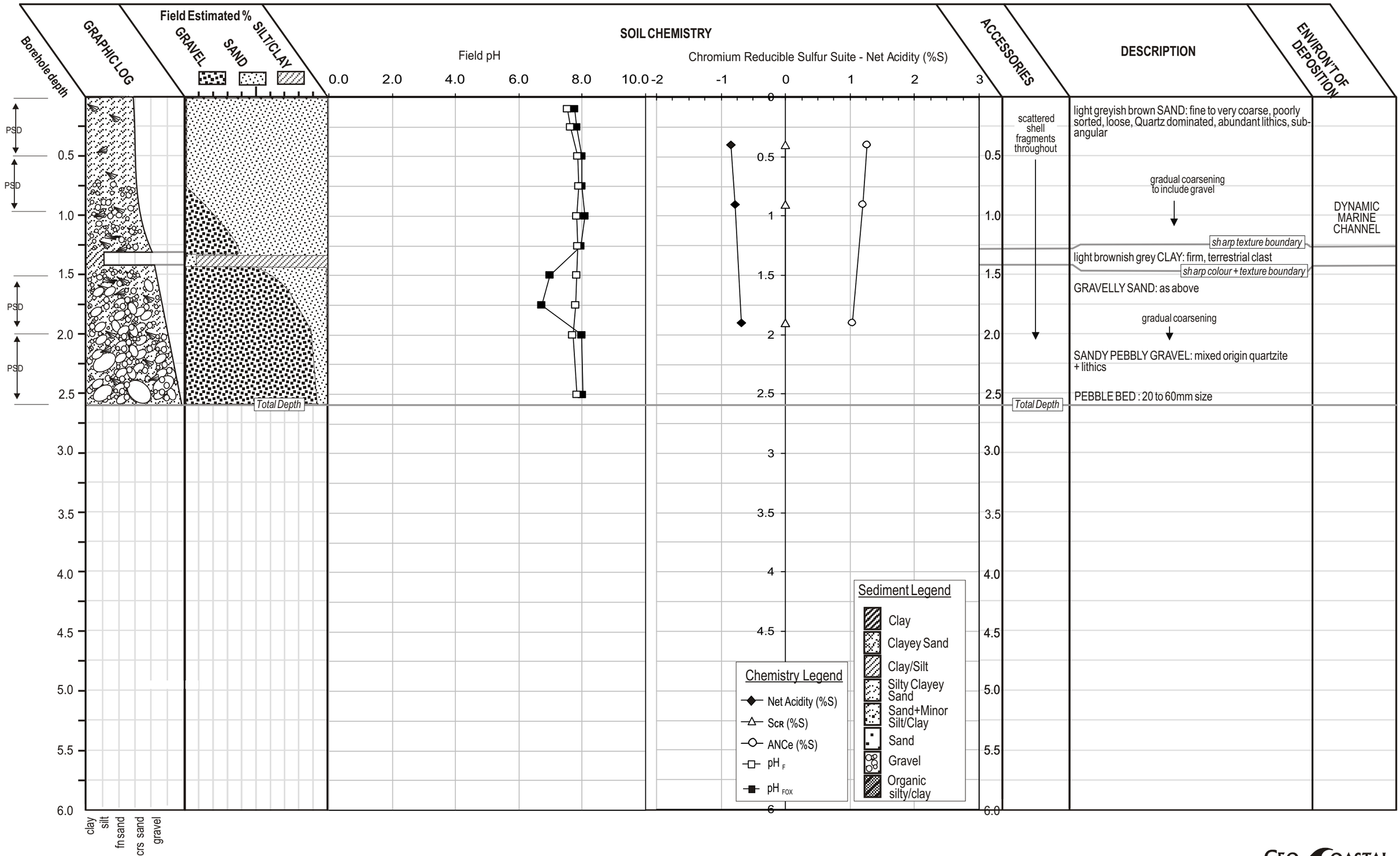
FEATURE: Marine Channel

DATE: 7/6/08

Seabed Core #11

LOCATION: Offshore Sthn Curtis Island, Qld
WGS 84 23° 48.067' Lat. 151° 13.197' Long. **Depth below LAT:** -12.45m

SAMPLING METHOD: GeoCoastal Pneumatic/Hydraulic Vibracorer



GEO COASTAL Australia

SITE: GC/GLNG OFF#12

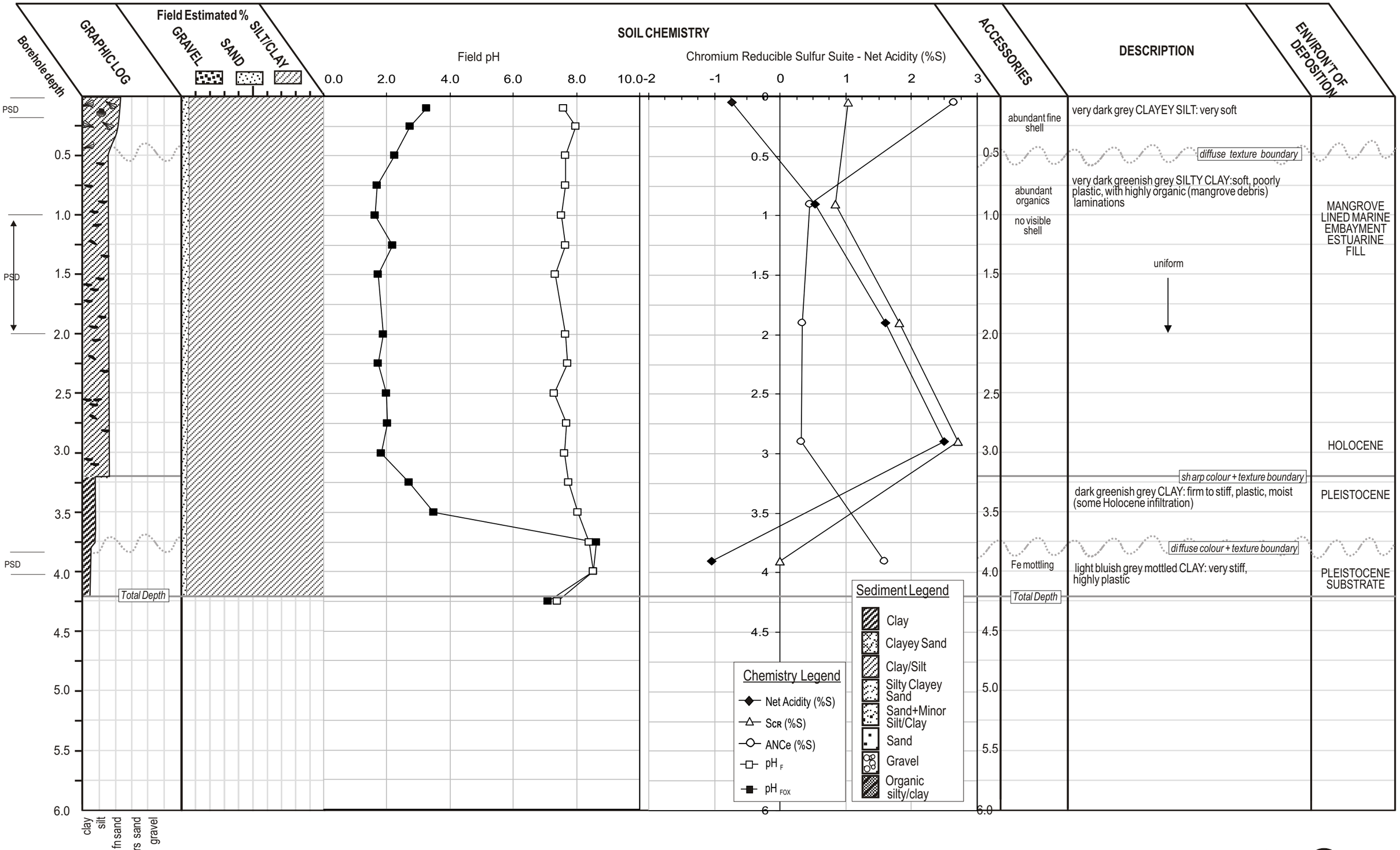
FEATURE: Shallow embayment

DATE: 8/6/08

Seabed Core #12

LOCATION: Offshore Sthn Curtis Island, Qld
WGS 84 23° 47.001' Lat. 151° 12.557' Long. **Depth below LAT:** 0m

SAMPLING METHOD: GeoCoastal Pneumatic/Hydraulic Vibracorer



GEO COASTAL Australia

URS Australia Pty Ltd

Soil Bore BH13

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/DA(URS)** Checked By: Date Started: **28-8-08** Date Finished: **28-8-08**	Relative Level: -2.7 mLAT Relative Level: -4.968 mAHD Coordinates: 316756.98 mE 7367999.68 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-3 / 0	NO RECOVERY	Core Loss. No recovery.								NOR
	1.00	BH13_1.0-1.6		-4 / 1		SAND. Loose, moist, dark grey with brown tinge. Shell fragments noted, 30-40% shell fragments up to 5mm and trace up to 10mm. Trace coarse, sub-angular sand and trace silt.			F-M	SR				SP
									F-M	SR				SM
	1.60	BH13_1.6-2.3 QC42 QC43				Silty SAND. As above with increased silt content.			F-M	SR				SP
				-5 / 2		SAND. Very loose, dark grey tinged black. Trace coarse sand, shell fragments present up to 10mm, trace clay fines.								NOR
					NO RECOVERY	Core Loss. No recovery.								
				-6 / 3										
				-7 / 4										
	4.90	BH13_4.9-5.3				SAND. Loose, dark grey with brown tinge, occasional black mottling. Slightly less shell fragment content. Lenses of clayey sand noted.			F-M	SA-SR				SP
				-8 / 5		Core Loss. No recovery.								NOR
					NO RECOVERY									
				-9 / 6										
	7.30	BH13_7.3-7.4		-10 / 7		SAND. As above with increase clay content and decreasing shell fragment content.								SP
					NO RECOVERY									NOR
	7.70	BH13_7.7-8.05				Core Loss. No recovery.								
						Sandy CLAY. Soft, grey, fine to coarse grained sand angular to						H		CL

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH13

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/DA(URS)** Checked By: Date Started: **28-8-08** Date Finished: **28-8-08**	Relative Level: -2.7 mLAT Relative Level: -4.968 mAHD Coordinates: 316756.98 mE 7367999.68 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	8.05	BH13_8.05-8.30		-11 / 8		sub-rounded, trace shell fragments, trace fine to medium gravels, sub-rounded.			F-C	SA-SR				SP
	8.30	BH13_8 3-8.60				Gravelly SAND. Loose, grey with brown tinge. Fine to coarse gravel, angular to sub-angular, some clay fines, low plasticity, trace shell fragments.								SP
					NO RECOVERY									NOR
	9.00	BH13_9.0-9.15		-12 / 9		Gravelly SAND. As above, brown in colour.								SW
						Core Loss. No recovery.								
				-13 / 10		SAND and GRAVEL. Coarse sand and fine gravel both sub-angular to sub-rounded.								
	11.20													
	11.30	BH13_11.2-11.3		-14 / 11		Gravelly SAND. Medium dense, orange brown, fine to medium gravel, sub-angular to sub-rounded.			F-C	SR				SP
		BH13_11.3-11.4							F-C	SR				SP
	11.90	BH13_11.9-12.07		-15 / 12		SAND. Medium dense, orange brown. Trace fine gravel, angular to sub-rounded.								
	12.95	BH13_12.95-14.30		-16 / 13		Gravelly SAND. Dense, orange brown, fine to medium gravel, angular to sub-angular, some clay fines of medium plasticity.			F-C	SA-SR				SP
				-17 / 14										
				-18 / 15										

REMARKS:

GLNG SOIL BORE GLNG DRILLING LOGS_JAN_09.GPJ WCC_AUS.GDT 20/1/09 This drawing is subject to COPYRIGHT. It remains the property of URS Australia Pty Ltd.

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Soil Bore BH14

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/DA(URS)** Checked By: Date Started: **27-8-08** Date Finished: **27-8-08**	Relative Level: -8.5 mLAT Relative Level: -10.768 mAHD Coordinates: 317137.91 mE 7367694.6 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-9 / 0	NO RECOVERY	Core Loss. No recovery.								NOR
	1.00	BH14_1.0-1.5		-10 / 1		SAND. Loose, wet, dark grey with a brownish tinge. Some shell fragments up to 15mm in size.			F-C	SA-SR				SP
	1.60	BH14_1.6-2.0 QC39 QC40		-11 / 2		Silty SAND. Loose, moist, dark grey, occasional mottling, trace medium grained sand, sub-angular to sub-rounded, trace shell fragments up to 15mm in size.			F-C	SA-SR				SM
				-12 / 3	NO RECOVERY	Core Loss. No recovery.								NOR
	3.50	BH14_3.5-4.0				CLAY. Soft, moist, dark grey, some shell fragments up to 5mm, some fine to coarse sands, sub-rounded and some fine gravels, sub-angular.						H		CL
	4.10	BH14_4.1-4.6		-13 / 4										
					NO RECOVERY	Core Loss. No recovery.								NOR
	5.30	BH14_5.3-5.5		-14 / 5		GRAVELS. Comprising of siltstone and quartz.			F-C	A-SR				GP
									F-C	SR				SC
						Clayey SAND. Medium dense, low plasticity, grey with greenish tinge, trace siltstone gravels, fine to medium, angular, trace shell fragments up to 5mm.								NOR
				-15 / 6	NO RECOVERY	Core Loss. No recovery.								
	7.10	BH14_7.1-7.4		-16 / 7		Clayey SAND. Medium dense, moderate plasticity, light brown, trace fine siltstone gravel, angular.			F-C	SA-SR				SC
	7.80	BH14_7.8-8.0				Clayey SAND. Medium dense, reddish brown, trace fine			M-C	SR				SC

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH14

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/DA(URS)** Checked By: Date Started: **27-8-08** Date Finished: **27-8-08**	Relative Level: -8.5 mLAT Relative Level: -10.768 mAHD Coordinates: 317137.91 mE 7367694.6 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
					8		gravel, sub-angular to sub-rounded, trace fine sand. Clay has high plasticity.						H		CL
	8.20	BH14_8.2-8.5		-17			CLAY. Stiff to very stiff, grey mottled brown. Gravelly clay seam (30mm) @ 8.20.								
	8.60	BH14_8.6-8.85			9		CLAY. As above, very stiff and traces of fine sand.						H		CL
				-18	10										
				-19	11										
				-20	12										
				-21	13										
				-22	14										
				-23	15										
				-24											

REMARKS:

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Soil Bore BH15

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **20-8-08** Date Finished: **20-8-08**	Relative Level: +0.375 mLAT Relative Level: -1.898 mAHD Coordinates: 317747.7 mE 7368078.19 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	0.00	BH15_0.0-0.45 QC29 QC30		0 / 0		CLAY/SILT. Very soft, wet, grey. Minor coarse sand and shell fragments up 20mm.						H		CL
	0.50	BH15_0.5-0.95				CLAY. Very soft, wet, grey. Minor shell fragments up to 10mm.						High		CL
	1.00	BH15_1.0-0.45		1 / -1		CLAY. Firm, grey with some fine to medium sand. Some fine gravels, sub-rounded from 1.3-2.0m.						M		CL
	1.50	BH15_1.5-2.0 QC31 QC32												
				2 / -2	NO RECOVERY	Core Loss. No recovery.								NOR
	2.50	BH15_2.5-2.8				CLAY. Firm, grey with some fine to medium sand. Some fine gravels, angular.						M		CL
	2.85	BH15_2.85-3.0				SAND. Dense, moist, grey mottled green/brown. Some silt, some fine angular gravels.			C					SP
	3.00	BH15_3.0-3.2		3 / -3					F-C	A-SA				GP
						Sandy GRAVEL. Dense, grey reddish brown. Sand is coarse grained, some silt.			F-M	A-SR				SC
	3.50	BH15_3.5-3.85				Clayey SAND. Dense, grey mottled green/brown clayey SAND. Trace gravels, fine, angular.			F-COB	A-SA				GP
	4.00	BH15_4.0-5.0		4 / -4	NO RECOVERY	GRAVEL. Dense, grey, brown, comprising of siltstone and quartz, minor silt and minor coarse sand.								NOR
						Core Loss. No recovery.			F-COB	A-SA				GP
						GRAVEL. Dense, grey, brown, comprising of siltstone and quartz, trace coarse grained sand and silt fines.								
	5.10	BH15_5.1-5.3		5 / -5										
				6 / -6	NO RECOVERY	Core Loss. No recovery.								NOR
				7 / -7		ARENITE. Distinctly weathered, high strength, grey with orange red staining along defects. Very closely spaced defects, defects comprising foliation and joints. Joints infilled with high plasticity grey clay.								SS

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH16

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **19-8-08** Date Finished: **19-8-08**	Relative Level: +1.05 mLAT Relative Level: -1.218 mAHD Coordinates: 317126.24 mE 7368705.27 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				1 / 0	NO RECOVERY	Core Loss. No recovery.								NOR
	0.50	BH16_0.5-0.95				CLAY. Very soft, wet, grey. Minor fine to coarse sand and shell fragments up to 20mm.						H		CL
	1.00	BH16_1.0-1.45 QC26 QC27		0 / 1		CLAY. As above but trace shell fragments.						H		CL
	1.50	BH16_1.5-2.0												
				-1 / 2	NO RECOVERY	Core Loss. No recovery.								NOR
	3.40	BH16_3.4-3.6		-2 / 3		CLAY. Very soft, grey. Minor sand, fine to coarse.						H		CL
						CLAY. Soft, light grey, mottled orange. Minor fine sand and trace fine angular gravels.						M		CL
	4.20	BH16_4.2-4.6		-3 / 4		Some lenses of orange SAND, fine to coarse.						M		CL
						CLAY. As above, but gravels are fine to coarse.								
						CLAY. Very stiff, light grey, mottled orange. Some fine grained sand, some fine to coarse gravel, angular, with sand lenses up to 30mm thick.						M		CL
	5.70	BH16_5.7-6.0		-4 / 5		Clayey SAND/Sandy CLAY. Firm to stiff, light grey. Some gravel, fine to cobbled sized, angular.			F-M			L		SC
	6.20	BH16_6.2-6.5		-5 / 6										
				-6 / 7	NO RECOVERY	Core Loss. No recovery.								NOR

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
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Soil Bore BH16

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **19-8-08** Date Finished: **19-8-08**	Relative Level: +1.05 mLAT Relative Level: -1.218 mAHD Coordinates: 317126.24 mE 7368705.27 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	8.20	BH16_8.2-8.45		-7	8		CLAY. Stiff, light grey, mottled orange. Minor fine sand.						H		CL
				-8	9										
				-9	10										
				-10	11										
				-11	12										
				-12	13										
				-13	14										
				-14	15										

REMARKS:

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Soil Bore BH17

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **18-8-08** Date Finished: **18-8-08**	Relative Level: -8.03 mLAT Relative Level: -10.298 mAHD Coordinates: 317376.56 mE 7367975.35 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	0.00	BH17_0.0-0.4		-8 / 0		SILT. Loose, grey, some medium to coarse angular to sub-angular sand, some angular to sub angular gravel and some shell fragments.						H		ML
	0.50	BH17_0.5-1.0 QC22 QC23				SILT. As above with minor shell fragments.						H		ML
	1.00	BH17_1.0-1.1		-9 / 1		Sandy GRAVEL. Loose light brown, trace coarse gravels. Sand is fine to coarse, some silt. Minor shell fragments.			F-M	A-SA				GP
	1.20	BH17_1.2-1.5										M		CL
	1.55	BH17_1.55-2.0 QC24 QC25		-10 / 2		SILT/CLAY. Light brown/grey, mottled orange brown, some fine sand.								
	2.30	BH17_2.3-2.8				SILT/CLAY. Light brown/grey, mottled orange brown, some fine sand.						M		CL
	3.00	BH17_3.0-3.5		-11 / 3										
				-12 / 4	NO RECOVERY	Core Loss. No recovery.								NOR
	5.00	BH17_5.0-5.45		-13 / 5		Gravelly CLAY. Firm light brown, mottled orange clay. Gravels are fine to medium, angular to sub-angular, with minor coarse gravels. Some sand medium to coarse.						M		CL
	5.40	BH17_5.4-5.6										M		CL
						Sandy CLAY. Firm light brown grey, mottled orange. Sand is medium to coarse angular to sub-angular, some gravels, fine to medium, angular to sub-angular.			M-CO	BA-SA				GW
				-14 / 6								M		CL
						GRAVEL. Light grey/white comprising of siltstone and quartz.								NOR
					NO RECOVERY	Sandy CLAY. Stiff light brown grey, mottled orange. Sand is medium to coarse, some fine to medium, angular to sub-angular gravels.								
				-15 / 7		Core Loss. No recovery.								
						Sandy CLAY. Firm, light grey, mottled orange. Sand is medium to coarse grained, some fine to medium gravel, angular to sub-angular.						M		CL

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH17

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **18-8-08** Date Finished: **18-8-08**	Relative Level: -8.03 mLAT Relative Level: -10.298 mAHD Coordinates: 317376.56 mE 7367975.35 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
					8										
				-17	9										
	9.60	BH17_9.6-9.8		-18	10		Sandy CLAY. Stiff grey mottled light brown. Sand fine to medium. Layers of gravel fine to coarse, angular to sub-angular of siltstone and quartzite fragments.						M		CL
										F-COB	A-SA				GC
							Clayey GRAVEL. Light grey to light brown, some sand fine to coarse, angular to sub-rounded.			F-M M-COB	A-SA				SM GW
				-19	11	NO RECOVERY	Silty SAND. Dense, light grey, minor brown streaks.								NOR
							GRAVEL. White to red grey, siltstone and quartzite. Trace sand, medium to coarse. Trace silt.								
							Core Loss. No recovery.								
				-20	12										
				-21	13										
				-22	14										
				-23	15										

REMARKS:

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Soil Bore BH18

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **26-8-08** Date Finished: **26-8-08**	Relative Level: +0.3 mLAT Relative Level: -1.968 mAHD Coordinates: 316364.1 mE 7368156.07 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				0	NO RECOVERY	Core Loss. No recovery.								NOR
	0.70													
	0.90	BH18_0.7-0.85				SAND. Loose dark grey, some shell fragments up to 4mm, trace silt, trace coarse sand.			F-M	SA-R				SP
		BH18_0.9-1.2		1					F-M	SA-R				SP
	1.30					SAND. As above, shell fragments up to 15mm.			F-M	SA-R				SP
		BH18_1.3-1.7 QC34 QC35		1		SAND. As above, shell fragments up to 10mm, increased silt content.			F-M	SA-R				SM
						Silty SAND. Loose, dark grey, lenses of sandy SILT, trace clay fines, trace shell fragments.								NOR
				2	NO RECOVERY	Core Loss. No recovery.								
	2.60	BH18_2.6-3.0				Silty SAND. As above with increased shell fragments up to 10mm in size.			F-M	SA-R				SM
	3.00	BH18_3.0-3.2		3										
					NO RECOVERY	Core Loss. No recovery.								NOR
				4		Silty SAND. Loose, dark grey, fine to medium grained sand, sub-angular to rounded, with lenses of sandy silt, trace clay fines, with lenses of increased shell fragments up to 10mm.								SM
	4.60	BH18_4.6-4.9							F	SA				GP
	4.90	BH18_4.9-5.1		5		Sandy GRAVEL. Loose, dark grey.			F	SA-R				SC
						Clayey SAND. Loose, grey, trace coarse sand and fine gravel, trace shell fragments up to 5mm.						H		CL
					NO RECOVERY	Sandy CLAY. Soft, grey. Sand if fine grained, sub-rounded.								NOR
	5.70	BH18_5.7-6.0				Core Loss. No recovery.			F-C	SA-R				SP
				6		SAND. Medium dense, grey with brown tinge, some shell fragments, up to 6mm in size, trace fine gravels.								NOR
					NO RECOVERY	Core Loss. No recovery.								
	7.60			7										
	7.70	BH18_7.6-7.7 BH18_7.7-8.1 QC36				Sandy CLAY. Soft, dark grey, fine to coarse grained sand, sub-angular to sub-rounded,			F-C	SA-SR		M		CL SP

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH18

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **26-8-08** Date Finished: **26-8-08**	Relative Level: +0.3 mLAT Relative Level: -1.968 mAHD Coordinates: 316364.1 mE 7368156.07 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
		QC37		8		trace fine gravel.								
				-8		SAND. Medium dense, dark grey, some shell fragments up to 10mm, trace fine gravel, trace clay fines.								NOR
					NO RECOVERY	Core Loss. No recovery.								
				9										
				-9	NO RECOVERY	Core Loss. No recovery.								NOR
	9.60	BH18_9.6-10.0				Clayey SAND. Dense, grey. Trace coarse sand, trace shell fragments, up to 5mm, trace coarse gravels, angular.			F-M	SA-R				SC
	10.20	BH18_10.2-10.5		10		Sandy CLAY. Firm, dark grey, fine to coarse grained sand, sub-angular to sub-rounded, trace fine gravel.						M		CL
				-10										
						CLAY. Very stiff, orange brown mottled grey, trace fine sand.						H		CL
	11.30	BH18_11.3-11.5		11										
				-11		CLAY. As above, soft.						H		CL
	12.00	BH18_12.0-12.4				CLAY, As above, very stiff, black mottling, trace fine sand.						H		CL
				12										
				-12										
	13.00	BH18_13.0-13.25		13										
				-13										
	14.00	BH18_14.0-14.5		14										
				-14										
				15										
				-15										
	15.60	BH18_15.6-16.0				Sandy CLAY. Very stiff, orange brown mottled grey, some fine grained sand.						H		CL

REMARKS:

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Soil Bore BH18

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **26-8-08** Date Finished: **26-8-08**	Relative Level: +0.3 mLAT Relative Level: -1.968 mAHD Coordinates: 316364.1 mE 7368156.07 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	16.20	BH18_16.2-16.5		-16	16		Clayey SAND. Medium dense, low plasticity, light grey mottled yellow. Some lenses of higher clay content with medium plasticity.			F-M	SA-SR				SC
				-17	17										
				-18	18										
				-19	19										
				-20	20										
				-21	21										
				-22	22										
				-23	23										

REMARKS:

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Soil Bore BH19

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/DA & ME(URS)** Checked By: Date Started: **29-8-08** Date Finished: **3-9-08**	Relative Level: -0.7 mLAT Relative Level: -2.968 mAHD Coordinates: 312563.69 mE 7372535.22 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				0	NO RECOVERY	Core Loss. No recovery.								NOR
	0.30 0.50	BH19_0.3-0.5 BH19_0.5-0.9		-1		Clayey GRAVEL. Loose, wet, dark grey with brown tinge, some coarse sand, sub-angular to rounded, trace cobbles up to 80mm, some clay fines, medium plasticity			F-C	SA		H		GC CL
	1.30	BH19_1.3-1.43		-2		CLAY. Stiff, orange brown with red and grey mottled, trace medium to coarse sand, sub-angular.								CL
				-3		CLAY. As above becoming very stiff. Increased medium to coarse sand content.			F-C	A-SA				GP
				-4		Sandy GRAVEL. Dense, orange brown mottled red brown, some medium to coarse grained sand, sub-angular to sub-rounded, trace fine sand, some clay fines, medium plasticity.								
	3.95	BH19_3.95-4.4		-5		Clayey SAND. Dense, yellow-brown with red and light grey mottles. Clay has low plasticity.			F					SC
	5.30	BH19_5.3-5.59		-6		Clayey GRAVEL. Dense to very dense, light pink mottled light yellow. Clay has low to medium plasticity, trace medium to coarse sand.			F-M	A-SA				GC
	7.10	BH19_7.1-7.4		-7		Clayey SAND. Dense to very dense, light pink mottled magenta, clay has low plasticity, trace medium to coarse sand, trace fine to medium gravels.			F					SC
				-8		SAND. Dense to very dense, light pink mottled magenta. Trace medium to coarse grained sand, trace clay fines, low to no plasticity.			F					SP

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/DA & ME(URS)** Checked By: Date Started: **29-8-08** Date Finished: **3-9-08**	Relative Level: -0.7 mLAT Relative Level: -2.968 mAHD Coordinates: 312563.69 mE 7372535.22 mN	Client: **Santos**

SAMPLING DETAILS				DESCRIPTION OF STRATA									
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-9 / 8										
	8.60	BH19_8.6-9.01				Gravelly SAND. Dense to very dense, white mottled pink and occasionally red brown. Some fine to medium sub-angular to sub-rounded gravels. Trace coarse sand, rounded. Lenses of white sandy CLAY, medium to high plasticity.			F					SP
				-10 / 9										
	10.10	BH19_10.1-10.38		-11 / 10		Sandy CLAY. Stiff, light pink mottled orange and magenta. Sand is fine grained.						L-M		CL
						Clayey SAND. Very dense light pink mottled orange and magenta. Clay has low plasticity.			F					SC
				-12 / 11										
	11.60	BH19_11.6-11.72				Clayey SAND. Very dense, light grey. Clay has low plasticity, trace coarse sand, sub-angular.			F					SC
				-13 / 12										
	13.00	BH19_13.0-13.2				Gravelly SAND. Very dense, light grey, some fine gravel, sub-angular to sub-rounded, some clay seams, low plasticity.			F-C	SR-R				SP
	13.20	BH19_13.2-13.4		-14 / 13					F-C	SR-R				SC
												H		CL
						Clayey SAND. Very dense, light grey mottled orange-brown, some clay fines, low to medium plasticity, trace fine gravel.								
				-15 / 14		Gravelly CLAY. Stiff light grey mottled orange-brown, some fine to coarse gravels, sub-angular, trace fine to coarse sand, sub-angular to rounded.								
	14.90	BH19_14.9-15.14		-16 / 15		Clayey SAND. Very dense, light orange mottled light grey and pink. Some clay fines, low to medium plasticity, trace medium to coarse grained sand.			F					SC

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URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/DA & ME(URS)** Checked By: Date Started: **29-8-08** Date Finished: **3-9-08**	Relative Level: -0.7 mLAT Relative Level: -2.968 mAHD Coordinates: 312563.69 mE 7372535.22 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				16 / -17										
	16.50	BH19_16.5-16.95				CLAY. Very stiff becoming hard, orange-brown mottled light grey. Trace fine sand.						H		CL
				17 / -18										
				18 / -19		CLAY. As above but Light grey with occasional pink mottling, trace coarse sand. At 18.45m a 50mm seam of orange brown clayey sand is noted.								CL
	18.40	BH19_18.4-18.83												
				19 / -20										
						Clayey SAND. Dense, light grey with occasional orange brown mottles. Clay has low plasticity.			F					SC
	20.20			20 / -21										
	20.34	BH19_20.2-20.35												
	20.40	BH19_20.34-20.4				Sandy CLAY. Very stiff, light grey, some fine grained sand.						M		CL
		BH19_20.4-20.6				CLAY. Very stiff, light grey.						H		CL
						Clayey SAND. Dense, light grey. Clay has low plasticity.			F					SC
				21 / -22										
	21.80	BH19_21.8-22.05				CLAY. Stiff, light grey becoming tanned coloured.						H		CL
	22.05	BH19_22.05-22.25		22 / -23										
						Clayey SAND. Very dense/hard, orange brown. Trace platey black and brown fine ironstone gravels.			F-C	SR				SC
				23 / -24										

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Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/DA & ME(URS)** Checked By: Date Started: **29-8-08** Date Finished: **3-9-08**	Relative Level: -0.7 mLAT Relative Level: -2.968 mAHD Coordinates: 312563.69 mE 7372535.22 mN	Client: **Santos**

SAMPLING DETAILS				DESCRIPTION OF STRATA									
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-25 / 24										
						CLAY. Soft to firm, white.						H		CL
	24.80													
	24.95	BH19_24.8-24.95												
	25.10	BH19_24.95-25.1		-26 / 25		Clayey SAND. Very dense, light grey with some light pink and orange brown mottles.			F					SC
		BH19_25.1-25.25				SAND. Very dense, tan mottled orange brown. Trace medium to coarse sand, trace clay fines.			F					SP
	26.20													
		BH19_26.2-26.65		-27 / 26		CLAY. Very stiff to hard, light grey with occasional light pink and orange brown mottles.						H		CL
	27.70			-28 / 27										
		BH19-27.7-28.15		-29 / 28										
						SILTSTONE. Extremely weathered, extremely to very low strength. Presented as an orange brown, fine to coarse grained sand, sub-rounded, some fine gravel, sub-angular to sub-rounded. Trace low plasticity clays.								STS
				-30 / 29										
				-31 / 30										
	30.90													
		BH19_30.9-31.0		-32 / 31										

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Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/DA & ME(URS)** Checked By: Date Started: **29-8-08** Date Finished: **3-9-08**	Relative Level: -0.7 mLAT Relative Level: -2.968 mAHD Coordinates: 312563.69 mE 7372535.22 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-33	32										
					33										
				-34			SANDSTONE. Extremely weathered, extremely low strength. Presented as a yellow brown mottled red and white sand, trace fine gravel noted. Redrilled due to risk of damaging casing from potential bad weather. See BH019B for indicative underlying geology.			F-C	SR				SS
	33.50	BH19_33.5-33.58													
				-35	34										
					35										
				-36											
					36										
				-37											
					37										
				-38											
					38										
				-39											
					39										
				-40											

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Drilling Contractor: **Drillsearch**			
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SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-41 -42 -43 -44 -45 -46 -47 -48	40 41 42 43 44 45 46 47										

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SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-49	48										
				-50	49										
				-51	50										
				-52	51										
				-53	52										
				-54	53										
				-55	54										
				-56	55										

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Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/DA & ME(URS)** Checked By: Date Started: **29-8-08** Date Finished: **3-9-08**	Relative Level: -0.7 mLAT Relative Level: -2.968 mAHD Coordinates: 312563.69 mE 7372535.22 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification

m LAT: -57, -58, -59, -60, -61, -62, -63, -64

DEPTH (m): 56, 57, 58, 59, 60, 61, 62, 63

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Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **6-9-08** Date Finished: **7-9-08**	Relative Level: -0.7 mLAT Relative Level: -2.968 mAHD Coordinates: 312567.25 mE 7372538.24 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-1	0										
				-2	1										
				-3	2										
				-4	3										
				-5	4										
				-6	5										
				-7	6										
				-8	7										

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **6-9-08** Date Finished: **7-9-08**	Relative Level: -0.7 mLAT Relative Level: -2.968 mAHD Coordinates: 312567.25 mE 7372538.24 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-9	8										
				-10	9										
				-11	10										
				-12	11										
				-13	12										
				-14	13										
				-15	14										
				-16	15										

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SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-16	16										
				-17	17										
				-18	18										
				-19	19										
				-20	20										
				-21	21										
				-22	22										
				-23	23										
				-24											

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SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-25 -26 -27 -28 -29 -30 -31 -32	24 25 26 27 28 29 30 31										

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SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				32 / -33		See BH19 for indicative overlying geology. BH19B rock rolled to 35.0m.								NOR
				33 / -34	NO RECOVERY									
	35.15	BH19B_35.15-35.22		34 / -35		SILTSTONE. Extremely weathered, extremely low strength. Presented as an orange brown with occasional white mottles, fine to coarse grained sand, sub rounded, trace clay fines, low plasticity.								STS GW STS
				35 / -36		COBBLE. Brown siltstone cobble, 50mm diameter.								STS NOR
				36 / -37	NO RECOVERY	SILTSTONE. Extremely weathered, very low strength, presented as a light grey banded purple fine grained sand.								STS NOR
				37 / -38	NO RECOVERY	SILTSTONE. Extremely weathered, very low strength. Presented as a purple, fine to medium sand, trace coarse sand.								STS
				38 / -39	NO RECOVERY	Core Loss. No recovery.								
				39 / -40		SILTSTONE. Extremely weathered, very low strength. Presented as a purple with red and yellow brown mottles fine sand with some clay fines.								NOR
					NO RECOVERY	Core Loss. No recovery.								
						SILTSTONE. Extremely weathered, very low strength. Presented as a purple, red and yellow brown mottles, fine grained sand with clay fines.								STS STS
					NO RECOVERY	Core Loss. No recovery.								
						SILTSTONE. Extremely weathered, very low strength, purple with red and yellow-brown streaks, some fine grained sand and clay fines.								
					NO RECOVERY	SILTSTONE. As above, but yellow brown in colour. Core Loss. No recovery.								NOR

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Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **6-9-08** Date Finished: **7-9-08**	Relative Level: -0.7 mLAT Relative Level: -2.968 mAHD Coordinates: 312567.25 mE 7372538.24 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-41	40	NO RECOVERY									
				-42	41										
				-43	42		SILTSTONE. Extremely weathered, very low strength. Presented as an orange brown, medium to coarse grained sand, trace fine grained sand, sub-angular to sub-rounded, trace clay fines.								STS
				-44	43		SILTSTONE. As above but light grey banded orange brown, some fine grained sand, trace medium to coarse								STS
							SILTSTONE. As above, but light grey mottled orange-brown, trace fine sand and gravel, trace clay fines.								STS
							SILTSTONE. As above, alternating bands of mauve and yellow-brown, trace coarse sand, some clay fines, low plasticity.								STS
					44	NO RECOVERY	SILTSTONE. As above, light grey with mauve tinge mottled yellow-brown, some fine grained sand. Core Loss. No recovery.								NOR
				-45	45										
				-46	46										
				-47	47										
				-48											

REMARKS:

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Soil Bore BH20

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **8-9-08** Date Finished: **17-9-08**	Relative Level: -11.38 mLAT Relative Level: -13.648 mAHD Coordinates: 313065.82 mE 7372613.41 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	0.00	BH20_0.0-0.2		-12 / 0		Clayey SAND. Very loose, wet, grey. Abundant shell fragments up to 30mm.			F-C					SC
						Core Loss. No recovery.								NOR
					NO RECOVERY									
	1.10	BH20_1.1-1.4		1		Sandy CLAY. Very soft, wet, grey. Sand is fine to coarse grained, some shell fragments up to 20mm.						H		CL
	1.40	BH20_1.4-1.8		-13		CLAY. Firm becoming stiff, grey. Trace fine grained sand, minor shell fragments up to 10mm.						H		CL
	1.80	BH20_1.8-2.0		2		CLAY. As above, but brown grey, mottled light brown, with lenses of medium grained sand.						H		CL
	2.35	BH20_2.35-2.55										H		CL
	2.60	BH20_2.6-2.7		-14		CLAY. As above, but light brown, high organic recovery, no sand lenses.						H		CL
	3.00	BH20_3.0-3.5		3		Sandy CLAY. Stiff, light brown, grey, trace fine grained sand.						H		CL
				-15		CLAY. Stiff, light brown, grey, trace fine grained sand.								
				4		CLAY. As above, but trace fine sized, sub-angular gravels.						H		CL
	4.65	BH20_4.65-4.95		-16		CLAY. As above, but brown.						H		CL
	5.00	BH20_5.0-5.25		5		ORGANIC MATERIAL. Firm, wet, dark brown/black, some brown clay, trace fine grained sand, trace fine sized angular gravels.						H		OH
					NO RECOVERY									NOR
	5.50	BH20_5.5-5.7		-17		Core Loss. No recovery.			F-CO	B A-SA				GP
				6		GRAVEL. Dense to very dense, grey. Gravel comprises of siltstone and quartzite fragments, some medium to coarse sand, minor silt.								
				-18										
				7										
				-19										

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH20

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **8-9-08** Date Finished: **17-9-08**	Relative Level: -11.38 mLAT Relative Level: -13.648 mAHD Coordinates: 313065.82 mE 7372613.41 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				8										
	8.60			-20										
		BH29_8.6-8.78				CLAY. Very stiff, green grey, mottled orange, trace fine grained sand.						M		CL
				9										
				-21										
				10										
	10.70			-22										
		BH20_10.7-11.0				CLAY. As above, but red mottled brown grey.						M		CL
				11										
				-23										
	12.10			12										
		BH20_12.1-12.55				CLAY. As above, mottled red and orange.						M		CL
	12.50			-24										
		BH20_12.5-13.0				CLAY. As above, but purple mottled orange grey in colour.						M		CL
	13.00			13										
		BH20_13.0-13.2				CLAY. As above, but dark purple, some fine to medium, sized, angular gravels.						M		CL
					NO RECOVERY	Core Loss. No recovery								NOR
				-25		CLAY. Very stiff, purple, mottled orange grey, trace fine grained sand, minor fine to medium sized angular gravels.						M		CL
				14										
				-26										
	15.00			15										
	15.16	BH20_15.0-15.15				SILTSTONE. Extremely weathered, extremely low strength. Presented as a light brown yellow, mottled green grey, fine to medium grained sand, trace angular siltstone gravels.								STS
		BH20_15.16-15.38												STS
				-27										STS
						SILTSTONE. Extremely weathered, extremely low								

REMARKS:

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Soil Bore BH20

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **8-9-08** Date Finished: **17-9-08**	Relative Level: -11.38 mLAT Relative Level: -13.648 mAHD Coordinates: 313065.82 mE 7372613.41 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-28 / 16		strength. Presented as a green grey, mottled yellow brown, fine to coarse angular gravel.								
				-28 / 17		SILTSTONE. Extremely weathered, extremely low strength presented as a clayey GRAVEL and Sandy CLAY. Grey, green, grey blue, purple and red mottles. Gravel comprises of siltstone and quartzite. Sand is fine to coarse grained.								
	17.70			-29	NO RECOVERY	Core Loss. No recovery								NOR
		BH20_17.7-18.15				SILTSTONE. Extremely weathered, extremely low strength. Presented as a grey, mottled purple, fine grained sand, trace fine sized angular gravels.								STS
				18	NO RECOVERY	Core Loss. No recovery.								NOR
				-30		CONGLOMERATE. Extremely weathered, extremely low strength. Presented as a purple, mottled grey and red gravel, clay has medium plasticity, some fine to medium sand. Gravel comprises of siltstone fragments.			F-C	A-SA				COG
				19		CONGLOMERATE. As above, with some green grey clay.			F-C	A-SA				COG
	20.00	BH20_20.0-20.31		-31										
				20										
				-32										
				21										
	21.40	BH20_21.4-21.66				CONGLOMERATE. As above, red brown mottled blue grey.								CL
				-33										
				22		Core Loss. No recovery.								NOR
				-34	NO RECOVERY									
				23										
	23.60	BH20_23.6-23.77		-35		CONGLOMERATE. Extremely weathered, very low strength.			F-C	A-SA				COG

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Soil Bore BH20

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **8-9-08** Date Finished: **17-9-08**	Relative Level: -11.38 mLAT Relative Level: -13.648 mAHD Coordinates: 313065.82 mE 7372613.41 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-36	24		Presented as a blue, grey, mottled brown, fine to coarse angular to sub angular gravel. Some fine to medium sand, trace medium plasticity clay.			F-COB	A-SA				COG
				-37	25		CONGLOMERATE. As above, with some cobbles.			F-COB	A-SA				COG
				-38	26		CONGLOMERATE. Extremely weathered to distinctly weathered. Very dense, blue grey, mottled brown, medium strength. Some clay, medium plasticity, some sand fine to coarse.								
				-39	27										
				-40	28										
				-41	29										
				-42	30										
				-43	31		CONGLOMERATE. As above but extremely weathered.			F-COB	A-SA				COG
						NO RECOVERY	Core Loss. No recovery.								NOR

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Soil Bore BH20

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **8-9-08** Date Finished: **17-9-08**	Relative Level: -11.38 mLAT Relative Level: -13.648 mAHD Coordinates: 313065.82 mE 7372613.41 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-44	32		CONGLOMERATE. Distinctly weathered, low strength. Presented as a gravel with some clay, medium plasticity, some sand fine to coarse.			F-COB	A-SA				COG
				-45	33										
				-46	34										
				-47	35		SILTSTONE. Extremely weathered, low strength. Presented as a blue grey, streaked red brown, silty sandy GRAVEL. Sand is fine to medium grained.			F-C	A-SA				STS
						NO RECOVERY	Core Loss. No recovery.								NOR
				-48	36		SILTSTONE. Extremely weathered, low strength. Presented as a grey, some brown mottles, silty sandy GRAVEL. Silt has low plasticity, sand is fine to medium grained.			F-C	A-SA				STS
					37	NO RECOVERY	Core Loss. No recovery.								NOR
				-49	38		SILTSTONE. Distinctly to slightly weathered, medium strength, grey, mottled red brown. Widely spaced defects.								STS
				-50	39										
				-51		NO RECOVERY	Core Loss. No recovery.								NOR

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Soil Bore BH20

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **8-9-08** Date Finished: **17-9-08**	Relative Level: -11.38 mLAT Relative Level: -13.648 mAHD Coordinates: 313065.82 mE 7372613.41 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				40	NO RECOVERY									
				-52 / 41		SILTSTONE. Distinctly to slightly weathered, medium becoming high strength, light grey, widely spaced defects. Medium sized gravels between 40.5-40.8m.								STS
				-53	NO RECOVERY	Core Loss. No recovery.								NOR
				42		SILTSTONE. Slightly weathered, high strength, light grey, mottled brown, widely spaced defects.								STS
				-54 / 43										
				-55 / 44										
				-56 / 45										
				-57 / 46										
				-58 / 47										
				-59										

REMARKS:

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Soil Bore BH21

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/ME(URS)** Checked By: Date Started: **20-9-08** Date Finished: **24-10-08**	Relative Level: -2.5 mLAT Relative Level: -4.768 mAHD Coordinates: 313571.44 mE 7372703.88 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				0		Core Loss. No recovery.								NOR
				-3 / 1	NO RECOVERY									
	1.50													
	1.65	BH21_1.5-1.6		-4 / 2		Gravelly SAND. Very loose dark grey with brown tinge. Some fine gravel, sub-angular to sub-rounded, trace silt, medium gravel, trace shell fragments up to 40mm.			C F-M	SA-SR SA-SR				SP CL
		BH21_1.65-1.90												
	2.00	BH21_2.0-2.4										H		CL
	2.50	BH21_2.5-2.9		-5 / 3		Clay SAND. Dense, dark grey with brown tinge. Clay has medium plasticity, trace coarse sand and fine gravel. Trace shell fragments up to 2mm.						H		CL
	2.95	BH21_2.95-3.2				CLAY. Very stiff, grey with brown tinge, trace fine to coarse sand.								
				-6		CLAY. As above with orange and red mottles.								
	4.00	BH21_4.0-4.45		4		CLAY. As above but only occasional red mottles.						H		CL
				-7 / 5										
	5.60	BH21_5.6-6.05		-8 / 6		CLAY. As above with orange brown and red mottles. Mottles have some fine sand content.						H		CL
				-9										
	7.00	BH21_7.0-7.45		7										
				-10										
	7.80	BH21_7.8-8.2				Sandy CLAY. Very stiff, grey brown with orange brown and occasional black mottles (charcoal), some fine to						M		CL

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH21

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/ME(URS)** Checked By: Date Started: **20-9-08** Date Finished: **24-10-08**	Relative Level: -2.5 mLAT Relative Level: -4.768 mAHD Coordinates: 313571.44 mE 7372703.88 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				8		coarse, sub-rounded sand. Trace fine siltstone gravel.								
	8.50	BH21_8.5-8.9		-11										
					NO RECOVERY	Core Loss. No recovery.								NOR
				9		Sandy CLAY. Very stiff, grey brown mottled orange brown and infrequent black. Some fine to coarse sand, sub-rounded, trace siltstone gravel.						M		CL
	9.60	BH21_9.6-10.0		-12		Clayey SAND. Dense, grey-brown with orange brown and occasional black mottles. Clay has low plasticity.			F-C	SR				SC
				10		Sandy CLAY. Very stiff grey brown with orange brown and occasional black mottles.						M		CL
	10.50	BH21_10.5-10.7		-13		Some fine to coarse sand, sub-rounded.						L		CL
	10.70	BH21_10.7-11.1				Sandy CLAY. As above with increased black mottling (Charcoal).								
				11		CLAY. Very stiff, light brown mottled orange-brown. Trace fine to medium sand.						H		CL
	11.60	BH21_11.6-11.9		-14										
				12		CLAY. As above with a uniform grey colour.						H		CL
						Gravelly CLAY. Very stiff, grey with black charcoal streaks. Some fine to coarse, sub-angular gravel.			M-C			H		GC SP
				-15		SAND. Dense, brown, trace fine to medium gravel, sub-rounded, occasional clay lenses.			F-C	A-SA				GP
				13		Sandy GRAVEL. Dense, brown, some medium to coarse sub-angular to sub-rounded sand, trace fine sand and clay fines.								
				-16										
	14.00	BH21_14.0-14.4		14		Gravelly Clayey SAND. Dense, grey, some gravel, fine to medium, angular to sub-angular, some clay fines, medium plasticity.			F					SC
									F-M	SR				SC
				-17		Clayey SAND. Dense, grey, mottled orange brown, clay fines have medium plasticity. Trace coarse sand.								
				15										
	15.45	BH21_15.45-15.8		-18		Clayey SAND. As above, very dense with occasional mottling.			F-M	SR				SC
						Gravelly Clayey SAND. Very dense, grey, some gravel, fine			F-C	A-SR				SC

REMARKS:

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Soil Bore BH21

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/ME(URS)** Checked By: Date Started: **20-9-08** Date Finished: **24-10-08**	Relative Level: -2.5 mLAT Relative Level: -4.768 mAHD Coordinates: 313571.44 mE 7372703.88 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				16		to medium, angular to sub-angular, some clay fines, low plasticity.								STS
				-19		SILTSTONE. Extremely weathered, extremely low strength, orange brown, white and dark brown, some fine to medium gravel, angular. to sub-angular.								NOR
				17	NO RECOVERY	Core Loss. No recovery.								
				-20										
	17.90	BH21_17.9-18.31		18		SILTSTONE. Extremely weathered, extremely low strength orange brown, white and dark brown. Presented as a fine to medium, angular siltstone gravel @ 18.6-18.7m and 18.9-19.0m.								STS
				-21										
				19										
				-22	NO RECOVERY	Core Loss. No recovery.								NOR
				20		SILTSTONE. Extremely weathered, low strength, orange brown streaked light and dark grey, stained red brown at defects.								STS
				-23		SILTSTONE. Distinctly weathered, low strength, grey with red streaks along fractures. Highly fractured between 20.0-20.25m.								STS
				21		SILTSTONE. Presented as fine to coarse gravel.								STS
				-24		SILTSTONE. Slightly weathered, medium strength, light grey with dark grey streaks. Iron staining noted along fractures.								STS
				22		ARGILLITE. Slightly weathered, medium strength, dark grey with light grey streaks, orange brown staining at fractures.								STS
				-25	NO RECOVERY	Core Loss. No recovery.								NOR
				23		ARGILLITE. Slightly weathered, medium to high strength, dark grey with light grey streaks, orange brown staining at fractures. Two crush zones noted between 23.4-23.5 and 24.4-24.5m.								METAFG
				-26										

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Soil Bore BH21

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/ME(URS)** Checked By: Date Started: **20-9-08** Date Finished: **24-10-08**	Relative Level: -2.5 mLAT Relative Level: -4.768 mAHD Coordinates: 313571.44 mE 7372703.88 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-27	24										
						NO RECOVERY	Core Loss. No recovery.								NOR
					25		ARGILLITE. Slightly weathered, medium to high strength, dark grey with light grey streaks, iron staining along fractures.								METAFG
				-28											
					26										
				-29											
					27										
				-30											
					28										
				-31			ARGILLITE. As above, no signs of weathering, medium to high strength.								METAFG
					29										
				-32											
							ARGILLITE. As above, fresh, medium to high strength.								METAFG
					30										
				-33											
					31										
				-34											

REMARKS:

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Soil Bore BH24

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **DWL(CW)/JD(URS)** Checked By: Date Started: **30-7-08** Date Finished: **3-8-06**	Relative Level: -10.60 mLAT Relative Level: -12.868 mAHD Coordinates: 312929.5 mE 7372220.3 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	0.00	BH24_0.0-0.7		-11 / 0		Sandy CLAY. Soft, wet, dark grey tinged brown. Sand is fine to coarse grained sand, sub-rounded, trace fine and coarse sized gravel, sub-angular, shell fragments and whole shells up to 25mm.						L		CL
	0.70	BH24_0.7-1.7				CLAY. Firm, dark grey, interbedded lenses of sandy CLAY and CLAY. Each lense is 50 to 60mm thick, trace fine grained, sub-rounded, shell fragments up to15mm.						M		CL
	2.90	BH24_2.9-3.3		-12 / 1 / -13 / 2 / -14 / 3		Clayey GRAVEL. Medium dense greenish brown. Trace fine grained sand, shell fragments up to 5mm in size.			F-M	SA-SR		L		GC
	4.00	BH24_4.0-4.4		-15 / 4		CLAY. Stiff to very stiff, grey mottled brown, traces of silt.						M-H		CL
	5.00	BH24_5.0-5.8		-16 / 5		Sandy GRAVEL. Very dense, moist, yellow brown, fine to coarse grained sand, sub-rounded. Gravels are in a clayey matrix.			M-C	SA-SR				GP
	6.60	BH24_6.6-6.8		-17 / 6		SAND. Loose, moist, orange brown. Trace fine to medium sized gravel, sub-angular to sub-rounded, with lenses of clayey SAND up to 20mm thick. Clay fines have medium to low plasticity.			M-C	SR				SP
									F-C	SR				SP
												H		CH
														GW
						SAND. Loose, moist, greyish brown. Trace clay and trace fine to medium sized gravel, sub-angular to sub-rounded, well graded.			F-M	SA		L		GC
												M		CL
				-18 / 7					F-C	SA-SR		M		GC
									F-M	SR				SP
						CLAY. Very stiff, moist, orange brown lenses brown and grey								
						COBBLE. 100mm.								NOR
					NO RECOVERY	Clayey GRAVEL. Loose, yellow, brown, trace clay and trace fine to coarse grained								

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH24

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **DWL(CW)/JD(URS)** Checked By: Date Started: **30-7-08** Date Finished: **3-8-06**	Relative Level: -10.60 mLAT Relative Level: -12.868 mAHD Coordinates: 312929.5 mE 7372220.3 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-19	8		sand.								
						NO RECOVERY	Gravelly CLAY. Very stiff, yellow brown, fine sized gravel, sub-angular to sub-rounded, trace fine to coarse grained sand.			F-M	SR				SC
							Clayey GRAVEL. Dense light greyish brown. Trace fine to coarse grained sand.						M M		CL CL
				-20	9		SAND. Dense light grey mottled yellow brown.								NOR
							Core Loss. No recovery.								
						NO RECOVERY	Clayey SAND. Medium dense. Light greyish brown, lenses of sandy CLAY, medium plasticity, trace fine to medium sized gravel, sub-angular.								
					10		CLAY. Very soft, light yellow brown, trace fine grained sand.								
				-21			Sandy CLAY. Soft, light greyish brown mottled yellow brown, lenses of clayey SAND. Fine grained sand, trace fine sized gravel.								
							Core Loss. No recovery.			F-M	SA		M		GC
					11		Clayey GRAVEL. Dense, grey brown, some coarse grained sand.			F-C	SA-SR		H M-H		CL SC
				-22			CLAY. Very stiff, orange brown. Trace fine to medium grained sand.			F-C	SA-SR		M-H M-H		CL SC
							Clayey SAND. Medium dense to dense light grey with some sandy CLAY lenses.								NOR
					12		CLAY. Stiff light yellow brown.								
				-23			Clayey SAND. Medium dense to dense light grey with some sandy CLAY lenses.								
							Core Loss. No recovery.								
						NO RECOVERY									
					13										
				-24											
					14										
				-25			SILTSTONE. Extremely weathered, extremely low strength. Presented as a light grey lenses orange brown SAND, with some sandy CLAY lenses.			F-M			M-H		STS
					15										
				-26											

REMARKS:

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Soil Bore BH24

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **DWL(CW)/JD(URS)** Checked By: Date Started: **30-7-08** Date Finished: **3-8-06**	Relative Level: -10.60 mLAT Relative Level: -12.868 mAHD Coordinates: 312929.5 mE 7372220.3 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-27	16										
				-28	17										
							SILTSTONE. As above with fine sized ironstone gravel, reddish brown, angular to sub-rounded, trace medium sized gravel.								STS
				-29	18										
				-30	19										
				-31	20										
				-32	21										
							SILTSTONE. Distinctly weathered, very low to low strength. Presented as a grey with orange brown lenses of coarse grained sand to fine sized gravel, sub-angular. Gravel comprises of ironstone and quartz.								STS
				-33	22		SILTSTONE. Presented as a slightly weathered, low strength, grey, fine grained sand.								STS
															STS
					23		SILTSTONE. As above, greyish brown in colour.								STS
				-34			SILTSTONE. As above, grey with bands of higher clay content.								STS
							SILTSTONE. As above, with a higher fine grained sand content.								STS

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Soil Bore BH24

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **DWL(CW)/JD(URS)** Checked By: Date Started: **30-7-08** Date Finished: **3-8-06**	Relative Level: -10.60 mLAT Relative Level: -12.868 mAHD Coordinates: 312929.5 mE 7372220.3 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-35 / 24		SILTSTONE. As above, with some fine grained sand.								STS
						SILTSTONE. As above, with some fine grained sand, trace fine sized ironstone gravel, angular.								STS
					NO RECOVERY	SILTSTONE. As above with increased clay content. Core Loss. No recovery.								NOR
				-36 / 25		SILTSTONE. Slightly weathered, low strength, grey with some clay fines, trace fine sized ironstone gravel, angular.								STS
						SILTSTONE. As above, grey banded, reddish brown.								STS
						SILTSTONE. As above, reddish brown, trace fine sized quartz gravel, sub-rounded, decreased fine sand content, increased clay content.								STS
				-37 / 26		SILTSTONE. As above, grey in colour.								STS
				-38 / 27		SILTSTONE. As above, grey mottled orange, lenses of increased clay content. Some fine to medium grained sand, rounded trace coarse sand, trace fine to medium gravel.								STS
				-39 / 28		SILTSTONE. As above, with no traces of fine grained gravel.								STS
				-40 / 29		SILTSTONE. As Above, low to medium strength grey mottled orange brown and reddish brown, trace coarse sand.								STS
				-41 / 30		SILTSTONE. As above, grey tinged purple, trace fine to medium grained sand.								STS
						SILTSTONE. Slightly weathered, very low to low strength. Grey tinged purple, bands of high clay content, high plasticity, trace fine to medium grained sand.								STS
				-42 / 31		SILTSTONE. Slightly weathered, low to medium strength, grey mottled red brown, some fine to medium grained sand, sub-angular to								STS

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Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **DWL(CW)/JD(URS)** Checked By: Date Started: **30-7-08** Date Finished: **3-8-06**	Relative Level: -10.60 mLAT Relative Level: -12.868 mAHD Coordinates: 312929.5 mE 7372220.3 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-43 -44	32 33		sub-rounded. SILTSTONE. Slightly weathered, very low to low strength, slightly weathered, grey mottled orange brown and white. Clay matrix present in some lenses, high plasticity, some fine to medium grained sand, sub-angular to sub-rounded.								
				-45 -46 -47 -48 -49 -50	34 35 36 37 38 39										

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Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **4-8-08** Date Finished: **7-8-08**	Relative Level: -4.0 mLAT Relative Level: -6.268 mAHD Coordinates: 313480.69 mE 7372224.03 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-4	0		Core Loss. No recovery.								NOR
				-5	1	NO RECOVERY									
				-6	2										
	2.40	BH25_2.4-3.0													
	3.00	BH25_3.0-3.8		-7	3		SAND. Very loose, wet, dark grey with brownish tinge. Trace fine grained gravel, high content of shell fragments up to 30mm.			F-C	SR-R				SP
							SAND. As above but trace silt.								SP
	3.80	BH25_3.8-4.4		-8	4										
	4.40	BH25_4.4-5.0					CLAY. Soft, dark grey, some fine to medium, sub-rounded to rounded sand. Trace shell fragments.						M		CL
				-9	5										
	5.40	BH25_5.4-5.8													
	5.80	BH25_5.8-6.2					Sandy CLAY. Soft, dark grey, some fine to medium sand.						L		CL
				-10	6		CLAY. Soft, dark grey, traces of fine to medium sand.						L-M		CL
							Sandy CLAY. Dark grey, some fine to coarse grained sand, rounded, some shell fragments up to 10mm, trace fine gravel.						L		CL
				-11	7		CLAY. Soft becoming firm dark grey, trace fine to medium gravel and shell fragments.						H		CL

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **4-8-08** Date Finished: **7-8-08**	Relative Level: -4.0 mLAT Relative Level: -6.268 mAHD Coordinates: 313480.69 mE 7372224.03 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-12	8										
				-13	9										
	9.45	BH25_9.45-9.75					Sandy GRAVEL. Medium dense, light grey with yellow tinge. Fine to coarse grained sand, sub-angular to sub-rounded, lenses of clayey GRAVEL, low plasticity.			F-C	SA				GP
	9.75	BH25_9.75-9.9		-14	10										
				-15	11										
	11.90	BH25_11.9-12.3		-16	12		Sandy GRAVEL. As above, dense.								GP
				-17	13		Clayey SAND. Light grey mottled orange-brown. Some coarse sand and fine grained gravel, sub-angular to sub-rounded. Occasional lenses of high plasticity clay.			F-M	SR		L		SC
				-18	14										
				-19	15		SILTSTONE. Extremely weathered, extremely low strength. Presented as an orange brown mottled white fine sand. Rock fabric and laminations present, some clay fines.						H		STS

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Soil Bore BH25

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **4-8-08** Date Finished: **7-8-08**	Relative Level: -4.0 mLAT Relative Level: -6.268 mAHD Coordinates: 313480.69 mE 7372224.03 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-20	16										
				-21	17										
				-22	18										
	18.80	BH25B_18.8-20.4		-23	19		ARGILLITE. Distinctly weathered, low strength, grey streaked orange brown, some diffuse quartz veining.								METAFG
				-24	20		ARGILLITE. As above but increased grain size.								METAFG
				-25	21		ARGILLITE. As above with diffuse quartz veins.								METAFG
	21.75	BH25B_21.75-21.90		-26	22		ARGILLITE. Extremely weathered, very low strength, orange brown streaked grey and white, some clay seams, high plasticity. Redrilled due to casing cracking when barge was pulled off location.								METAFG
				-27	23										

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URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **4-8-08** Date Finished: **7-8-08**	Relative Level: -4.0 mLAT Relative Level: -6.268 mAHD Coordinates: 313480.69 mE 7372224.03 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-28	24										
				-29	25										
				-30	26		See BH25B for indicative underlying geology.								
				-31	27										
				-32	28										
				-33	29										
				-34	30										
				-35	31										

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Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **7-8-08** Date Finished: **8-8-08**	Relative Level: -4.0 mLAT Relative Level: -6.268 mAHD Coordinates: 313475.44 mE 7372228.4 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-4	0										
				-5	1										
				-6	2										
				-7	3										
				-8	4										
				-9	5										
				-10	6										
				-11	7										

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **7-8-08** Date Finished: **8-8-08**	Relative Level: -4.0 mLAT Relative Level: -6.268 mAHD Coordinates: 313475.44 mE 7372228.4 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-12	8										
				-13	9										
				-14	10										
				-15	11										
				-16	12										
				-17	13										
				-18	14										
				-19	15										

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URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **7-8-08** Date Finished: **8-8-08**	Relative Level: -4.0 mLAT Relative Level: -6.268 mAHD Coordinates: 313475.44 mE 7372228.4 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-20	16										
				-21	17										
				-22	18										
						NO RECOVERY	See BH25 for indicative overlying geology. Rock rolled down to 18.8m.								NOR
				-23	19		SILTSTONE. Slightly weathered, low strength, orange grey streaked brown and white, highly fractured.								STS
							ARGILLITE. Slightly weathered medium strength, highly fractured, grey with orange-brown streaks, some quartz dissolutions and quartz veining.								METAFG
				-24	20	NO RECOVERY	Core Loss. No recovery.								NOR
							ARGILLITE. Slightly weathered, medium strength, highly fractured, grey with orange-brown streaks, some quartz dissolutions and quartz veining.								METAFG
				-25	21										
				-26	22		ARGILLITE. Extremely weathered, medium strength, orange brown streaked grey and white, some clay seams, high plasticity.								METAFG
				-27	23										
						NO RECOVERY	Core Loss. No recovery.								NOR
							ARGILLITE. Slightly weathered, high strength, grey with orange-brown streaks, some quartz dissolutions and								METAFG

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Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **VHT(CW)/MJE(URS)** Checked By: Date Started: **7-8-08** Date Finished: **8-8-08**	Relative Level: -4.0 mLAT Relative Level: -6.268 mAHD Coordinates: 313475.44 mE 7372228.4 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-28	24		quartz veining. ARGILLITE. As above, slightly weathered, very high strength.								METAFG
				-29	25										
				-30	26										
				-31	27										
				-32	28										
				-33	29		ARGILLITE. As above.								METAFG
				-34	30										
				-35	31										

REMARKS:

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Soil Bore BH26

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Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **12-8-08** Date Finished: **13-8-08**	Relative Level: +1.6 mLAT Relative Level: -0.668 mAHD Coordinates: 314025.2 mE 7372231.1 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	0.00	BH26_0.0-0.6		1 / 0		SILT. Loose, grey brown. Trace coarse sand, whole shell and trace shell fragments up to 50mm, trace organic material.						H		MH
	0.70	BH26_0.7-1.0				CLAY. As above but soft.						H		CL
	1.10	BH26_1.1-1.45		0 / 1										
	1.50	BH26_1.5-2.0												
				-1 / 2	NO RECOVERY	Core Loss. No recovery.								NOR
	3.20	BH26_3.2-3.45				CLAY. Firm to stiff dark brown. Trace fine sand, trace fine gravel, sub-angular, trace organic material, odour noted.						H		CL
	3.50	BH26_3.5-3.9		-2 / 3		CLAY. As above, grey brown. Some fine to coarse, sub-angular gravels.								CL
	4.00	BH26_4.0-4.2				CLAY. As above, but with some light grey/greenish grey lenses.								CL
				-3 / 4		SILTSTONE. Extremely weathered, extremely low strength, light grey, streaked red brown.								STS
	5.60	BH26_5.6-5.7		-4 / 5		SILTSTONE. Extremely weathered, very low to low strength, light grey with greenish brown lenses of extremely weathered, very low to low strength SANDSTONE.								STS
				-5 / 6										
				-6 / 7										

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH26

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **12-8-08** Date Finished: **13-8-08**	Relative Level: +1.6 mLAT Relative Level: -0.668 mAHD Coordinates: 314025.2 mE 7372231.1 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				8 / -7										
				9 / -8										
				10 / -9										
				11 / -10										
				12 / -11	NO RECOVERY	Core Loss. No recovery.								NOR
	13.00	BH26_13.0-13.12		13 / -12		SILTSTONE. Extremely weathered, very low to low strength, light grey with light brown streaking and lamination.								STS
						SILTSTONE. As above, but layer of light brown gravels at 13.6 to 13.78m. Gravels are fragments of quartz and siltstone, fine to medium, angular to sub-angular.								STS
				14 / -13		SILTSTONE. As above, increased gravel content.								STS
				15 / -14		SILTSTONE. Extremely weathered, extremely low strength, brown stained dark brown and black.								STS
						SILTSTONE. Extremely weathered, extremely low strength, light grey, stained red brown and brown. Laminated siltstone gravels, fine to medium, sub-angular to								STS
	15.95													STS

REMARKS:

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Soil Bore BH26

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **12-8-08** Date Finished: **13-8-08**	Relative Level: +1.6 mLAT Relative Level: -0.668 mAHD Coordinates: 314025.2 mE 7372231.1 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
		BH26_15.95-16.26			16		sub-rounded, clay fines, medium plasticity.								
				-15			SILTSTONE. Extremely weathered, extremely low strength, stained orange brown, some fine to medium gravel.								STS
					17		SILTSTONE. Extremely weathered, extremely low strength, light grey stained brange brown at defects.								NOR
				-16		NO RECOVERY	SILTSTONE. Distinctly weathered, extremely low strength, light grey stained orange-brown at defects.								
							Core Loss. No recovery.								STS
					18		SILTSTONE. Extremely to distinctly weathered, extremely weathered, light grey, streaked red brown at defects.								
				-17		NO RECOVERY	Core Loss. No recovery.								NOR
	19.00				19		SILTSTONE. Distinctly weathered, extremely low strength, light grey, streaked red brown along defects.								STS
		BH26_19.0-19.3		-18			SILTSTONE. As above, but red brown.								STS
					20		SILTSTONE. Distinctly weathered, extremely low strength, light grey, minor brown streaking. Closely spaced defects/fractures noted.								STS STS
				-19			SILTSTONE. Distinctly weathered, extremely low strength, light grey becoming brown. Extremely closely spaced defects.								STS
					21		SILTSTONE. As above, light grey with brown to dark brown staining.								STS
				-20			SILTSTONE. Presented as a crush zone. Brown, fine to medium, angular to sub-rounded gravels, some silt and coarse sand.								STS
					22		SILTSTONE. Distinctly weathered, extremely low to very low strength, light grey with brown staining along defects. Extremely closely spaced defects.								
				-21											
					23										
							SILTSTONE. As above but slickensided defects noted.								STS
				-22			SILTSTONE. As above, but with major quartz mineralisation.								STS STS

REMARKS:

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Soil Bore BH26

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **12-8-08** Date Finished: **13-8-08**	Relative Level: +1.6 mLAT Relative Level: -0.668 mAHD Coordinates: 314025.2 mE 7372231.1 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
					24		SILTSTONE. Distinctly weathered, extremely low to very low strength, light grey with brown staining along defects.								
				-23		NO RECOVERY	Core Loss. No recovery.								NOR
					25		ARGILLITE. Distinctly weathered, low strength, grey and orange red along fractures. Extremely to closely spaced defects, some quartz mineralisation.								METAFG
				-24			ARGILLITE. As above.								METAFG
					26										
				-25			ARGILLITE. Distinctly weathered, medium strength, grey, very close to closely spaced defects.								METAFG
					27										
				-26											
					28		ARGILLITE. As above but light brown, very close to closely spaced defects.								METAFG
							ARGILLITE. Distinctly weathered, medium strength, dark grey, increased frequency of micro structures.								METAFG
				-27			ARGILLITE. As above but light grey.								METAFG
					29		ARGILLITE. As above.								METAFG
				-28			ARGILLITE. As above but grey.								METAFG
					30										
				-29											
					31										
				-30											

REMARKS:

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Soil Bore BH27

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **4-10-08** Date Finished: **4-10-08**	Relative Level: -0.1 mLAT Relative Level: -2.368 mAHD Coordinates: 317742.19 mE 7367967.75 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				0	NO RECOVERY	Core Loss. No recovery.								NOR
	0.40	BH27_0.4-0.8				CLAY. Very soft. Wet, grey, some fine to medium grained sand. Some fine to coarse sized, sub-angular to sub-rounded gravels, some shell fragments up to 30mm.						H		CL
	0.80	BH27_0.8-1.1		-1 / 1		Sandy CLAY. Very soft, wet, brown. Sand is fine to medium grained. Some medium sized gravels, sub-angular to sub-rounded.								CL
	1.60	BH27_1.6-1.8				Sandy CLAY. As above, firm, light grey, mottled orange brown.								CL
	2.00	BH27_2.0-2.3		-2 / 2										
	2.50	BH27_2.5-3.0				SANDSTONE. Extremely to distinctly weathered, very low strength, grey, mottled light brown. Presented as gravelly SILT/Silty GRAVEL. Medium dense, moist, low plasticity, some fine to coarse grained sand.			F-COB	A				SS
				-3 / 3	NO RECOVERY	Core Loss. No recovery.								NOR
	3.70	BH27_3.7-4.35				SANDSTONE. Extremely weathered, low strength, grey mottled light brown. Presented as a gravelly SAND/Sandy GRAVEL. Medium dense, moist. Sand and gravel are fine to coarse grained, angular, some silt, low plasticity.								SS
				-4 / 4		Core Loss. No recovery.								NOR
				-5 / 5	NO RECOVERY									
				-6 / 6		Redrilled due to anchor movement. See BH27B for indicative underlying geology.								
				-7 / 7										
				-8										

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH27B

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **5-10-08** Date Finished: **6-10-08**	Relative Level: -0.1 mLAT Relative Level: -2.368 mAHD Coordinates: 317742.95 mE 7367967.08 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-1 -2 -3 -4 -5 -6 -7 -8	0 1 2 3 4 5 6 7	NO RECOVERY	See BH27 for indicative overlying geology. Rock rolled down to 7.0m								NOR
					7		CLAY. Soft, wet, light grey, some fine to medium grained sand, some fine sized sub-angular gravels.			M-C	A		H		CL
							SANDSTONE. Extremely weathered, low strength, grey mottled light brown. Presented as a sandy GRAVEL. Medium dense, moist. Sand is fine to								SS

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH27B

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **5-10-08** Date Finished: **6-10-08**	Relative Level: -0.1 mLAT Relative Level: -2.368 mAHD Coordinates: 317742.95 mE 7367967.08 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
					8		coarse grained, angular, some silt, low plasticity.								
				-9	9		SANDSTONE. Slightly weathered, low to medium strength, light brown, widely spaced defects.								SS
				-10	10										
				-11	11										
							SANDSTONE. Crush zone presented as light brown clayey GRAVEL.								SS
							SANDSTONE. Slightly weathered, very high strength, light grey with light brown streaking, some minor defects.								SS
				-12	12		Meta-SILTSTONE. Slightly weathered, low to medium strength, light grey brown with medium spaced defects.								STS
				-13	13		Meta-SILTSTONE. As above, but widely spaced defects, some micro fractures and foliations with brown staining.								STS
							Meta-SILTSTONE. As above, but medium spaced defects, some micro fractures and foliations with brown staining.								STS
				-14	14										
				-15	15										
				-16											

REMARKS:

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Soil Bore BH27B

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **5-10-08** Date Finished: **6-10-08**	Relative Level: -0.1 mLAT Relative Level: -2.368 mAHD Coordinates: 317742.95 mE 7367967.08 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-17	16 17										
				-18	18										
				-19	19										
				-20	20										
				-21	21										
				-22	22										
				-23	23										
				-24											

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Soil Bore BH28

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **28-9-08** Date Finished: **28-9-08**	Relative Level: -6.2 mLAT Relative Level: -8.468 mAHD Coordinates: 316930.6 mE 7368499.93 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-7	0		Core Loss. No recovery								NOR
					1	NO RECOVERY									
				-8											
					2										
	2.40	BH28_2.4-3.4		-9			CLAY. Very soft, wet, grey. Trace fine grained sand, minor shell fragments up to 20mm.						H		CL
	3.50	BH28_3.5-4.4			3										
				-10											
					4										
							Core Loss. No recovery								NOR
				-11	5	NO RECOVERY									
	5.30	BH28_5.3-5.7					CLAY. Very soft, moist, grey. Trace fine grained sand, minor shell fragments up to 20mm.						H		CL
	5.90	BH28_5.9-6.3		-12											
					6		SANDY CLAY. Very stiff, grey green, mottled light grey. Sand is fine to medium grained						M		CL
				-13	7		Redrilled due to anchor movement. See BH28B for indicative underlying geology.								
				-14											

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH28B

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **28-9-08** Date Finished: **2-10-08**	Relative Level: -6.2 mLAT Relative Level: -8.468 mAHD Coordinates: 316930.35 mE 7368495.74 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				0	NO RECOVERY	Core Loss. No recovery.								NOR
	0.50	BH28B_0.5-0.95		-7		CLAY. Very soft, wet, grey, trace fine grained sand, minor shell fragments up to 20mm.						H		CL
	1.00	BH28B_1.0-1.45		1										
	1.50	BH28B_1.5-2.0		-8										
				2		See BH28 for indicative overlying geology. Rock rolled down to 7.3m.								NOR
				-9										
				3										
				-10										
				4	NO RECOVERY									
				-11										
				5										
				-12										
				6										
				-13										
				7		SANDY CLAY. Firm, grey green. Sand is fine to medium grained.						M		CL
				-14		GRAVEL. Medium dense, yellow brown. Gravel comprises of siltstone			F-C	A-SA				GP

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH28B

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **28-9-08** Date Finished: **2-10-08**	Relative Level: -6.2 mLAT Relative Level: -8.468 mAHD Coordinates: 316930.35 mE 7368495.74 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-15	8		fragments, some clay, medium plasticity, some fine to coarse grained sand.								
				-16	9		GRAVEL. As above but gravels range up to cobbled size.								GP
				-17	10										
				-18	11		SILTSTONE. Extremely weathered, extremely low strength. Presented as a light brown/orange grey SILT, with low plasticity and trace fine grained sand.								STS
				-19	12										
				-20	13		SILTSTONE. As above, but trace fine to medium, siltstone GRAVELS.								STS
				-21	14										
	15.50	BH28B_15.5-16.0		-22	15	NO RECOVERY	Core Loss. No recovery.								NOR
							SILTSTONE. Distinctly weathered, low strength, light brown, streaked very light grey, widely spaced defects, some								STS

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Soil Bore BH28B

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **28-9-08** Date Finished: **2-10-08**	Relative Level: -6.2 mLAT Relative Level: -8.468 mAHD Coordinates: 316930.35 mE 7368495.74 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-23	16		micro fractures with MgO staining.								STS
							SILTSTONE. As above, but high strength.								
					17	NO RECOVERY	Core Loss. No recovery.								NOR
							Meta-SILTSTONE. Distinctly weathered, high strength, light brown, widely spaced defects, some MgO staining.								METAFG
				-24	18		Meta-SILTSTONE. As above, but grey/dark grey, mottled light brown.								METAFG
				-25			Meta-SILTSTONE, as above but extremely weathered and low strength.								METAFG
					19	NO RECOVERY	Core Loss. No recovery.								NOR
							Meta-SILTSTONE. Distinctly weathered, high strength, grey/dark grey, widely spaced defects, minor micro fractures.								METAFG
				-26	20										
						NO RECOVERY	Core Loss. No recovery.								NOR
				-27	21		Meta-SILTSTONE. Slightly weathered, high strength, light to medium grey, stained brown along defects.								METAFG
							ARGILLITE. Slightly weathered to fresh rock, high strength, grey, wide spaced defects. Foliation and veining noted.								METAFG
				-28	22										
				-29	23										
				-30											

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Soil Bore BH28B

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **28-9-08** Date Finished: **2-10-08**	Relative Level: -6.2 mLAT Relative Level: -8.468 mAHD Coordinates: 316930.35 mE 7368495.74 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-31	24		ARGILLITE. Fresh rock, high strength, grey with light grey speckling, wide spaced defects. Foliation and veining noted.								METAFG
				-32	25										
				-33	26										
				-34	27										
				-35	28										
				-36	29										
				-37	30										
				-38	31										

REMARKS:

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Soil Bore BH29

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **8-10-08** Date Finished: **8-10-08**	Relative Level: +1.1 mLAT Relative Level: -1.168 mAHD Coordinates: 319316.56 mE 7367379.55 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	0.20			1 / 0	NO RECOVERY	Core Loss. No recovery.								NOR
		BH29_0.2-0.5\				Clayey SAND. Very loose, wet, grey. Clay has high plasticity, some shell fragments, up to 5mm.			F					SC
	0.50	BH29_0.5-0.7												
	0.70	BH29_0.7-1.0				CLAY. Very soft becoming firm with depth, wet becoming moist, grey with some fine grained sand.						H		CL
	1.00	BH29_1.0-1.5		0 / 1										
	1.60	BH29_1.6-2.0												
	2.20	BH29_2.2-2.7		-1 / 2										
				-2 / 3	NO RECOVERY	Core Loss. No recovery.								NOR
						CLAY. Firm, moist, grey with some fine grained sand.						H		CL
	4.10	BH29_4.1-4.4		-3 / 4		CLAY. As above but grey, mottled red.						H		CL
						CLAY. Stiff, moist, some gravels coarse to cobbled size and angular noted between 4.5-4.8m.						H		CL
				-4 / 5										
				-5 / 6		CLAY. Stiff becoming very stiff, light grey with lenses of clayey SAND, fine grained and red brown in colour. Minor fine to medium sub-angular to sub-rounded gravels.						H		CL
	7.20	BH29_7.2-7.45		-6 / 7										

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

GLNG SOIL BORE GLNG DRILLING LOGS_JAN_09.GPJ WCC_AUS.GDT 20/1/09 This drawing is subject to COPYRIGHT. It remains the property of URS Australia Pty Ltd.

URS Australia Pty Ltd

Soil Bore BH29

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **8-10-08** Date Finished: **8-10-08**	Relative Level: +1.1 mLAT Relative Level: -1.168 mAHD Coordinates: 319316.56 mE 7367379.55 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-7	8										
				-8	9		SILTSTONE. Extremely weathered, extremely low strength. Presented as a very stiff, light grey, mottled brown CLAY with some fine to medium grained sand and some fine to medium sub-angular gravels.						H		STS
				-9	10										
				-10	11		SANDSTONE. Distinctly weathered, very low strength becoming moderate strength, light brown mottled grey.								SS
				-11	12	NO RECOVERY	Core Loss. No recovery.								NOR
				-12	13		SANDSTONE. Distinctly weathered, very low strength, light brown mottled grey.								SS
						NO RECOVERY	Core Loss. No recovery.								NOR
				-13	14		SANDSTONE. Distinctly weathered, low strength, light brown mottled grey, some micro structures.								SS
						NO RECOVERY	Core Loss. No recovery.								NOR
					15		SANDSTONE. Distinctly weathered, low strength, light brown mottled grey.								SS
				-14											

REMARKS:

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Soil Bore BH30

URS Australia Pty. Ltd. , Phone Fax		Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **9-10-08** Date Finished: **9-10-08**	Relative Level: +1.00 mLAT Relative Level: -1.268 mAHD Coordinates: 319596.54 mE 7367550.89 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
G	0.00	BH30_0.0-0.2		1 / 0	NO RECOVERY	Core Loss. No recovery.								NOR
	0.60	BH30_0.6-0.9				CLAY. Very soft, wet, grey. Some fine grained sand, some shell fragments up to 50mm.						H		CL
	1.00	BH30_1.0-1.45		0 / 1		CLAY. As above, but trace shell fragments up to 10mm.						H		CL
	1.50	BH30_1.5-2.0												
	2.10	BH30_2.1-3.0		-1 / 2										
				-2 / 3	NO RECOVERY	Core Loss. No recovery.								NOR
	3.80	BH30_3.8-4.8		-3 / 4		CLAY. Very soft, wet, grey. Some fine grained sand, minor lenses of SAND fine grained up to 50mm.						H		CL
	5.20	BH30_5.2-5.8		-4 / 5										
	6.00	BH30_6.0-6.15		-5 / 6		CLAY. As above, minor organics noted.						H		CL
					NO RECOVERY	Core Loss. No recovery.								NOR
				-6 / 7		CLAY. Soft, moist, grey, some fine grained sand. Minor lenses of fine grained sand up to 50mm, minor fine to medium sized, sub-angular to sub-rounded gravels.						H		CL

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

GLNG SOIL BORE GLNG DRILLING LOGS_JAN_09.GPJ WCC_AUS.GDT 20/1/09 This drawing is subject to COPYRIGHT. It remains the property of URS Australia Pty Ltd.

URS Australia Pty Ltd

Soil Bore BH30

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/MJE(URS)** Checked By: Date Started: **9-10-08** Date Finished: **9-10-08**	Relative Level: +1.00 mLAT Relative Level: -1.268 mAHD Coordinates: 319596.54 mE 7367550.89 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	8.30			-7	8										
		BH30_8.3--8.75					CLAY. As above, very stiff, light grey mottled brown.						H		CL
				-8	9										
				-9	10		CLAY. Stiff, light grey, mottled brown, some fine to medium grained sand, some fine to coarse sized, sub-angular to sub-rounded gravels, some lenses of sandy gravelly CLAY, up to 40mm.						M		CL
				-10	11										
							CLAY. Very stiff, light grey, mottled brown, some fine grained sand, some lenses of a sandy CLAY, up to 40mm.						M		CL
				-11	12										
				-12	13										
				-13	14										
				-14	15										

REMARKS:

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Soil Bore BH31

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/DA(URS)** Checked By: Date Started: **13-10-08** Date Finished: **14-10-08**	Relative Level: +0.55 mLAT Relative Level: -1.718 mAHD Coordinates: 317088.95 mE 7368763.15 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	0.18			0		CLAY. Very soft, wet, grey, some fine to medium grained sand, some shell fragments, up to 30mm.						H		CL
	0.20	BH31_0.18-0.2										H		CL
	0.30	BH31_0.2-0.3 BH31_0.3-0.6		0		Gravelly CLAY. Very soft, wet, grey. Gravels are fine to medium sized, sub-angular to sub-rounded, some fine to coarse sand, minor organic material.			F-C	SA-SR				GC
				1		Clayey GRAVEL. Loose, wet, grey mottled brown. Clay has high plasticity. Some fine to coarse sand.								
	2.00	BH31_2.0-0.3		-1										
				2		GRAVEL. Loose, wet, light grey. Gravel comprises of siltstone fragments, some clay fines, high plasticity, some fine to coarse grained sand.			F-C	SA-SR				GP
				-2										
				3										
	3.60	BH31_3.6-3.9		-3		Silty SAND. Medium dense, moist, light brown, mottled grey,. Silt has medium plasticity, minor coarse sized, sub-angular SILTSTONE & Quartzite fragments. Possibly extremely weathered SANDSTONE.			F					SM
				4										
				-4										
	5.00	BH31_5.0-5.35		5		SILTSTONE. Extremely weathered, extremely low strength, light grey, mottled brown. Silt has low plasticity, some fine grained sand.								STS
				-5										
				6										
				-6		SANDSTONE. Extremely weathered, extremely low strength, some micro fractures with manganese staining noted. Presented as a firm light brown, silty SAND.								SS
				7										
				-7										

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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Soil Bore BH31

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/DA(URS)** Checked By: Date Started: **13-10-08** Date Finished: **14-10-08**	Relative Level: +0.55 mLAT Relative Level: -1.718 mAHD Coordinates: 317088.95 mE 7368763.15 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-8	8		SANDSTONE. Extremely to distinctly weathered, low strength. Presented as a light brown gravel, minor silt and minor fine to coarse sand.			F-COB	SA-SR				SS
				-9	9		SANDSTONE. As above but distinctly weathered.								SS
				-10	10		SANDSTONE. Distinctly weathered, low strength. Presented as a light brown gravel, minor silt and minor fine to coarse sand.			F-COB	SA-SR				SS
				-11	11		SANDSTONE. As above. Becoming medium strength at 14.5m.			F-COB	SA-SR				SS
				-12	12										
				-13	13										
				-14	14										
				-15	15										

REMARKS:

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Soil Bore BH31

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/DA(URS)** Checked By: Date Started: **13-10-08** Date Finished: **14-10-08**	Relative Level: +0.55 mLAT Relative Level: -1.718 mAHD Coordinates: 317088.95 mE 7368763.15 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-16	16		SANDSTONE. Distinctly weathered, medium strength, light brown with black staining along micro fractures (MgO). Presented as a gravel, minor silt, minor fine to coarse grained sand.			F-COB	SA-SR				SS
				-17	17										
				-18	18										
				-19	19										
				-20	20										
				-21	21										
				-22	22										
				-23	23										

REMARKS:

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Soil Bore BH32

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/DA(URS)** Checked By: Date Started: **15-10-08** Date Finished: **15-10-08**	Relative Level: +0.56 mLAT Relative Level: -1.708 mAHD Coordinates: 317030.67 mE 7368697.99 mN	Client: **Santos**

SAMPLING DETAILS					DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT / DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				0	NO RECOVERY	Core Loss. No recovery.								NOR
	0.70	BH32_0.7-1.0		0		CLAY. Very soft, wet, dark grey, some fine grained sand. Some shell fragments up to 10mm.						H		CL
	1.50	BH32_1.5-1.8		-1										
	2.50	BH32_2.5-3.2		-2										
	3.80	BH32_3.8-4.1		-3										
	4.70	BH32_4.7-5.1		-4		SILT, Stiff, dry, light grey, mottled brown, some fine grained sand, minor fine to medium sized sub-angular gravels.						L		ML
				-5	NO RECOVERY	Core Loss. No recovery.								NOR
	6.20	BH32_6.2-6.65		-6		Sandy SILT. Stiff, moist, light grey, mottled red and orange. Sand is fine to medium grained, minor fine to medium sized, sub-angular to sub-rounded gravels.						H		ML
						Sandy SILT. As above, but sand is fine to coarse grained, some fine to cobbled, sub-angular to sub-rounded gravels.								ML
				-7		SILTSTONE. Extremely weathered to distinctly								STS

REMARKS: NVO: No Visual or Olfactory (evidence of contamination)
SWL: Static Water Level IWL: Initial Water Level

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URS Australia Pty Ltd

Soil Bore BH32

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/DA(URS)** Checked By: Date Started: **15-10-08** Date Finished: **15-10-08**	Relative Level: +0.56 mLAT Relative Level: -1.708 mAHD Coordinates: 317030.67 mE 7368697.99 mN	Client: **Santos**

SAMPLING DETAILS						DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
	8.10	BH32_8.1-8.4		-8	8	NO RECOVERY	weathered, low strength. Presented as a stiff, medium plasticity, light grey, mottled brown, sandy SILT. Sand is fine to medium grained, minor fine to medium sub angular gravels.								NOR
							Core Loss. No recovery.								
	9.30	BH32_9.3-9.6		-9	9		SILTSTONE. Extremely weathered to distinctly weathered, extremely low strength. Presented as a stiff, medium plasticity, light grey, mottled brown, sandy SILT. Sand is fine to medium grained, minor fine to medium sub angular gravels.								STS
				-10	10		SANDSTONE. Distinctly weathered, very low strength, light brown, grey, fine grained, widely spaced defects.								SS
				-11	11										
				-12	12		SANDSTONE. Distinctly weathered, very low strength, light brown, grey, fine grained, widely spaced defects.								SS
				-13	13										
				-14	14										
				-15	15										

REMARKS:

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URS Australia Pty Ltd

Soil Bore BH32

URS Australia Pty. Ltd. ,	Phone Fax	Project No.: **42626228**	Project Reference: **GLNG Drilling**
Drilling Contractor: **Drillsearch**			
Drilling Method: **Rotary Boring / Push Tube Sampling**	Logged By: **AL(CW)/DA(URS)** Checked By: Date Started: **15-10-08** Date Finished: **15-10-08**	Relative Level: +0.56 mLAT Relative Level: -1.708 mAHD Coordinates: 317030.67 mE 7368697.99 mN	Client: **Santos**

SAMPLING DETAILS							DESCRIPTION OF STRATA								
Sample Type	Sample Depth (m)	SAMPLING AND OTHER TESTING	FIELD OBSERVATIONS AND COMMENTS	m LAT	DEPTH (m)	LEGEND	LITHOLOGY	Consistency	Structure	Grain Size	Shape	Sorting	Plasticity	Moisture	Classification
				-16	16										
				-17	17										
				-18	18										
				-19	19		SANDSTONE. As above, but low strength.								SS
				-20	20										
				-21	21										
				-22	22										
				-23	23										

REMARKS:

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Appendix B URS 2008 - Geological Cross Sections

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Client

Source: Client Supplied Data

Project

GLADSTONE LNG PROJECT
MARINE SEDIMENT INVESTIGATION

Drawn: RG

Approved: JB

Date: 13-01-2009

Job No.: 4262 6220

File No.: 42626220-g-724.dwg

Title

APPENDIX B -
GEOLOGICAL CROSS SECTION
A - A'

Figure: B1

Rev. A

A4

Legend

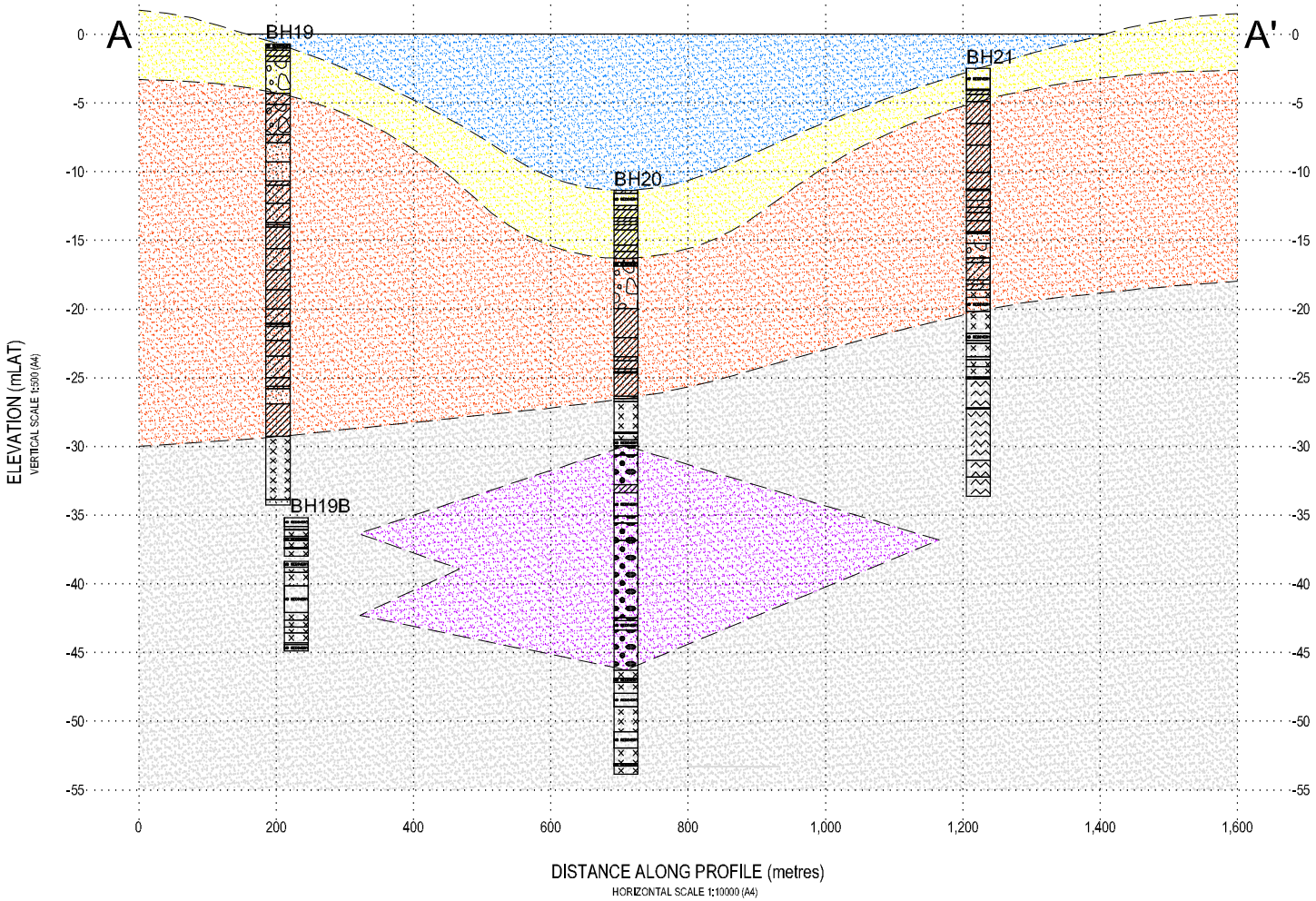
Borehole/Well Number — BH20

Borehole Lithology

Inferred Geology

Lithology Graphics

- No Recovery
- Clayey Gravel
- Low Plasticity Clay
- Poorly-graded Gravel
- Clayey Sand
- Poorly-graded Sand
- Siltstone
- Sandstone
- Well-graded Gravel
- High Plasticity Organic silt or clay
- Conglomerate
- Fine grained Metamorphic Rock

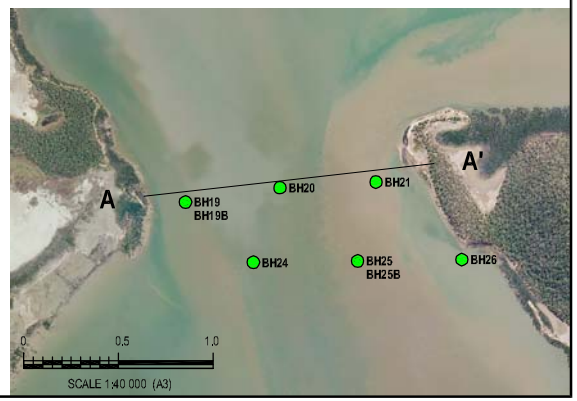


General Geology Graphics

- Ocean
- Marine Sediments
- Residual Material
- Conglomerate
- EW/DW/Bedrock

Borehole Classification

- Environmental Marine Borehole (Geocoastal (Australia) Pty Ltd)
- Geotechnical Marine Borehole
- Bridge CUI Program



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Client

Source: Client Supplied Data

Project

GLADSTONE LNG PROJECT
MARINE SEDIMENT INVESTIGATION

Drawn: RG | Approved: JB | Date: 13-01-2009

Job No.: 4262 6220

File No.: 42626220-g-725.dwg

Title

APPENDIX B -
GEOLOGICAL CROSS SECTION
B - B'

Figure: B2

Rev. A

A4

Legend

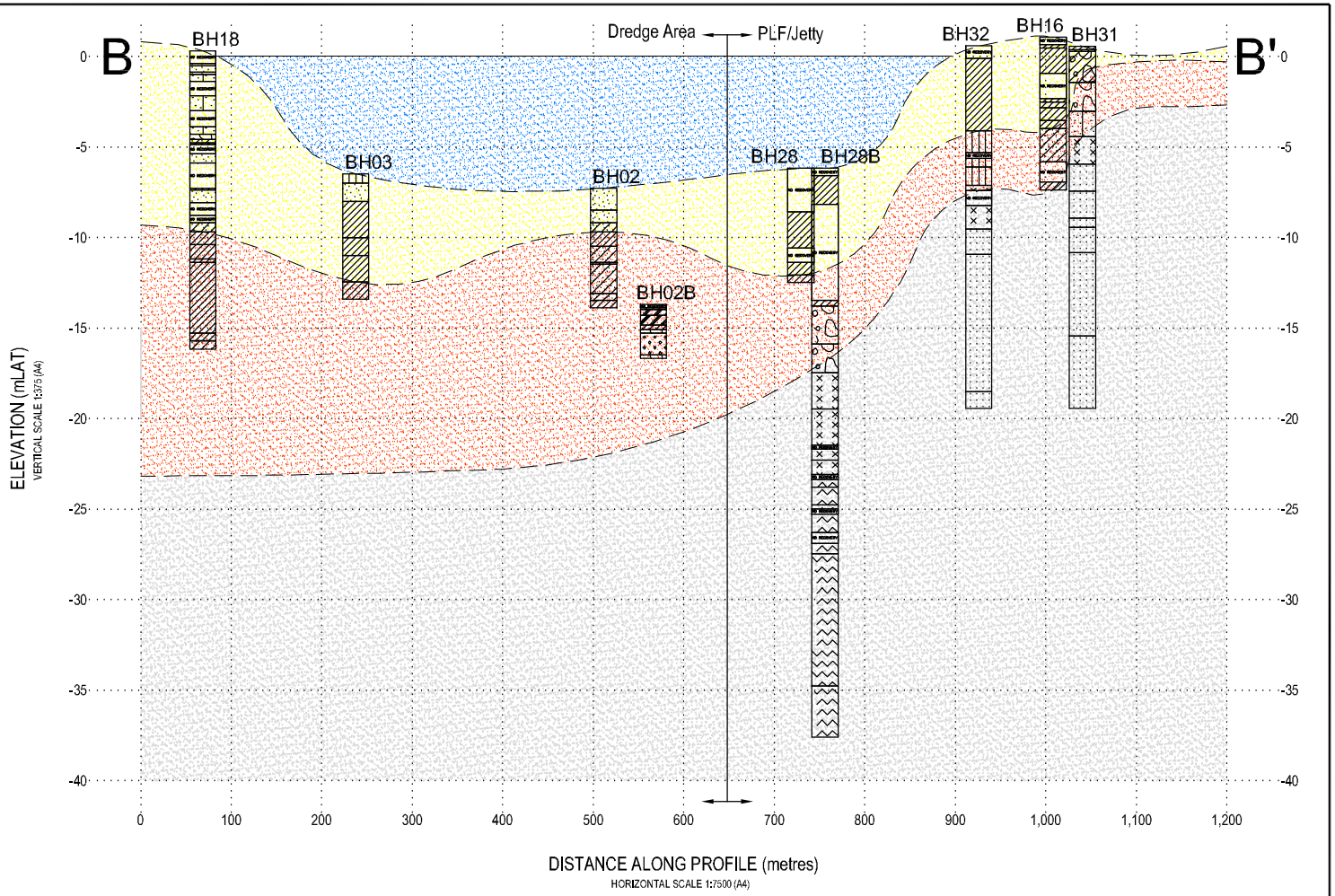
Borehole/Well Number — BH03

Borehole Lithology

Inferred Geology

Lithology Graphics

- Poorly-graded Sand
- Clayey Sand
- Low Plasticity Clay
- No Recovery
- High Plasticity Clay
- Poorly-graded Gravel
- Well-graded Sand
- Silt
- Silty Sand
- Siltstone
- Fine grained Metamorphic Rock
- Clayey Gravel
- Sandstone



General Geology Graphics

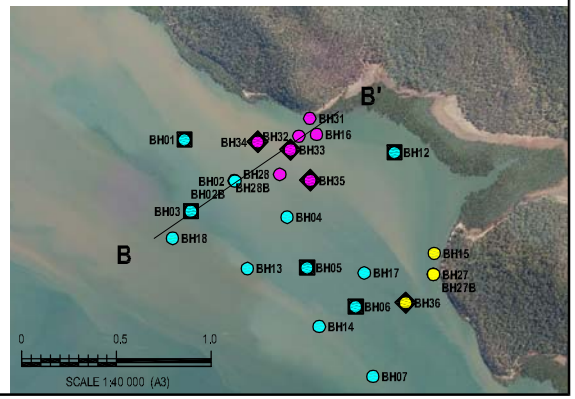
- Ocean
- Marine Sediments
- Residual Material
- EW/DW/Bedrock

Borehole Classification

- Geocoastal (Australia) Pty Ltd
- Connell Wagner Pty Ltd

Geotechnical Marine Borehole

- Dredge Area
- PLF/Jetty
- MOF



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Client: LNG

Source: Client Supplied Data

Project: GLADSTONE LNG PROJECT
MARINE SEDIMENT INVESTIGATION

Drawn: RG | Approved: JB | Date: 13-01-2009

Job No.: 4262 6220

File No.: 42626220-g-751.dwg

Title: APPENDIX B - GEOLOGICAL CROSS SECTION C - C'

Figure: B3

Rev. A

A4

Legend

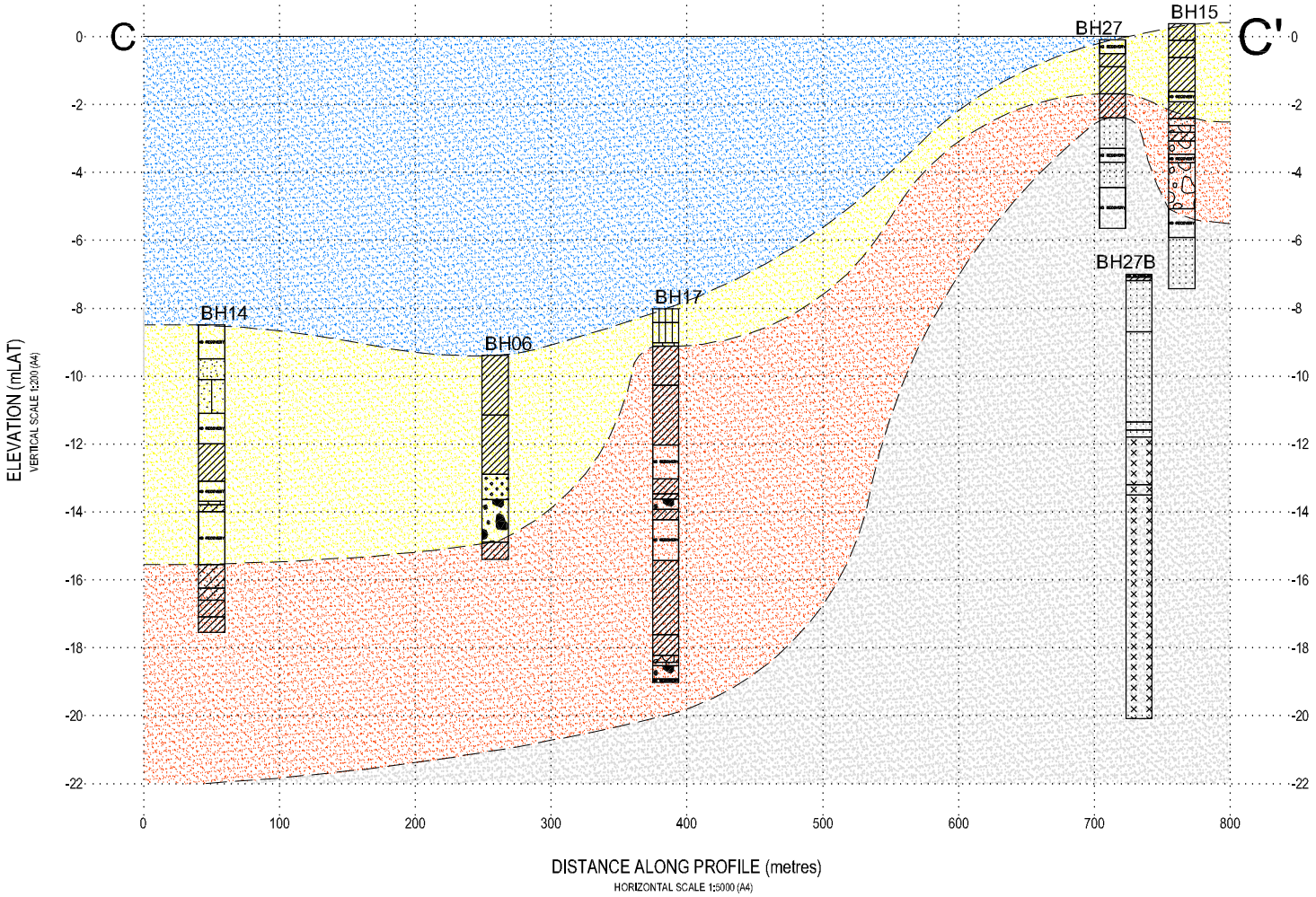
Borehole/Well Number — BH06

Borehole Lithology

Inferred Geology

Lithology Graphics

- Low Plasticity Clay
- Well-graded Sand
- Well-graded Gravel
- No Recovery
- Poorly-graded Sand
- Silty Sand
- Poorly-graded Gravel
- Clayey Sand
- Sandstone
- Silt
- Clayey Gravel
- Siltstone



General Geology Graphics

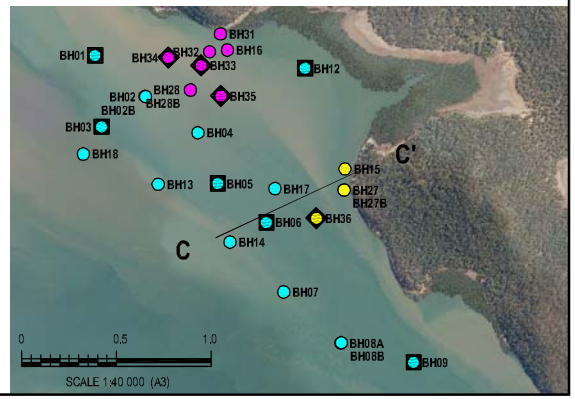
- Ocean
- Marine Sediments
- Residual Material
- EW/DW/Bedrock

Borehole Classification

- Geocoastal (Australia) Pty Ltd
- Connell Wagner Pty Ltd

Geotechnical Marine Borehole

- Dredge Area
- PLF/Jetty
- MOF



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Client

Source: Client Supplied Data

Project

GLADSTONE LNG PROJECT
MARINE SEDIMENT INVESTIGATION

Drawn: RG

Approved: JB

Date: 13-01-2009

Job No.: 4262 6220

File No.: 42626220-g-752.dwg

Title

APPENDIX B -
GEOLOGICAL CROSS SECTION
D - D'

Figure: B4

Rev. A

A4

Legend

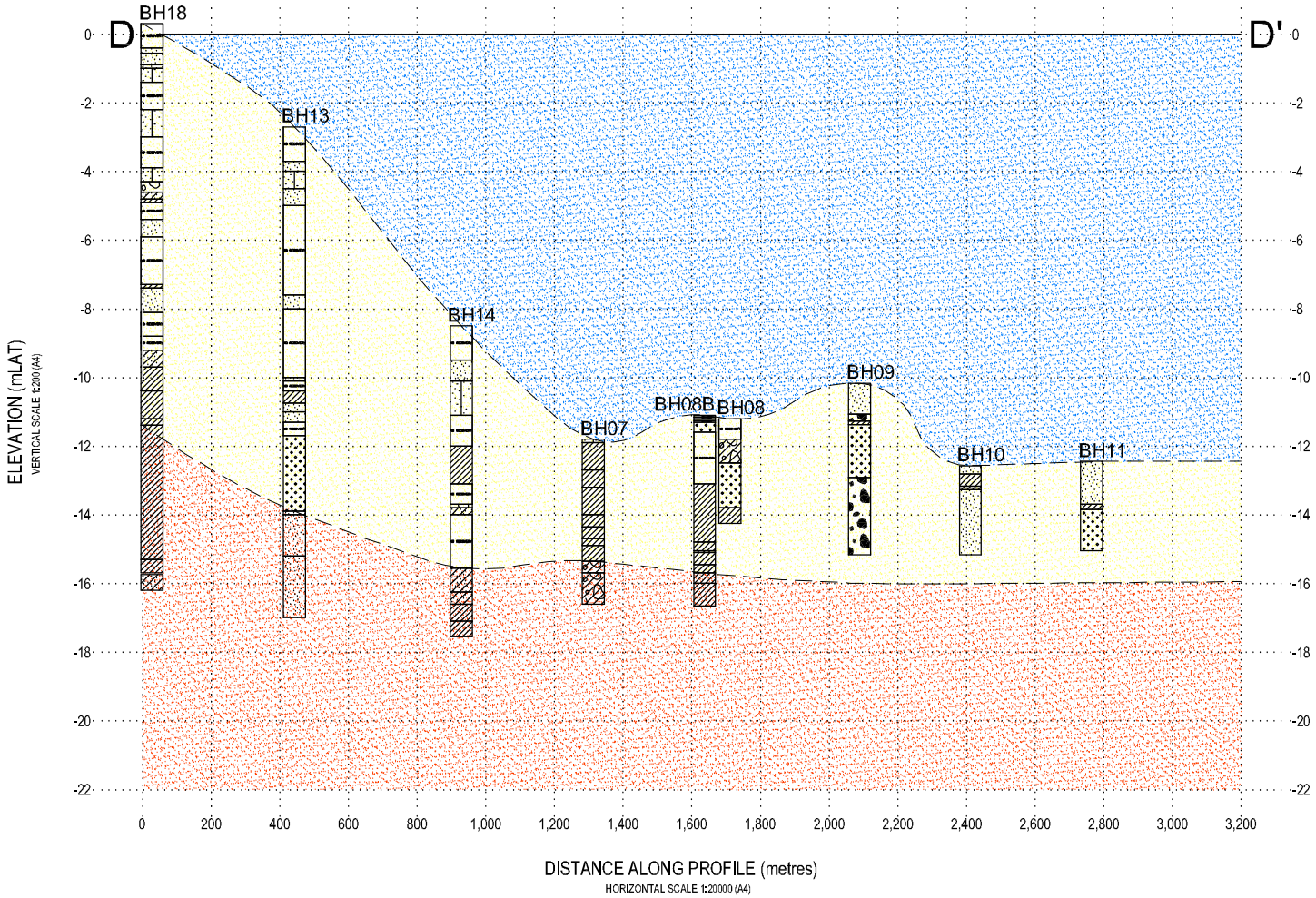
Borehole/Well Number — BH14

Borehole Lithology

Inferred Geology

Lithology Graphics

- Silty Sand
- Low Plasticity Clay
- Clayey Gravel
- No Recovery
- Well-graded Sand
- Well-graded Gravel
- Poorly-graded Sand
- Poorly-graded Gravel
- Clayey Sand



General Geology Graphics

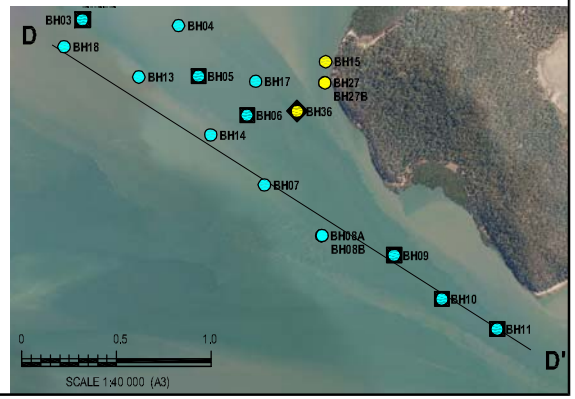
- Ocean
- Marine Sediments
- Residual Material

Borehole Classification

- Geocoastal (Australia) Pty Ltd
- Connell Wagner Pty Ltd

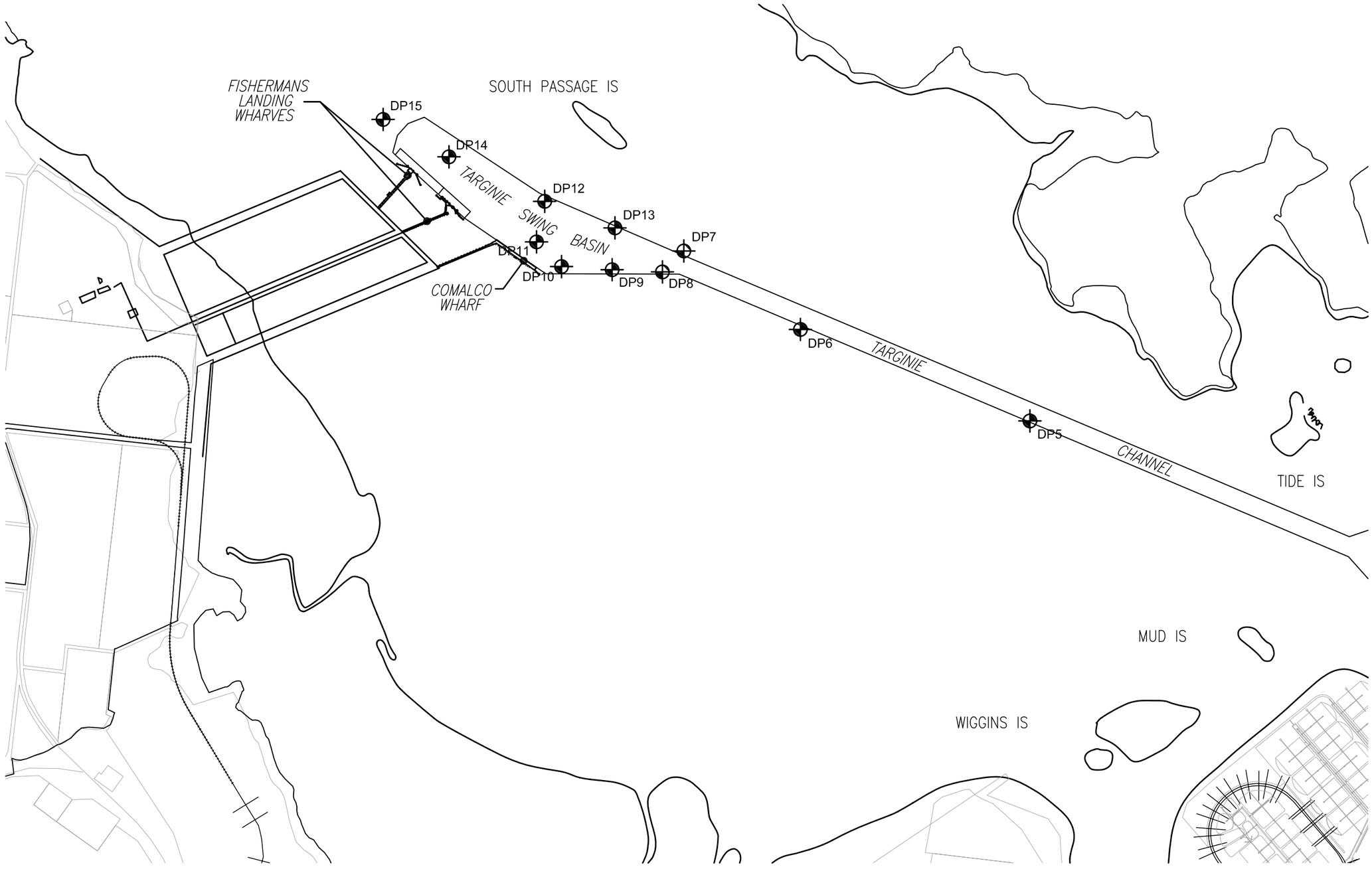
Geotechnical Marine Borehole

- Dredge Area
- MOF



Appendix C

URS 2008 - Douglas Partners 2005 Drilling Locations



NOTES:-

1. Adapted from Drawing No. 337500B9 provided by KFM PARTNERSHIP
2. Bore locations are approximate only, and shown with reference to existing and proposed site features

O:\Geotech projects\33597A - Gladstone Shipping Channel\Drawings\33597A DP Site Plan.dwg

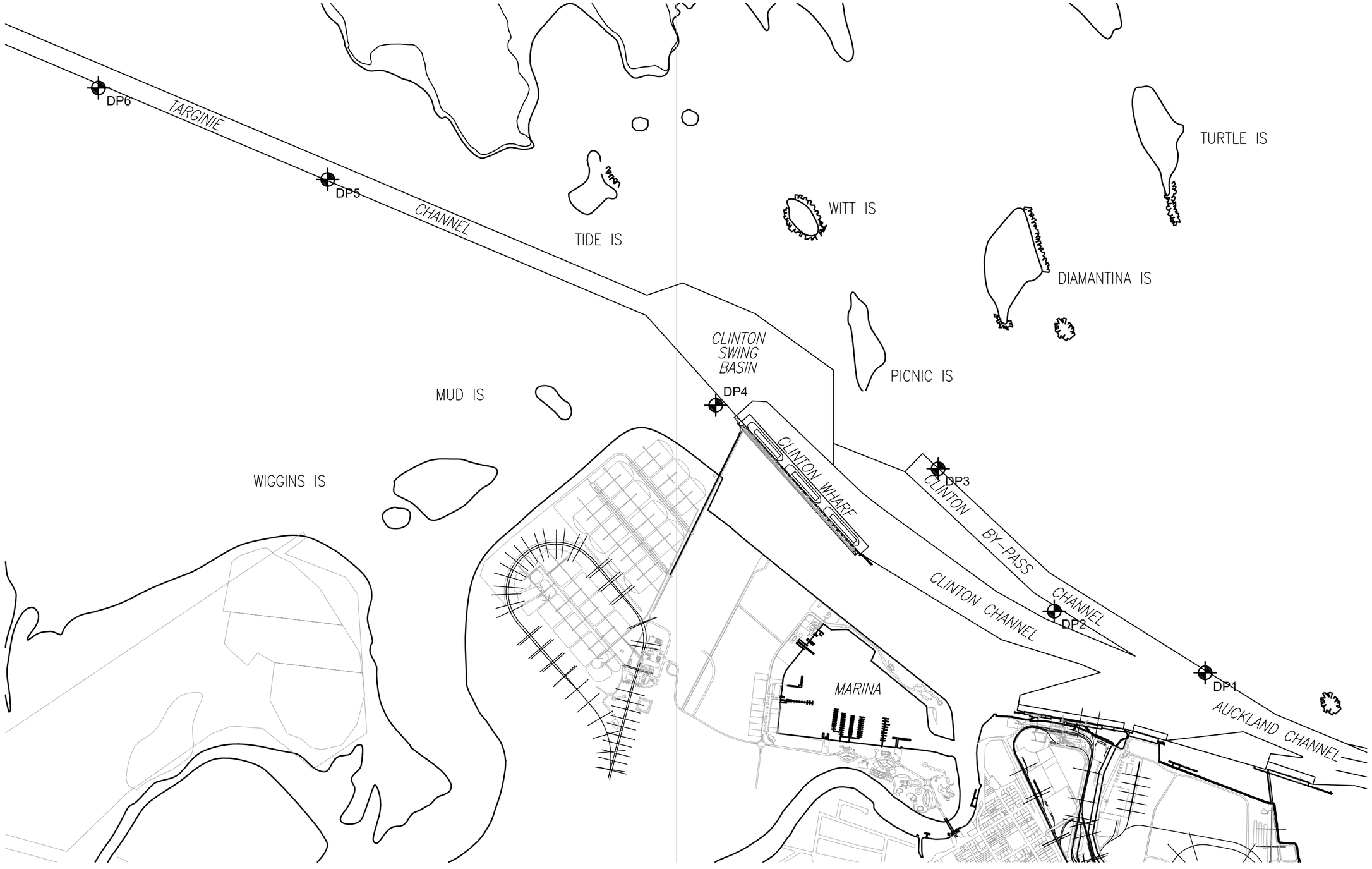
Douglas Partners
Geotechnics · Environment · Groundwater

Sydney, Newcastle, Brisbane, Melbourne, Perth, Darwin

Campbelltown, Townsville, Cairns, Wollongong, Wyong

TITLE: TEST LOCATION PLAN
PROPOSED DREDGING WORKS
EXISTING SHIPPING CHANNELS, GLADSTONE

CLIENT:	CENTRAL QUEENSLAND PORTS AUTHORITY			OFFICE:	BRISBANE
DRAWN BY:	SAR	SCALE:	1:25,000	PROJECT No:	33597A
APPROVED BY:		DATE:	June 2005	DRAWING No:	2



NOTES:-

1. Adapted from Drawing No. 337500B9 provided by KFM PARTNERSHIP
2. Bore locations are approximate only, and shown with reference to existing and proposed site features

Douglas Partners
Geotechnics · Environment · Groundwater

Sydney, Newcastle, Brisbane, Melbourne, Perth, Darwin

Campbelltown, Townsville, Cairns, Wollongong, Wyong

TITLE: TEST LOCATION PLAN
PROPOSED DREDGING WORKS
EXISTING SHIPPING CHANNELS, GLADSTONE

CLIENT:	CENTRAL QUEENSLAND PORTS AUTHORITY			OFFICE:	BRISBANE
DRAWN BY:	SAR	SCALE:	1:25,000	PROJECT No:	33597A
APPROVED BY:		DATE:	June 2005	DRAWING No:	3

O:\Geotech projects\33597A – Gladstone Shipping Channel\Drawings\33597A DP Site Plan.dwg

Appendix D URS 2008 - Laboratory Reports (CD ROM)

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259

All results to be provided in MRED format
email address: julian_dobos@urscorp.com

TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard

COC SEQUENCE NUMBER: (1) 2 3 4 — please circle 1/2

FOR LABORATORY USE ONLY
Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [signature]
URS PM:	Rob Ully	SITE :	GLNG SANTOS				ALS
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME:	DATE: TIME:	DATE: 28.7.08 14.05

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox} 1/2 125ml	ASS (Chromuim Suite TAA) ALT	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon prep	Radionuclide 1/2 125	Particle Size Determination 1/2 125	Pore Water Ammonia	Phenoxy Acid 5 for	Triazine Herbicides 5yd	Carbonates 5yd	Hold	NAPTHALENE + TOTAL PAH's
1	BH07 0.0-0.5	27/7/08	Solid	2	1									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
2	BH07 0.5-1.0	↓	↓	2	1									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
3	BH07 1.0-1.5	↓	↓	2	1									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
4	BH07 1.5-2.0	↓	↓	2	1									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
5	BH07 2.2-2.7	↓	↓	2	1									✓	✓	✓					✓	✓	✓	✓	✓	✓	✓		✓
6	BH07 2.7-3.2	↓	↓	2	1									✓	✓	✓					✓	✓	✓	✓	✓	✓	✓		✓
7	BH07 3.2-3.5	↓	↓	2	1									✓	✓	✓					✓	✓	✓	✓	✓	✓	✓		✓
8	BH07 3.5-3.6	↓	↓	2	1									✓	✓	✓					✓	✓	✓	✓	✓	✓	✓		✓
9	BH07 3.6-3.9	↓	↓	1	–																	✓		✓	✓	✓	✓		
10	BH07 4.0-4.3	↓	↓	1	–																	✓		✓	✓	✓	✓		
11	BH07 4.3-4.8	↓	↓	1	–																	✓		✓	✓	✓	✓		
TOTAL																													

Environmental Division
Brisbane
Work Order
EB0810023

Telephone : +61-7-3243 7222

URS Australia Pty. Ltd.

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: 1 (2) 3 4 — please circle 2/2
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		Custody Seal ? Y N NA Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C
URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: / RELINQUISHED BY: / RECEIVED BY: DATE: 28-7-08 TIME: 14.05
URS PM:	Rob Ully	SITE :	GLNG SANTOS		
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME: / DATE: TIME:
COMMENTS:	Please see overleaf for specific analytes			(1) Caution - Samples may contain hazardous substances	ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE										ANALYSIS REQUIRED																
				Solid		Liquid																								
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Hold	NAPTHALENE + Total PAH's
12	BH08B 0.2-0.5	26/7/08	Solid	2	1									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	HOLD	HOLD	HOLD	HOLD		
13	BH08B 2.0-2.4	↓	↓	1	—											✓	✓	✓	✓	✓	✓	✓							
14	BH08B 3.6-3.9			2	1									✓	✓	✓					✓		✓						✓
15	BH08B 4.3-4.6			2	1									✓	✓	✓					✓		✓						✓
16	BH08B 4.75-5			2	1									✓	✓	✓					✓		✓						✓
TOTAL																													

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0810023**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 28-JUL-2008	Issue Date	: 01-AUG-2008 10:46
Client Requested Due Date	: 11-AUG-2008	Scheduled Reporting Date	: **12-AUG-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 5.0 C - Ice present
No. of coolers/boxes	: 1 LARGE	No. of samples received	: 16
Sercurity Seal	: Intact.	No. of samples analysed	: 16

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Radionuclide Testing has been subcontracted to QHSS.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP006 (solids) Total Inorganic Carbon (TIC)	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP068C Triazines by GCMS
EB0810023-001	27-JUL-2008 15:00	BH07 0.0-0.5	✓	✓		✓	✓	✓	✓	✓
EB0810023-002	27-JUL-2008 15:00	BH07 0.5-1.0	✓	✓		✓	✓	✓	✓	✓
EB0810023-003	27-JUL-2008 15:00	BH07 1.0-1.5	✓	✓		✓	✓	✓	✓	✓
EB0810023-004	27-JUL-2008 15:00	BH07 1.5-2.0	✓	✓		✓	✓	✓	✓	✓
EB0810023-005	27-JUL-2008 15:00	BH07 2.2-2.7	✓	✓		✓	✓			✓
EB0810023-006	27-JUL-2008 15:00	BH07 2.7-3.2	✓	✓		✓	✓			✓
EB0810023-007	27-JUL-2008 15:00	BH07 3.2-3.5	✓	✓		✓	✓			✓
EB0810023-008	27-JUL-2008 15:00	BH07 3.5-3.6	✓	✓		✓	✓			✓
EB0810023-009	27-JUL-2008 15:00	BH07 3.6-3.9			✓		✓			✓
EB0810023-010	27-JUL-2008 15:00	BH07 4.0-4.3			✓		✓			✓
EB0810023-011	27-JUL-2008 15:00	BH07 4.3-4.8			✓		✓			✓
EB0810023-012	26-JUL-2008 15:00	BH08B 0.2-0.5	✓	✓		✓		✓	✓	
EB0810023-013	26-JUL-2008 15:00	BH08B 2.0-2.4	✓			✓		✓	✓	
EB0810023-014	26-JUL-2008 15:00	BH08B 3.6-3.9	✓	✓		✓				
EB0810023-015	26-JUL-2008 15:00	BH08B 4.3-4.6	✓	✓		✓				
EB0810023-016	26-JUL-2008 15:00	BH08B 4.75-5	✓	✓		✓				

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins	SOIL - EP202(solids) Phenoxyacetic acids	SOIL - S-02 8 Metals (incl. Digestion)
EB0810023-001	27-JUL-2008 15:00	BH07 0.0-0.5	✓	✓	✓	✓
EB0810023-002	27-JUL-2008 15:00	BH07 0.5-1.0	✓	✓	✓	✓
EB0810023-003	27-JUL-2008 15:00	BH07 1.0-1.5	✓	✓	✓	✓
EB0810023-004	27-JUL-2008 15:00	BH07 1.5-2.0	✓	✓	✓	✓
EB0810023-005	27-JUL-2008 15:00	BH07 2.2-2.7	✓		✓	✓
EB0810023-006	27-JUL-2008 15:00	BH07 2.7-3.2	✓		✓	✓
EB0810023-007	27-JUL-2008 15:00	BH07 3.2-3.5	✓		✓	✓
EB0810023-008	27-JUL-2008 15:00	BH07 3.5-3.6	✓		✓	✓

			SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins	SOIL - EP202(solids) Phenoxyacetic acids	SOIL - S-02 8 Metals (incl. Digestion)
EB0810023-009	27-JUL-2008 15:00	BH07 3.6-3.9			✓	
EB0810023-010	27-JUL-2008 15:00	BH07 4.0-4.3			✓	
EB0810023-011	27-JUL-2008 15:00	BH07 4.3-4.8			✓	
EB0810023-012	26-JUL-2008 15:00	BH08B 0.2-0.5	✓	✓		✓
EB0810023-013	26-JUL-2008 15:00	BH08B 2.0-2.4	✓	✓		✓
EB0810023-014	26-JUL-2008 15:00	BH08B 3.6-3.9	✓			✓
EB0810023-015	26-JUL-2008 15:00	BH08B 4.3-4.6	✓			✓
EB0810023-016	26-JUL-2008 15:00	BH08B 4.75-5	✓			✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com
- Trigger - Subcontract Report	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com
- Trigger - Subcontract Report	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com
- Trigger - Subcontract Report	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0810023**	Page	: 1 of 15
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 28-JUL-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 16
Quote number	: EN/001/08	No. of samples analysed	: 16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Senior Organic Chemist	Inorganics
Edwandy Fadjar	Senior Organic Chemist	Organics
Gaston Allende		Organics
Hoa Nguyen	Inorganic Chemist	Inorganics
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **It has been noted that the matrix spike for sample BH07 0.5-1.0 and duplicate for sample BH08B 3.6-3.9 has failed for Mn. ALS is unable to repeat the analysis as the samples have been disposed.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **PCB: Laboratory Control Spike fails high; accepted as all associated samples are less than LOR.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH07 0.0-0.5	BH07 0.5-1.0	BH07 1.0-1.5	BH07 1.5-2.0	BH07 2.2-2.7
				Client sampling date / time: 27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00
				EB0810023-001	EB0810023-002	EB0810023-003	EB0810023-004	EB0810023-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.2	9.0	9.0	9.0	9.2
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.17	0.57	0.34	0.51	0.25
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	108	358	213	321	155
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	12.3	8.64	14.7	20.2	12.7
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	2460	1730	2940	4040	2530
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	3.94	2.77	4.71	6.48	4.06
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	32.8	30.7	38.0	32.3	36.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	7870	7320	8860	8920	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	9	9	14	12	11
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	15	16	18	18	17
Copper	7440-50-8	5	mg/kg	12	14	14	30	12
Iron	7439-89-6	50	mg/kg	19800	19800	22800	21100	----
Lead	7439-92-1	5	mg/kg	6	5	7	7	6
Manganese	7439-96-5	5	mg/kg	236	248	371	334	----
Nickel	7440-02-0	2	mg/kg	8	9	10	10	9
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	25	23	26	30	24
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.36	0.71	0.63	0.49	0.38

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH07 0.0-0.5	BH07 0.5-1.0	BH07 1.0-1.5	BH07 1.5-2.0	BH07 2.2-2.7
				Client sampling date / time: 27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00
				EB0810023-001	EB0810023-002	EB0810023-003	EB0810023-004	EB0810023-005
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	1.58	1.00	1.87	2.50	1.64
EP007: Total Carbon (TC)								
Total Carbon	----	0.02	%	1.94	1.71	2.50	2.99	2.02
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<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	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	<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	----
Endrin	72-20-8	0.05	mg/kg	<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	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<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	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
EP068C: Triazines								
Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Simazine	122-34-9	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
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
EP090: Organotin Compounds								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH07 0.0-0.5	BH07 0.5-1.0	BH07 1.0-1.5	BH07 1.5-2.0	BH07 2.2-2.7
				Client sampling date / time: 27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00
				EB0810023-001	EB0810023-002	EB0810023-003	EB0810023-004	EB0810023-005
EP090: Organotin Compounds - Continued								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**74.8**	**74.8**	**78.4**	**73.6**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**59.6**	**55.0**	**60.9**	**58.0**	**50.8**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**65.2**	**65.9**	**68.1**	**63.6**	**59.8**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**98.2**	**91.0**	**93.9**	**81.6**	**91.8**
2-Chlorophenol-D4	93951-73-6	0.1	%	**101**	**97.4**	**96.9**	**83.4**	**94.6**
2.4.6-Tribromophenol	118-79-6	0.1	%	**92.0**	**92.2**	**93.0**	**76.8**	**88.5**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**98.4**	**99.6**	**100**	**82.4**	**94.1**
Anthracene-d10	1719-06-8	0.1	%	**99.4**	**93.7**	**109**	**104**	**108**
4-Terphenyl-d14	1718-51-0	0.1	%	**106**	**110**	**112**	**96.0**	**108**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**68.2**	**49.5**	**42.8**	**47.1**	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.1	%	**110**	**97.1**	**85.6**	**118**	**119**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH07 2.7-3.2	BH07 3.2-3.5	BH07 3.5-3.6	BH07 3.6-3.9	BH07 4.0-4.3
				Client sampling date / time: 27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00
				EB0810023-006	EB0810023-007	EB0810023-008	EB0810023-009	EB0810023-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**8.9**	**9.1**	**8.8**	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	**0.70**	**0.51**	**0.63**	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**434**	**316**	**394**	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**12.0**	**23.0**	**7.93**	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**2410**	**4590**	**1580**	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**3.86**	**7.36**	**2.54**	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**32.9**	**30.0**	**35.8**	**12.2**	**8.5**
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	**8330**	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	----	----
Arsenic	7440-38-2	5	mg/kg	**13**	**10**	**9**	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	**15**	**16**	**20**	----	----
Copper	7440-50-8	5	mg/kg	**96**	**117**	**23**	----	----
Iron	7439-89-6	50	mg/kg	----	**18400**	----	----	----
Lead	7439-92-1	5	mg/kg	**6**	**7**	**8**	----	----
Manganese	7439-96-5	5	mg/kg	----	**274**	----	----	----
Nickel	7440-02-0	2	mg/kg	**9**	**8**	**11**	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	<2	----	----
Zinc	7440-66-6	5	mg/kg	**43**	**47**	**34**	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.73**	**0.50**	**0.62**	**0.05**	**0.05**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH07 2.7-3.2	BH07 3.2-3.5	BH07 3.5-3.6	BH07 3.6-3.9	BH07 4.0-4.3
				Client sampling date / time: 27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00
				EB0810023-006	EB0810023-007	EB0810023-008	EB0810023-009	EB0810023-010
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	**1.52**	**3.01**	**0.99**	<0.02	<0.02
EP007: Total Carbon (TC)								
Total Carbon	----	0.02	%	**2.25**	**3.51**	**1.61**	**0.06**	**0.06**
EP068C: Triazines								
Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Simazine	122-34-9	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	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<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	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH07 2.7-3.2	BH07 3.2-3.5	BH07 3.5-3.6	BH07 3.6-3.9	BH07 4.0-4.3
				Client sampling date / time: 27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00	27-JUL-2008 15:00
				EB0810023-006	EB0810023-007	EB0810023-008	EB0810023-009	EB0810023-010
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**57.6**	**63.6**	**61.5**	**118**	**106**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**68.2**	**70.0**	**69.6**	**81.0**	**73.3**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**93.7**	**82.1**	**89.2**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**98.1**	**87.9**	**92.7**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**87.6**	**80.7**	**86.9**	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**95.0**	**88.9**	**93.2**	----	----
Anthracene-d10	1719-06-8	0.1	%	**110**	**103**	**108**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**107**	**95.5**	**104**	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.1	%	**98.9**	**116**	**97.2**	**103**	**105**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH07 4.3-4.8	BH08B 0.2-0.5	BH08B 2.0-2.4	BH08B 3.6-3.9	BH08B 4.3-4.6
				Client sampling date / time: 27-JUL-2008 15:00	26-JUL-2008 15:00	26-JUL-2008 15:00	26-JUL-2008 15:00	26-JUL-2008 15:00
				EB0810023-011	EB0810023-012	EB0810023-013	EB0810023-014	EB0810023-015
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	9.7	----	9.4	8.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	<2	----	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	<0.02	----	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	----	0.06	----	0.41	0.59
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	36	----	254	366
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	1.34	----	23.1	6.21
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	269	----	4620	1240
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	0.43	----	7.40	1.99
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	1.5	----	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	----	<0.02	----	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	----	<10	----	<10	<10
Liming Rate	----	1	kg CaCO3/t	----	<1	----	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	10.1	20.4	32.5	34.4	36.4
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	2480	6970	9470	12400
Antimony	7440-36-0	5	mg/kg	----	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	----	<5	11	11	8
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	6	14	18	24
Copper	7440-50-8	5	mg/kg	----	6	10	14	18
Iron	7439-89-6	50	mg/kg	----	8790	18000	21400	23500
Lead	7439-92-1	5	mg/kg	----	<5	5	7	9
Manganese	7439-96-5	5	mg/kg	----	155	442	260	227
Nickel	7440-02-0	2	mg/kg	----	4	8	10	12
Silver	7440-22-4	2	mg/kg	----	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	----	11	18	28	36
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.03	0.04	0.50	0.28	0.82

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH07 4.3-4.8	BH08B 0.2-0.5	BH08B 2.0-2.4	BH08B 3.6-3.9	BH08B 4.3-4.6
				Client sampling date / time: 27-JUL-2008 15:00	26-JUL-2008 15:00	26-JUL-2008 15:00	26-JUL-2008 15:00	26-JUL-2008 15:00
				EB0810023-011	EB0810023-012	EB0810023-013	EB0810023-014	EB0810023-015
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	<0.02	----	----	----	----
EP007: Total Carbon (TC)								
Total Carbon	----	0.02	%	**0.03**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	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	----	----
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	----	----
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	----	----
EP068C: Triazines								
Atrazine	1912-24-9	0.05	mg/kg	<0.05	----	----	----	----
Simazine	122-34-9	0.05	mg/kg	<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	<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
Chrysene	218-01-9	0.5	mg/kg	----	<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
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<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
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<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
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5
EP090: Organotin Compounds								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH07 4.3-4.8	BH08B 0.2-0.5	BH08B 2.0-2.4	BH08B 3.6-3.9	BH08B 4.3-4.6
				Client sampling date / time: 27-JUL-2008 15:00	26-JUL-2008 15:00	26-JUL-2008 15:00	26-JUL-2008 15:00	26-JUL-2008 15:00
				EB0810023-011	EB0810023-012	EB0810023-013	EB0810023-014	EB0810023-015
EP090: Organotin Compounds - Continued								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	<0.5	<0.5	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	----	----	----	----
2.4-DB	94-82-6	0.02	mg/kg	<0.02	----	----	----	----
Dicamba	1918-00-9	0.02	mg/kg	<0.02	----	----	----	----
Mecoprop	93-65-2	0.02	mg/kg	<0.02	----	----	----	----
MCPA	94-74-6	0.02	mg/kg	<0.02	----	----	----	----
2.4-DP	120-36-5	0.02	mg/kg	<0.02	----	----	----	----
2.4-D	94-75-7	0.02	mg/kg	<0.02	----	----	----	----
Triclopyr	55335-06-3	0.02	mg/kg	<0.02	----	----	----	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	----	----	----	----
2.4.5-T	93-76-5	0.02	mg/kg	<0.02	----	----	----	----
MCPB	94-81-5	0.02	mg/kg	<0.02	----	----	----	----
Picloram	1918-02-1	0.02	mg/kg	<0.02	----	----	----	----
Clopyralid	1702-17-6	0.02	mg/kg	<0.02	----	----	----	----
Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	**74.0**	**80.8**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**111**	**56.8**	**62.3**	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**75.9**	**66.1**	**72.9**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	**89.3**	**91.9**	**97.3**	**98.2**
2-Chlorophenol-D4	93951-73-6	0.1	%	----	**87.4**	**96.7**	**98.7**	**96.9**
2.4.6-Tribromophenol	118-79-6	0.1	%	----	**98.8**	**89.5**	**80.3**	**83.9**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	**89.6**	**97.0**	**90.4**	**90.8**
Anthracene-d10	1719-06-8	0.1	%	----	**108**	**101**	**85.8**	**86.7**
4-Terphenyl-d14	1718-51-0	0.1	%	----	**118**	**104**	**99.8**	**103**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	**68.3**	**62.5**	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.1	%	**120**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH08B 4.75-5	----	----	----	----
				Client sampling date / time: 26-JUL-2008 15:00	----	----	----	----
				EB0810023-016	----	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.1**	----	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	**0.47**	----	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**292**	----	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**22.0**	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**4390**	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**7.04**	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**29.5**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**6050**	----	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	**11**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**12**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**10**	----	----	----	----
Iron	7439-89-6	50	mg/kg	**13800**	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Manganese	7439-96-5	5	mg/kg	**373**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**6**	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**13**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.40**	----	----	----	----

Analytical Results

Sub-Matrix: SOLID				Client sample ID	BH08B 4.75-5	----	----	----	----
				Client sampling date / time	26-JUL-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0810023-016	----	----	----	----
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	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**97.4**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**97.4**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**83.0**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**90.0**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**88.3**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**105**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOLID**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	70	130

Queensland Government

Queensland **Health**

Inquiries: Megan Cook
Telephone: 07 3000 9686
Facsimile: 07 3274 9123

Reference: EB0810023

Requested by: Tim Kilmister
Australian Laboratory Services Pty Ltd
PO Box 66
Everton Park QLD 4053

RADIOACTIVITY ANALYSIS REPORT No. 08PQ216 - 228

SAMPLE

description: 13 x sample/s

for: Radioactivity (U/Th) analysis using High Resolution Gamma Spectrometry

date received: 31st July 2008

METHOD - Gamma Spectrometry

Method: Adapted from ISO10703:1997-05-01 'Water Quality - Determination of the activity concentration of radionuclides by high resolution gamma-ray spectrometry'
All errors are quoted at the 2 sigma (95%) confidence level

Sample preparation: Samples was passed through a 200μm sieve and sealed in a poly jar counting geometry. The sample may be considered as having attained secular equilibrium.

Sample geometry: Soil: 100 mL polypropylene jar geometry

Detector specification:

Model number:	GMX 18190	*Serial number:*	26-N-1627B
Efficiency (rel. to 3" NaI):	~ 20%	*Energy resolution @ 1332keV:*	< 2.00 keV

Traceability: Reference source/s: Uranium 400 ± 2 μg/g (as uranium - 238 in secular equilibrium with decay progeny) IAEA Reference Material RGU-1, Report IAEA/RL/148, 1987, & Thorium 800 ± 2 μg/g (as thorium - 232 in secular equilibrium with decay progeny) IAEA Reference Material RGTh-1, Report IAEA/RL/148, 1987, used for system calibration.

Calibration file name: S2_100J030908RK.Clb
Radionuclide library: EnviroNat_2.lib
Last calib. Validation: 03 September 2008

RESULTS

Refer to attached results table 08PQ216-228.

COMMENT

Results indicate individual radionuclide concentration only. Correction factors for full decay series activity should be applied before comparison to regulatory compliance / guideline / action levels as required.

M Cook
Chemist
29th September 2008

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Gamma Spectrometry Results – Report No: 08PQ216-228

Queensland Government
Queensland Health

SAMPLE DESCRIPTION		ANALYSIS DETAILS			RESULTS (Bq.g^{-1})				
Lab number	Sample identification	Date sampled	Date prepared	Date analysed	U-238[1]	Th-232[2]	Ra-224[3]	K-40	Other
08PQ216	BH07 0.0-0.5	27/07/2008	6/08/2008	29/08/2008	0.012±0.003	0.021±0.008	0.023±0.003	0.34±0.05	N/D
08PQ217	BH07 0.5-1.0	27/07/2008	6/08/2008	02/09/2008	0.015±0.003	0.025±0.008	0.025±0.003	0.39±0.05	N/D
08PQ218	BH07 1.0-1.5	27/07/2008	6/08/2008	09/09/2008	0.014±0.004	0.03±0.01	0.026±0.004	0.40±0.06	N/D
08PQ219	BH07 1.5-2.0	27/07/2008	6/08/2008	08/09/2008	0.018±0.004	0.02±0.01	0.029±0.004	0.37±0.06	N/D
08PQ220	BH07 2.2-2.7	27/07/2008	6/08/2008	15/09/2008	0.016±0.003	0.019±0.009	0.025±0.003	0.36±0.05	N/D
08PQ221	BH07 2.7-3.2	27/07/2008	6/08/2008	11/09/2008	0.015±0.003	0.024±0.007	0.021±0.003	0.31±0.04	N/D
08PQ222	BH07 3.2-3.5	27/07/2008	6/08/2008	09/09/2008	0.018±0.002	0.025±0.007	0.021±0.003	0.34±0.04	N/D
08PQ223	BH07 3.5-3.6	27/07/2008	6/08/2008	15/09/2008	0.027±0.004	0.03±0.01	0.025±0.004	0.38±0.06	N/D
08PQ224	BH07 3.6-3.9	27/07/2008	6/08/2008	15/09/2008	0.029±0.003	0.020±0.008	0.011±0.003	0.22±0.04	N/D
08PQ225	BH07 4.0-4.3	27/07/2008	6/08/2008	17/09/2008	0.030±0.003	0.025±0.009	0.015±0.003	0.32±0.05	N/D
08PQ226	BH07 4.3-4.8	27/07/2008	6/08/2008	1/09/2008	0.031±0.004	0.023±0.009	0.013±0.004	0.21±0.05	N/D
08PQ227	BH08B 0.2-0.5	26/07/2008	6/08/2008	19/09/2008	0.016±0.002	0.014±0.006	0.015±0.002	0.34±0.03	N/D
08PQ228	BH08B 2.0-2.4	26/07/2008	6/08/2008	24/09/2008	0.011±0.002	0.03±0.01	0.019±0.003	0.38±0.06	N/D

NOTES

[1] Uranium 238 results derived from Lead-214 and Bismuth-214

[2] Thorium-232 results derived from Actinium-228

[3] Radium 224 results derived from decay progeny unless otherwise stated.

N/D Not detected above system minimum detection level

M Cook 26th September 2008

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 28-Jul-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810023	BH07 0.0-0.5	001	6%	67%	NA	NA
EB0810023	BH07 0.5-1.0	002	4%	53%	NA	NA
EB0810023	BH07 1.0-1.5	003	4%	34%	NA	NA
EB0810023	BH07 1.5-2.0	004	19%	45%	NA	NA
EB0810023	BH07 2.2-2.7	005	8%	60%	NA	NA
EB0810023	BH07 2.7-3.2	006	12%	39%	NA	NA
EB0810023	BH07 3.2-3.5	007	16%	42%	NA	NA
EB0810023	BH07 3.5-3.6	008	30%	33%	NA	NA
EB0810023	BH08B 0.2-0.5	0012	15%	76%	NA	NA
EB0810023	BH08B 3.6-3.9	0014	7%	59%	NA	NA
EB0810023	BH08B 4.3-4.6	0015	1%	15%	NA	NA
EB0810023	BH08B 4.75-5	0016	18%	43%	NA	NA

Remarks :
Test Procedure : AS1289.3.6.1
Prepared by : DB
Checked by PK

Certificate of Analysis

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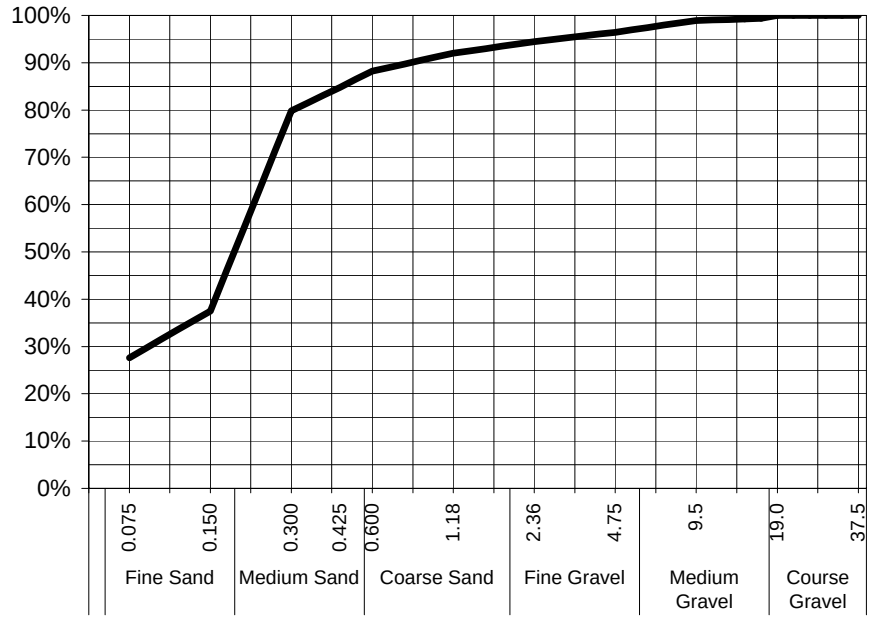
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-001 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH07 0.0-0.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	99%
4.75	96%
2.36	94%
1.18	92%
0.600	88%
0.425	85%
0.300	80%
0.150	38%
0.075	28%

Samples analysed as received.

Sample Comments:

Analysed: 4-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay, grit & shell

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

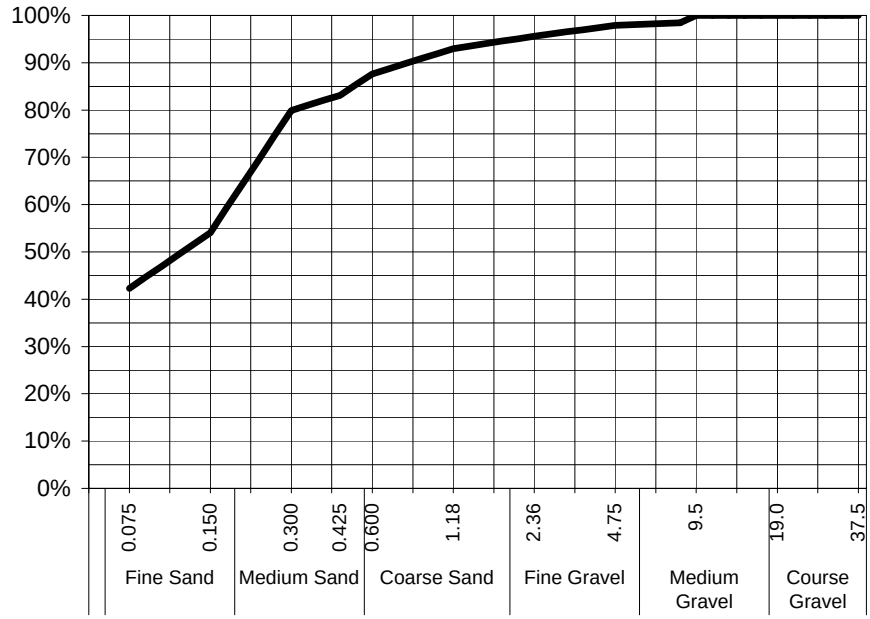
ALS Laboratory Group Pty Ltd
5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-002 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH07 0.5-1.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	96%
1.18	93%
0.600	88%
0.425	83%
0.300	80%
0.150	54%
0.075	42%

Samples analysed as received.

Sample Comments:

Analysed: 4-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay, grit & shell

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

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5 Rosegum Road
Warabrook, NSW 2304
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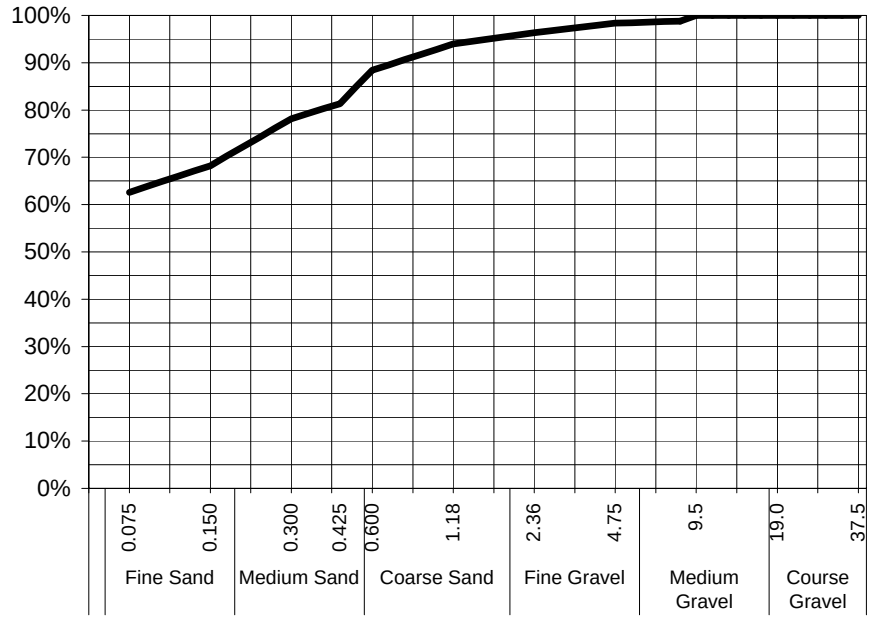
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-003 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH07 1.0-1.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	96%
1.18	94%
0.600	88%
0.425	81%
0.300	78%
0.150	68%
0.075	63%

Samples analysed as received.

Sample Comments:

Analysed: 4-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay, grit & shell

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

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Warabrook, NSW 2304
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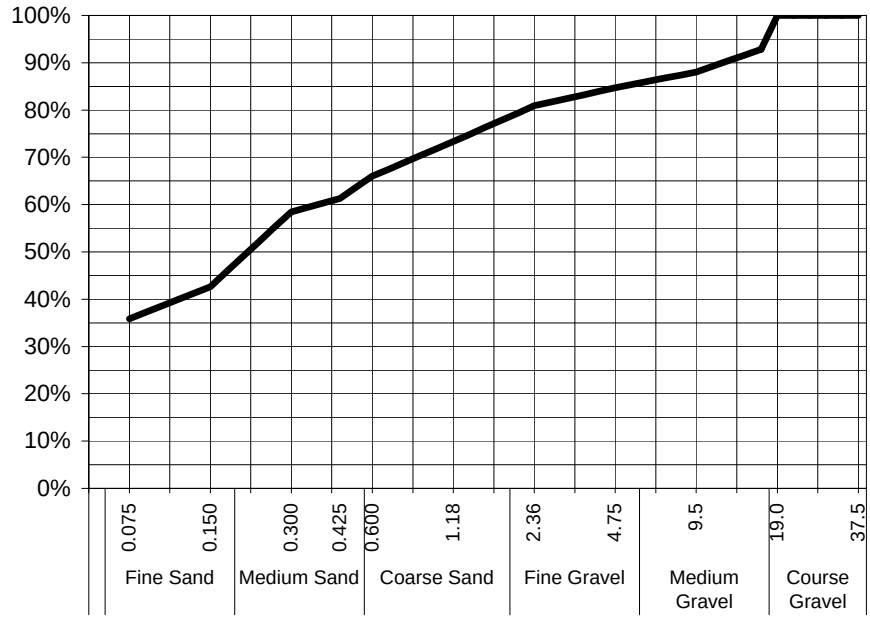
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH07 1.5-2.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	88%
4.75	85%
2.36	81%
1.18	73%
0.600	66%
0.425	61%
0.300	58%
0.150	43%
0.075	36%

Samples analysed as received.

Sample Comments:

Analysed: 4-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay, grit & shell

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

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5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
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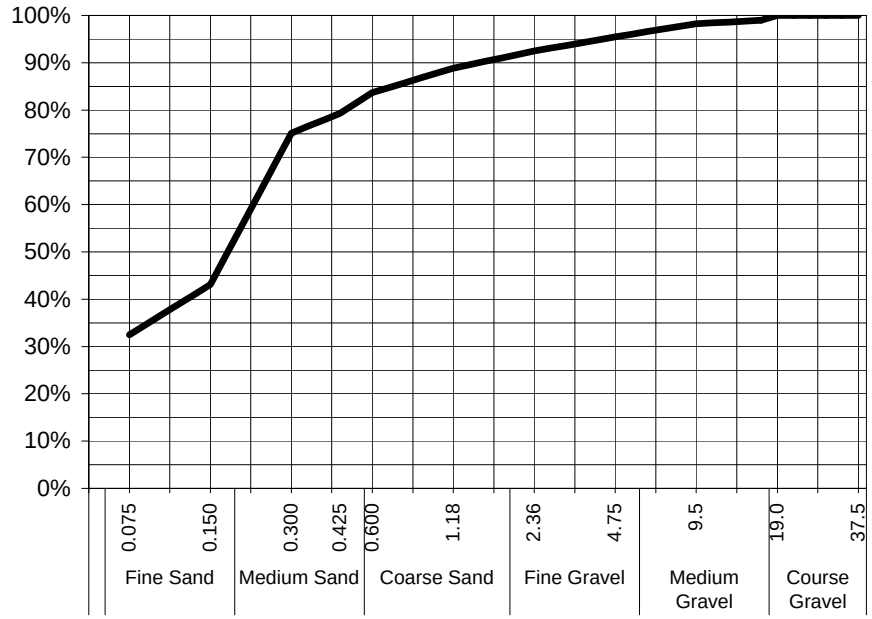
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-005 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH07 2.2-2.7

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	98%
4.75	95%
2.36	92%
1.18	89%
0.600	84%
0.425	79%
0.300	75%
0.150	43%
0.075	32%

Samples analysed as received.

Sample Comments:

Analysed: 4-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay & some grit

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

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5 Rosegum Road
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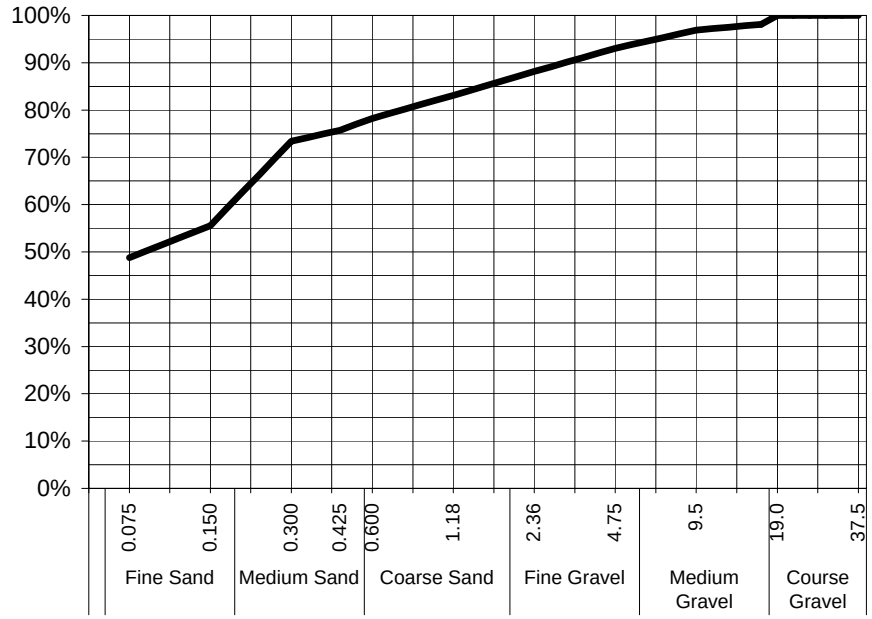
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-006 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH07 2.7-3.2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	97%
4.75	93%
2.36	88%
1.18	83%
0.600	78%
0.425	76%
0.300	73%
0.150	56%
0.075	49%

Samples analysed as received.

Sample Comments:

Analysed: 4-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay, grit & shell

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

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5 Rosegum Road
Warabrook, NSW 2304
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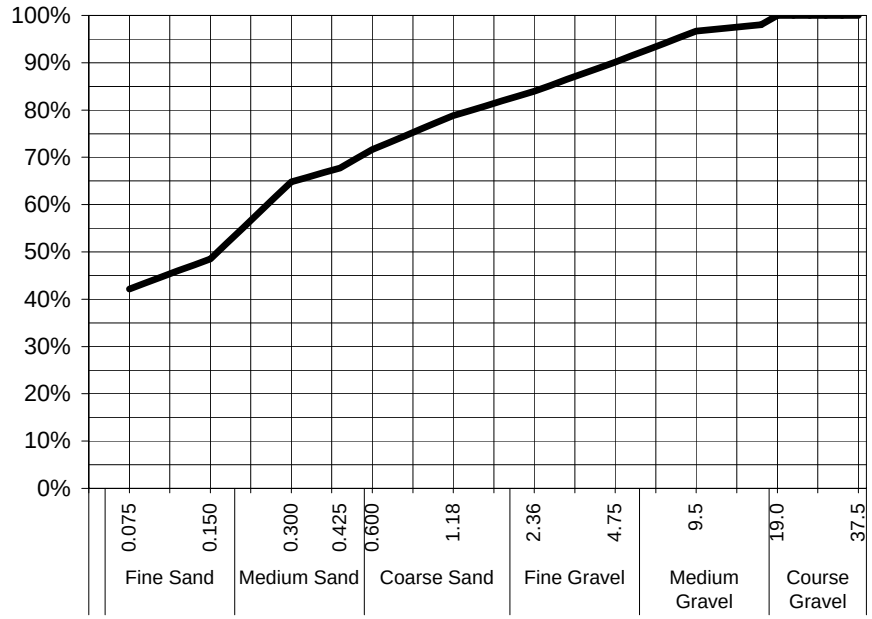
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-007 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH07 3.2-3.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	97%
4.75	90%
2.36	84%
1.18	79%
0.600	72%
0.425	68%
0.300	65%
0.150	49%
0.075	42%

Samples analysed as received.

Sample Comments:

Analysed: 4-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay, grit & shell

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

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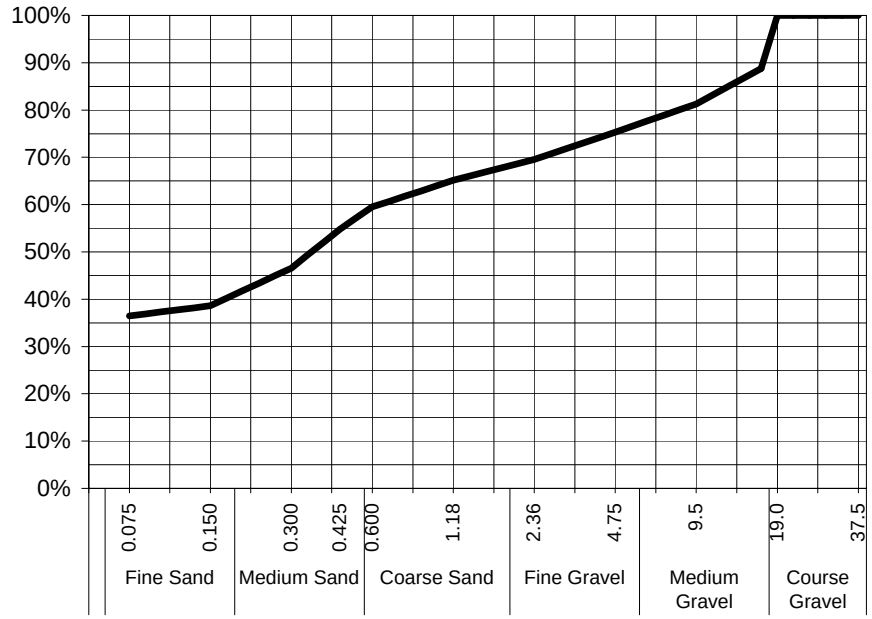
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-008 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH07 3.5-3.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	81%
4.75	75%
2.36	70%
1.18	65%
0.600	60%
0.425	55%
0.300	47%
0.150	39%
0.075	36%

Samples analysed as received.

Sample Comments:

Analysed: 4-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay, grit & shell

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

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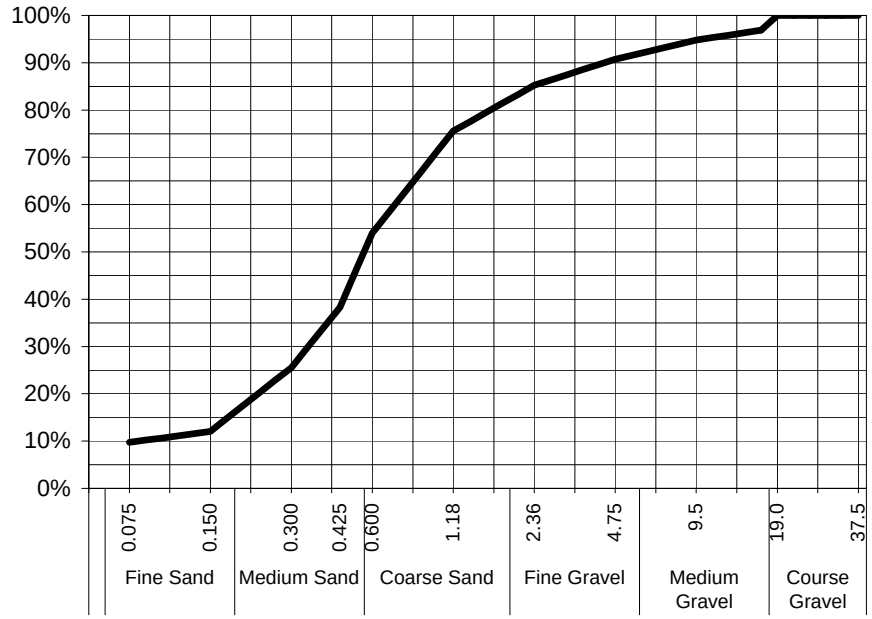
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-0012 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH08B 0.2-0.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	95%
4.75	91%
2.36	85%
1.18	76%
0.600	54%
0.425	38%
0.300	26%
0.150	12%
0.075	10%

Samples analysed as received.

Sample Comments:

Analysed: 4-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: River sand, gravel & rock

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
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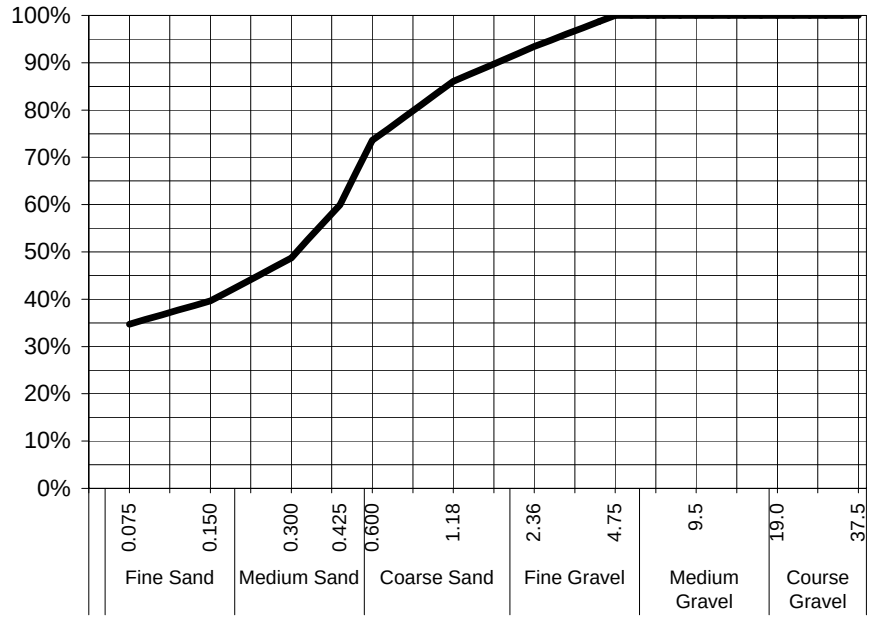
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-0014 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH08B 3.6-3.9

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	93%
1.18	86%
0.600	74%
0.425	60%
0.300	49%
0.150	40%
0.075	35%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Grey clay, grit & shell

Test Method: AS1289.3.6.1

Analysed: 4-Aug-08

Limit of Reporting: 1%

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

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Warabrook, NSW 2304
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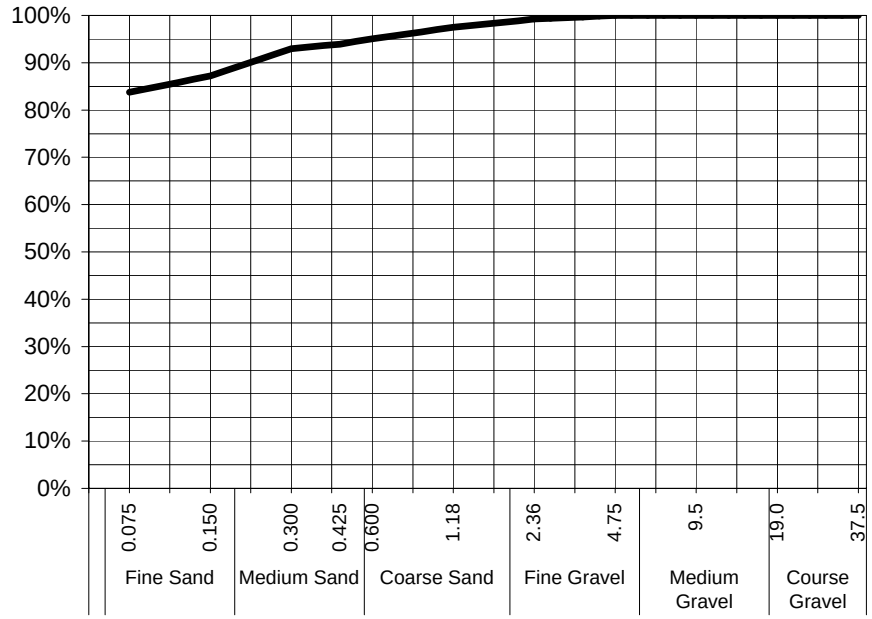
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-0015 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH08B 4.3-4.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	97%
0.600	95%
0.425	94%
0.300	93%
0.150	87%
0.075	84%

Samples analysed as received.

Sample Comments:

Analysed: 4-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay paste

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

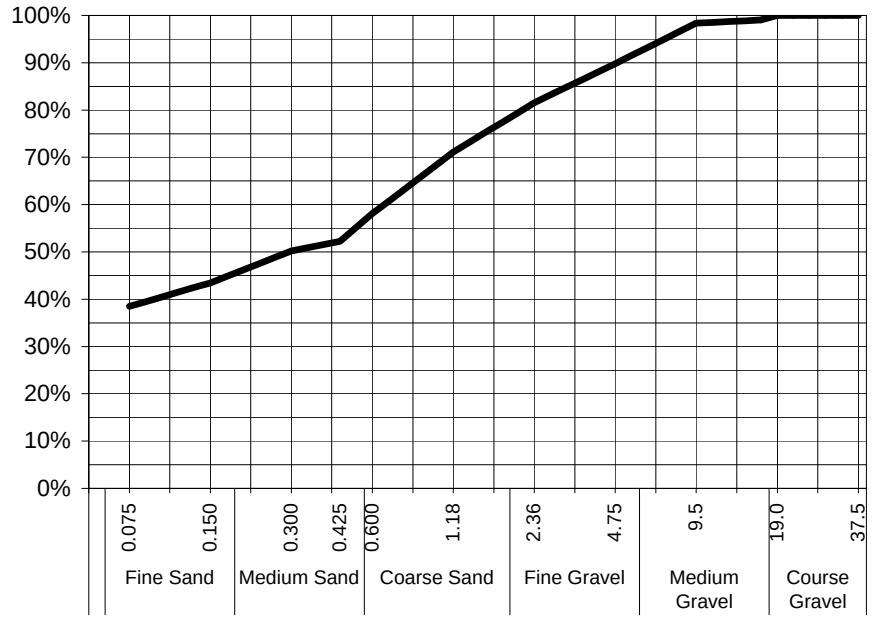
ALS Laboratory Group Pty Ltd
5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810023-0016 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH08B 4.75-5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	98%
4.75	90%
2.36	82%
1.18	71%
0.600	58%
0.425	52%
0.300	50%
0.150	43%
0.075	38%

Samples analysed as received.

Sample Comments:

Analysed: 4-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay, grit & shell

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

ALS Laboratory Group Pty Ltd
5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 28-Jul-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810023	BH07 0.0-0.5	001	6%	67%	NA	NA
EB0810023	BH07 0.5-1.0	002	4%	53%	NA	NA
EB0810023	BH07 1.0-1.5	003	4%	34%	NA	NA
EB0810023	BH07 1.5-2.0	004	19%	45%	NA	NA
EB0810023	BH07 2.2-2.7	005	8%	60%	NA	NA
EB0810023	BH07 2.7-3.2	006	12%	39%	NA	NA
EB0810023	BH07 3.2-3.5	007	16%	42%	NA	NA
EB0810023	BH07 3.5-3.6	008	30%	33%	NA	NA
EB0810023	BH08B 0.2-0.5	0012	15%	76%	NA	NA
EB0810023	BH08B 3.6-3.9	0014	7%	59%	NA	NA
EB0810023	BH08B 4.3-4.6	0015	1%	15%	NA	NA
EB0810023	BH08B 4.75-5	0016	18%	43%	NA	NA

Remarks :
Test Procedure : AS1289.3.6.1
Prepared by : Checked by

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0810023**	Page	: 1 of 11
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 28-JUL-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 16
Quote number	: EN/001/08	No. of samples analysed	: 16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Senior Organic Chemist	Inorganics
Edwandy Fadjar	Senior Organic Chemist	Organics
Gaston Allende		Organics
Hoa Nguyen	Inorganic Chemist	Inorganics
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 722890)									
EB0810023-001	BH07 0.0-0.5	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.2	9.2	0.0	0% - 20%
EB0810023-015	BH08B 4.3-4.6	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.5	8.7	2.3	0% - 20%
EA033-B: Potential Acidity (QC Lot: 722890)									
EB0810023-001	BH07 0.0-0.5	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.17	0.16	8.8	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	108	99	8.8	No Limit
EB0810023-015	BH08B 4.3-4.6	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.59	0.51	13.6	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	366	320	13.6	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 722890)									
EB0810023-001	BH07 0.0-0.5	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	12.3	12.4	0.7	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	3.94	3.97	0.7	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	2460	2480	0.7	0% - 20%
EB0810023-015	BH08B 4.3-4.6	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	6.21	7.20	14.8	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.99	2.31	14.8	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1240	1440	14.8	0% - 20%
EA055: Moisture Content (QC Lot: 721132)									
EB0810023-009	BH07 3.6-3.9	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	12.2	12.6	2.8	0% - 50%
ES0811027-007	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EA055: Moisture Content (QC Lot: 721182)									
EB0810023-004	BH07 1.5-2.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	32.3	38.0	16.2	0% - 20%
EB0810023-014	BH08B 3.6-3.9	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	34.4	32.7	5.1	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 721614)									
EB0810023-001	BH07 0.0-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	15	16	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	9	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 721614) - continued									
EB0810023-001	BH07 0.0-0.5	EG005T: Arsenic	7440-38-2	5	mg/kg	9	9	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	14	8.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	6	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	236	261	10.1	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	25	26	5.7	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	7870	8330	5.6	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	19800	21100	6.3	0% - 20%
EB0810023-014	BH08B 3.6-3.9	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	20	9.2	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	10	12	15.7	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	11	15	35.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	15	7.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	8	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	260	629	# 83.0	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	28	31	10.2	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	9470	10800	12.8	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	21400	25500	17.5	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 721615)									
EB0810023-001	BH07 0.0-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0810023-014	BH08B 3.6-3.9	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 721988)									
EB0810023-001	BH07 0.0-0.5	EP005: Total Organic Carbon	----	0.02	%	0.36	0.37	2.7	0% - 50%
EB0810023-014	BH08B 3.6-3.9	EP005: Total Organic Carbon	----	0.02	%	0.28	0.28	0.0	0% - 50%
EP005: Total Organic Carbon (TOC) (QC Lot: 723148)									
EB0810023-009	BH07 3.6-3.9	EP005: Total Organic Carbon	----	0.02	%	0.05	0.05	0.0	No Limit
EP007: Total Carbon (TC) (QC Lot: 721989)									
EB0810023-001	BH07 0.0-0.5	EP007: Total Carbon	----	0.02	%	1.94	1.93	0.5	0% - 20%
EP007: Total Carbon (TC) (QC Lot: 723149)									
EB0810023-009	BH07 3.6-3.9	EP007: Total Carbon	----	0.02	%	0.06	0.06	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 720775)									
EB0810023-001	BH07 0.0-0.5	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 720774)									
EB0810023-001	BH07 0.0-0.5	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 720774) - continued									
EB0810023-001	BH07 0.0-0.5	EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068C: Triazines (QC Lot: 720774)									
EB0810023-001	BH07 0.0-0.5	EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Simazine	122-34-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP068C: Triazines (QC Lot: 721126)									
EB0810023-009	BH07 3.6-3.9	EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Simazine	122-34-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 721621)									
EB0810023-001	BH07 0.0-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0810023-014	BH08B 3.6-3.9	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 721621) - continued									
EB0810023-014	BH08B 3.6-3.9	EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 721554)									
EB0810023-001	BH07 0.0-0.5	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 724567)									
ES0811081-001	Anonymous	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Dicamba	1918-00-9	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Mecoprop	93-65-2	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPA	94-74-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-D	94-75-7	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPB	94-81-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Picloram	1918-02-1	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810023-011	BH07 4.3-4.8	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 722890)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 722890)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 722890)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 721614)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	97.6	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	93.7	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	98.1	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	97.9	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	94.9	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	95.9	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	95.0	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 721615)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	92.2	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 721988)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	101	70	130
EP005: Total Organic Carbon (TOC) (QCLot: 723148)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	101	70	130
EP007: Total Carbon (TC) (QCLot: 721989)								
EP007: Total Carbon	----	0.02	%	<0.02	100 %	99.8	70	130
EP007: Total Carbon (TC) (QCLot: 723149)								
EP007: Total Carbon	----	0.02	%	<0.02	100 %	99.8	70	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 720775)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	# 112	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 720774)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	72.0	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	92.2	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	90.9	60.8	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	97.2	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	93.5	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	# 149	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	93.7	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	74.2	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	126	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	95.6	51.6	124
EP068C: Triazines (QCLot: 720774)								
EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	0.25 mg/kg	69.3	58.6	112
EP068: Simazine	122-34-9	0.05	mg/kg	<0.05	0.25 mg/kg	# 58.2	70	117
EP068C: Triazines (QCLot: 721126)								
EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	0.25 mg/kg	99.0	53.4	127
EP068: Simazine	122-34-9	0.05	mg/kg	<0.05	0.25 mg/kg	91.2	48.9	134
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 721621)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	102	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	103	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	99.2	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	101	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	112	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	98.7	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	110	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	106	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	104	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	101	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	100	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	99.5	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	102	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	106	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	108	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	104	52	128
EP090: Organotin Compounds (QCLot: 721554)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP090: Organotin Compounds (QCLot: 721554) - continued								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	44.5	28	129
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 724567)								
EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	0.1 mg/kg	98.4	54.4	136
EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	0.1 mg/kg	85.8	45.5	144
EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	0.1 mg/kg	82.3	51.7	146
EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	0.1 mg/kg	95.5	60	140
EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	0.1 mg/kg	100	56.8	143
EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	0.1 mg/kg	97.3	50	141
EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	0.1 mg/kg	87.0	68.5	139
EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	0.1 mg/kg	108	50.8	145
EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	0.1 mg/kg	85.1	40.8	135
EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	0.1 mg/kg	109	57.4	142
EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	0.1 mg/kg	89.5	38.9	147
EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	0.1 mg/kg	65.2	48.7	138
EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	0.1 mg/kg	# 57.0	59.4	149
EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	0.1 mg/kg	95.6	53.2	145

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 721614)							
EB0810023-002	BH07 0.5-1.0	EG005T: Arsenic	7440-38-2	50 mg/kg	97.1	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	95.2	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	94.8	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	101	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	98.7	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# 202	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	92.4	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	91.8	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 721615)							
EB0810023-002	BH07 0.5-1.0	EG035T: Mercury	7439-97-6	5.0 mg/kg	83.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 720775)							
EB0810023-002	BH07 0.5-1.0	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	120	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 720774)							
EB0810023-002	BH07 0.5-1.0	EP068: gamma-BHC	58-89-9	0.25 mg/kg	75.6	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	96.3	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	# 130	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	92.8	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 721621)							
EB0810023-002	BH07 0.5-1.0	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	98.2	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	105	70	130
EP090: Organotin Compounds (QCLot: 721554)							
EB0810023-002	BH07 0.5-1.0	EP090: Tributyltin	56573-85-4	25 µgSn/kg	47.3	20	130
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 724567)							
ES0811081-001	Anonymous	EP202: Mecoprop	93-65-2	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPA	94-74-6	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-D	94-75-7	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Triclopyr	55335-06-3	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-T	93-76-5	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Picloram	1918-02-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Clopyralid	1702-17-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0810023**	Page	: 1 of 10
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 28-JUL-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 16
Quote number	: EN/001/08	No. of samples analysed	: 16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
80* dried soil								
BH08B 0.2-0.5,	BH08B 3.6-3.9,	**26-JUL-2008**	**28-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH08B 4.3-4.6,	BH08B 4.75-5							
80* dried soil								
BH07 0.0-0.5,	BH07 0.5-1.0,	**27-JUL-2008**	**28-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH07 1.0-1.5,	BH07 1.5-2.0,							
BH07 2.2-2.7,	BH07 2.7-3.2,							
BH07 3.2-3.5,	BH07 3.5-3.6							
EA033-B: Potential Acidity								
80* dried soil								
BH08B 0.2-0.5,	BH08B 3.6-3.9,	**26-JUL-2008**	**28-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH08B 4.3-4.6,	BH08B 4.75-5							
80* dried soil								
BH07 0.0-0.5,	BH07 0.5-1.0,	**27-JUL-2008**	**28-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH07 1.0-1.5,	BH07 1.5-2.0,							
BH07 2.2-2.7,	BH07 2.7-3.2,							
BH07 3.2-3.5,	BH07 3.5-3.6							
EA033-C: Acid Neutralising Capacity								
80* dried soil								
BH08B 0.2-0.5,	BH08B 3.6-3.9,	**26-JUL-2008**	**28-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH08B 4.3-4.6,	BH08B 4.75-5							
80* dried soil								
BH07 0.0-0.5,	BH07 0.5-1.0,	**27-JUL-2008**	**28-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH07 1.0-1.5,	BH07 1.5-2.0,							
BH07 2.2-2.7,	BH07 2.7-3.2,							
BH07 3.2-3.5,	BH07 3.5-3.6							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity								
80* dried soil								
BH08B 0.2-0.5,	BH08B 3.6-3.9,	**26-JUL-2008**	**28-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH08B 4.3-4.6,	BH08B 4.75-5							
80* dried soil								
BH07 0.0-0.5,	BH07 0.5-1.0,	**27-JUL-2008**	**28-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH07 1.0-1.5,	BH07 1.5-2.0,							
BH07 2.2-2.7,	BH07 2.7-3.2,							
BH07 3.2-3.5,	BH07 3.5-3.6							
EA033-E: Acid Base Accounting								
80* dried soil								
BH08B 0.2-0.5,	BH08B 3.6-3.9,	**26-JUL-2008**	**28-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH08B 4.3-4.6,	BH08B 4.75-5							
80* dried soil								
BH07 0.0-0.5,	BH07 0.5-1.0,	**27-JUL-2008**	**28-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH07 1.0-1.5,	BH07 1.5-2.0,							
BH07 2.2-2.7,	BH07 2.7-3.2,							
BH07 3.2-3.5,	BH07 3.5-3.6							
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH08B 0.2-0.5,	BH08B 2.0-2.4,	**26-JUL-2008**	**----**	----	----	**01-AUG-2008**	02-AUG-2008	✓
BH08B 3.6-3.9,	BH08B 4.3-4.6,							
BH08B 4.75-5								
Soil Glass Jar - Unpreserved								
BH07 0.0-0.5,	BH07 0.5-1.0,	**27-JUL-2008**	**----**	----	----	**01-AUG-2008**	03-AUG-2008	✓
BH07 1.0-1.5,	BH07 1.5-2.0,							
BH07 2.2-2.7,	BH07 2.7-3.2,							
BH07 3.2-3.5,	BH07 3.5-3.6							
Soil Glass Jar - Unpreserved								
BH07 3.6-3.9,	BH07 4.0-4.3,	**27-JUL-2008**	**----**	----	----	**03-AUG-2008**	03-AUG-2008	✓
BH07 4.3-4.8								
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
BH08B 0.2-0.5,	BH08B 2.0-2.4,	**26-JUL-2008**	**04-AUG-2008**	22-JAN-2009	✓	**04-AUG-2008**	22-JAN-2009	✓
BH08B 3.6-3.9,	BH08B 4.3-4.6,							
BH08B 4.75-5								
Soil Glass Jar - Unpreserved								
BH07 0.0-0.5,	BH07 0.5-1.0,	**27-JUL-2008**	**04-AUG-2008**	23-JAN-2009	✓	**04-AUG-2008**	23-JAN-2009	✓
BH07 1.0-1.5,	BH07 1.5-2.0,							
BH07 2.2-2.7,	BH07 2.7-3.2,							
BH07 3.2-3.5,	BH07 3.5-3.6							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
BH08B 0.2-0.5,	BH08B 2.0-2.4,	**26-JUL-2008**	**04-AUG-2008**	22-JAN-2009	✓	**06-AUG-2008**	23-AUG-2008	✓
BH08B 3.6-3.9,	BH08B 4.3-4.6,							
BH08B 4.75-5								
Soil Glass Jar - Unpreserved								
BH07 0.0-0.5,	BH07 0.5-1.0,	**27-JUL-2008**	**04-AUG-2008**	23-JAN-2009	✓	**06-AUG-2008**	24-AUG-2008	✓
BH07 1.0-1.5,	BH07 1.5-2.0,							
BH07 2.2-2.7,	BH07 2.7-3.2,							
BH07 3.2-3.5,	BH07 3.5-3.6							
EP005: Total Organic Carbon (TOC)								
Pulp Bag								
BH08B 0.2-0.5,	BH08B 2.0-2.4,	**26-JUL-2008**	**04-AUG-2008**	---	----	**06-AUG-2008**	23-AUG-2008	✓
BH08B 3.6-3.9,	BH08B 4.3-4.6,							
BH08B 4.75-5								
Pulp Bag								
BH07 0.0-0.5,	BH07 0.5-1.0,	**27-JUL-2008**	**04-AUG-2008**	---	----	**06-AUG-2008**	24-AUG-2008	✓
BH07 1.0-1.5,	BH07 1.5-2.0,							
BH07 2.2-2.7,	BH07 2.7-3.2,							
BH07 3.2-3.5,	BH07 3.5-3.6							
Pulp Bag								
BH07 3.6-3.9,	BH07 4.0-4.3,	**27-JUL-2008**	**06-AUG-2008**	23-JAN-2009	✓	**06-AUG-2008**	24-AUG-2008	✓
BH07 4.3-4.8								
EP007: Total Carbon (TC)								
Pulp Bag								
BH07 0.0-0.5,	BH07 0.5-1.0,	**27-JUL-2008**	**04-AUG-2008**	---	----	**04-AUG-2008**	23-JAN-2009	✓
BH07 1.0-1.5,	BH07 1.5-2.0,							
BH07 2.2-2.7,	BH07 2.7-3.2,							
BH07 3.2-3.5,	BH07 3.5-3.6							
Pulp Bag								
BH07 3.6-3.9,	BH07 4.0-4.3,	**27-JUL-2008**	**06-AUG-2008**	23-JAN-2009	✓	**06-AUG-2008**	23-JAN-2009	✓
BH07 4.3-4.8								
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
BH08B 0.2-0.5,	BH08B 2.0-2.4	**26-JUL-2008**	**01-AUG-2008**	09-AUG-2008	✓	**08-AUG-2008**	10-SEP-2008	✓
Soil Glass Jar - Unpreserved								
BH07 0.0-0.5,	BH07 0.5-1.0,	**27-JUL-2008**	**01-AUG-2008**	10-AUG-2008	✓	**08-AUG-2008**	10-SEP-2008	✓
BH07 1.0-1.5,	BH07 1.5-2.0							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH08B 0.2-0.5, BH08B 2.0-2.4	**26-JUL-2008**	**01-AUG-2008**	09-AUG-2008	✓	**08-AUG-2008**	10-SEP-2008	✓
Soil Glass Jar - Unpreserved							
BH07 0.0-0.5, BH07 0.5-1.0, BH07 1.0-1.5, BH07 1.5-2.0	**27-JUL-2008**	**01-AUG-2008**	10-AUG-2008	✓	**08-AUG-2008**	10-SEP-2008	✓
EP068C: Triazines							
Soil Glass Jar - Unpreserved							
BH07 0.0-0.5, BH07 0.5-1.0, BH07 1.0-1.5, BH07 1.5-2.0, BH07 2.2-2.7, BH07 2.7-3.2, BH07 3.2-3.5, BH07 3.5-3.6	**27-JUL-2008**	**01-AUG-2008**	10-AUG-2008	✓	**08-AUG-2008**	10-SEP-2008	✓
Soil Glass Jar - Unpreserved							
BH07 3.6-3.9, BH07 4.0-4.3, BH07 4.3-4.8	**27-JUL-2008**	**05-AUG-2008**	10-AUG-2008	✓	**11-AUG-2008**	14-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH08B 0.2-0.5, BH08B 2.0-2.4, BH08B 3.6-3.9, BH08B 4.3-4.6, BH08B 4.75-5	**26-JUL-2008**	**04-AUG-2008**	09-AUG-2008	✓	**05-AUG-2008**	13-SEP-2008	✓
Soil Glass Jar - Unpreserved							
BH07 0.0-0.5, BH07 0.5-1.0, BH07 1.0-1.5, BH07 1.5-2.0, BH07 2.2-2.7, BH07 2.7-3.2, BH07 3.2-3.5, BH07 3.5-3.6	**27-JUL-2008**	**04-AUG-2008**	10-AUG-2008	✓	**05-AUG-2008**	13-SEP-2008	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH08B 0.2-0.5, BH08B 2.0-2.4	**26-JUL-2008**	**04-AUG-2008**	09-AUG-2008	✓	**05-AUG-2008**	13-SEP-2008	✓
Soil Glass Jar - Unpreserved							
BH07 0.0-0.5, BH07 0.5-1.0, BH07 1.0-1.5, BH07 1.5-2.0	**27-JUL-2008**	**04-AUG-2008**	10-AUG-2008	✓	**05-AUG-2008**	13-SEP-2008	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Soil Glass Jar - Unpreserved							
BH07 0.0-0.5, BH07 0.5-1.0, BH07 1.0-1.5, BH07 1.5-2.0, BH07 2.2-2.7, BH07 2.7-3.2, BH07 3.2-3.5, BH07 3.5-3.6, BH07 3.6-3.9, BH07 4.0-4.3, BH07 4.3-4.8	**27-JUL-2008**	**07-AUG-2008**	10-AUG-2008	✓	**07-AUG-2008**	16-SEP-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	4	33	**12.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	3	16	**18.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	13	**15.4**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	2	11	**18.2**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	16	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	13	**15.4**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	2	11	**18.2**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	16	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	9	**11.1**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Pesticides by GCMS	EP068	2	13	**15.4**	**5.0**	✓	ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 1995
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Total Inorganic Carbon	EP006	SOIL	In-house. Determined as the difference between Total Carbon and Organic Carbon.
Total Carbon	EP007	SOIL	In-house. Dried and pulverised sample is combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved Carbon (as CO2) is measured by infra-red detector
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.

Analytical Methods	Method	Matrix	Method Descriptions
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	SOIL	In-House, LCMS (Electrospray in negative mode). Residues of acid herbicides are extracted from soil samples under the alkaline condition. An aliquot of the alkaline aqueous phase is taken and acidified before a SPE cleanup. After eluting off from the SPE cartridge, residues of acid herbicides are dissolved in HPLC mobile phase prior to instrument analysis.
Radionucleide Analysis (Solid)	RAN-SOL	SOIL	Radon and Radium, Gross alpha and beta radiation analysis of solid matrices conducted by Subcontracting Laboratory

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Extraction for Phenoxy Acid Herbicides in Soils.	* EP202-PR	SOIL	In-House: Alkaline extract followed by SPE clean up of acidified portion of the sample extract.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0810023-014	BH08B 3.6-3.9	**Manganese**	7439-96-5	83.0 %	0-20%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EP066: Polychlorinated Biphenyls (PCB)	811469-006	----	**Total Polychlorinated biphenyls**	----	112 %	53.8-105%	**Recovery greater than upper control limit**
EP068A: Organochlorine Pesticides (OC)	811469-002	----	**Endrin**	72-20-8	149 %	47-133%	**Recovery greater than upper control limit**
EP068C: Triazines	811469-002	----	**Simazine**	122-34-9	58.2 %	70-117%	**Recovery less than lower control limit**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	816124-002	----	**Clopyralid**	1702-17-6	57.0 %	59.4-149%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB0810023-002	BH07 0.5-1.0	**Manganese**	7439-96-5	202 %	70-130%	**Recovery greater than upper data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0810023-002	BH07 0.5-1.0	**Endrin**	72-20-8	130 %	70-130%	**Recovery greater than upper data quality objective**

- **For all matrices, no Method Blank value outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

URS CHAIN OF CUSTODY

ADDRESS: URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY
PHONE NO: (07) 3243 2111	PHONE NO: (07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	Custody Seal ? Y N NA
FAX NO: (07) 3243 2199	FAX NO: (07) 32437259	COC SEQUENCE NUMBER: 1 2 3 4 (please circle 1/1)	Free ice / frozen icebricks present upon receipt? Y N
			Random Sample Temperature on Receipt 6.0 °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: Rex
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME:	DATE: TIME:	DATE: 31/7/18 15:15

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	~~40ml VOA Vial (G) HCL~~ 40ml Vials VOC	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	~~100ml (P) Unpr.~~ 40ml Vials TOC	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH Field and pH Fox	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Hold	NAPThalene + Total PAH
1	BH24 0.0-0.7	30/7/08	Solid	2	1									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
2	BH24 0.7-1.7			2	1									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
3	BH24 2.9-3.3			2										✓	✓	✓					✓	✓	✓						✓
4	BH24 4.0-4.4			1												✓					✓	✓	✓						✓
5	BH24 5.5-5.8			2												✓					✓	✓	✓						✓
6	BH24 6.6-6.8			1										✓		✓	[illegible]	[illegible]	[illegible]				✓						✓
7	QC01			2	1									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
8	QC02		liquid			[illegible]	1	1	1							✓	✓	✓	✓	✓	✓					1			
	~~TB1~~																												
TOTAL																													

Environmental Division
Brisbane
Work Order
EB0810222



Telephone : + 61-7-3243 7222

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0810222**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 31-JUL-2008	Issue Date	: 01-AUG-2008 16:38
Client Requested Due Date	: 11-AUG-2008	Scheduled Reporting Date	: **14-AUG-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 6.8 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 8
Sercurity Seal	: Not intact.	No. of samples analysed	: 8

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **For organic analysis for sample QC02, the limit of reporting may be raised , due to the low volume of sample submitted.**
- **Radionuclide Testing has been subcontracted to QHSS.**
- **Please note that insufficient sample volume has been provided to perform Tributyltin Analysis on sample QC02.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP006 (solids) Total Inorganic Carbon (TIC)	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP068C Triazines by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only
EB0810222-001	30-JUL-2008 15:00	BH24 0.0-0.7	✓	✓	✓	✓	✓	✓	✓	✓
EB0810222-002	30-JUL-2008 15:00	BH24 0.7-1.7	✓	✓	✓	✓	✓	✓	✓	✓
EB0810222-003	30-JUL-2008 15:00	BH24 2.9-3.3	✓	✓	✓					✓
EB0810222-004	30-JUL-2008 15:00	BH24 4.0-4.4	✓		✓					✓
EB0810222-005	30-JUL-2008 15:00	BH24 5.5-5.8	✓		✓					✓
EB0810222-006	30-JUL-2008 15:00	BH24 6.6-6.8			✓					✓
EB0810222-007	30-JUL-2008 15:00	QC01	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP090 (solids) Organotins	SOIL - EP202(solids) Phenoxyacetic acids	SOIL - S-02 8 Metals (incl. Digestion)
EB0810222-001	30-JUL-2008 15:00	BH24 0.0-0.7	✓	✓	✓
EB0810222-002	30-JUL-2008 15:00	BH24 0.7-1.7	✓	✓	✓
EB0810222-003	30-JUL-2008 15:00	BH24 2.9-3.3			✓
EB0810222-004	30-JUL-2008 15:00	BH24 4.0-4.4			✓
EB0810222-005	30-JUL-2008 15:00	BH24 5.5-5.8			✓
EB0810222-006	30-JUL-2008 15:00	BH24 6.6-6.8			✓
EB0810222-007	30-JUL-2008 15:00	QC01	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP068C Triazine Pesticides	WATER - EP075 SIM PAH only SIM - PAH only	WATER - W-02T 8 metals (Total)
EB0810222-008	30-JUL-2008 15:00	QC02	✓	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com
- Trigger - Subcontract Report	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com
- Trigger - Subcontract Report	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com
- Trigger - Subcontract Report	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0810222**	Page	: 1 of 12
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 31-JUL-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 8
Quote number	: EN/001/08	No. of samples analysed	: 8

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Gaston Allende		Organics
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EG005T (Total Metals): Sample EB0809551-053 shows poor matrix spike recovery due to matrix interference. Confirmed by visual inspection.**
- **EG005T (Total Metals): Sample EB0810523-002 shows poor matrix spike recovery due to matrix interference. Confirmed by visual inspection.**
- **LCS recovery for EG020U (Unfiltered Metals) fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC02 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: **LIQUID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC02	----	----	----	----
				Client sampling date / time: 30-JUL-2008 15:00	----	----	----	----
				EB0810222-008	----	----	----	----
EG020T: Total Metals by ICP-MS								
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0002**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.5	µg/L	<1.0	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<1.0	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<1.0	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<1.0	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<1.0	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<1.0	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<1.0	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<1.0	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<1.0	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<1.0	----	----	----	----
EP068C: Triazines								
Atrazine	1912-24-9	0.5	µg/L	<1.0	----	----	----	----
Simazine	122-34-9	0.5	µg/L	<1.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC02	----	----	----	----
				Client sampling date / time	30-JUL-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0810222-008	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**73.0**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**76.6**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**87.3**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**34.0**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**78.6**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**92.2**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**78.7**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**92.1**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**85.2**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH24 0.0-0.7	BH24 0.7-1.7	BH24 2.9-3.3	BH24 4.0-4.4	BH24 5.5-5.8
				Client sampling date / time: 30-JUL-2008 15:00	30-JUL-2008 15:00	30-JUL-2008 15:00	30-JUL-2008 15:00	30-JUL-2008 15:00
				EB0810222-001	EB0810222-002	EB0810222-003	EB0810222-004	EB0810222-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.3	9.0	8.9	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.12	0.48	<0.02	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	77	297	<10	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	17.6	13.3	0.95	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3510	2650	189	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	5.63	4.25	0.30	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	26.2	31.2	17.4	7.2	16.3
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	4430	6850	5460	980	1820
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	14	16	16	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	13	15	14	11	5
Copper	7440-50-8	5	mg/kg	8	13	19	<5	<5
Iron	7439-89-6	50	mg/kg	24300	25600	23400	4010	2180
Lead	7439-92-1	5	mg/kg	<5	7	5	<5	<5
Manganese	7439-96-5	5	mg/kg	172	245	127	27	<5
Nickel	7440-02-0	2	mg/kg	6	8	11	<2	<2
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	17	23	26	6	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.33	0.64	0.07	0.06	0.04

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH24 0.0-0.7	BH24 0.7-1.7	BH24 2.9-3.3	BH24 4.0-4.4	BH24 5.5-5.8
				Client sampling date / time: 30-JUL-2008 15:00	30-JUL-2008 15:00	30-JUL-2008 15:00	30-JUL-2008 15:00	30-JUL-2008 15:00
				EB0810222-001	EB0810222-002	EB0810222-003	EB0810222-004	EB0810222-005
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	**2.45**	**1.62**	----	----	----
EP007: Total Carbon (TC)								
Total Carbon	----	0.02	%	**2.78**	**2.26**	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.43	<0.48	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----
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	----	----	----
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	----	----	----
EP068C: Triazines								
Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Simazine	122-34-9	0.05	mg/kg	<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
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

Analytical Results

Sub-Matrix: SOLID				Client sample ID	BH24 0.0-0.7	BH24 0.7-1.7	BH24 2.9-3.3	BH24 4.0-4.4	BH24 5.5-5.8
				Client sampling date / time	30-JUL-2008 15:00	30-JUL-2008 15:00	30-JUL-2008 15:00	30-JUL-2008 15:00	30-JUL-2008 15:00
Compound	CAS Number	LOR	Unit		EB0810222-001	EB0810222-002	EB0810222-003	EB0810222-004	EB0810222-005
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg		<0.02	<0.02	----	----	----
2.4-DB	94-82-6	0.02	mg/kg		<0.02	<0.02	----	----	----
Dicamba	1918-00-9	0.02	mg/kg		<0.02	<0.02	----	----	----
Mecoprop	93-65-2	0.02	mg/kg		<0.02	<0.02	----	----	----
MCPA	94-74-6	0.02	mg/kg		<0.02	<0.02	----	----	----
2.4-DP	120-36-5	0.02	mg/kg		<0.02	<0.02	----	----	----
2.4-D	94-75-7	0.02	mg/kg		<0.02	<0.02	----	----	----
Triclopyr	55335-06-3	0.02	mg/kg		<0.02	<0.02	----	----	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg		<0.02	<0.02	----	----	----
2.4.5-T	93-76-5	0.02	mg/kg		<0.02	<0.02	----	----	----
MCPB	94-81-5	0.02	mg/kg		<0.02	<0.02	----	----	----
Picloram	1918-02-1	0.02	mg/kg		<0.02	<0.02	----	----	----
Clopyralid	1702-17-6	0.02	mg/kg		<0.02	<0.02	----	----	----
Fluroxypyr	69377-81-7	0.02	mg/kg		<0.02	<0.02	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**75.2**	**74.8**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**69.5**	**68.6**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**63.9**	**64.5**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**89.0**	**91.6**	**96.7**	**105**	**85.6**
2-Chlorophenol-D4	93951-73-6	0.1	%		**106**	**106**	**112**	**121**	**100**
2.4.6-Tribromophenol	118-79-6	0.1	%		**91.1**	**89.0**	**93.8**	**103**	**90.0**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**105**	**102**	**114**	**126**	**106**
Anthracene-d10	1719-06-8	0.1	%		**94.9**	**90.4**	**109**	**102**	**86.9**
4-Terphenyl-d14	1718-51-0	0.1	%		**123**	**118**	**130**	**136**	**118**
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**79.6**	**72.6**	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.1	%		**110**	**103**	----	----	----

Analytical Results

Sub-Matrix: SOLID			Client sample ID	BH24 6.6-6.8	QC01	----	----	----
			Client sampling date / time	30-JUL-2008 15:00	30-JUL-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit	EB0810222-006	EB0810222-007	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	9.0	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	<2	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	<0.02	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	----	0.52	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	326	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	17.8	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	3550	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	5.70	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	1.5	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	----	<0.02	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	----	<10	----	----	----
Liming Rate	----	1	kg CaCO3/t	----	<1	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	16.9	32.5	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	760	6380	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	----	----	----
Arsenic	7440-38-2	5	mg/kg	<5	19	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	2	18	----	----	----
Copper	7440-50-8	5	mg/kg	16	12	----	----	----
Iron	7439-89-6	50	mg/kg	1240	27700	----	----	----
Lead	7439-92-1	5	mg/kg	<5	6	----	----	----
Manganese	7439-96-5	5	mg/kg	<5	202	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	9	----	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	----	----
Zinc	7440-66-6	5	mg/kg	8	24	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	----	0.71	----	----	----

Analytical Results

Sub-Matrix: SOLID			Client sample ID	BH24 6.6-6.8	QC01	----	----	----
			Client sampling date / time	30-JUL-2008 15:00	30-JUL-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit	EB0810222-006	EB0810222-007	----	----	----
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	----	1.40	----	----	----
EP007: Total Carbon (TC)								
Total Carbon	----	0.02	%	----	2.11	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	<0.10	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.49	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	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	----	----	----
EP068C: Triazines								
Atrazine	1912-24-9	0.05	mg/kg	----	<0.05	----	----	----
Simazine	122-34-9	0.05	mg/kg	----	<0.05	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: SOLID				Client sample ID	BH24 6.6-6.8	QC01	----	----	----
				Client sampling date / time	30-JUL-2008 15:00	30-JUL-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		EB0810222-006	EB0810222-007	----	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		----	<0.5	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg		----	<0.02	----	----	----
2.4-DB	94-82-6	0.02	mg/kg		----	<0.02	----	----	----
Dicamba	1918-00-9	0.02	mg/kg		----	<0.02	----	----	----
Mecoprop	93-65-2	0.02	mg/kg		----	<0.02	----	----	----
MCPA	94-74-6	0.02	mg/kg		----	<0.02	----	----	----
2.4-DP	120-36-5	0.02	mg/kg		----	<0.02	----	----	----
2.4-D	94-75-7	0.02	mg/kg		----	<0.02	----	----	----
Triclopyr	55335-06-3	0.02	mg/kg		----	<0.02	----	----	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg		----	<0.02	----	----	----
2.4.5-T	93-76-5	0.02	mg/kg		----	<0.02	----	----	----
MCPB	94-81-5	0.02	mg/kg		----	<0.02	----	----	----
Picloram	1918-02-1	0.02	mg/kg		----	<0.02	----	----	----
Clopyralid	1702-17-6	0.02	mg/kg		----	<0.02	----	----	----
Fluroxypyr	69377-81-7	0.02	mg/kg		----	<0.02	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	**77.6**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		----	**72.3**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		----	**67.8**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**84.8**	**85.9**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**97.8**	**102**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**85.1**	**87.1**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**105**	**103**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**87.2**	**85.2**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**124**	**116**	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		----	**74.0**	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.1	%		----	**106**	----	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	70	130

Queensland Government

Queensland **Health**

Inquiries: Megan Cook
Telephone: 07 3000 9686
Facsimile: 07 3274 9123

Reference: EB0810222

Requested by: Tim Kilmister
Australian Laboratory Services Pty Ltd
PO Box 66
Everton Park QLD 4053

RADIOACTIVITY ANALYSIS REPORT No. 08PQ237-242

SAMPLE

description: 6 x sample/s

for: Radioactivity (U/Th) analysis using High Resolution Gamma Spectrometry

date received: 4th August 2008

METHOD - Gamma Spectrometry

Method: Adapted from ISO10703:1997-05-01 'Water Quality - Determination of the activity concentration of radionuclides by high resolution gamma-ray spectrometry'
All errors are quoted at the 2 sigma (95%) confidence level

Sample preparation: Samples was passed through a 1mm sieve and sealed in a poly jar counting geometry. The sample may be considered as having attained secular equilibrium.

Sample geometry: Soil: 100 mL polypropylene jar geometry

Detector specification:

Model number:	GMX 18190	*Serial number:*	26-N-1627B
Efficiency (rel. to 3" NaI):	~ 20%	*Energy resolution @ 1332keV:*	< 2.00 keV

Traceability: Reference source/s: Uranium 400 ± 2 µg/g (as uranium - 238 in secular equilibrium with decay progeny) IAEA Reference Material RGU-1, Report IAEA/RL/148, 1987, & Thorium 800 ± 2 µg/g (as thorium - 232 in secular equilibrium with decay progeny) IAEA Reference Material RGTh-1, Report IAEA/RL/148, 1987, used for system calibration.

Calibration file name: 2S_100J030908RK.Clb
Radionuclide library: EnviroNat_2.lib
Last calib. Validation: 03 September 2008

RESULTS

Refer to attached results table 08PQ237-242

COMMENT

Results indicate individual radionuclide concentration only. Correction factors for full decay series activity should be applied before comparison to regulatory compliance / guideline / action levels as required.

M Cook
Scientist
7th October 2008

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Gamma Spectrometry Results – Report No: 08PQ237-242

Queensland Government
Queensland Health

SAMPLE DESCRIPTION		ANALYSIS DETAILS			RESULTS (Bq.kg^{-1})				
Lab number	Sample identification	Date sampled	Date prepared	Date analysed	U-238[1]	Ra-224[2]	Th-232[3]	K-40	Other
08PQ237	BH24 00-0.7	30/07/2008	06/08/2008	26/09/2008	11±4	20±4	20±10	560±60	N/D
08PQ238	BH24 0.7-1.7	30/07/2008	06/08/2008	30/09/2008	14±4	23±4	30±10	460±70	N/D
08PQ239	BH24 2.9-3.3	30/07/2008	06/08/2008	29/09/2008	24±4	32±4	40±10	280±50	N/D
08PQ240	BH24 4.0-4.4	30/07/2008	06/08/2008	01/10/2008	13±3	8±3	14±7	130±40	N/D
08PQ241	BH24 5.5-5.8	30/07/2008	06/08/2008	02/10/2008	24±4	16±3	N/D	160±50	N/D
08PQ242	QC01	30/07/2008	06/08/2008	02/10/2008	16±3	23±3	28±8	360±40	N/D

NOTES

[1] Uranium 238 results derived from decay progeny unless otherwise stated.
[2] Radium 224, 226, 228 results derived from decay progeny unless otherwise stated.
[3] Thorium 232 results derived from decay progeny unless otherwise stated.
N/D Not detected above system minimum detection level

M Cook 7th October 2008
Scientist

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File G:\Physics\Analytical Laboratory\Analysis - Samples 2008 2009\08PQ237-243 GS\08PQ237-242 Table.DOC

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	31-Jul-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810222	BH24 0.0-0.7	001	26%	54%	NA	NA
EB0810222	BH24 0.7-1.7	002	26%	39%	NA	NA
EB0810222	BH24 2.9-3.3	003	0%	2%	NA	NA
EB0810222	BH24 4.0-4.4	004	46%	36%	NA	NA
EB0810222	BH24 5.5-5.8	005	5%	79%	NA	NA
EB0810222	BH24 6.6-6.8	006	0%	69%	NA	NA
EB0810222	QC01	007	17%	42%	NA	NA

Remarks :

Test Procedure : AS1289.3.6.1

Prepared by : DB Checked by PK

Certificate of Analysis

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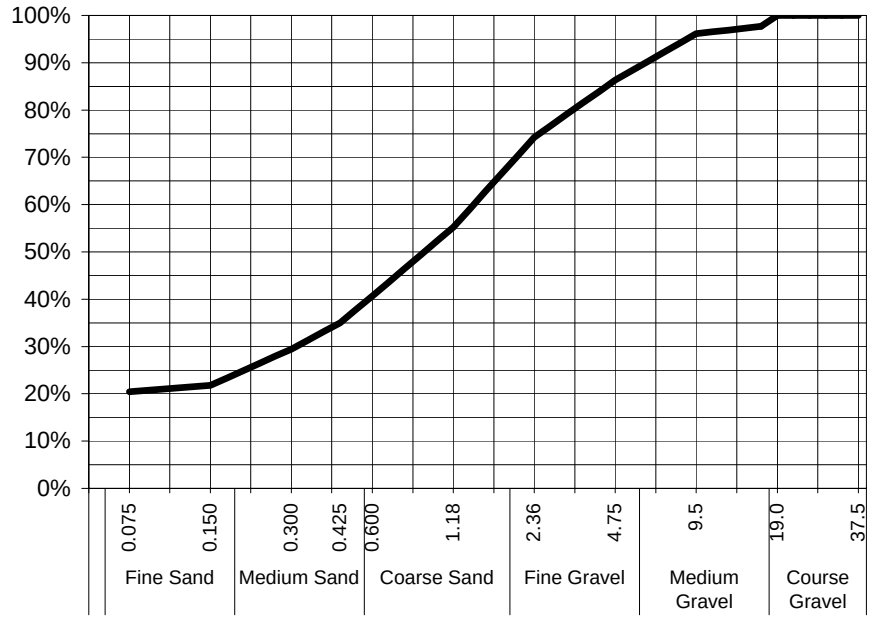
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	31-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810222-001 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH24 0.0-0.7

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	96%
4.75	86%
2.36	74%
1.18	55%
0.600	41%
0.425	35%
0.300	29%
0.150	22%
0.075	20%

Samples analysed as received.

Sample Comments:

Analysed: 6-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey silt & shells

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

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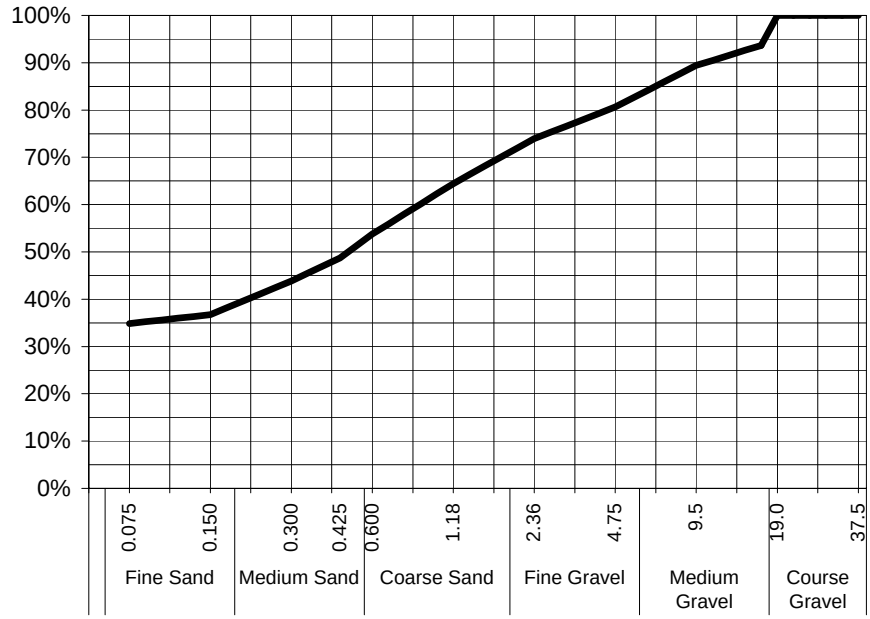
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	31-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810222-002 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH24 0.7-1.7

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	89%
4.75	81%
2.36	74%
1.18	64%
0.600	54%
0.425	49%
0.300	44%
0.150	37%
0.075	35%

Samples analysed as received.

Sample Comments:

Analysed: 6-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey silt & shells

Test Method: AS1289.3.6.1

Peter Keyte
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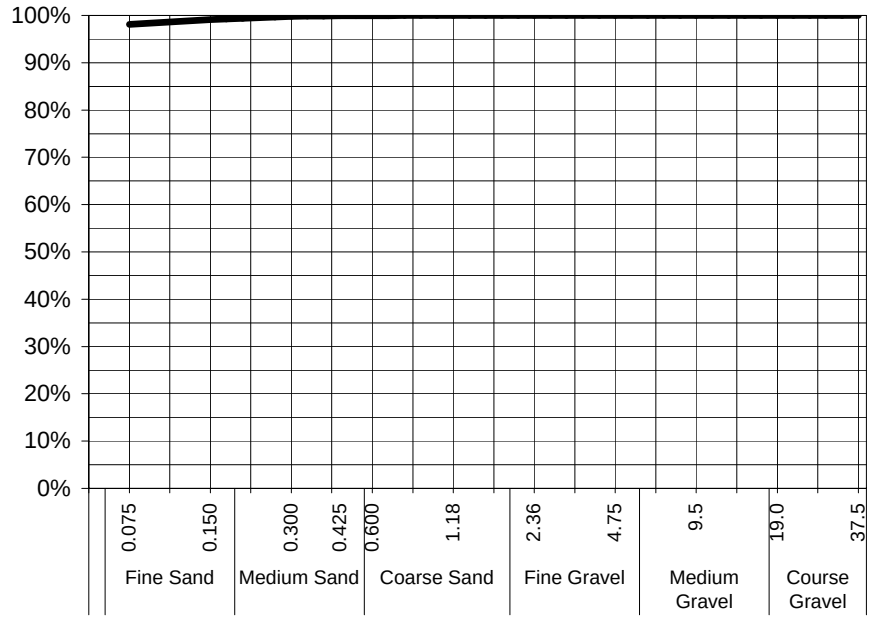
CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	31-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810222-003 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH24 2.9-3.3

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Hard clay

Test Method: AS1289.3.6.1

Analysed: 6-Aug-08

Limit of Reporting: 1%

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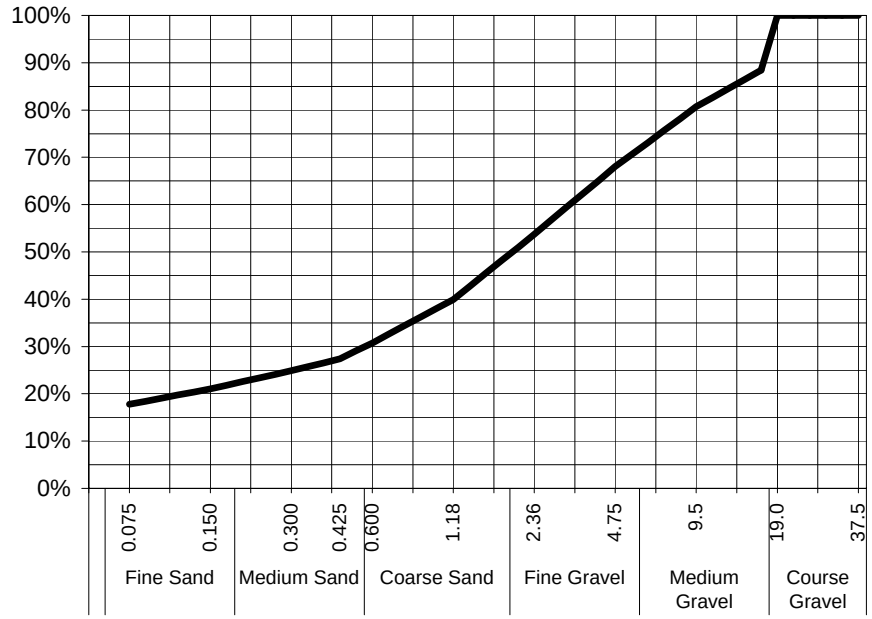
CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	31-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810222-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH24 4.0-4.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	81%
4.75	68%
2.36	54%
1.18	40%
0.600	31%
0.425	27%
0.300	25%
0.150	21%
0.075	18%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Silt & gravel

Test Method: AS1289.3.6.1

Analysed: 6-Aug-08

Limit of Reporting: 1%

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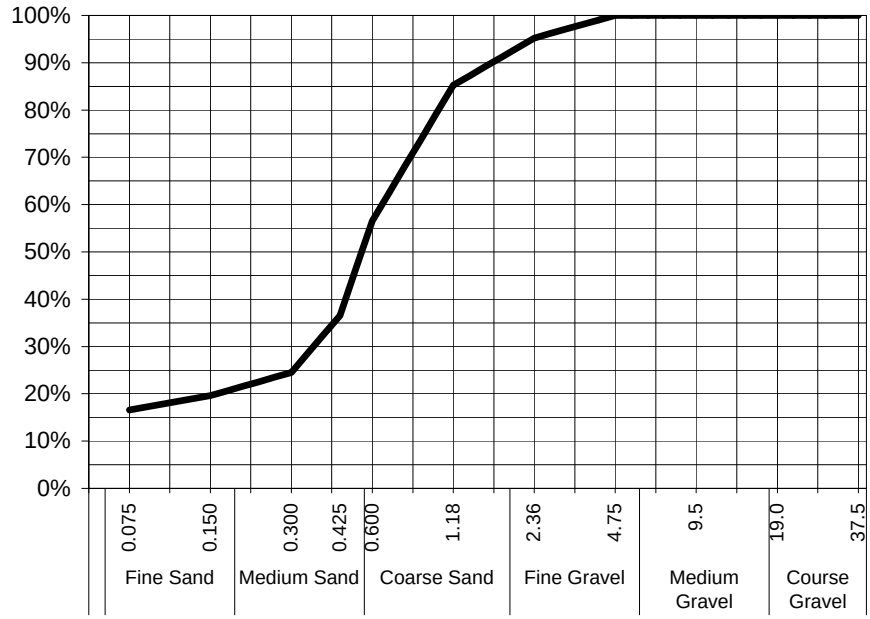
CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	31-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810222-005 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH24 5.5-5.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	95%
1.18	85%
0.600	57%
0.425	37%
0.300	24%
0.150	20%
0.075	17%

Samples analysed as received.

Sample Comments:

Analysed: 6-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Sand & fine gravel

Test Method: AS1289.3.6.1

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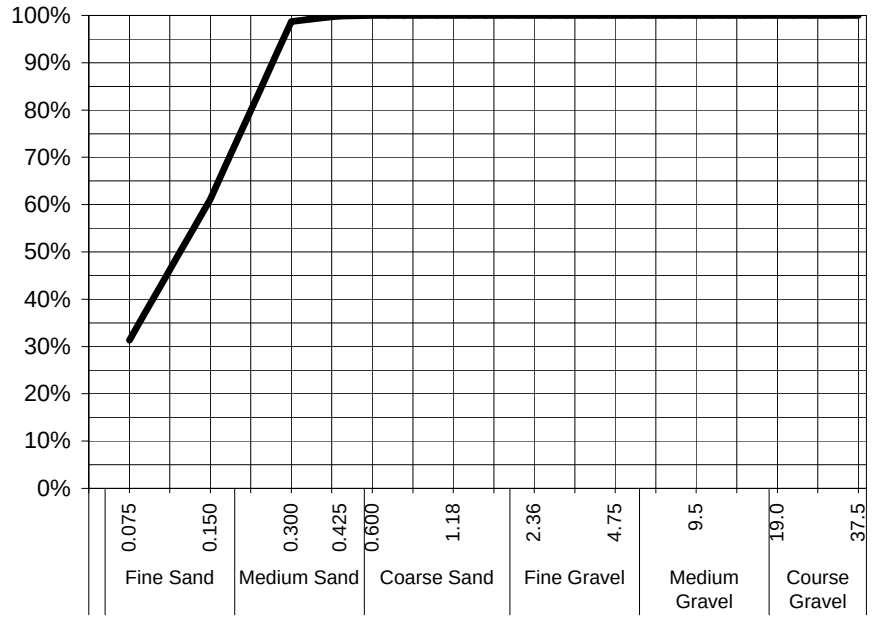
CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	31-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810222-006 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH24 6.6-6.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	61%
0.075	31%

Samples analysed as received.

Sample Comments:

Analysed: 6-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Light sand & silt

Test Method: AS1289.3.6.1

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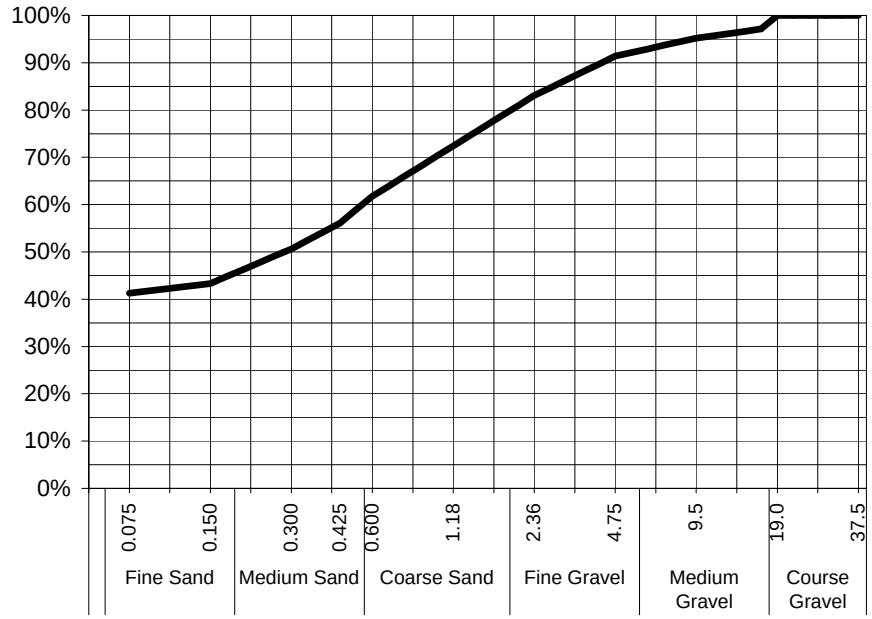
CLIENT:	Rob Ully	**DATE REPORTED:**	8-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	31-Jul-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810222-007 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC01

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	95%
4.75	91%
2.36	83%
1.18	72%
0.600	62%
0.425	56%
0.300	51%
0.150	43%
0.075	41%

Samples analysed as received.

Sample Comments:

Analysed: 6-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay & grit

Test Method: AS1289.3.6.1

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	31-Jul-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810222	BH24 0.0-0.7	001	26%	54%	NA	NA
EB0810222	BH24 0.7-1.7	002	26%	39%	NA	NA
EB0810222	BH24 2.9-3.3	003	0%	2%	NA	NA
EB0810222	BH24 4.0-4.4	004	46%	36%	NA	NA
EB0810222	BH24 5.5-5.8	005	5%	79%	NA	NA
EB0810222	BH24 6.6-6.8	006	0%	69%	NA	NA
EB0810222	QC01	007	17%	42%	NA	NA

Remarks :

Test Procedure : AS1289.3.6.1

Prepared by : DB Checked by PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0810222**	Page	: 1 of 13
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 31-JUL-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 8
Quote number	: EN/001/08	No. of samples analysed	: 8

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Gaston Allende		Organics
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 722891)									
EB0810222-001	BH24 0.0-0.7	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.3	9.4	1.1	0% - 20%
EA033-B: Potential Acidity (QC Lot: 722891)									
EB0810222-001	BH24 0.0-0.7	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.12	0.12	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	77	74	4.3	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 722891)									
EB0810222-001	BH24 0.0-0.7	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	17.6	17.7	0.9	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	5.63	5.68	0.9	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3510	3540	0.9	0% - 20%
EA055: Moisture Content (QC Lot: 722993)									
EB0810222-003	BH24 2.9-3.3	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.4	17.7	1.4	0% - 50%
EB0810226-019	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 723046)									
EB0810209-141	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 723047)									
EB0810209-141	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 722128)									
EB0810222-001	BH24 0.0-0.7	EP005: Total Organic Carbon	----	0.02	%	0.33	0.34	3.0	0% - 50%
EP007: Total Carbon (TC) (QC Lot: 722129)									
EB0810222-001	BH24 0.0-0.7	EP007: Total Carbon	----	0.02	%	2.78	2.78	0.0	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 721565)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 721565) - continued									
EB0810194-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810194-032	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QC Lot: 721564)									
EB0810194-002	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810194-032	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP068C: Triazines (QC Lot: 721564)									
EB0810194-002	Anonymous	EP068: Atrazine	1912-24-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Simazine	122-34-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810194-032	Anonymous	EP068: Atrazine	1912-24-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Simazine	122-34-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 722818)									
EB0810222-001	BH24 0.0-0.7	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 722818) - continued									
EB0810222-001	BH24 0.0-0.7	EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 721554)									
EB0810023-001	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 724567)									
ES0811081-001	Anonymous	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Dicamba	1918-00-9	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Mecoprop	93-65-2	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPA	94-74-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-D	94-75-7	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPB	94-81-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Picloram	1918-02-1	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810023-011	Anonymous	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Dicamba	1918-00-9	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Mecoprop	93-65-2	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPA	94-74-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-D	94-75-7	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPB	94-81-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Picloram	1918-02-1	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 722427)									
EB0810209-161	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 722427) - continued									
EB0810209-161	Anonymous	EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810222-008	QC02	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0001	0.0	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 722428)									
EB0810222-008	QC02	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 725386)									
EB0810121-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810337-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 721673)									
EB0810222-008	QC02	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0	No Limit

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 722891)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 722891)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 722891)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 723047)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	99.4	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 722128)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	99.8	70	130
EP007: Total Carbon (TC) (QCLot: 722129)								
EP007: Total Carbon	----	0.02	%	<0.02	100 %	99.9	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 721565)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	102	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 721564)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	# 58.0	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	85.4	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	86.1	60.8	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	88.3	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	89.0	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	132	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	98.6	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	74.5	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	80.0	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	87.6	51.6	124
EP068C: Triazines (QCLot: 721564)								
EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	0.25 mg/kg	60.6	58.6	112

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068C: Triazines (QCLot: 721564) - continued								
EP068: Simazine	122-34-9	0.05	mg/kg	<0.05	0.25 mg/kg	# 63.6	70	117
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 722818)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	91.0	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	100	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	91.7	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	91.4	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	86.4	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	80.0	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	85.5	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	81.7	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	83.4	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	76.0	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	81.0	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	81.3	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	79.2	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	71.9	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	73.1	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	65.2	52	128
EP090: Organotin Compounds (QCLot: 721554)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	44.5	28	129
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 724567)								
EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	0.1 mg/kg	98.4	54.4	136
EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	0.1 mg/kg	85.8	45.5	144
EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	0.1 mg/kg	82.3	51.7	146
EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	0.1 mg/kg	95.5	60	140
EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	0.1 mg/kg	100	56.8	143
EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	0.1 mg/kg	97.3	50	141
EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	0.1 mg/kg	87.0	68.5	139
EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	0.1 mg/kg	108	50.8	145
EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	0.1 mg/kg	85.1	40.8	135
EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	0.1 mg/kg	109	57.4	142
EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	0.1 mg/kg	89.5	38.9	147
EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	0.1 mg/kg	65.2	48.7	138
EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	0.1 mg/kg	# 57.0	59.4	149
EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	0.1 mg/kg	95.6	53.2	145

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 722427)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	102	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	100	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	103	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	123	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	105	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	103	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	109	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	114	81	127
EG020T: Total Metals by ICP-MS (QCLot: 722428)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 76.4	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 725386)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	102	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 721673)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	107	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 721870)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	75.3	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 721869)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	78.7	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	91.7	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	91.4	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	87.9	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	95.0	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	99.2	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	96.5	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	98.4	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	111	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	88.5	47.3	137
EP068C: Triazines (QCLot: 721869)								
EP068: Atrazine	1912-24-9	0.5	µg/L	<0.5	5 µg/L	89.5	56.9	124
EP068: Simazine	122-34-9	0.5	µg/L	<0.5	5 µg/L	# 128	70	125
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 721868)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	67.4	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	70.6	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	68.3	50	114
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Recovery Limits (%)
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 721868) - continued								
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	70.4	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	75.1	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	71.9	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	74.5	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	76.4	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	76.6	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	64.0	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	74.1	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	62.0	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	61.9	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	60.5	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	58.1	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	56.7	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 723047)							
EB0810209-154	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 721565)							
EB0810194-005	Anonymous	EP066: Total Polychlorinated biphenyls	----	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QCLot: 721564)							
EB0810194-005	Anonymous	EP068: gamma-BHC	58-89-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 722818)							
EB0810222-002	BH24 0.7-1.7	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	95.6	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	88.5	70	130
EP090: Organotin Compounds (QCLot: 721554)							
EB0810023-002	Anonymous	EP090: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 724567)							
ES0811081-001	Anonymous	EP202: Mecoprop	93-65-2	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPA	94-74-6	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-D	94-75-7	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Triclopyr	55335-06-3	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-T	93-76-5	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Picloram	1918-02-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Clopyralid	1702-17-6	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 722427)							
EB0810217-001	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 725386)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG035T: Total Recoverable Mercury by FIMS (QCLot: 725386) - continued							
EB0810121-001	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0810222**	Page	: 1 of 10
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 31-JUL-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 8
Quote number	: EN/001/08	No. of samples analysed	: 8

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
80* dried soil								
BH24 0.0-0.7,	BH24 0.7-1.7,	**30-JUL-2008**	**31-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH24 2.9-3.3,	QC01							
EA033-B: Potential Acidity								
80* dried soil								
BH24 0.0-0.7,	BH24 0.7-1.7,	**30-JUL-2008**	**31-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH24 2.9-3.3,	QC01							
EA033-C: Acid Neutralising Capacity								
80* dried soil								
BH24 0.0-0.7,	BH24 0.7-1.7,	**30-JUL-2008**	**31-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH24 2.9-3.3,	QC01							
EA033-D: Retained Acidity								
80* dried soil								
BH24 0.0-0.7,	BH24 0.7-1.7,	**30-JUL-2008**	**31-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH24 2.9-3.3,	QC01							
EA033-E: Acid Base Accounting								
80* dried soil								
BH24 0.0-0.7,	BH24 0.7-1.7,	**30-JUL-2008**	**31-JUL-2008**	---	----	**12-AUG-2008**	03-NOV-2008	✓
BH24 2.9-3.3,	QC01							
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH24 0.0-0.7,	BH24 0.7-1.7,	**30-JUL-2008**	**----**	----	----	**05-AUG-2008**	06-AUG-2008	✓
BH24 2.9-3.3,	BH24 4.0-4.4,							
BH24 5.5-5.8,	BH24 6.6-6.8,							
QC01								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH24 0.0-0.7, BH24 0.7-1.7, BH24 2.9-3.3, BH24 4.0-4.4, BH24 5.5-5.8, BH24 6.6-6.8, QC01	**30-JUL-2008**	**05-AUG-2008**	26-JAN-2009	✓	**05-AUG-2008**	26-JAN-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH24 0.0-0.7, BH24 0.7-1.7, BH24 2.9-3.3, BH24 4.0-4.4, BH24 5.5-5.8, BH24 6.6-6.8, QC01	**30-JUL-2008**	**05-AUG-2008**	26-JAN-2009	✓	**07-AUG-2008**	27-AUG-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH24 0.0-0.7, BH24 0.7-1.7, BH24 2.9-3.3, BH24 4.0-4.4, BH24 5.5-5.8, QC01	**30-JUL-2008**	**04-AUG-2008**	---	----	**04-AUG-2008**	27-AUG-2008	✓
EP007: Total Carbon (TC)							
Pulp Bag							
BH24 0.0-0.7, BH24 0.7-1.7, QC01	**30-JUL-2008**	**04-AUG-2008**	---	----	**04-AUG-2008**	26-JAN-2009	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
BH24 0.0-0.7, BH24 0.7-1.7, QC01	**30-JUL-2008**	**04-AUG-2008**	13-AUG-2008	✓	**06-AUG-2008**	13-SEP-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH24 0.0-0.7, BH24 0.7-1.7, QC01	**30-JUL-2008**	**04-AUG-2008**	13-AUG-2008	✓	**06-AUG-2008**	13-SEP-2008	✓
EP068C: Triazines							
Soil Glass Jar - Unpreserved							
BH24 0.0-0.7, BH24 0.7-1.7, QC01	**30-JUL-2008**	**04-AUG-2008**	13-AUG-2008	✓	**06-AUG-2008**	13-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH24 0.0-0.7, BH24 0.7-1.7, BH24 2.9-3.3, BH24 4.0-4.4, BH24 5.5-5.8, BH24 6.6-6.8, QC01	**30-JUL-2008**	**05-AUG-2008**	13-AUG-2008	✓	**06-AUG-2008**	14-SEP-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH24 0.0-0.7, BH24 0.7-1.7, QC01	**30-JUL-2008**	**04-AUG-2008**	13-AUG-2008	✓	**05-AUG-2008**	13-SEP-2008	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Soil Glass Jar - Unpreserved							
BH24 0.0-0.7, BH24 0.7-1.7, QC01	**30-JUL-2008**	**07-AUG-2008**	13-AUG-2008	✓	**07-AUG-2008**	16-SEP-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC02	**30-JUL-2008**	**05-AUG-2008**	26-JAN-2009	✓	**06-AUG-2008**	26-JAN-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC02	**30-JUL-2008**	**----**	----	----	**07-AUG-2008**	27-AUG-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC02	**30-JUL-2008**	**----**	----	----	**04-AUG-2008**	27-AUG-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC02	**30-JUL-2008**	**05-AUG-2008**	06-AUG-2008	✓	**06-AUG-2008**	14-SEP-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC02	**30-JUL-2008**	**05-AUG-2008**	06-AUG-2008	✓	**06-AUG-2008**	14-SEP-2008	✓
EP068C: Triazines							
Amber Glass Bottle - Unpreserved							
QC02	**30-JUL-2008**	**05-AUG-2008**	06-AUG-2008	✓	**06-AUG-2008**	14-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC02	**30-JUL-2008**	**05-AUG-2008**	06-AUG-2008	✓	**06-AUG-2008**	14-SEP-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	9	**11.1**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.3**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	14	**7.1**	**5.0**	✓	ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Mercury by FIMS	EG035T	1	9	**11.1**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 1995
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Total Inorganic Carbon	EP006	SOIL	In-house. Determined as the difference between Total Carbon and Organic Carbon.
Total Carbon	EP007	SOIL	In-house. Dried and pulverised sample is combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved Carbon (as CO2) is measured by infra-red detector
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.

Analytical Methods	Method	Matrix	Method Descriptions
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	SOIL	In-House, LCMS (Electrospray in negative mode). Residues of acid herbicides are extracted from soil samples under the alkaline condition. An aliquot of the alkaline aqueous phase is taken and acidified before a SPE cleanup. After eluting off from the SPE cartridge, residues of acid herbicides are dissolved in HPLC mobile phase prior to instrument analysis.
Radionucleide Analysis (Solid)	RAN-SOL	SOIL	Radon and Radium, Gross alpha and beta radiation analysis of solid matrices conducted by Subcontracting Laboratory
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Extraction for Phenoxy Acid Herbicides in Soils.	* EP202-PR	SOIL	In-House: Alkaline extract followed by SPE clean up of acidified portion of the sample extract.

Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	812453-002	----	**gamma-BHC**	58-89-9	58.0 %	59.1-113%	**Recovery less than lower control limit**
EP068C: Triazines	812453-002	----	**Simazine**	122-34-9	63.6 %	70-117%	**Recovery less than lower control limit**
EP202A: Phenoxyacetic Acid Herbicides by LCMS	816124-002	----	**Clopyralid**	1702-17-6	57.0 %	59.4-149%	**Recovery less than lower control limit**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	813526-002	----	**Silver**	7440-22-4	76.4 %	120-123%	**Recovery less than lower control limit**
EP068C: Triazines	812839-013	----	**Simazine**	122-34-9	128 %	70-125%	**Recovery greater than upper control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **SOLID**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)T: PAH Surrogates	EB0810222-004	BH24 4.0-4.4	**2-Fluorobiphenyl**	321-60-8	126 %	30-115 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259

All results to be provided in MRED format
email address: julian_dobos@urscorp.com

TURNAROUND DETAILS: Standard - 5 days; Non standard

COC SEQUENCE NUMBER: 1 2 3 4 (please circle 1/1)

URS PROJECT NO:	42626228.52000	PO NO:	
URS PM:	Rob Ully	SITE :	GLNG SANTOS
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)

RELINQUISHED BY: DATE: TIME:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

FOR LABORATORY USE ONLY

Custody Seal ? Y N NA

Free ice / frozen icebricks present upon receipt? Y N

Random Sample Temperature on Receipt 10.4 °C

RECEIVED BY: [signature] DATE: 6/8 TIME: 1120

RELINQUISHED BY: DATE: TIME:

RECEIVED BY: DATE:

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

SAMPLE DETAILS / CONTAINER TYPE & PRESERVATIVE

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: ~~40ml VOA Vial (G) HCL~~ TOC VIAL	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's (specified 13)	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH25 2.4-3.0	04/08/08	S	1	1										✓	✓	✓	✓	✓	✓	✓		✓					
2	BH25 3.0-3.8	"	"	1	1											✓					✓							✓
3	BH25 3.8-4.4	"	"	1	2										✓	✓					✓		✓					✓
4	BH25 4.4-5.0	"	"	1	2										✓	✓					✓		✓					✓
5	BH25 5.4-5.8	"	"	2	1										✓	✓					✓		✓					✓
6	BH25 5.8-6.2	"	"	2	1										✓	✓					✓		✓					✓
7	QC03	"	"	1	1										✓	✓	✓	✓	✓	✓	✓		✓					
8	QC04	"	"	1	1										✓	✓	✓	✓	✓	✓	✓		✓					
9	QC05	"	L			2	1	1								✓		✓	✓	✓	✓							✓
TOTAL																												

Environmental Division
Brisbane
Work Order
EB0810480

Telephone : +61-7-3243 7222

URS Australia Pty. Ltd.

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0810480**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS ADDRESS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: brisbane@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 07 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 06-AUG-2008	Issue Date	: 07-AUG-2008 10:41
Client Requested Due Date	: 14-AUG-2008	Scheduled Reporting Date	: **14-AUG-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 10.4 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 9
Sercurity Seal	: Intact.	No. of samples analysed	: 9

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins
EB0810480-001	04-AUG-2008 15:00	BH25 2.4-3.0	✓	✓	✓	✓	✓	✓	✓	✓
EB0810480-002	04-AUG-2008 15:00	BH25 3.0-3.8	✓			✓			✓	
EB0810480-003	04-AUG-2008 15:00	BH25 3.8-4.4	✓	✓		✓			✓	
EB0810480-004	04-AUG-2008 15:00	BH25 4.4-5.0	✓	✓		✓			✓	
EB0810480-005	04-AUG-2008 15:00	BH25 5.4-5.8	✓	✓		✓			✓	
EB0810480-006	04-AUG-2008 15:00	BH25 5.8-6.2	✓	✓		✓			✓	
EB0810480-007	04-AUG-2008 15:00	QC03	✓	✓	✓	✓	✓	✓	✓	✓
EB0810480-008	04-AUG-2008 15:00	QC04	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - S-02 8 Metals (incl. Digestion)
EB0810480-001	04-AUG-2008 15:00	BH25 2.4-3.0	✓
EB0810480-002	04-AUG-2008 15:00	BH25 3.0-3.8	✓
EB0810480-003	04-AUG-2008 15:00	BH25 3.8-4.4	✓
EB0810480-004	04-AUG-2008 15:00	BH25 4.4-5.0	✓
EB0810480-005	04-AUG-2008 15:00	BH25 5.4-5.8	✓
EB0810480-006	04-AUG-2008 15:00	BH25 5.8-6.2	✓
EB0810480-007	04-AUG-2008 15:00	QC03	✓
EB0810480-008	04-AUG-2008 15:00	QC04	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0810480-009	04-AUG-2008 15:00	QC05	✓	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0810480**	Page	: 1 of 12
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 06-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 9
Quote number	: EN/001/08	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **It has been noted that the duplicate for sample BH25 3.0-3.8 has failed for Mn & Fe. ALS is unable to repeat the analysis as the samples have been disposed.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC05 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **TBT: Quality Control data including Laboratory Control Spike and the Matrix Spike show failing high recovery for soil samples. As all associated samples show results less than LOR this has been deemed acceptable.**

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC05	----	----	----	----
				Client sampling date / time	04-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0810480-009	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0064**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		**0.002**	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.005**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		**6**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<4	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<2.2	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<2.2	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<2.2	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<2.2	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<2.2	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<2.2	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<2.2	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<2.2	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<2.2	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L		<2.2	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC05	----	----	----	----
				Client sampling date / time	04-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0810480-009	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
EP090: Organotin Compounds (Soluble)									
Tributyltin	56573-85-4	2	ngSn/L		<2	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**85.2**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**95.2**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**96.9**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**35.8**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**84.5**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**82.2**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**87.2**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**77.9**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**91.6**	----	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**23.4**	----	----	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH25 2.4-3.0	BH25 3.0-3.8	BH25 3.8-4.4	BH25 4.4-5.0	BH25 5.4-5.8
Client sampling date / time				04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00
				EB0810480-001	EB0810480-002	EB0810480-003	EB0810480-004	EB0810480-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.3	----	8.8	8.4	8.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.07	----	0.52	0.88	0.70
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	43	----	324	551	436
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	17.8	----	8.72	4.24	4.24
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3560	----	1740	847	846
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	5.71	----	2.79	1.36	1.36
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	----	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	----	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	24.3	9.2	30.8	36.0	32.8
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	1390	1180	----	12400	9880
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	31	8	11	10	8
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	4	4	14	19	16
Copper	7440-50-8	5	mg/kg	<5	<5	11	20	16
Iron	7439-89-6	50	mg/kg	10700	6910	----	22300	19200
Lead	7439-92-1	5	mg/kg	<5	<5	6	9	8
Manganese	7439-96-5	5	mg/kg	530	359	----	566	241
Nickel	7440-02-0	2	mg/kg	4	2	8	10	8
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	<5	<5	23	35	29
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.22	0.13	0.57	0.70	0.46

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH25 2.4-3.0	BH25 3.0-3.8	BH25 3.8-4.4	BH25 4.4-5.0	BH25 5.4-5.8
				Client sampling date / time: 04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00
				EB0810480-001	EB0810480-002	EB0810480-003	EB0810480-004	EB0810480-005
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	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	----	----	----	----
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**50.7**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**59.6**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH25 2.4-3.0	BH25 3.0-3.8	BH25 3.8-4.4	BH25 4.4-5.0	BH25 5.4-5.8
				Client sampling date / time	04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00
Compound	CAS Number	LOR	Unit		EB0810480-001	EB0810480-002	EB0810480-003	EB0810480-004	EB0810480-005
EP068T: Organophosphorus Pesticide Surrogate - Continued									
DEF	78-48-8	0.1	%		68.2	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		97.4	91.8	60.9	85.4	97.1
2-Chlorophenol-D4	93951-73-6	0.1	%		96.0	90.9	58.9	85.2	98.3
2.4.6-Tribromophenol	118-79-6	0.1	%		92.1	90.5	49.3	73.9	90.8
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		94.9	84.5	65.0	80.1	90.9
Anthracene-d10	1719-06-8	0.1	%		96.6	92.2	51.7	80.0	93.2
4-Terphenyl-d14	1718-51-0	0.1	%		102	90.2	61.8	92.9	109
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		128	----	----	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH25 5.8-6.2	QC03	QC04	----	----
				Client sampling date / time: 04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00	----	----
				EB0810480-006	EB0810480-007	EB0810480-008	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**8.7**	**9.4**	**9.5**	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	**0.38**	**0.08**	**0.04**	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**240**	**50**	**29**	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**9.21**	**12.3**	**18.2**	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**1840**	**2460**	**3630**	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**2.95**	**3.94**	**5.82**	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**24.6**	**21.8**	**20.1**	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	**1550**	**1550**	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	----	----
Arsenic	7440-38-2	5	mg/kg	**6**	**8**	**6**	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	**9**	**4**	**3**	----	----
Copper	7440-50-8	5	mg/kg	**10**	<5	<5	----	----
Iron	7439-89-6	50	mg/kg	----	**7760**	**5980**	----	----
Lead	7439-92-1	5	mg/kg	**5**	<5	<5	----	----
Manganese	7439-96-5	5	mg/kg	----	**892**	**531**	----	----
Nickel	7440-02-0	2	mg/kg	**5**	**3**	**2**	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	<2	----	----
Zinc	7440-66-6	5	mg/kg	**13**	<5	<5	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.47**	**0.17**	**0.09**	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH25 5.8-6.2	QC03	QC04	----	----
				Client sampling date / time	04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00	----	----
Compound	CAS Number	LOR	Unit		EB0810480-006	EB0810480-007	EB0810480-008	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		----	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		----	<0.05	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	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	----	----
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	----	----
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	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<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	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		----	<0.5	<0.5	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	**52.4**	**53.1**	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		----	**61.8**	**61.9**	----	----
EP068T: Organophosphorus Pesticide Surrogate									

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH25 5.8-6.2	QC03	QC04	----	----
				Client sampling date / time	04-AUG-2008 15:00	04-AUG-2008 15:00	04-AUG-2008 15:00	----	----
Compound	CAS Number	LOR	Unit		EB0810480-006	EB0810480-007	EB0810480-008	----	----
EP068T: Organophosphorus Pesticide Surrogate - Continued									
DEF	78-48-8	0.1	%		----	68.5	68.1	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		93.0	94.8	96.0	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		94.8	97.8	93.4	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		83.4	89.7	86.7	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		87.1	89.1	89.6	----	----
Anthracene-d10	1719-06-8	0.1	%		85.2	90.4	91.9	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		98.7	105	107	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		----	126	103	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141
EP090S: Organotin Surrogate			
Tripropyltin	----	10	108

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 06-Aug-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810480	BH25 2.4-3.0	001	12%	81%	NA	NA
EB0810480	BH25 3.8-4.4	003	11%	50%	NA	NA
EB0810480	BH25 4.4-5.0	004	0%	9%	NA	NA
EB0810480	BH25 5.4-5.8	005	3%	31%	NA	NA
EB0810480	BH25 5.8-6.2	006	8%	49%	NA	NA
EB0810480	QC03	007	10%	84%	NA	NA
EB0810480	QC04	008	18%	76%	NA	NA

Remarks :
Test Procedure : AS1289.3.6.1
Prepared by : Checked by

Certificate of Analysis

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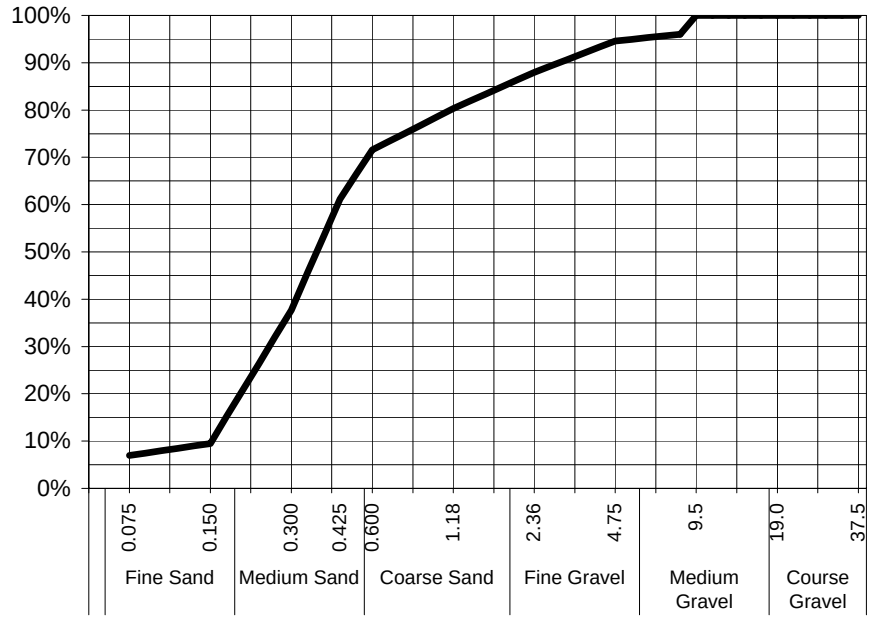
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	14-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810480-001 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH25 2.4-3.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	95%
2.36	88%
1.18	80%
0.600	72%
0.425	61%
0.300	38%
0.150	9%
0.075	7%

Samples analysed as received.

Sample Comments:

Analysed: 8-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Sand, gravel & shell

Test Method: AS1289.3.6.1

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

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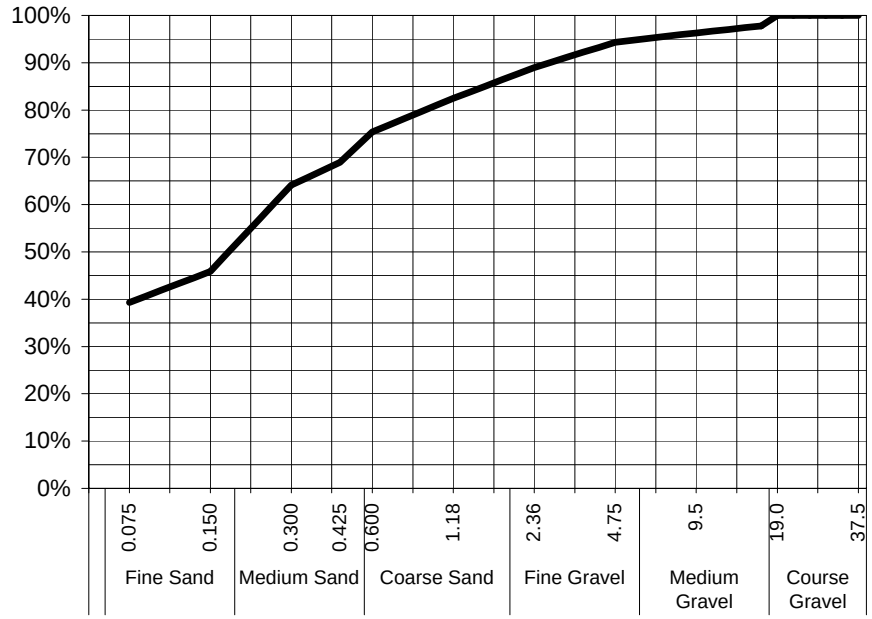
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	14-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810480-003 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH25 3.8-4.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	96%
4.75	94%
2.36	89%
1.18	82%
0.600	75%
0.425	69%
0.300	64%
0.150	46%
0.075	39%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Grey gritty clay

Test Method: AS1289.3.6.1

Analysed: 8-Aug-08

Limit of Reporting: 1%

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

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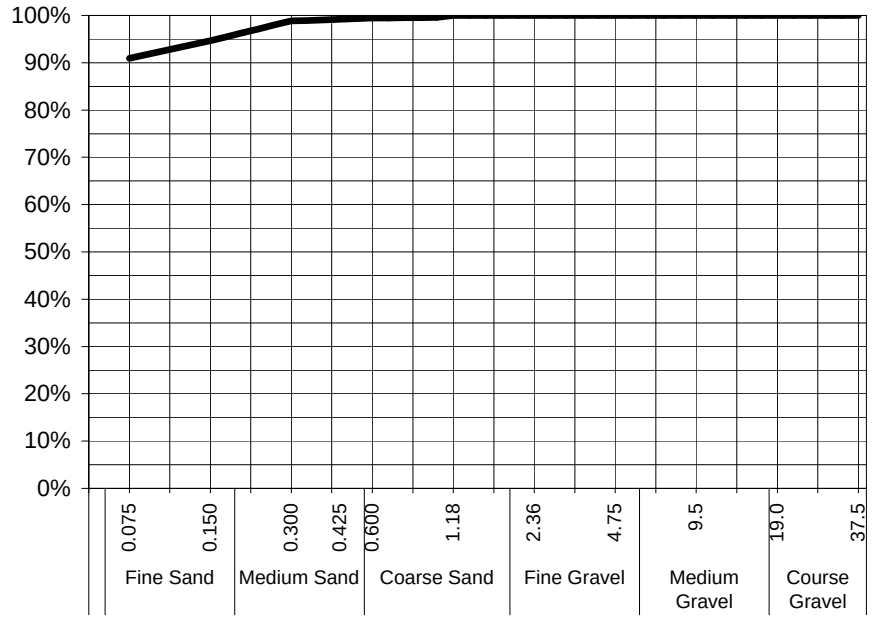
CLIENT:	Rob Ully	**DATE REPORTED:**	14-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810480-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH25 4.4-5.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	95%
0.075	91%

Samples analysed as received.

Sample Comments:

Analysed: 8-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay paste

Test Method: AS1289.3.6.1

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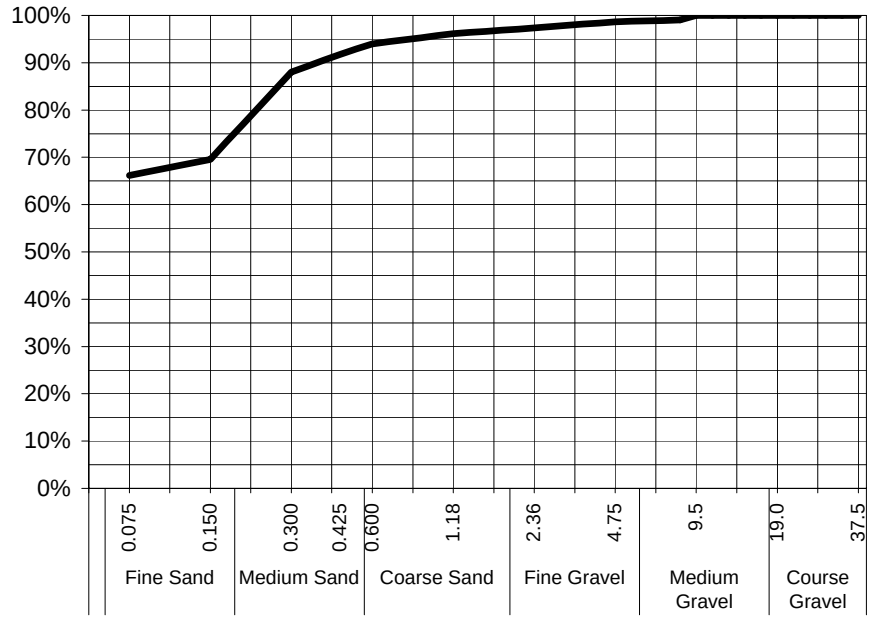
CLIENT:	Rob Ully	**DATE REPORTED:**	14-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810480-005 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH25 5.4-5.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	97%
1.18	96%
0.600	94%
0.425	92%
0.300	88%
0.150	70%
0.075	66%

Samples analysed as received.

Sample Comments:

Analysed: 8-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay paste

Test Method: AS1289.3.6.1

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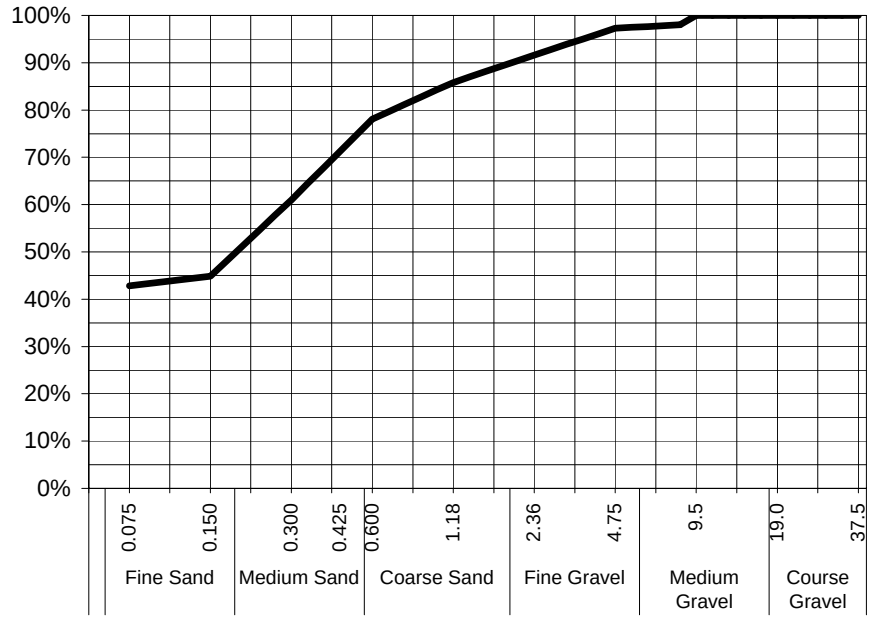
CLIENT:	Rob Ully	**DATE REPORTED:**	14-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810480-006 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH25 5.8-6.2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	97%
2.36	92%
1.18	86%
0.600	78%
0.425	71%
0.300	61%
0.150	45%
0.075	43%

Samples analysed as received.

Sample Comments:

Analysed: 8-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay paste

Test Method: AS1289.3.6.1

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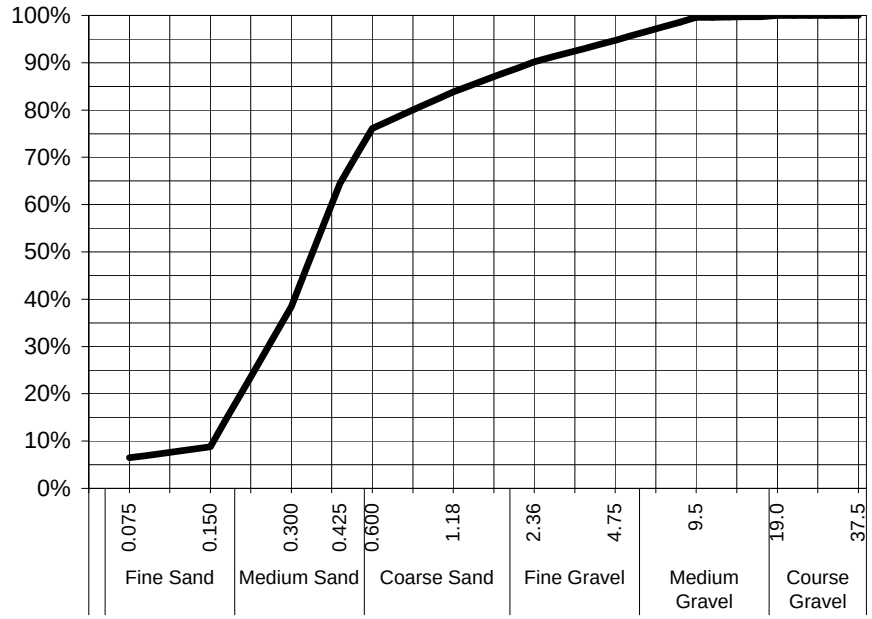
CLIENT:	Rob Ully	**DATE REPORTED:**	14-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810480-007 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC03

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	95%
2.36	90%
1.18	84%
0.600	76%
0.425	65%
0.300	38%
0.150	9%
0.075	6%

Samples analysed as received.

Sample Comments:

Analysed: 8-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Sand, gravel & shell

Test Method: AS1289.3.6.1

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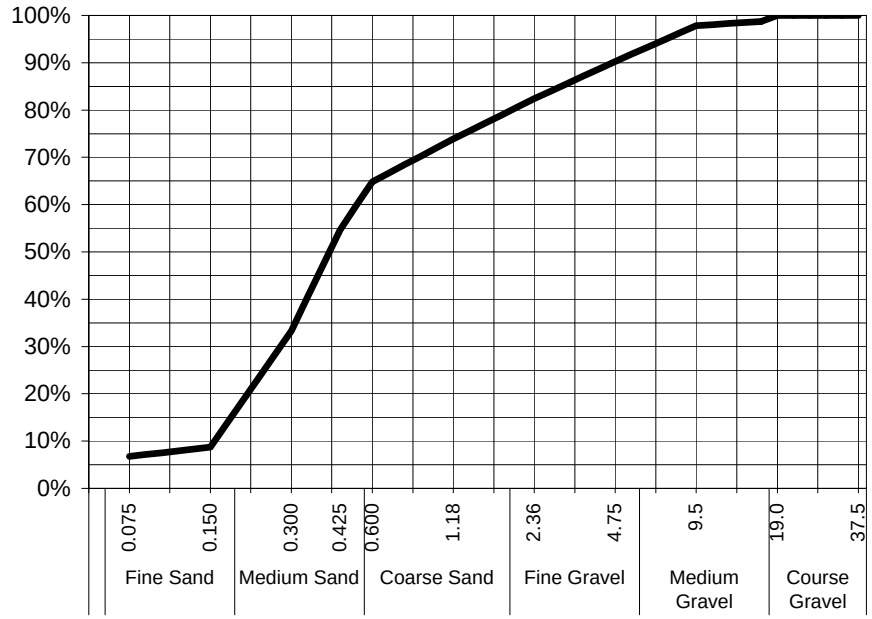
CLIENT:	Rob Ully	**DATE REPORTED:**	14-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810480-008 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC04

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	98%
4.75	90%
2.36	82%
1.18	74%
0.600	65%
0.425	55%
0.300	33%
0.150	9%
0.075	7%

Samples analysed as received.

Sample Comments:

Analysed: 8-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Sand, gravel & shell

Test Method: AS1289.3.6.1

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TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	06-Aug-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810480	BH25 2.4-3.0	001	12%	81%	NA	NA
EB0810480	BH25 3.8-4.4	003	11%	50%	NA	NA
EB0810480	BH25 4.4-5.0	004	0%	9%	NA	NA
EB0810480	BH25 5.4-5.8	005	3%	31%	NA	NA
EB0810480	BH25 5.8-6.2	006	8%	49%	NA	NA
EB0810480	QC03	007	10%	84%	NA	NA
EB0810480	QC04	008	18%	76%	NA	NA

Remarks :

Test Procedure : AS1289.3.6.1

Prepared by : DB Checked by PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0810480**	Page	: 1 of 13
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 06-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 9
Quote number	: EN/001/08	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 728026)									
EB0810480-001	BH25 2.4-3.0	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.3	9.3	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 728026)									
EB0810480-001	BH25 2.4-3.0	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.07	0.08	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	43	48	10.1	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 728026)									
EB0810480-001	BH25 2.4-3.0	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	17.8	18.0	0.8	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	5.71	5.75	0.8	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3560	3590	0.8	0% - 20%
EA055: Moisture Content (QC Lot: 726408)									
EB0810431-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0810480-001	BH25 2.4-3.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	24.3	22.8	6.7	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 724707)									
EB0810457-007	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810480-002	BH25 3.0-3.8	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	2	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	5	38.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	359	158	# 77.9	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 724707) - continued									
EB0810480-002	BH25 3.0-3.8	EG005T: Aluminium	7429-90-5	50	mg/kg	1180	1190	0.0	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	6910	5580	# 21.2	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 724708)									
EB0810457-007	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810480-002	BH25 3.0-3.8	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 725237)									
EB0810480-001	BH25 2.4-3.0	EP005: Total Organic Carbon	----	0.02	%	0.22	0.24	8.7	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 727532)									
EB0810480-001	BH25 2.4-3.0	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 727531)									
EB0810480-001	BH25 2.4-3.0	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EB0810605-002	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 725846)									
EB0810480-001	BH25 2.4-3.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 725846) - continued									
EB0810480-001	BH25 2.4-3.0	EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0810480-008	QC04	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 726193)									
EB0810480-001	BH25 2.4-3.0	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 727978)									
EB0810458-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810488-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 727978) - continued									
EB0810488-001	Anonymous	EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 727979)									
EB0810458-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 728859)									
EB0810446-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810460-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 724866)									
EB0810421-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810446-004	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (Soluble) (QC Lot: 725635)									
EB0810557-001	Anonymous	EP090S: Tributyltin	56573-85-4	2	ngSn/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 728026)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 728026)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 728026)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 724707)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	96.7	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	94.0	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	95.4	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	98.2	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	93.4	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	97.0	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	94.4	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 724708)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	95.8	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 725237)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	99.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 727532)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	83.5	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 727531)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	72.6	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	70.5	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	71.0	60.8	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 727531) - continued								
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	70.1	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	72.7	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	71.1	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	80.1	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	74.2	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	83.5	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	72.0	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 725846)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	91.5	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	97.2	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	92.8	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	94.0	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	98.4	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	88.9	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	95.9	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	95.1	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	98.8	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	84.2	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	93.8	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	92.6	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	88.9	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	100	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	98.0	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	96.0	52	128
EP090: Organotin Compounds (QCLot: 726193)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	# 233	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 727978)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	99.0	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	# 118	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	103	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	118	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	99.6	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	97.9	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	107	81.5	117

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 727978) - continued								
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	117	81	127
EG020T: Total Metals by ICP-MS (QCLot: 727979)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 84.0	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 728859)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	111	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 724866)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	105	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 725512)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	89.3	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 725511)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	99.3	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	105	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	106	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	99.0	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	108	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	104	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	108	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	104	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	126	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	102	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 725513)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	89.4	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	99.9	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	93.7	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	102	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	106	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	83.3	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	91.4	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	91.0	51	117
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Recovery Limits (%)
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 725513) - continued								
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	95.5	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	80.6	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	101	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	102	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	100	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	109	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	109	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	99.1	42	126
		1.0	µg/L	<1.0	----	----	----	----
EP090: Organotin Compounds (Soluble) (QCLot: 725635)								
EP090S: Tributyltin	56573-85-4	2	ngSn/L	<2	1470 ngSn/L	30.6	29	100

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 724707)							
EB0810457-008	Anonymous	EG005T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 724708)							
EB0810457-008	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 727532)							
EB0810480-007	QC03	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	71.0	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 727531)							
EB0810480-007	QC03	EP068: gamma-BHC	58-89-9	0.25 mg/kg	70.8	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	85.8	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	77.9	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	70.4	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 725846)							
EB0810480-002	BH25 3.0-3.8	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	84.5	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	90.1	70	130
EP090: Organotin Compounds (QCLot: 726193)							
EB0810480-007	QC03	EP090: Tributyltin	56573-85-4	25 µgSn/kg	# 151	20	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 727978)							
EB0810459-001	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 728859)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG035T: Total Recoverable Mercury by FIMS (QCLot: 728859) - continued							
EB0810446-001	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (Soluble) (QCLot: 725635)							
EB0810557-001	Anonymous	EP090S: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0810480**	Page	: 1 of 10
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 06-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 9
Quote number	: EN/001/08	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
Pulp Bag BH25 2.4-3.0, BH25 3.8-4.4, BH25 4.4-5.0, BH25 5.4-5.8, BH25 5.8-6.2, QC03, QC04	**04-AUG-2008**	**06-AUG-2008**	---	----	**12-AUG-2008**	10-NOV-2008	✓
EA033-B: Potential Acidity							
Pulp Bag BH25 2.4-3.0, BH25 3.8-4.4, BH25 4.4-5.0, BH25 5.4-5.8, BH25 5.8-6.2, QC03, QC04	**04-AUG-2008**	**06-AUG-2008**	---	----	**12-AUG-2008**	10-NOV-2008	✓
EA033-C: Acid Neutralising Capacity							
Pulp Bag BH25 2.4-3.0, BH25 3.8-4.4, BH25 4.4-5.0, BH25 5.4-5.8, BH25 5.8-6.2, QC03, QC04	**04-AUG-2008**	**06-AUG-2008**	---	----	**12-AUG-2008**	10-NOV-2008	✓
EA033-D: Retained Acidity							
Pulp Bag BH25 2.4-3.0, BH25 3.8-4.4, BH25 4.4-5.0, BH25 5.4-5.8, BH25 5.8-6.2, QC03, QC04	**04-AUG-2008**	**06-AUG-2008**	---	----	**12-AUG-2008**	10-NOV-2008	✓
EA033-E: Acid Base Accounting							
Pulp Bag BH25 2.4-3.0, BH25 3.8-4.4, BH25 4.4-5.0, BH25 5.4-5.8, BH25 5.8-6.2, QC03, QC04	**04-AUG-2008**	**06-AUG-2008**	---	----	**12-AUG-2008**	10-NOV-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH25 2.4-3.0, BH25 3.0-3.8, BH25 3.8-4.4, BH25 4.4-5.0, BH25 5.4-5.8, BH25 5.8-6.2, QC03, QC04	**04-AUG-2008**	**----**	----	----	**08-AUG-2008**	11-AUG-2008	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH25 2.4-3.0, BH25 3.0-3.8, BH25 3.8-4.4, BH25 4.4-5.0, BH25 5.4-5.8, BH25 5.8-6.2, QC03, QC04	**04-AUG-2008**	**07-AUG-2008**	31-JAN-2009	✓	**08-AUG-2008**	31-JAN-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH25 2.4-3.0, BH25 3.0-3.8, BH25 3.8-4.4, BH25 4.4-5.0, BH25 5.4-5.8, BH25 5.8-6.2, QC03, QC04	**04-AUG-2008**	**07-AUG-2008**	31-JAN-2009	✓	**12-AUG-2008**	01-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH25 2.4-3.0, BH25 3.0-3.8, BH25 3.8-4.4, BH25 4.4-5.0, BH25 5.4-5.8, BH25 5.8-6.2, QC03, QC04	**04-AUG-2008**	**08-AUG-2008**	---	----	**08-AUG-2008**	01-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
BH25 2.4-3.0, QC03, QC04	**04-AUG-2008**	**11-AUG-2008**	18-AUG-2008	✓	**12-AUG-2008**	20-SEP-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH25 2.4-3.0, QC03, QC04	**04-AUG-2008**	**11-AUG-2008**	18-AUG-2008	✓	**12-AUG-2008**	20-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH25 2.4-3.0, BH25 3.0-3.8, BH25 3.8-4.4, BH25 4.4-5.0, BH25 5.4-5.8, BH25 5.8-6.2, QC03, QC04	**04-AUG-2008**	**08-AUG-2008**	18-AUG-2008	✓	**11-AUG-2008**	17-SEP-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH25 2.4-3.0, QC03, QC04	**04-AUG-2008**	**08-AUG-2008**	18-AUG-2008	✓	**12-AUG-2008**	17-SEP-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC05	**04-AUG-2008**	**12-AUG-2008**	31-JAN-2009	✓	**12-AUG-2008**	31-JAN-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC05	**04-AUG-2008**	**----**	----	----	**12-AUG-2008**	01-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC05	**04-AUG-2008**	**----**	----	----	**07-AUG-2008**	01-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC05	**04-AUG-2008**	**08-AUG-2008**	11-AUG-2008	✓	**08-AUG-2008**	17-SEP-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC05	**04-AUG-2008**	**08-AUG-2008**	11-AUG-2008	✓	**08-AUG-2008**	17-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC05	**04-AUG-2008**	**08-AUG-2008**	11-AUG-2008	✓	**08-AUG-2008**	17-SEP-2008	✓
EP090: Organotin Compounds (Soluble)							
Amber Glass Bottle - Unpreserved							
QC05	**04-AUG-2008**	**08-AUG-2008**	03-OCT-2008	✓	**08-AUG-2008**	17-SEP-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	1	7	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	3	**33.3**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	11	**9.1**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	**9.1**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Organotin Compounds (Soluble)	EP090S	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Compounds (Soluble)	EP090S	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organotin Compounds (Soluble)	EP090S	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Compounds (Soluble)	EP090S	1	3	**33.3**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 1995
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Organotin Compounds (Soluble)	EP090S	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Organotin Sample Preparation	ORG34	WATER	In-house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0810480-002	BH25 3.0-3.8	**Iron**	7439-89-6	21.2 %	0-20%	**RPD exceeds LOR based limits**
EG005T: Total Metals by ICP-AES	EB0810480-002	BH25 3.0-3.8	**Manganese**	7439-96-5	77.9 %	0-20%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EP090: Organotin Compounds	818129-002	----	**Tributyltin**	56573-85-4	233 %	28-129%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP090: Organotin Compounds	EB0810480-007	QC03	**Tributyltin**	56573-85-4	151 %	20-130%	**Recovery greater than upper control limit**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	820352-002	----	**Arsenic**	7440-38-2	118 %	75.7-110%	**Recovery greater than upper control limit**
EG020T: Total Metals by ICP-MS	820352-002	----	**Silver**	7440-22-4	84.0 %	120-123%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259

All results to be provided in MRED format
email address: julian_dobos@urscorp.com

TURNAROUND DETAILS: Standard - 5 days; Non standard

COC SEQUENCE NUMBER: (1) 2 3 4 — please circle 1

FOR LABORATORY USE ONLY
Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: Christian	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 7-8-8 TIME: 13:15	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

SAMPLE DETAILS / CONTAINER TYPE & PRESERVATIVE

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL TOC USAC	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH25 9.45-9.75	05/08/08	S	1											✓	✓					✓		✓					✓
2	BH25 9.75-9.9	"	S	1											✓	✓					✓		✓					✓
3	BH25 11.4-12.3	"	S	1											✓	✓					✓		✓					✓
4	QC06	"	L			2	1	1								✓		✓	✓	✓	✓							✓
TOTAL																												

Environmental Division
Brisbane
Work Order
EB0810571

Telephone : +61-7-3243 7222

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0810571**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 2
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 07-AUG-2008	Issue Date	: 07-AUG-2008 17:33
Client Requested Due Date	: 15-AUG-2008	Scheduled Reporting Date	: **15-AUG-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.8 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 4
Sercurity Seal	: Intact.	No. of samples analysed	: 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-02 8 Metals (incl. Digestion)
EB0810571-001	05-AUG-2008 15:00	BH25 9.45-9.75	✓	✓	✓	✓	✓
EB0810571-002	05-AUG-2008 15:00	BH25 9.75-9.9	✓	✓	✓	✓	✓
EB0810571-003	05-AUG-2008 15:00	BH25 11.9-12.3	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0810571-004	05-AUG-2008 15:00	QC06	✓	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0810571**	Page	: 1 of 8
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 07-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 4
Quote number	: EN/001/08	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Phillip Kennedy	2IC Environmental Laboratory	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EG005T (Totall Metals) Sample EB0810571-002 (BH25 9.785-9.9) shows poor matrix spike recovery due to matrix interference. Confirmed by visual inspection.**
- **It has been noted that the duplicate for sample BH25 9.45-9.75 has failed for Mn & Fe. ALS is unable to repeat the analysis as the samples have been disposed.**
- **LCS recovery for EG020T (Total Metals) fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC06 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Pesticides: Results for Monocrotophos should be scrutinised as QC data indicates abnormally low recovery.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC06	----	----	----	----
				Client sampling date / time	05-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0810571-004	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0007**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<4	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<2.2	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<2.2	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<2.2	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<2.2	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<2.2	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<2.2	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<2.2	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<2.2	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<2.2	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L		<2.2	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC06	----	----	----	----
				Client sampling date / time	05-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0810571-004	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
EP090: Organotin Compounds (Soluble)									
Tributyltin	56573-85-4	2	ngSn/L		<2	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**60.4**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**65.8**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**87.2**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**30.1**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**70.2**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**83.0**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**67.3**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**85.5**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**86.1**	----	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**18.5**	----	----	----	----

Analytical Results

Sub-Matrix: SOLID			Client sample ID	BH25 9.45-9.75	BH25 9.75-9.9	BH25 11.9-12.3	----	----
			Client sampling date / time	05-AUG-2008 15:00	05-AUG-2008 15:00	05-AUG-2008 15:00	----	----
Compound	CAS Number	LOR	Unit	EB0810571-001	EB0810571-002	EB0810571-003	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.4	8.7	8.0	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.06	<0.02	<0.02	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	38	<10	<10	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.33	0.76	0.58	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	265	152	115	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.42	0.24	0.18	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	16.3	13.6	9.0	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	1200	----	800	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	----	----
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	32	7	5	----	----
Copper	7440-50-8	5	mg/kg	39	7	6	----	----
Iron	7439-89-6	50	mg/kg	20500	----	1070	----	----
Lead	7439-92-1	5	mg/kg	<5	<5	<5	----	----
Manganese	7439-96-5	5	mg/kg	240	----	<5	----	----
Nickel	7440-02-0	2	mg/kg	21	4	<2	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	<2	----	----
Zinc	7440-66-6	5	mg/kg	14	<5	<5	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.12	0.07	0.02	----	----

Analytical Results

Sub-Matrix: SOLID				Client sample ID	BH25 9.45-9.75	BH25 9.75-9.9	BH25 11.9-12.3	----	----
				Client sampling date / time	05-AUG-2008 15:00	05-AUG-2008 15:00	05-AUG-2008 15:00	----	----
Compound	CAS Number	LOR	Unit		EB0810571-001	EB0810571-002	EB0810571-003	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<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	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**80.8**	**76.7**	**71.1**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**84.5**	**85.8**	**81.1**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**82.0**	**77.8**	**68.5**	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**96.2**	**96.6**	**91.6**	----	----
Anthracene-d10	1719-06-8	0.1	%		**94.1**	**94.4**	**82.1**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**89.6**	**91.3**	**87.0**	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141
EP090S: Organotin Surrogate			
Tripropyltin	----	10	108

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0810571**	Page	: 1 of 9
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 07-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 4
Quote number	: EN/001/08	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Phillip Kennedy	ZIC Environmental Laboratory	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 731650)									
EB0810571-001	BH25 9.45-9.75	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.4	9.5	1.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 731650)									
EB0810571-001	BH25 9.45-9.75	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.06	0.05	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	38	33	12.8	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 731650)									
EB0810571-001	BH25 9.45-9.75	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.33	1.29	2.8	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.42	0.41	2.8	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	265	258	2.8	0% - 20%
EA055: Moisture Content (QC Lot: 727147)									
EB0810523-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0810578-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 727429)									
EB0810571-001	BH25 9.45-9.75	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	32	21	40.2	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	21	15	30.6	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	39	26	39.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	240	132	# 58.0	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	14	23	50.9	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	1200	1320	9.2	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	20500	15700	# 26.5	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 727430)									
EB0810571-001	BH25 9.45-9.75	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 726306)									
EB0810571-001	BH25 9.45-9.75	EP005: Total Organic Carbon	----	0.02	%	0.12	0.13	8.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 725846)									
EB0810480-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 725846) - continued									
EB0810480-001	Anonymous	EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810480-008	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 727993)									
EB0810525-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 727993) - continued									
EB0810525-001	Anonymous	EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810575-007	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 727995)									
EB0810576-009	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810582-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 729126)									
EB0810466-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810562-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 727324)									
EB0810550-004	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810601-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (Soluble) (QC Lot: 725635)									
EB0810557-001	Anonymous	EP090S: Tributyltin	56573-85-4	2	ngSn/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 731650)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 731650)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 731650)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 727429)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	98.4	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	96.4	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	103	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	104	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	102	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	106	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	104	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 727430)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	103	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 726306)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	99.8	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 725846)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	91.5	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	97.2	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	92.8	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	94.0	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	98.4	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	88.9	65	110

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 725846) - continued								
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	95.9	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	95.1	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	98.8	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	84.2	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	93.8	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	92.6	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	88.9	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	100	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	98.0	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	96.0	52	128

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 727993)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	109	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	# 113	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	# 114	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	120	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	114	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	112	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	113	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	115	81	127
EG020T: Total Metals by ICP-MS (QCLot: 727995)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 81.8	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 729126)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	101	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 727324)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	92.5	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 725791)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	78.6	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 725789)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	100	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	86.0	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	87.4	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	84.2	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	94.2	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	77.5	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	109	54.3	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 725789) - continued								
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	96.5	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	71.1	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	94.7	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 725787)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	57.5	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	64.9	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	57.4	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	63.4	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	67.7	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	50.5	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	53.9	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	55.1	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	60.0	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	# 44.4	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	60.9	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	64.5	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	61.1	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	66.0	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	64.6	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	60.3	42	126
		1.0	µg/L	<1.0	----	----	----	----
EP090: Organotin Compounds (Soluble) (QCLot: 725635)								
EP090S: Tributyltin	56573-85-4	2	ngSn/L	<2	1470 ngSn/L	30.6	29	100

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 727429)							
EB0810571-002	BH25 9.75-9.9	EG005T: Arsenic	7440-38-2	50 mg/kg	98.0	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	95.0	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	125	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	# 137	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	99.8	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	118	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	# 132	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 727430)							
EB0810571-002	BH25 9.75-9.9	EG035T: Mercury	7439-97-6	5.0 mg/kg	93.0	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 725846)							
EB0810480-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 727993)							
EB0810525-001	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 729126)							
EB0810466-001	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (Soluble) (QCLot: 725635)							
EB0810557-001	Anonymous	EP090S: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0810571**	Page	: 1 of 8
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 07-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 4
Quote number	: EN/001/08	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
Pulp Bag BH25 9.45-9.75, BH25 9.75-9.9, BH25 11.9-12.3	**05-AUG-2008**	**07-AUG-2008**	---	----	**15-AUG-2008**	13-NOV-2008	✓
EA033-B: Potential Acidity							
Pulp Bag BH25 9.45-9.75, BH25 9.75-9.9, BH25 11.9-12.3	**05-AUG-2008**	**07-AUG-2008**	---	----	**15-AUG-2008**	13-NOV-2008	✓
EA033-C: Acid Neutralising Capacity							
Pulp Bag BH25 9.45-9.75, BH25 9.75-9.9, BH25 11.9-12.3	**05-AUG-2008**	**07-AUG-2008**	---	----	**15-AUG-2008**	13-NOV-2008	✓
EA033-D: Retained Acidity							
Pulp Bag BH25 9.45-9.75, BH25 9.75-9.9, BH25 11.9-12.3	**05-AUG-2008**	**07-AUG-2008**	---	----	**15-AUG-2008**	13-NOV-2008	✓
EA033-E: Acid Base Accounting							
Pulp Bag BH25 9.45-9.75, BH25 9.75-9.9, BH25 11.9-12.3	**05-AUG-2008**	**07-AUG-2008**	---	----	**15-AUG-2008**	13-NOV-2008	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved BH25 9.45-9.75, BH25 9.75-9.9, BH25 11.9-12.3	**05-AUG-2008**	**----**	----	----	**11-AUG-2008**	12-AUG-2008	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved BH25 9.45-9.75, BH25 9.75-9.9, BH25 11.9-12.3	**05-AUG-2008**	**11-AUG-2008**	01-FEB-2009	✓	**11-AUG-2008**	01-FEB-2009	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH25 9.45-9.75, BH25 9.75-9.9, BH25 11.9-12.3	**05-AUG-2008**	**11-AUG-2008**	01-FEB-2009	✓	**14-AUG-2008**	02-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH25 9.45-9.75, BH25 9.75-9.9, BH25 11.9-12.3	**05-AUG-2008**	**11-AUG-2008**	---	----	**11-AUG-2008**	02-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH25 9.45-9.75, BH25 9.75-9.9, BH25 11.9-12.3	**05-AUG-2008**	**08-AUG-2008**	19-AUG-2008	✓	**11-AUG-2008**	17-SEP-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC06	**05-AUG-2008**	**12-AUG-2008**	01-FEB-2009	✓	**12-AUG-2008**	01-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC06	**05-AUG-2008**	**----**	----	----	**12-AUG-2008**	02-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC06	**05-AUG-2008**	**----**	----	----	**11-AUG-2008**	02-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC06	**05-AUG-2008**	**08-AUG-2008**	12-AUG-2008	✓	**11-AUG-2008**	17-SEP-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC06	**05-AUG-2008**	**08-AUG-2008**	12-AUG-2008	✓	**11-AUG-2008**	17-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC06	**05-AUG-2008**	**08-AUG-2008**	12-AUG-2008	✓	**11-AUG-2008**	17-SEP-2008	✓
EP090: Organotin Compounds (Soluble)							
Amber Glass Bottle - Unpreserved							
QC06	**05-AUG-2008**	**08-AUG-2008**	04-OCT-2008	✓	**08-AUG-2008**	17-SEP-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	1	3	33.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	13	15.4	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	11	18.2	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	3	33.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	33.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	11	9.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	11	9.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	11	9.1	5.0	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	5.0	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	3	33.3	5.0	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Organotin Compounds (Soluble)	EP090S	1	3	33.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Compounds (Soluble)	EP090S	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organotin Compounds (Soluble)	EP090S	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Compounds (Soluble)	EP090S	1	3	**33.3**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Analytical Methods	Method	Matrix	Method Descriptions
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Organotin Compounds (Soluble)	EP090S	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Organotin Sample Preparation	ORG34	WATER	In-house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0810571-001	BH25 9.45-9.75	**Iron**	7439-89-6	26.5 %	0-20%	**RPD exceeds LOR based limits**
EG005T: Total Metals by ICP-AES	EB0810571-001	BH25 9.45-9.75	**Manganese**	7439-96-5	58.0 %	0-20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB0810571-002	BH25 9.75-9.9	**Copper**	7440-50-8	137 %	70-130%	**Recovery greater than upper data quality objective**
EG005T: Total Metals by ICP-AES	EB0810571-002	BH25 9.75-9.9	**Zinc**	7440-66-6	132 %	70-130%	**Recovery greater than upper data quality objective**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	820359-002	----	**Arsenic**	7440-38-2	113 %	75.7-110%	**Recovery greater than upper control limit**
EG020T: Total Metals by ICP-MS	820359-002	----	**Cadmium**	7440-43-9	114 %	81.8-111%	**Recovery greater than upper control limit**
EG020T: Total Metals by ICP-MS	820359-002	----	**Silver**	7440-22-4	81.8 %	120-123%	**Recovery less than lower control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	817615-002	----	**Chrysene**	218-01-9	44.4 %	48-114%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0810762
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URS CHAIN OF CUSTODY

FOR LABORATORY USE ONLY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	Custody Seal ? Y N NA Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ☐ Standard - 5 days ☐ Non standard	COC SEQUENCE NUMBER: (1) 2 3 4 please circle 2
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: NKM	RELINQUISHED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS		DATE: 11/8 TIME: 1730	DATE: TIME:
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:		

COMMENTS:	Please see overleaf for specific analytes	(1) Caution - Samples may contain hazardous substances	ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE																									
				Solid		Liquid																							
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH Field and pH Fox	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's specific list 12	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
1	BH25B 18.0-20.4	7/08/08	S	1											ON HOLD														
2	BH02 0.3-1.9	10/08/08	S	1	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
3	BH02 1.9-2.3	"	S	1	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
4	BH02 2.4-3.2	"	S	1	1	Labelled 2.5-3.0									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
5	BH02 4.2-4.6	"	S	1	2	only one ASS bag Rec. 2 Jars Rec.									✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	
6	BH02 5.0-5.4	"	S	1	2	"									✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	
7	BH02 6.2-6.6	"	S	1	2	"						"			✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	
8	QC07	"	S	1	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
9	QC08	"	S	1	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
10	QC09	"	S	1	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
11	QC10	"	S	1	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
12	QC11	"	S	1	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
TOTAL															11	11	9	8	9	8	11	11	11	11	11	11	11	3	

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259

All results to be provided in MRED format
email address: julian_dobos@urscorp.com

TURNAROUND DETAILS: Standard - 5 days / Non standard

COC SEQUENCE NUMBER: 1 (2) 3 4 — please circle 2

FOR LABORATORY USE ONLY
Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: N.King	RELINQUISHED BY: / RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS			
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 11/8 TIME: 1730	DATE: TIME: / DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

SAMPLE DETAILS / CONTAINER TYPE & PRESERVATIVE

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: ~~40ml VOA Vial (G) HCL~~ TOC VIAL	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromulm Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
13	QC12	10/08/08	S	1	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
14	QC13	10/08/08	L			2	1	1								✓		✓	✓	✓	✓							✓
TOTAL															1	2	1	2	2	2	2	1	1	1	1	1	1	1

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0810762**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 11-AUG-2008	Issue Date	: 14-AUG-2008 11:51
Client Requested Due Date	: 19-AUG-2008	Scheduled Reporting Date	: **26-AUG-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.1 C, 2.5 C - Ice present
No. of coolers/boxes	: 2 MEDIUM	No. of samples received	: 14
Sercurity Seal	: Intact.	No. of samples analysed	: 13

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Radionuclide Testing has been subcontracted to QHSS.**
- **Please be advised that POREWATER Ammonia will be done if there will be sufficient samples.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP006 (solids) Total Inorganic Carbon (TIC)	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP068C Triazines by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only
EB0810762-001	07-AUG-2008 15:00	BH25B 18.8 - 20.4	✓							
EB0810762-002	10-AUG-2008 15:00	BH02 0.3-0.9		✓	✓	✓	✓	✓	✓	✓
EB0810762-003	10-AUG-2008 15:00	BH02 1.9-2.3		✓	✓	✓	✓	✓	✓	✓
EB0810762-004	10-AUG-2008 15:00	BH02 2.4-3.2		✓	✓	✓	✓	✓	✓	✓
EB0810762-005	10-AUG-2008 15:00	BH02 4.2-4.6		✓	✓	✓			✓	✓
EB0810762-006	10-AUG-2008 15:00	BH02 5.0-5.4		✓	✓	✓			✓	✓
EB0810762-007	10-AUG-2008 15:00	BH02 6.2-6.6		✓	✓	✓			✓	✓
EB0810762-008	10-AUG-2008 15:00	QC07		✓	✓	✓	✓	✓	✓	✓
EB0810762-009	10-AUG-2008 15:00	QC08		✓	✓	✓	✓	✓	✓	✓
EB0810762-010	10-AUG-2008 15:00	QC09		✓	✓	✓	✓	✓	✓	✓
EB0810762-011	10-AUG-2008 15:00	QC10		✓	✓	✓	✓	✓	✓	✓
EB0810762-012	10-AUG-2008 15:00	QC11		✓	✓	✓	✓	✓	✓	✓
EB0810762-013	10-AUG-2008 15:00	QC12		✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP090 (solids) Organotins	SOIL - EP202(solids) Phenoxyacetic acids	SOIL - S-02 8 Metals (incl. Digestion)
EB0810762-002	10-AUG-2008 15:00	BH02 0.3-0.9	✓	✓	✓
EB0810762-003	10-AUG-2008 15:00	BH02 1.9-2.3	✓	✓	✓
EB0810762-004	10-AUG-2008 15:00	BH02 2.4-3.2	✓	✓	✓
EB0810762-005	10-AUG-2008 15:00	BH02 4.2-4.6		✓	✓
EB0810762-006	10-AUG-2008 15:00	BH02 5.0-5.4		✓	✓
EB0810762-007	10-AUG-2008 15:00	BH02 6.2-6.6		✓	✓
EB0810762-008	10-AUG-2008 15:00	QC07	✓	✓	✓
EB0810762-009	10-AUG-2008 15:00	QC08	✓	✓	✓
EB0810762-010	10-AUG-2008 15:00	QC09	✓	✓	✓
EB0810762-011	10-AUG-2008 15:00	QC10	✓	✓	✓
EB0810762-012	10-AUG-2008 15:00	QC11	✓	✓	✓

			SOIL - EP090 (solids) Organotins	SOIL - EP202(solids) Phenoxyacetic acids	SOIL - S-02 8 Metals (incl. Digestion)
EB0810762-013	10-AUG-2008 15:00	QC12	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0810762-014	10-AUG-2008 15:00	QC13	✓	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com
- Trigger - Subcontract Report	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com
- Trigger - Subcontract Report	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com
- Trigger - Subcontract Report	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0810762**	Page	: 1 of 15
Amendment	: **2**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 11-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 14
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Gaston Allende		Organics
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #2: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EG020T (Total Metals); EB0811040-003 duplicate failed due to insufficient sample volume.**
- **Insufficient volume was provide for TBT analysis on sample 'QC13'. No TBT data will be reported for this sample.**
- **LCS recovery for EG020T (Total Metals) fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC13 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Pesticides: Poor matrix spike recovery due to sample matrix interference. Confirmed by re-extraction and re-analysis.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **TBT sample QC13 could not be analysed due to insufficent samle volume**

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC13	----	----	----	----
				Client sampling date / time	10-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0810762-014	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0003**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		**0.013**	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<1.0	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<1.0	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<1.0	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<1.0	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<1.0	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<1.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC13	----	----	----	----
				Client sampling date / time	10-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0810762-014	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**64.8**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**92.4**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**95.3**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**25.1**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**67.4**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**91.9**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**72.1**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**71.4**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**80.1**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH02 0.3-0.9	BH02 1.9-2.3	BH02 2.4-3.2	BH02 4.2-4.6	BH02 5.0-5.4
				Client sampling date / time: 10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00
				EB0810762-002	EB0810762-003	EB0810762-004	EB0810762-005	EB0810762-006
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.4	9.1	7.6	7.2	6.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.06	0.11	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	36	67	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	3.77	5.03	0.97	0.80	0.72
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	753	1000	194	160	144
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.21	1.61	0.31	0.26	0.23
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	23.3	26.5	18.5	16.3	16.6
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	2810	5210	----	6190	4380
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	6	10	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	8	11	29	13	7
Copper	7440-50-8	5	mg/kg	6	11	31	26	12
Iron	7439-89-6	50	mg/kg	12500	14600	----	20700	8780
Lead	7439-92-1	5	mg/kg	<5	5	<5	<5	<5
Manganese	7439-96-5	5	mg/kg	184	1110	----	1340	81
Nickel	7440-02-0	2	mg/kg	4	7	20	12	4
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	12	22	40	31	20
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.14	0.43	0.06	0.04	0.04

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH02 0.3-0.9	BH02 1.9-2.3	BH02 2.4-3.2	BH02 4.2-4.6	BH02 5.0-5.4
				Client sampling date / time: 10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00
				EB0810762-002	EB0810762-003	EB0810762-004	EB0810762-005	EB0810762-006
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	**0.42**	**0.47**	<0.02	<0.02	<0.02
EP007: Total Carbon (TC)								
Total Carbon	----	0.02	%	**0.56**	**0.90**	**0.06**	**0.04**	**0.04**
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
EP068C: Triazines								
Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Simazine	122-34-9	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
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
EP090: Organotin Compounds								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	BH02 0.3-0.9	BH02 1.9-2.3	BH02 2.4-3.2	BH02 4.2-4.6	BH02 5.0-5.4
				Client sampling date / time	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00
					EB0810762-002	EB0810762-003	EB0810762-004	EB0810762-005	EB0810762-006
EP090: Organotin Compounds - Continued									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
2.4-DB	94-82-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Dicamba	1918-00-9	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Mecoprop	93-65-2	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
MCPA	94-74-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
2.4-DP	120-36-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
2.4-D	94-75-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Triclopyr	55335-06-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
2.4.5-T	93-76-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
MCPB	94-81-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Picloram	1918-02-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Clopyralid	1702-17-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**54.7**	**54.6**	**53.6**	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**63.5**	**69.0**	**63.9**	**67.2**	**63.0**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**79.6**	**85.6**	**82.1**	**84.2**	**79.5**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**96.8**	**95.8**	**66.4**	**93.6**	**104**
2-Chlorophenol-D4	93951-73-6	0.1	%		**102**	**101**	**64.3**	**96.9**	**108**
2.4.6-Tribromophenol	118-79-6	0.1	%		**98.5**	**99.0**	**61.8**	**84.2**	**92.6**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**103**	**99.5**	**72.4**	**99.7**	**108**
Anthracene-d10	1719-06-8	0.1	%		**96.6**	**91.5**	**64.7**	**92.7**	**99.5**
4-Terphenyl-d14	1718-51-0	0.1	%		**115**	**109**	**83.7**	**110**	**121**
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**57.4**	**56.4**	**46.6**	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.1	%		**114**	**88.6**	**87.3**	**106**	**93.3**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH02 6.2-6.6	QC07	QC08	QC09	QC10
				Client sampling date / time: 10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00
				EB0810762-007	EB0810762-008	EB0810762-009	EB0810762-010	EB0810762-011
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.6	9.6	9.6	9.2	9.0
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	0.03	<0.02	0.16	0.33
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	16	12	102	208
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.97	2.74	3.58	6.70	7.17
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	194	547	715	1340	1430
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.31	0.88	1.14	2.15	2.30
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	20.8	20.3	20.1	23.5	27.7
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	9810	1580	1430	4710	5900
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	11	12
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	16	6	6	12	13
Copper	7440-50-8	5	mg/kg	38	<5	5	9	11
Iron	7439-89-6	50	mg/kg	24900	6660	6520	13800	15400
Lead	7439-92-1	5	mg/kg	6	<5	<5	<5	5
Manganese	7439-96-5	5	mg/kg	310	226	263	393	414
Nickel	7440-02-0	2	mg/kg	13	4	4	8	8
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	47	7	7	17	20
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.18	0.07	0.05	0.27	0.44

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH02 6.2-6.6	QC07	QC08	QC09	QC10
				Client sampling date / time: 10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00
				EB0810762-007	EB0810762-008	EB0810762-009	EB0810762-010	EB0810762-011
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	**0.02**	**0.23**	**0.33**	**0.68**	**0.83**
EP007: Total Carbon (TC)								
Total Carbon	----	0.02	%	**0.20**	**0.30**	**0.38**	**0.95**	**1.27**
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	<0.10	<0.10	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	----	<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
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	<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
Endrin	72-20-8	0.05	mg/kg	----	<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
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<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
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05
EP068C: Triazines								
Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Simazine	122-34-9	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
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
EP090: Organotin Compounds								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH02 6.2-6.6	QC07	QC08	QC09	QC10
				Client sampling date / time: 10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00	10-AUG-2008 15:00
				EB0810762-007	EB0810762-008	EB0810762-009	EB0810762-010	EB0810762-011
EP090: Organotin Compounds - Continued								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	<0.5	<0.5	<0.5	<0.5
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	**55.7**	**55.9**	**54.2**	**52.5**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**66.6**	**67.3**	**69.9**	**68.1**	**74.5**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**82.5**	**79.3**	**91.0**	**87.4**	**90.2**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**93.3**	**82.4**	**91.0**	**94.9**	**92.3**
2-Chlorophenol-D4	93951-73-6	0.1	%	**98.1**	**88.3**	**96.6**	**101**	**99.0**
2.4.6-Tribromophenol	118-79-6	0.1	%	**78.8**	**82.2**	**89.7**	**97.3**	**94.2**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**102**	**90.7**	**98.2**	**99.3**	**95.5**
Anthracene-d10	1719-06-8	0.1	%	**95.8**	**85.4**	**93.2**	**93.2**	**89.7**
4-Terphenyl-d14	1718-51-0	0.1	%	**118**	**102**	**111**	**110**	**107**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	**60.5**	**51.4**	**37.5**	**103**
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.1	%	**111**	**102**	**102**	**92.9**	**104**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC11	QC12	----	----	----
				Client sampling date / time: 10-AUG-2008 15:00	10-AUG-2008 15:00	----	----	----
				EB0810762-012	EB0810762-013	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.0**	**7.7**	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**0.91**	**0.97**	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**182**	**195**	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**0.29**	**0.31**	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	----	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**16.3**	**16.7**	----	----	----
EG005T: Total Metals by ICP-AES								
Antimony	7440-36-0	5	mg/kg	<5	<5	----	----	----
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**18**	**15**	----	----	----
Copper	7440-50-8	5	mg/kg	**35**	**31**	----	----	----
Lead	7439-92-1	5	mg/kg	**6**	**6**	----	----	----
Nickel	7440-02-0	2	mg/kg	**16**	**15**	----	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	----	----
Zinc	7440-66-6	5	mg/kg	**40**	**34**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.04**	**0.05**	----	----	----
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	<0.02	<0.02	----	----	----
EP007: Total Carbon (TC)								

Analytical Results

Sub-Matrix: SOLID				Client sample ID	QC11	QC12	----	----	----
				Client sampling date / time	10-AUG-2008 15:00	10-AUG-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		EB0810762-012	EB0810762-013	----	----	----
EP007: Total Carbon (TC) - Continued									
Total Carbon	----	0.02	%		**0.04**	**0.05**	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		<0.10	<0.10	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----
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	----	----	----
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	----	----	----
EP068C: Triazines									
Atrazine	1912-24-9	0.05	mg/kg		<0.05	<0.05	----	----	----
Simazine	122-34-9	0.05	mg/kg		<0.05	<0.05	----	----	----
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	----	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC11	QC12	----	----	----
				Client sampling date / time: 10-AUG-2008 15:00	10-AUG-2008 15:00	----	----	----
				EB0810762-012	EB0810762-013	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	----	----	----
2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	----	----	----
Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	----	----	----
Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	----	----	----
MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	----	----	----
2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	----	----	----
2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	----	----	----
Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	----	----	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	----	----	----
2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	----	----	----
MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	----	----	----
Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	----	----	----
Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	----	----	----
Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**58.4**	**54.2**	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**73.5**	**65.5**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**88.7**	**78.9**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**93.5**	**47.5**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**98.4**	**48.4**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**94.6**	**41.8**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**98.0**	**52.8**	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**92.6**	**50.4**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**111**	**62.0**	----	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**49.7**	**62.1**	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.1	%	**97.2**	**104**	----	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	70	130

Queensland Government

Queensland **Health**

Inquiries: Megan Cook
Telephone: 07 3000 9686
Facsimile: 07 3274 9123

Reference: EB0810762

Requested by: Tim Kilmister
Australian Laboratory Services Pty Ltd
PO Box 66
Everton Park QLD 4053

RADIOACTIVITY ANALYSIS REPORT No. 08PQ309-320

SAMPLE

description: 12 x sample/s

for: Radioactivity (U/Th) analysis using High Resolution Gamma Spectrometry

date received: 15th August 2008

METHOD - Gamma Spectrometry

Method: Adapted from ISO10703:1997-05-01 'Water Quality - Determination of the activity concentration of radionuclides by high resolution gamma-ray spectrometry'
All errors are quoted at the 2 sigma (95%) confidence level

Sample preparation: Samples was passed through a 1mm sieve and sealed in a poly jar counting geometry. The sample may be considered as having attained secular equilibrium.

Sample geometry: Soil: 100 mL polypropylene jar geometry

Detector specification:

Model number:	GMX 18190	*Serial number:*	26-N-1627B
Efficiency (rel. to 3" NaI):	~ 20%	*Energy resolution @ 1332keV:*	< 2.00 keV

Traceability: Reference source/s: Uranium 400 ± 2 µg/g (as uranium - 238 in secular equilibrium with decay progeny) IAEA Reference Material RGU-1, Report IAEA/RL/148, 1987, & Thorium 800 ± 2 µg/g (as thorium - 232 in secular equilibrium with decay progeny) IAEA Reference Material RGTh-1, Report IAEA/RL/148, 1987, used for system calibration.

Calibration file name: 2S_100J030908RK.Clb
Radionuclide library: EnviroNat_2.lib
Last calib. Validation: 3rd August 2008

RESULTS

Refer to attached results table 08PQ309-320

COMMENT

Results indicate individual radionuclide concentration only. Correction factors for full decay series activity should be applied before comparison to regulatory compliance / guideline / action levels as required.

M Cook
Chemist
11th November 2008

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Gamma Spectrometry Results – Report No: 08PQ309-320

Queensland Government
Queensland Health

SAMPLE DESCRIPTION		ANALYSIS DETAILS			RESULTS (Bq.kg^{-1})				
Lab number	Sample identification	Date sampled	Date prepared	Date analysed	U-238[1]	Th-232[2]	Ra-224[3]	K-40	Other
08PQ309	BH02 0.3-1.9	10/08/2008	26/08/2008	8/10/2008	10±3	13±9	10±3	340±50	N/D
08PQ310	BH02 1.9-2.3	10/08/2008	26/08/2008	20/10/2008	11±4	<20	15±4	450±70	N/D
08PQ311	BH02 2.4-3.2	10/08/2008	26/08/2008	27/10/2008	15±4	<20	17±3	280±60	N/D
08PQ312	BH02 4.2-4.6	10/08/2008	26/08/2008	28/10/2008	13±6	20±10	16±4	390±70	N/D
08PQ313	BH02 5.0-5.4	10/08/2008	26/08/2008	31/10/2008	23±4	<20	22±3	230±50	N/D
07PQ314	BH02 6.2-6.6	10/08/2008	26/08/2008	3/11/2008	15±4	20±10	19±4	290±60	N/D
08PQ315	QC07	10/08/2008	26/08/2008	3/11/2008	12±5	20±10	13±3	340±60	N/D
08PQ316	QC08	10/08/2008	26/08/2008	4/11/2008	13±7	20±10	11±5	420±90	N/D
08PQ317	QC09	10/08/2008	26/08/2008	4/11/2008	8±3	13±8	14±3	330±40	N/D
08PQ318	QC10	10/08/2008	26/08/2008	5/11/2008	15±4	<20	17±4	370±60	N/D
08PQ319	QC11	10/08/2008	26/08/2008	6/11/2008	15±4	20±9	15±4	210±50	N/D
08PQ320	QC12	10/08/2008	26/08/2008	10/11/2008	11±4	20±10	14±4	200±60	N/D

NOTES

[1] Uranium 238 results derived from decay progeny unless otherwise stated.

[2] Thorium 232 results derived from decay progeny unless otherwise stated.

[3] Radium 224 results derived from decay progeny unless otherwise stated.

N/D Not detected above system minimum detection level

M Cook 11th November 2008

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pH 02 4968 9433
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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 11-Aug-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810762	BH02 0.3-0.9	002	4%	78%	NA	NA
EB0810762	BH02 1.9-2.3	003	14%	55%	NA	NA
EB0810762	BH02 2.4-3.2	004	0%	35%	NA	NA
EB0810762	BH02 4.2-4.6	005	0%	38%	NA	NA
EB0810762	BH02 5.0-5.4	006	0%	38%	NA	NA
EB0810762	BH02 6.2-6.6	007	0%	9%	NA	NA
EB0810762	QC07	008	1%	91%	NA	NA
EB0810762	QC08	009	3%	84%	NA	NA
EB0810762	QC09	010	10%	59%	NA	NA
EB0810762	QC10	011	14%	51%	NA	NA
EB0810762	QC11	012	0%	35%	NA	NA
EB0810762	QC12	013	0%	37%	NA	NA

Remarks : The mass of sample supplied does not meet that required by AS 1289.1.1.
Test Procedure : AS1289.3.6.1
Prepared by : Dianne Blane
Checked by

Certificate of Analysis

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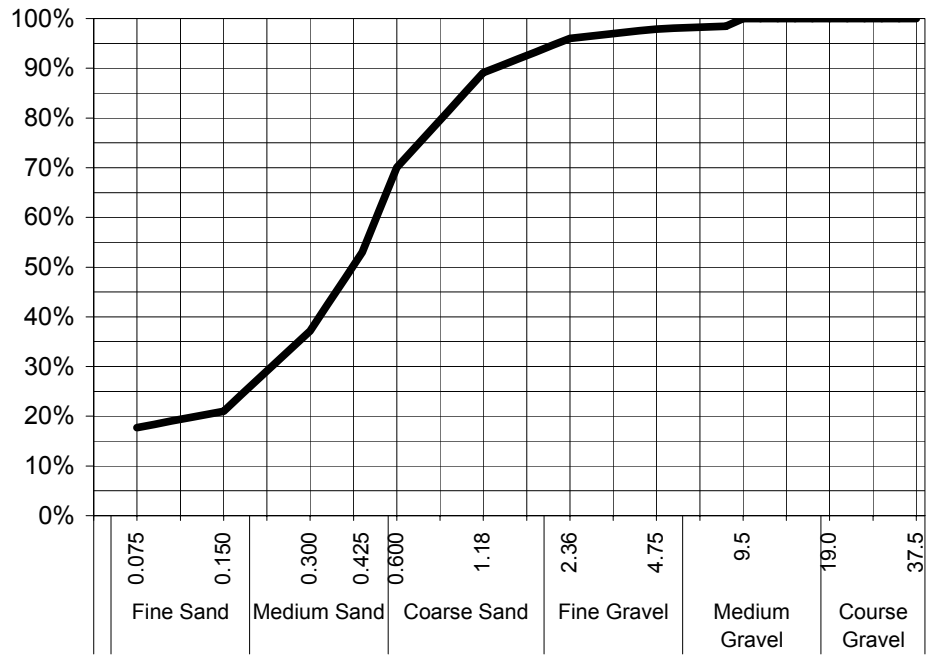
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-002 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH02 0.3-0.9

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	96%
1.18	89%
0.600	70%
0.425	53%
0.300	37%
0.150	21%
0.075	18%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt		
Test Method:	AS1289.3.6.1		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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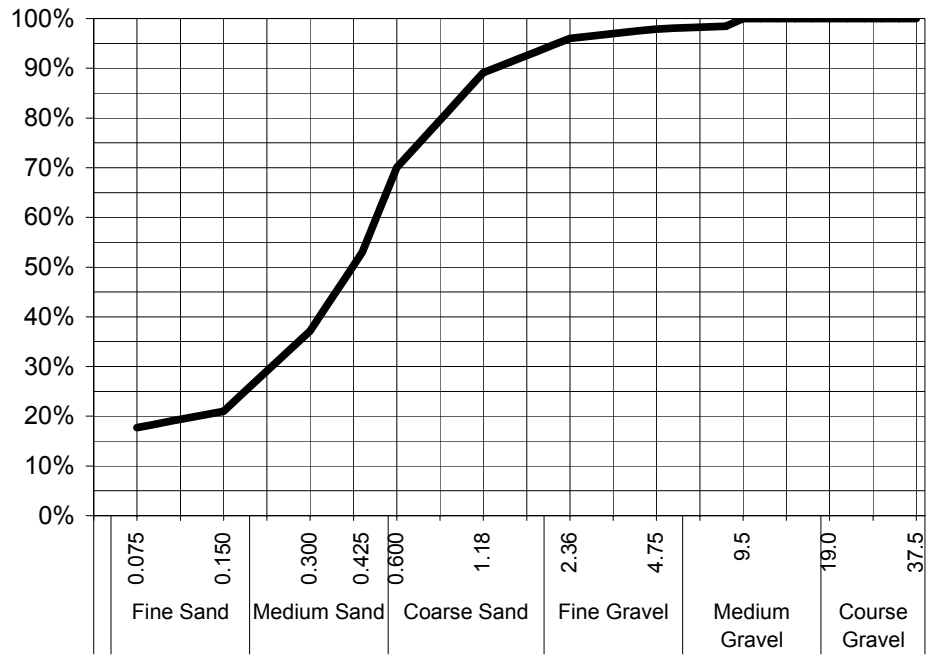
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-002 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH02 0.3-0.9

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	96%
1.18	89%
0.600	70%
0.425	53%
0.300	37%
0.150	21%
0.075	18%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt		
Test Method:	AS1289.3.6.1		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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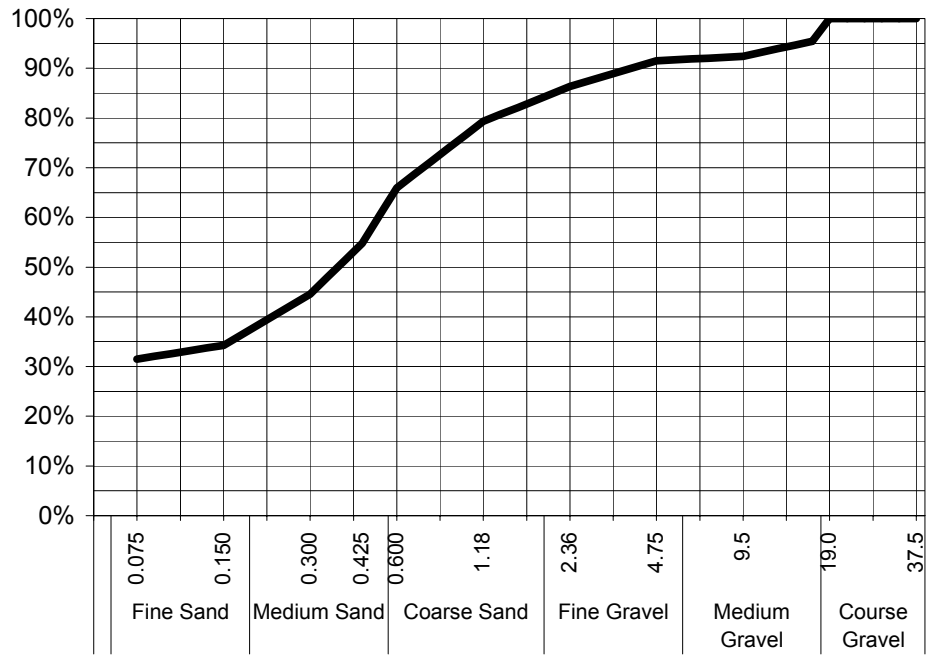
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-003 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH02 1.9-2.3

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	92%
4.75	91%
2.36	86%
1.18	79%
0.600	66%
0.425	55%
0.300	45%
0.150	34%
0.075	31%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	sand & silt		
Test Method:	AS1289.3.6.1		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

ALS Laboratory Group Pty Ltd
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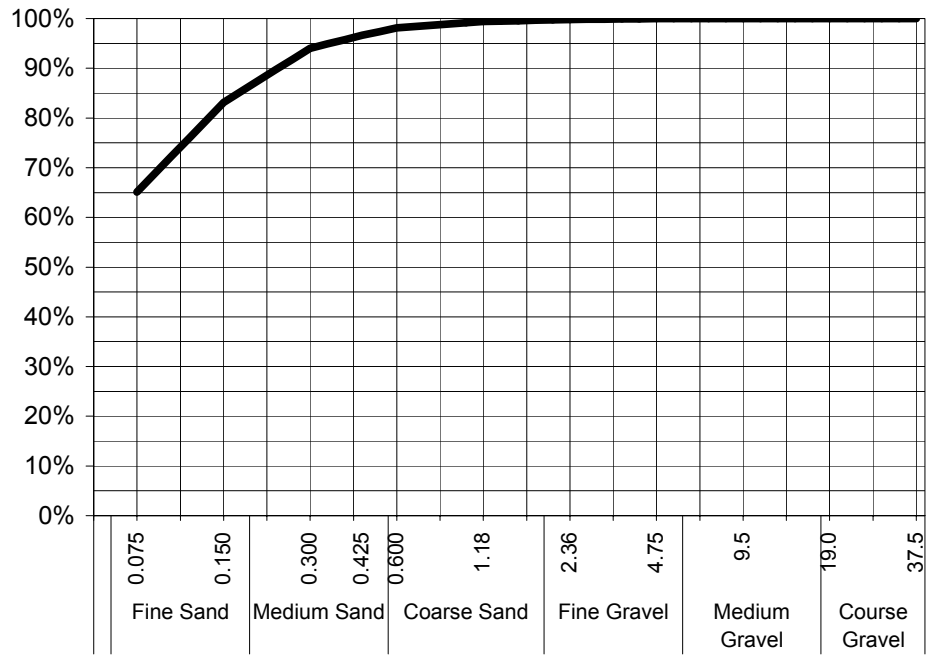
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH02 2.4-3.2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	98%
0.425	97%
0.300	94%
0.150	83%
0.075	65%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay & grit		
Test Method:	AS1289.3.6.1		

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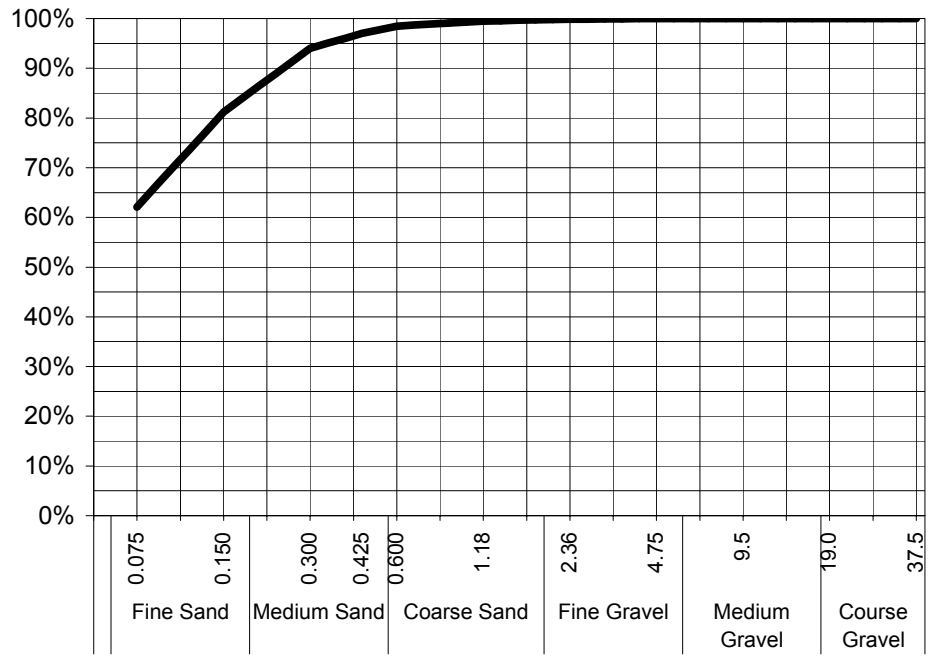
CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-005 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH02 4.2-4.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	98%
0.425	97%
0.300	94%
0.150	81%
0.075	62%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay & grit		
Test Method:	AS1289.3.6.1		

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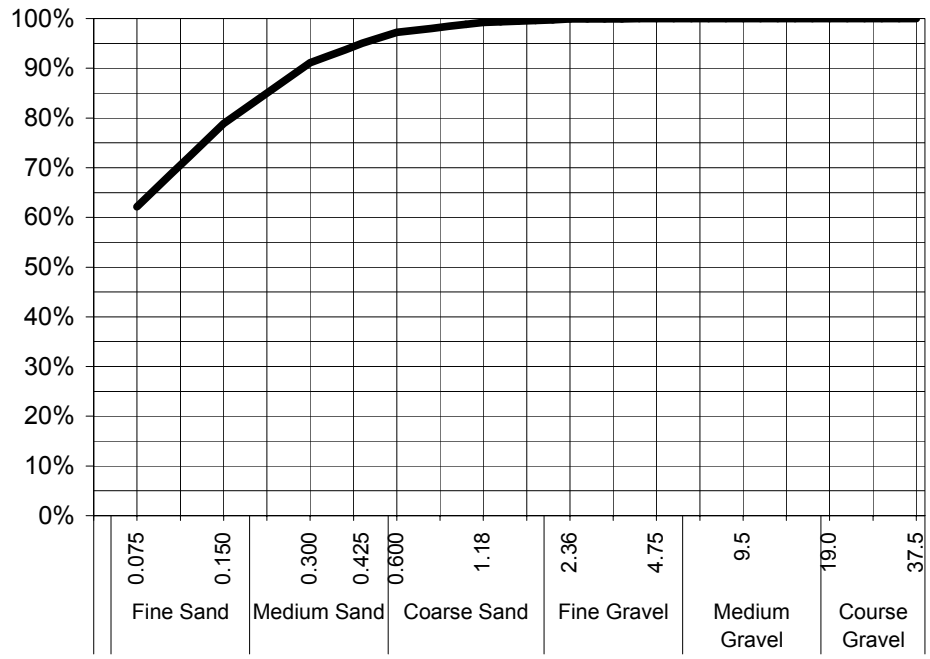
CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-006 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH02 5.0-5.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	97%
0.425	95%
0.300	91%
0.150	79%
0.075	62%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay & grit		
Test Method:	AS1289.3.6.1		

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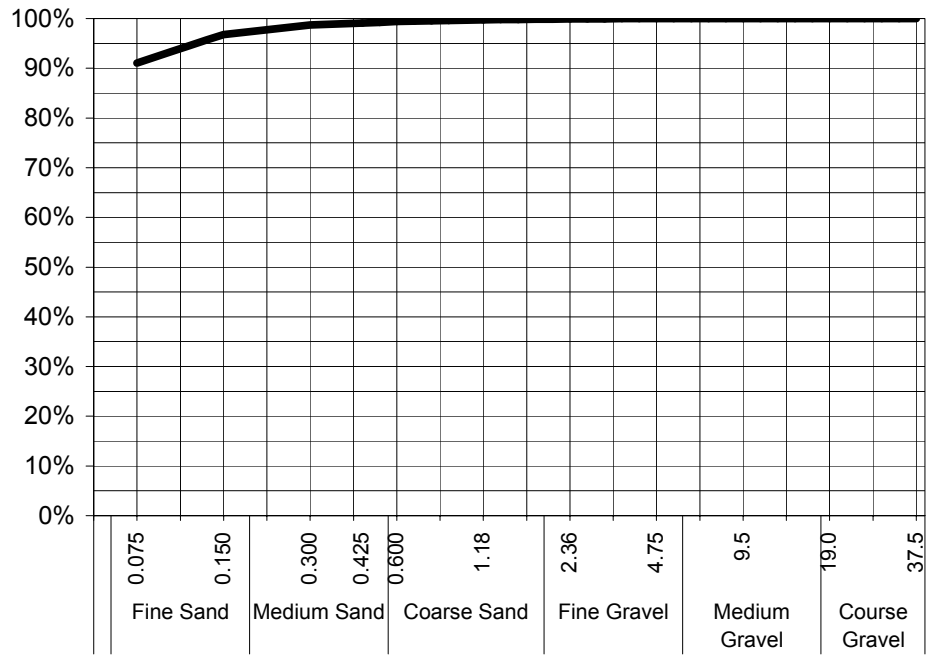
Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-007 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH02 6.2-6.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	97%
0.075	91%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay & grit		
Test Method:	AS1289.3.6.1		

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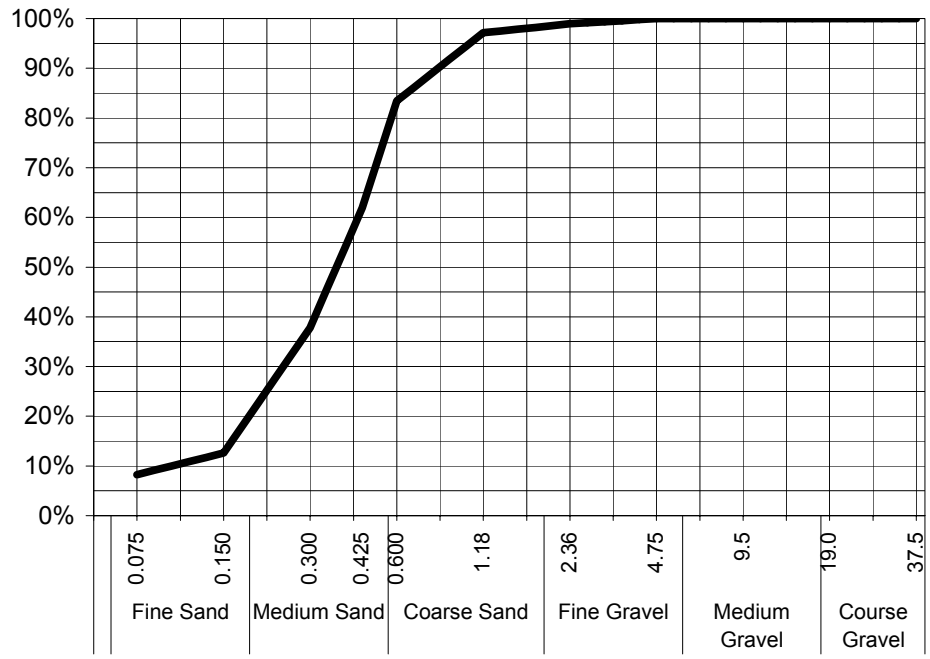
CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-008 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC07

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	97%
0.600	83%
0.425	62%
0.300	38%
0.150	13%
0.075	8%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt		
Test Method:	AS1289.3.6.1		

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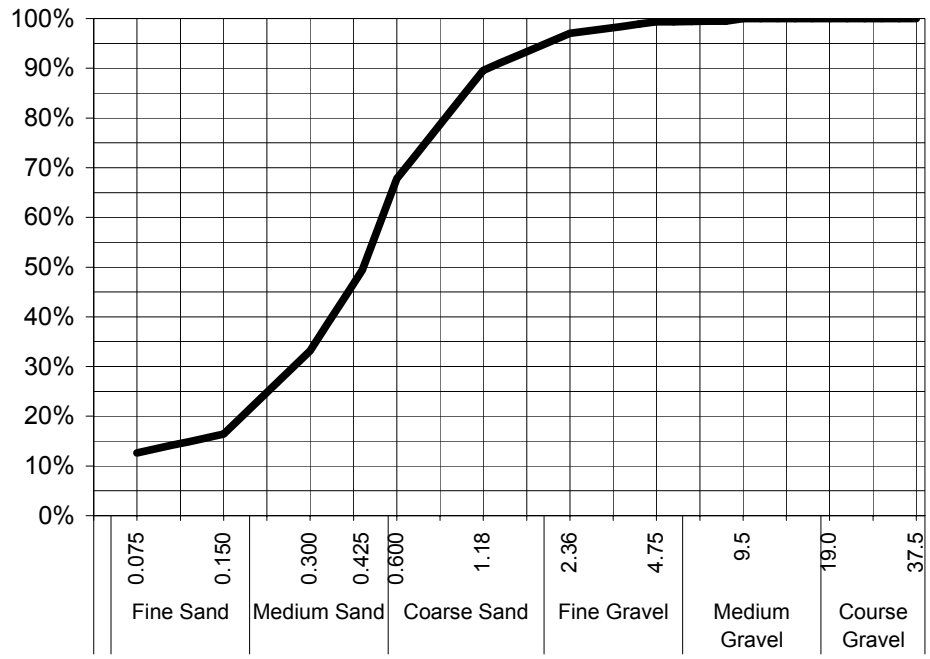
CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-009 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC08

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	97%
1.18	90%
0.600	68%
0.425	49%
0.300	33%
0.150	16%
0.075	13%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt		
Test Method:	AS1289.3.6.1		

Dianne Blane
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Authorised Signatory

Certificate of Analysis

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ALS Environmental

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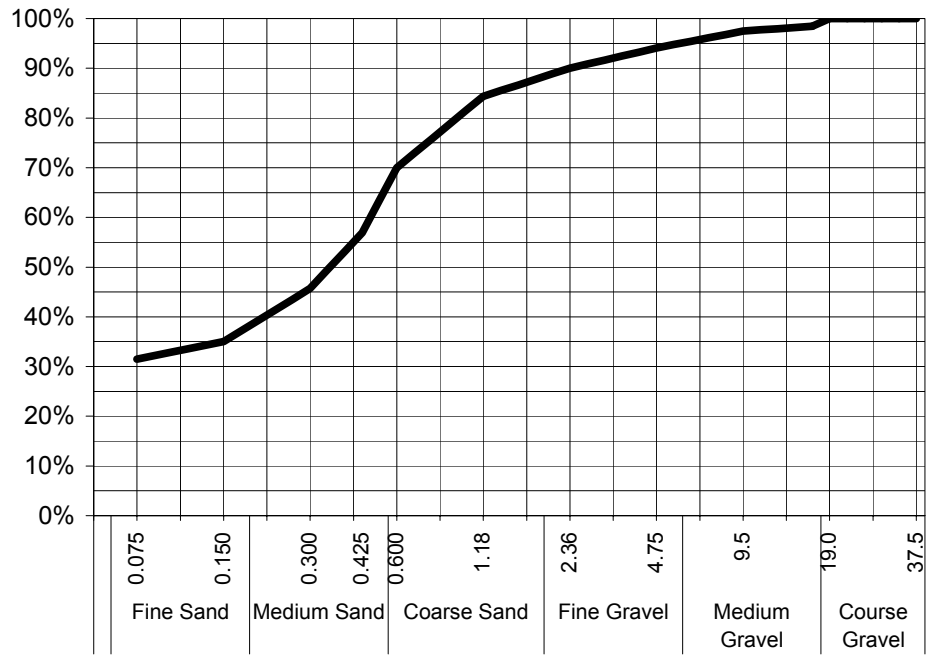
CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-010 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC09

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	97%
4.75	94%
2.36	90%
1.18	84%
0.600	70%
0.425	57%
0.300	46%
0.150	35%
0.075	32%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt		
Test Method:	AS1289.3.6.1		

Dianne Blane
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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 21-Aug-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 11-Aug-2008

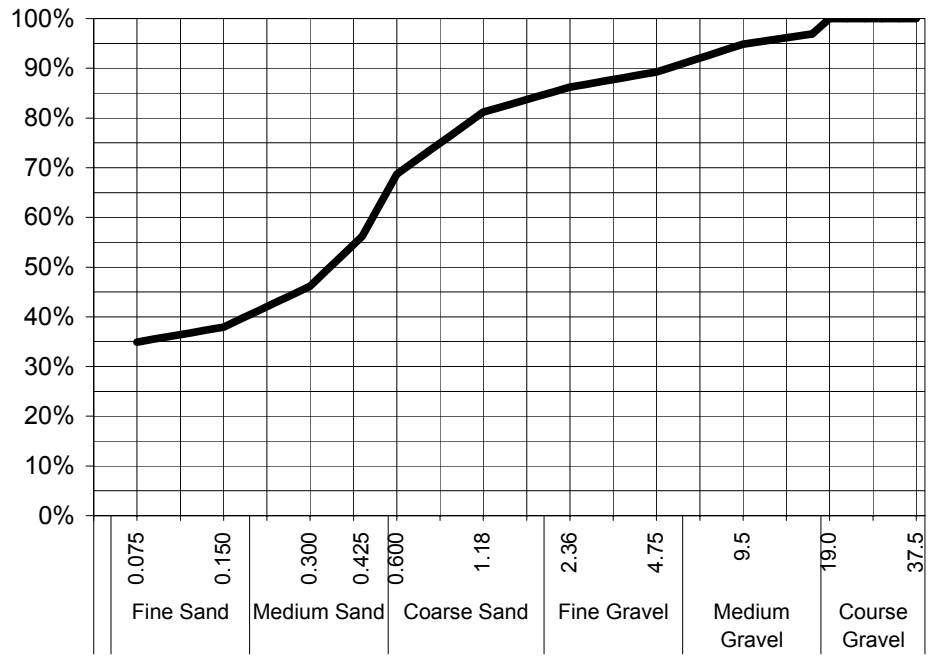
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0810762-011 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC10

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	95%
4.75	89%
2.36	86%
1.18	81%
0.600	69%
0.425	56%
0.300	46%
0.150	38%
0.075	35%

Samples analysed as received.

Sample Comments: The mass of sample supplied does not meet that required by AS 1289.1.1.

Analysed: 18-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Sand, silt & shell

Test Method: AS1289.3.6.1

Dianne Blane
Senior Analyst
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Certificate of Analysis

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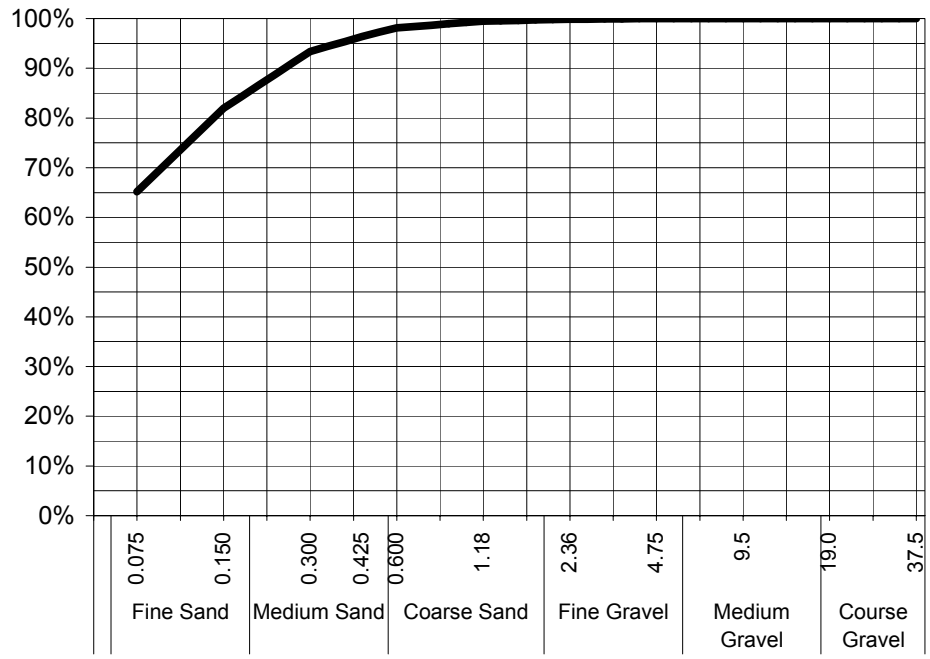
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-012 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC11

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	98%
0.425	96%
0.300	93%
0.150	82%
0.075	65%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay, silt & sand		
Test Method:	AS1289.3.6.1		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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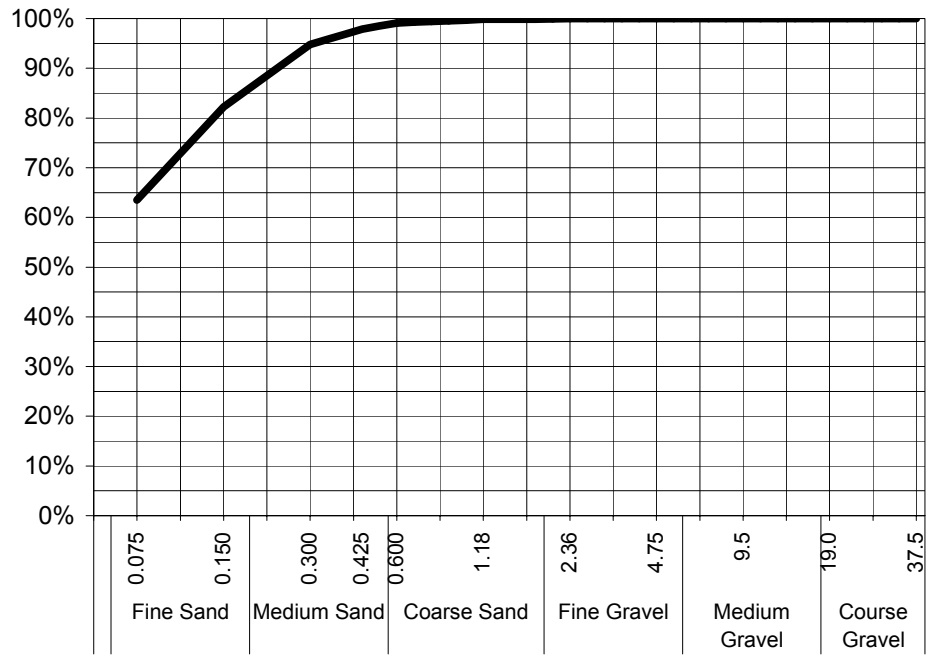
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810762-013 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC12

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	98%
0.300	95%
0.150	82%
0.075	63%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay, silt & sand		
Test Method:	AS1289.3.6.1		

Dianne Blane
Senior Analyst
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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	11-Aug-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810762	BH02 0.3-0.9	002	4%	78%	NA	NA
EB0810762	BH02 1.9-2.3	003	14%	55%	NA	NA
EB0810762	BH02 2.4-3.2	004	0%	35%	NA	NA
EB0810762	BH02 4.2-4.6	005	0%	38%	NA	NA
EB0810762	BH02 5.0-5.4	006	0%	38%	NA	NA
EB0810762	BH02 6.2-6.6	007	0%	9%	NA	NA
EB0810762	QC07	008	1%	91%	NA	NA
EB0810762	QC08	009	3%	84%	NA	NA
EB0810762	QC09	010	10%	59%	NA	NA
EB0810762	QC10	011	14%	51%	NA	NA
EB0810762	QC11	012	0%	35%	NA	NA
EB0810762	QC12	013	0%	37%	NA	NA

Remarks :	The mass of sample supplied does not meet that required by AS 1289.1.1.
Test Procedure :	AS1289.3.6.1
Prepared by :	Dianne Blane
Checked by	PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0810762**	Page	: 1 of 14
Amendment	: **2**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 11-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 14
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Gaston Allende		Organics
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 732723)									
EB0810762-002	BH02 0.3-0.9	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.4	9.4	0.0	0% - 20%
EB0810762-011	QC10	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.0	7.5	18.2	0% - 20%
EA033-B: Potential Acidity (QC Lot: 732723)									
EB0810762-002	BH02 0.3-0.9	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.06	0.07	18.3	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	36	43	18.3	No Limit
EB0810762-011	QC10	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.33	0.33	0.0	0% - 50%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	208	208	0.0	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 732723)									
EB0810762-002	BH02 0.3-0.9	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	3.77	3.88	3.0	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.21	1.24	3.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	753	776	3.0	0% - 20%
EB0810762-011	QC10	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	7.17	6.88	4.2	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.30	2.20	4.2	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1430	1370	4.2	0% - 20%
EA055: Moisture Content (QC Lot: 730676)									
EB0810762-005	BH02 4.2-4.6	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.3	16.6	1.5	0% - 50%
EB0810762-012	QC11	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.3	16.7	2.6	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 734656)									
EB0810762-002	BH02 0.3-0.9	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	6	20.7	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	7	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 734656) - continued									
EB0810762-002	BH02 0.3-0.9	EG005T: Manganese	7439-96-5	5	mg/kg	184	136	# 30.3	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	12	12	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	2810	2760	1.7	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	12500	8540	# 37.5	0% - 20%
EB0810762-012	QC11	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	17	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	14	8.8	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	35	30	14.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	980	898	8.7	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	40	39	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	8240	8140	1.1	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	24000	21200	12.4	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 734657)									
EB0810762-002	BH02 0.3-0.9	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0810762-012	QC11	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 733681)									
EB0810762-002	BH02 0.3-0.9	EP005: Total Organic Carbon	----	0.02	%	0.14	0.14	0.0	No Limit
EB0810762-012	QC11	EP005: Total Organic Carbon	----	0.02	%	0.04	0.04	0.0	No Limit
EP007: Total Carbon (TC) (QC Lot: 733682)									
EB0810762-002	BH02 0.3-0.9	EP007: Total Carbon	----	0.02	%	0.56	0.55	1.8	0% - 20%
EB0810762-012	QC11	EP007: Total Carbon	----	0.02	%	0.04	0.04	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 731409)									
EB0810762-002	BH02 0.3-0.9	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EB0810850-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QC Lot: 731408)									
EB0810762-002	BH02 0.3-0.9	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EB0810850-002	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 731408) - continued									
EB0810850-002	Anonymous	EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP068C: Triazines (QC Lot: 731408)									
EB0810762-002	BH02 0.3-0.9	EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Simazine	122-34-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EB0810850-002	Anonymous	EP068: Atrazine	1912-24-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Simazine	122-34-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 731410)									
EB0810762-002	BH02 0.3-0.9	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0810762-012	QC11	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 731410) - continued									
EB0810762-012	QC11	EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 730767)									
EB0810762-002	BH02 0.3-0.9	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 731384)									
EB0810762-002	BH02 0.3-0.9	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
EB0810762-012	QC11	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 734717)									
EB0810762-014	QC13	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0003	0.0002	0.0	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.013	0.013	0.0	0% - 50%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 734718)									
EB0810762-014	QC13	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EB0811040-003	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 735424)									
EB0810762-014	QC13	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EB0810989-003	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 732744)									
EB0810733-004	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810846-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 732723)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 732723)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 732723)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 734656)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	92.1	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	96.5	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	95.2	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	97.3	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	97.0	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	97.3	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	97.0	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 734657)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	98.1	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 733681)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP007: Total Carbon (TC) (QCLot: 733682)								
EP007: Total Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 731409)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	78.3	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 731408)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Recovery Limits (%)
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 731408) - continued								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	89.5	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	83.4	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	84.0	60.8	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	75.0	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	73.8	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	101	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	81.3	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	77.0	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	76.2	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	75.2	51.6	124
EP068C: Triazines (QCLot: 731408)								
EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	0.25 mg/kg	94.5	58.6	112
EP068: Simazine	122-34-9	0.05	mg/kg	<0.05	0.25 mg/kg	110	70	117
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 731410)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	89.5	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	92.1	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	89.5	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	91.5	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	93.1	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	89.2	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	98.6	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	97.9	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	100	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	86.0	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	91.3	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	90.8	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	86.8	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	93.2	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	92.3	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	88.5	52	128
EP090: Organotin Compounds (QCLot: 730767)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	54.9	28	129
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 731384)								
EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	0.1 mg/kg	97.5	54.4	136
EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	0.1 mg/kg	108	45.5	144
EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	0.1 mg/kg	88.1	51.7	146
EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	0.1 mg/kg	104	60	140
EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	0.1 mg/kg	102	56.8	143

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 731384) - continued								
EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	0.1 mg/kg	102	50	141
EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	0.1 mg/kg	98.6	68.5	139
EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	0.1 mg/kg	114	50.8	145
EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	0.1 mg/kg	86.2	40.8	135
EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	0.1 mg/kg	95.4	57.4	142
EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	0.1 mg/kg	81.4	38.9	147
EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	0.1 mg/kg	105	48.7	138
EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	0.1 mg/kg	60.3	59.4	149
EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	0.1 mg/kg	94.4	53.2	145

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 734717)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	87.6	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	83.8	75.7	110
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	108	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	87.3	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	87.4	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	89.4	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	88.4	81	127
EG020T: Total Metals by ICP-MS (QCLot: 734718)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 78.7	120	123
EG020T: Total Metals by ICP-MS (QCLot: 739822)								
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	94.2	81.8	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 735424)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	107	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 732744)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 732113)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	65.0	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 732112)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	85.3	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	73.1	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	74.9	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	71.8	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	78.8	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	72.2	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	90.0	54.3	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Recovery Limits (%)
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 732112) - continued								
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	83.1	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	61.5	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	79.3	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 732114)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	64.6	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	70.0	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	68.4	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	68.4	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	66.9	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	66.9	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	68.2	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	69.1	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	79.2	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	64.2	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	69.5	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	69.0	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	65.5	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	75.3	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	73.4	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	71.5	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 734656)							
EB0810762-003	BH02 1.9-2.3	EG005T: Arsenic	7440-38-2	50 mg/kg	94.1	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	99.7	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	98.7	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	105	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	103	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	99.1	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	106	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 734657)							
EB0810762-003	BH02 1.9-2.3	EG035T: Mercury	7439-97-6	5.0 mg/kg	86.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 731409)							
EB0810762-003	BH02 1.9-2.3	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	103	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 731408)							
EB0810762-003	BH02 1.9-2.3	EP068: gamma-BHC	58-89-9	0.25 mg/kg	85.7	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	76.4	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	88.6	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	# 45.7	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 731410)							
EB0810762-003	BH02 1.9-2.3	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	105	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	122	70	130
EP090: Organotin Compounds (QCLot: 730767)							
EB0810762-003	BH02 1.9-2.3	EP090: Tributyltin	56573-85-4	25 µgSn/kg	45.0	20	130
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 731384)							
EB0810762-002	BH02 0.3-0.9	EP202: Mecoprop	93-65-2	0.1 mg/kg	119	70	130
		EP202: MCPA	94-74-6	0.1 mg/kg	118	70	130
		EP202: 2.4-D	94-75-7	0.1 mg/kg	101	70	130
		EP202: Triclopyr	55335-06-3	0.1 mg/kg	114	70	130
		EP202: 2.4.5-T	93-76-5	0.1 mg/kg	120	70	130
		EP202: Picloram	1918-02-1	0.1 mg/kg	81.8	70	130
		EP202: Clopyralid	1702-17-6	0.1 mg/kg	84.5	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 734717)							
EB0810824-005	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 735424)							
EB0810762-014	QC13	EG035T: Mercury	7439-97-6	0.0100 mg/L	106	70	130

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0810762**	Page	: 1 of 12
Amendment	: **2**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 11-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 14
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**11-AUG-2008**	---	----	**18-AUG-2008**	09-NOV-2008	✓
BH02 2.4-3.2,	BH02 4.2-4.6,							
BH02 5.0-5.4,	BH02 6.2-6.6,							
QC07,	QC08,							
QC09,	QC10,							
QC11,	QC12							
EA033-B: Potential Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**11-AUG-2008**	---	----	**18-AUG-2008**	09-NOV-2008	✓
BH02 2.4-3.2,	BH02 4.2-4.6,							
BH02 5.0-5.4,	BH02 6.2-6.6,							
QC07,	QC08,							
QC09,	QC10,							
QC11,	QC12							
EA033-C: Acid Neutralising Capacity								
Snap Lock Bag - frozen on receipt at ALS								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**11-AUG-2008**	---	----	**18-AUG-2008**	09-NOV-2008	✓
BH02 2.4-3.2,	BH02 4.2-4.6,							
BH02 5.0-5.4,	BH02 6.2-6.6,							
QC07,	QC08,							
QC09,	QC10,							
QC11,	QC12							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**11-AUG-2008**	---	----	**18-AUG-2008**	09-NOV-2008	✓
BH02 2.4-3.2,	BH02 4.2-4.6,							
BH02 5.0-5.4,	BH02 6.2-6.6,							
QC07,	QC08,							
QC09,	QC10,							
QC11,	QC12							
EA033-E: Acid Base Accounting								
Snap Lock Bag - frozen on receipt at ALS								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**11-AUG-2008**	---	----	**18-AUG-2008**	09-NOV-2008	✓
BH02 2.4-3.2,	BH02 4.2-4.6,							
BH02 5.0-5.4,	BH02 6.2-6.6,							
QC07,	QC08,							
QC09,	QC10,							
QC11,	QC12							
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**----**	----	----	**14-AUG-2008**	17-AUG-2008	✓
BH02 2.4-3.2,	BH02 4.2-4.6,							
BH02 5.0-5.4,	BH02 6.2-6.6,							
QC07,	QC08,							
QC09,	QC10,							
QC11,	QC12							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**20-AUG-2008**	06-FEB-2009	✓	**20-AUG-2008**	06-FEB-2009	✓
BH02 2.4-3.2,	BH02 4.2-4.6,							
BH02 5.0-5.4,	BH02 6.2-6.6,							
QC07,	QC08,							
QC09,	QC10,							
QC11,	QC12							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**20-AUG-2008**	06-FEB-2009	✓	**21-AUG-2008**	07-SEP-2008	✓
BH02 2.4-3.2,	BH02 4.2-4.6,							
BH02 5.0-5.4,	BH02 6.2-6.6,							
QC07,	QC08,							
QC09,	QC10,							
QC11,	QC12							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP005: Total Organic Carbon (TOC)								
Soil Glass Jar - Unpreserved								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**19-AUG-2008**	06-FEB-2009	✓	**19-AUG-2008**	07-SEP-2008	✓
BH02 2.4-3.2,	BH02 4.2-4.6,							
BH02 5.0-5.4,	BH02 6.2-6.6,							
QC07,	QC08,							
QC09,	QC10,							
QC11,	QC12							
EP007: Total Carbon (TC)								
Soil Glass Jar - Unpreserved								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**19-AUG-2008**	06-FEB-2009	✓	**19-AUG-2008**	06-FEB-2009	✓
BH02 2.4-3.2,	BH02 4.2-4.6,							
BH02 5.0-5.4,	BH02 6.2-6.6,							
QC07,	QC08,							
QC09,	QC10,							
QC11,	QC12							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**15-AUG-2008**	24-AUG-2008	✓	**19-AUG-2008**	24-SEP-2008	✓
BH02 2.4-3.2,	QC07,							
QC08,	QC09,							
QC10,	QC11,							
QC12								
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**15-AUG-2008**	24-AUG-2008	✓	**19-AUG-2008**	24-SEP-2008	✓
BH02 2.4-3.2,	QC07,							
QC08,	QC09,							
QC10,	QC11,							
QC12								
EP068C: Triazines								
Soil Glass Jar - Unpreserved								
BH02 0.3-0.9,	BH02 1.9-2.3,	**10-AUG-2008**	**15-AUG-2008**	24-AUG-2008	✓	**19-AUG-2008**	24-SEP-2008	✓
BH02 2.4-3.2,	BH02 4.2-4.6,							
BH02 5.0-5.4,	BH02 6.2-6.6,							
QC07,	QC08,							
QC09,	QC10,							
QC11,	QC12							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH02 0.3-0.9, BH02 1.9-2.3, BH02 2.4-3.2, BH02 4.2-4.6, BH02 5.0-5.4, BH02 6.2-6.6, QC07, QC08, QC09, QC10, QC11, QC12	**10-AUG-2008**	**15-AUG-2008**	24-AUG-2008	✓	**19-AUG-2008**	24-SEP-2008	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH02 0.3-0.9, BH02 1.9-2.3, BH02 2.4-3.2, QC07, QC08, QC09, QC10, QC11, QC12	**10-AUG-2008**	**14-AUG-2008**	24-AUG-2008	✓	**19-AUG-2008**	23-SEP-2008	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Soil Glass Jar - Unpreserved							
BH02 0.3-0.9, BH02 1.9-2.3, BH02 2.4-3.2, BH02 4.2-4.6, BH02 5.0-5.4, BH02 6.2-6.6, QC07, QC08, QC09, QC10, QC11, QC12	**10-AUG-2008**	**15-AUG-2008**	24-AUG-2008	✓	**15-AUG-2008**	24-SEP-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC13	**10-AUG-2008**	**20-AUG-2008**	06-FEB-2009	✓	**20-AUG-2008**	06-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC13	**10-AUG-2008**	**----**	----	----	**20-AUG-2008**	07-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC13	**10-AUG-2008**	**----**	----	----	**18-AUG-2008**	07-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC13	**10-AUG-2008**	**15-AUG-2008**	17-AUG-2008	✓	**19-AUG-2008**	27-SEP-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC13	**10-AUG-2008**	**15-AUG-2008**	17-AUG-2008	✓	**19-AUG-2008**	27-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC13	**10-AUG-2008**	**15-AUG-2008**	17-AUG-2008	✓	**19-AUG-2008**	24-SEP-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	16	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	2	10	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	21	**9.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	21	**9.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 1995
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Total Inorganic Carbon	EP006	SOIL	In-house. Determined as the difference between Total Carbon and Organic Carbon.
Total Carbon	EP007	SOIL	In-house. Dried and pulverised sample is combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved Carbon (as CO2) is measured by infra-red detector
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.

Analytical Methods	Method	Matrix	Method Descriptions
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	SOIL	In-House, LCMS (Electrospray in negative mode). Residues of acid herbicides are extracted from soil samples under the alkaline condition. An aliquot of the alkaline aqueous phase is taken and acidified before a SPE cleanup. After eluting off from the SPE cartridge, residues of acid herbicides are dissolved in HPLC mobile phase prior to instrument analysis.
Radionucleide Analysis (Solid)	RAN-SOL	SOIL	Radon and Radium, Gross alpha and beta radiation analysis of solid matrices conducted by Subcontracting Laboratory
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Organotin Compounds (Soluble)	EP090S	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)

Preparation Methods	Method	Matrix	Method Descriptions
Extraction for Phenoxy Acid Herbicides in Soils.	* EP202-PR	SOIL	In-House: Alkaline extract followed by SPE clean up of acidified portion of the sample extract.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Organotin Sample Preparation	ORG34	WATER	In-house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0810762-002	BH02 0.3-0.9	**Iron**	7439-89-6	37.5 %	0-20%	**RPD exceeds LOR based limits**
EG005T: Total Metals by ICP-AES	EB0810762-002	BH02 0.3-0.9	**Manganese**	7439-96-5	30.3 %	0-20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB0810762-003	BH02 1.9-2.3	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP068A: Organochlorine Pesticides (OC)	EB0810762-003	BH02 1.9-2.3	**4.4`-DDT**	50-29-3	45.7 %	70-130%	**Recovery less than lower data quality objective**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	828314-002	----	**Silver**	7440-22-4	78.7 %	120-123%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Total Metals by ICP-MS - Suite A	1	20	5.0	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY Custody Seal ? Y N NA
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ☐ Standard - 5 days ☐ Non standard	COC SEQUENCE NUMBER: (1) 2 3 4 (please circle)
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C
URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: / RELINQUISHED BY: / RECEIVED BY: Rex
URS PM:	Rob Ully	SITE :	GLNG SANTOS		
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME: / DATE: TIME: / DATE: 12/8/8 08:20

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) Heat 70 C	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH Field and pH Lab	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH02B 7.0-7.55	11/08/08	S	2	✓										✓	✓					✓	✓	✓	✓	✓	✓	✓	✓
2	BH02B 7.6-7.9	"	"	2	✓										✓	✓					✓	✓	✓	✓	✓	✓	✓	✓
3	BH02B 7.9-8.0	"	"	2	✓										✓	✓					✓	✓	✓	✓	✓	✓	✓	✓
4	BH02B 9.3-9.4	"	"	1	✓										✓	✓					✓	✓	✓	✓	✓	✓	✓	✓
5	QC 14	"	L			2	1	1								✓		✓	✓	✓	✓							✓
6	BH15B 21.75-21.90	"	S		1												ON		HOLD									
TOTAL																												

Environmental Division
Brisbane
Work Order
EB0810824

Telephone : +61-7-3243 7222

URS Australia Pty. Ltd.

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0810824**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 12-AUG-2008	Issue Date	: 14-AUG-2008 13:42
Client Requested Due Date	: 27-AUG-2008	Scheduled Reporting Date	: **27-AUG-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 5.4 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 6
Sercurity Seal	: Intact.	No. of samples analysed	: 5

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Raeionuclide Testing has been subcontracted to QHSS.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	(On Hold) SOIL No analysis requested	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP006 (solids) Total Inorganic Carbon (TIC)	SOIL - EP068C Triazines by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP202(solids) Phenoxyacetic acids	SOIL - S-02 8 Metals (incl. Digestion)
EB0810824-001	11-AUG-2008 15:00	BH02B 7.0-7.55		✓	✓	✓	✓	✓	✓	✓
EB0810824-002	11-AUG-2008 15:00	BH02B 7.6-7.8		✓	✓	✓	✓	✓	✓	✓
EB0810824-003	11-AUG-2008 15:00	BH02B 7.8-8.0		✓	✓	✓	✓	✓	✓	✓
EB0810824-004	11-AUG-2008 15:00	BH02B 9.3-9.4		✓	✓	✓	✓	✓	✓	✓
EB0810824-006	11-AUG-2008 15:00	BH25B 21.75-21.90	✓							

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0810824-005	11-AUG-2008 15:00	QC 14	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com
- Trigger - Subcontract Report	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com
- Trigger - Subcontract Report	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com
- Trigger - Subcontract Report	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0810824**	Page	: 1 of 9
Amendment	: **2**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 12-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 6
Quote number	: EN/001/08	No. of samples analysed	: 5

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Gaston Allende		Organics
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Silver and Antimony while requested on the COC they had not been reported for sample QC14.**
- **Amendment #2: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EG005T (Total Metals): LCS recoveries fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **EG005T (Total Metals): Sample EP0804482-001 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.**
- **EG020T (Total Metals); EB0811040-003 duplicate failed due to insufficient sample volume.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC14 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **TBT: Sample QC 14 was unable to be analysed as insufficient sample had been provided.**

Analytical Results

Sub-Matrix: **LIQUID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC 14	----	----	----	----
				Client sampling date / time: 11-AUG-2008 15:00	----	----	----	----
				EB0810824-005	----	----	----	----
EG020T: Total Metals by ICP-MS								
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.012**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	**1**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.5	µg/L	<0.9	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.9	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.9	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.9	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.9	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.9	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC 14	----	----	----	----
				Client sampling date / time	11-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0810824-005	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**56.4**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**78.3**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**96.4**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**53.5**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**111**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**74.2**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**95.3**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**78.8**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**93.9**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	BH02B 7.0-7.55	BH02B 7.6-7.8	BH02B 7.8-8.0	BH02B 9.3-9.4	----
				Client sampling date / time	11-AUG-2008 15:00	11-AUG-2008 15:00	11-AUG-2008 15:00	11-AUG-2008 15:00	----
					EB0810824-001	EB0810824-002	EB0810824-003	EB0810824-004	----
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		**6.4**	**8.9**	**7.5**	**8.8**	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	----
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.02	% S		<0.02	**0.02**	<0.02	<0.02	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		<10	**14**	<10	<10	----
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		----	**0.50**	**0.35**	**0.28**	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		----	**101**	**70**	**55**	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		----	**0.16**	**0.11**	**0.09**	----
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		**1.5**	**1.5**	**1.5**	**1.5**	----
Net Acidity (sulfur units)	----	0.02	% S		<0.02	<0.02	<0.02	<0.02	----
Net Acidity (acidity units)	----	10	mole H+ / t		<10	<10	<10	<10	----
Liming Rate	----	1	kg CaCO3/t		<1	<1	<1	<1	----
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		**18.1**	**18.3**	**15.0**	**6.6**	----
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		**3330**	----	**1200**	**1460**	----
Antimony	7440-36-0	5	mg/kg		<5	<5	<5	**8**	----
Arsenic	7440-38-2	5	mg/kg		<5	<5	**5**	<6	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<3	----
Chromium	7440-47-3	2	mg/kg		**5**	**3**	**3**	**11**	----
Copper	7440-50-8	5	mg/kg		**7**	**7**	**7**	**15**	----
Iron	7439-89-6	50	mg/kg		**2250**	----	**3140**	**4720**	----
Lead	7439-92-1	5	mg/kg		<5	<5	**6**	<6	----
Manganese	7439-96-5	5	mg/kg		**87**	----	**8**	**22**	----
Nickel	7440-02-0	2	mg/kg		<2	<2	<2	<6	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<6	----
Zinc	7440-66-6	5	mg/kg		**5**	<5	<5	**14**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.3	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**0.03**	**0.06**	**0.03**	**0.03**	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH02B 7.0-7.55	BH02B 7.6-7.8	BH02B 7.8-8.0	BH02B 9.3-9.4	----
				Client sampling date / time: 11-AUG-2008 15:00	11-AUG-2008 15:00	11-AUG-2008 15:00	11-AUG-2008 15:00	----
				EB0810824-001	EB0810824-002	EB0810824-003	EB0810824-004	----
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	<0.02	**0.06**	<0.02	**0.02**	----
EP007: Total Carbon (TC)								
Total Carbon	----	0.02	%	**0.03**	**0.12**	**0.03**	**0.05**	----
EP068C: Triazines								
Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Simazine	122-34-9	0.05	mg/kg	<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	<2.0	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<2.0	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----
Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	BH02B 7.0-7.55	BH02B 7.6-7.8	BH02B 7.8-8.0	BH02B 9.3-9.4	----
				Client sampling date / time	11-AUG-2008 15:00	11-AUG-2008 15:00	11-AUG-2008 15:00	11-AUG-2008 15:00	----
					EB0810824-001	EB0810824-002	EB0810824-003	EB0810824-004	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**66.4**	**67.5**	**70.2**	**69.6**	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**83.0**	**85.0**	**83.2**	**86.7**	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**42.7**	**53.8**	**26.1**	**81.9**	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**43.7**	**61.7**	**29.1**	**91.1**	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**34.6**	**47.0**	**28.5**	**50.4**	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**47.3**	**56.0**	**31.6**	**82.1**	----
Anthracene-d10	1719-06-8	0.1	%		**45.0**	**68.7**	**45.3**	**99.7**	----
4-Terphenyl-d14	1718-51-0	0.1	%		**56.5**	**53.0**	**31.9**	**78.5**	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.1	%		**105**	**83.9**	**111**	**116**	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	70	130

Queensland Government

Queensland **Health**

Inquiries: Megan Cook
Telephone: 07 3000 9686
Facsimile: 07 3274 9123

Reference: EB0810824

Requested by: Tim Kilmister
Australian Laboratory Services Pty Ltd
PO Box 66
Everton Park QLD 4053

RADIOACTIVITY ANALYSIS REPORT No. 08PQ322-325

SAMPLE

description: 4 x sample/s for: Radioactivity (U/Th) analysis using High Resolution Gamma Spectrometry

date received: 15th August 2008

METHOD - Gamma Spectrometry

Method: Adapted from ISO10703:1997-05-01 'Water Quality - Determination of the activity concentration of radionuclides by high resolution gamma-ray spectrometry'
All errors are quoted at the 2 sigma (95%) confidence level

Sample preparation: Samples was passed through a 1mm sieve and sealed in a poly jar counting geometry. The sample may be considered as having attained secular equilibrium.

Sample geometry: Soil: 100 mL polypropylene jar geometry

Detector specification:

Model number:	GMX 18190	*Serial number:*	26-N-1627B
Efficiency (rel. to 3" NaI):	~ 20%	*Energy resolution @ 1332keV:*	< 2.00 keV

Traceability: Reference source/s: Uranium 400 ± 2 µg/g (as uranium - 238 in secular equilibrium with decay progeny) IAEA Reference Material RGU-1, Report IAEA/RL/148, 1987, & Thorium 800 ± 2 µg/g (as thorium - 232 in secular equilibrium with decay progeny) IAEA Reference Material RGTh-1, Report IAEA/RL/148, 1987, used for system calibration.

Calibration file name: 2S_100J030908RK.Clb
Radionuclide library: EnviroNat_2.lib
Last calib. Validation: 3rd September 2008

RESULTS

Refer to attached results table 08PQ322-325

COMMENT

Results indicate individual radionuclide concentration only. Correction factors for full decay series activity should be applied before comparison to regulatory compliance / guideline / action levels as required.

M Cook
Chemist
13th October 2008

This report shall not be reproduced except in full, without the written permission of the Laboratory. The results relate to the samples as received, responsibility for sampling rests with the client.

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Gamma Spectrometry Results – Report No: 08PQ322-325

Queensland Government
Queensland Health

SAMPLE DESCRIPTION		ANALYSIS DETAILS			RESULTS (Bq.kg^{-1})					
Lab number	Sample identification	Date sampled	Date prepared	Date analysed	U-238[1]	Pb-210	Th-232[3]	Ra-224[2]	K-40	Other
08PQ322	BH02B 7.0-7.55	11/08/2008	22/09/2008	9/10/2008	42±4	40±20	35±8	31±3	250±40	N/D
08PQ323	BH02B 7.6-7.8	11/08/2008	22/09/2008	10/10/2008	36±5	40±20	29±8	32±3	200±40	N/D
08PQ324	BH02B 7.8-8.0	11/08/2008	22/09/2008	11/10/2008	8±3	N/D	14±8	12±3	210±40	N/D
08PQ325	BH02B 9.3-9.4	11/08/2008	22/09/2008	12/10/2008	13±3	N/D	18±8	15±3	110±40	N/D

NOTES

[1] Uranium 238 results derived decay progeny unless otherwise stated.
[2] Radium 224 results derived from decay progeny unless otherwise stated.
[3] Thorium-232 results derived from decay progeny unless otherwise stated.

N/D Not detected above system minimum detection level

M Cook 13th October 2008

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ALS Laboratory Group Pty Ltd
5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	12-Aug-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810824	BH02B 7.0-7.55	001	0%	5%	NA	NA
EB0810824	BH02B 7.6-7.8	002	8%	34%	NA	NA
EB0810824	BH02B 7.8-8.0	003	73%	13%	NA	NA

Remarks :

Test Procedure : AS1289.3.6.1

Prepared by : Dianne Blane Checked by

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 20-Aug-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 12-Aug-2008

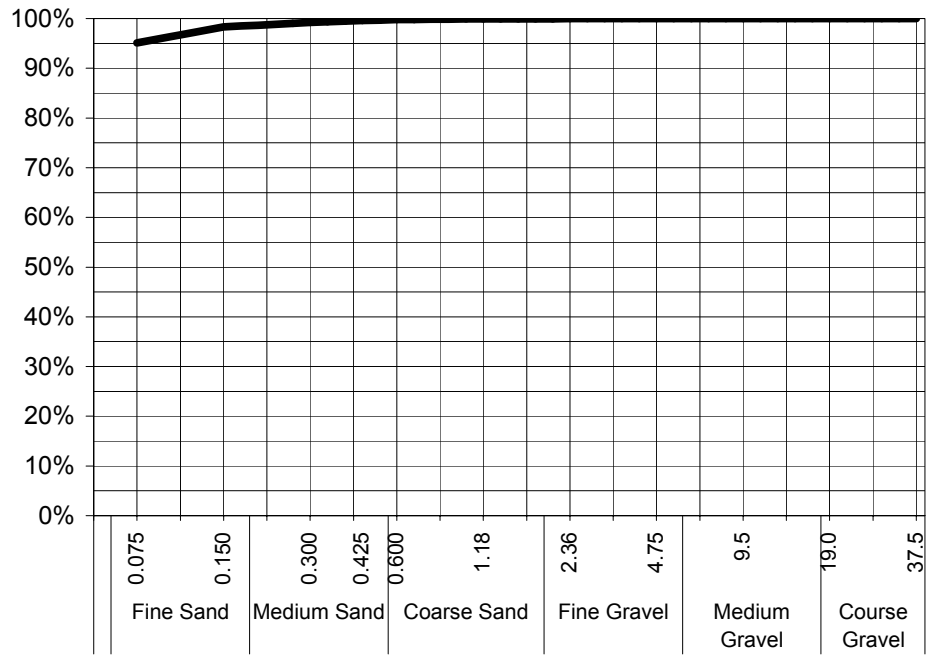
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0810824-001 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH02B 7.0-7.55

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	98%
0.075	95%

Samples analysed as received.

Sample Comments:

Analysed: 18-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Crumbly clay & silt

Test Method: AS1289.3.6.1

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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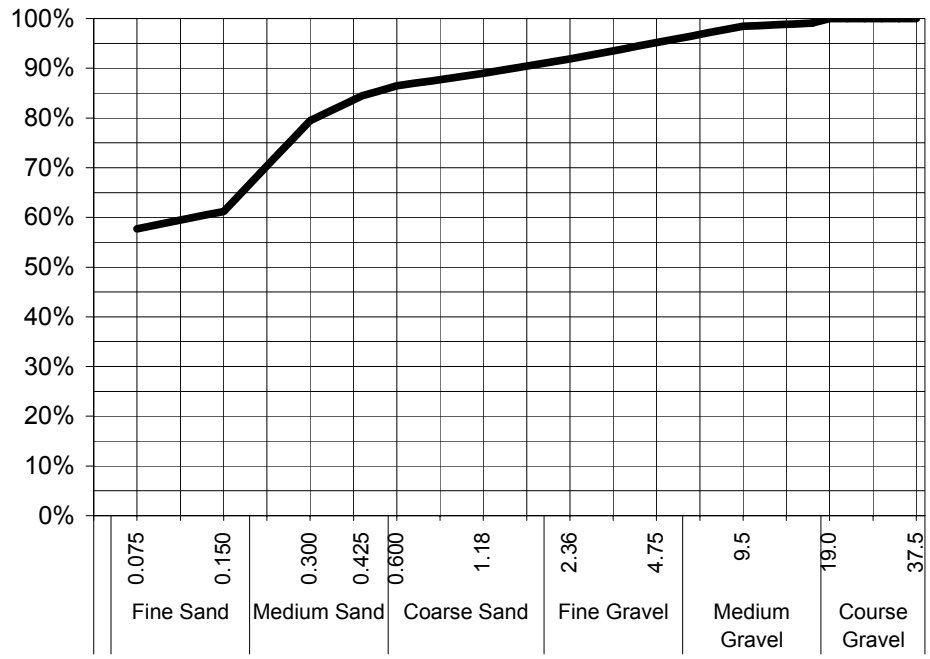
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	12-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810824-002 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH02B 7.6-7.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	98%
4.75	95%
2.36	92%
1.18	89%
0.600	86%
0.425	84%
0.300	79%
0.150	61%
0.075	58%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay & gravel		
Test Method:	AS1289.3.6.1		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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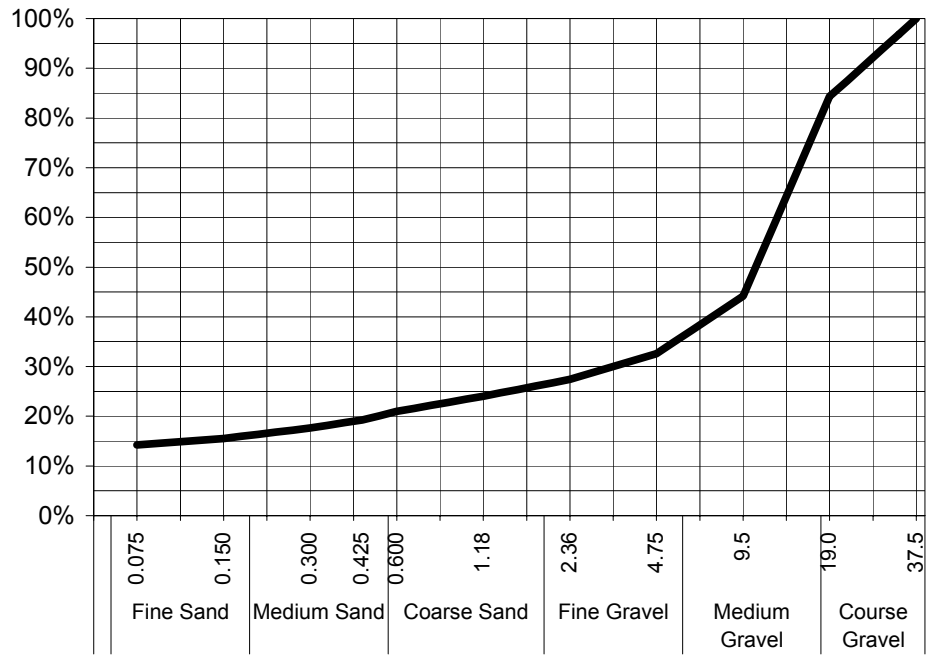
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	21-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	12-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810824-003 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH02B 7.8-8.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
37.5	100%
19.0	84%
9.5	44%
4.75	33%
2.36	27%
1.18	24%
0.600	21%
0.425	19%
0.300	18%
0.150	16%
0.075	14%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	18-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Rock & silt		
Test Method:	AS1289.3.6.1		

Dianne Blane
Senior Analyst
Authorised Signatory

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	12-Aug-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810824	BH02B 7.0-7.55	001	0%	5%	NA	NA
EB0810824	BH02B 7.6-7.8	002	8%	34%	NA	NA
EB0810824	BH02B 7.8-8.0	003	73%	13%	NA	NA

Remarks :	The mass of sample supplied does not meet that required by AS 1289.1.1.
Test Procedure :	AS1289.3.6.1
Prepared by :	Dianne Blane Checked by

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0810824**	Page	: 1 of 13
Amendment	: **2**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 12-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 6
Quote number	: EN/001/08	No. of samples analysed	: 5

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Gaston Allende		Organics
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 732725)									
EB0810824-001	BH02B 7.0-7.55	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.4	6.4	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 732725)									
EB0810824-001	BH02B 7.0-7.55	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA055: Moisture Content (QC Lot: 731488)									
EB0810805-020	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 736426)									
EB0810776-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP0804482-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 736427)									
EB0810776-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP0804482-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP005: Total Organic Carbon (TOC) (QC Lot: 733684)									
EB0810824-001	BH02B 7.0-7.55	EP005: Total Organic Carbon	----	0.02	%	0.03	0.03	0.0	No Limit
EP007: Total Carbon (TC) (QC Lot: 733685)									
EB0810824-001	BH02B 7.0-7.55	EP007: Total Carbon	----	0.02	%	0.03	0.03	0.0	No Limit
EP068C: Triazines (QC Lot: 731408)									
EB0810762-002	Anonymous	EP068: Atrazine	1912-24-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Simazine	122-34-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810850-002	Anonymous	EP068: Atrazine	1912-24-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Simazine	122-34-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 731410)									
EB0810762-002	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810762-012	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 731410) - continued									
EB0810762-012	Anonymous	EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 732561)									
ES0811842-001	Anonymous	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Dicamba	1918-00-9	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Mecoprop	93-65-2	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPA	94-74-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-D	94-75-7	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPB	94-81-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Picloram	1918-02-1	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 734717)									
EB0810762-014	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 737350)									
EB0810824-005	QC 14	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0002	72.2	No Limit
EB0811187-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 733710)									
EB0810772-004	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810772-013	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QC Lot: 731725)									
EP0804470-009	Anonymous	EP068: gamma-BHC	58-89-9	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 731725) - continued									
EP0804470-009	Anonymous	EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 731727)									
EP0804470-002	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 732725)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 732725)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 732725)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 736426)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	# 76.9	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	86.8	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	88.0	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	# 89.8	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	87.3	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	89.2	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	88.2	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 736427)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	99.3	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 733684)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	97.2	70	130
EP007: Total Carbon (TC) (QCLot: 733685)								
EP007: Total Carbon	----	0.02	%	<0.02	100 %	97.2	70	130
EP068C: Triazines (QCLot: 731408)								
EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	0.25 mg/kg	94.5	58.6	112
EP068: Simazine	122-34-9	0.05	mg/kg	<0.05	0.25 mg/kg	110	70	117
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 731410)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 731410) - continued								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	89.5	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	92.1	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	89.5	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	91.5	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	93.1	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	89.2	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	98.6	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	97.9	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	100	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	86.0	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	91.3	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	90.8	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	86.8	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	93.2	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	92.3	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	88.5	52	128
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 732561)								
EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	0.1 mg/kg	89.6	54.4	136
EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	0.1 mg/kg	82.4	45.5	144
EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	0.1 mg/kg	114	51.7	146
EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	0.1 mg/kg	91.0	60	140
EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	0.1 mg/kg	98.0	56.8	143
EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	0.1 mg/kg	92.3	50	141
EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	0.1 mg/kg	92.5	68.5	139
EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	0.1 mg/kg	97.2	50.8	145
EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	0.1 mg/kg	68.4	40.8	135
EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	0.1 mg/kg	97.8	57.4	142
EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	0.1 mg/kg	82.5	38.9	147
EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	0.1 mg/kg	60.1	48.7	138
EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	0.1 mg/kg	66.2	59.4	149
EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	0.1 mg/kg	99.3	53.2	145

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 734717)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	83.8	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	88.7	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	108	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	87.3	80.9	115

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 734717) - continued								
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	87.4	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	89.4	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	88.4	81	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 737350)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	101	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 733710)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	105	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 731726)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	73.7	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 731725)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	80.6	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	78.3	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	79.4	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	78.9	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	87.6	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	73.8	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	104	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	82.3	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	44.5	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	76.7	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 731727)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	71.7	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	80.5	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	69.5	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	73.9	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	71.7	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	62.2	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	72.9	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	72.6	51	117
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 731727) - continued								
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	71.2	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	66.7	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	77.6	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	73.3	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	83.6	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	78.7	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	82.0	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	77.4	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 736426)							
EB0810824-001	BH02B 7.0-7.55	EG005T: Arsenic	7440-38-2	50 mg/kg	74.7	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	90.2	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	91.0	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	95.0	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	91.5	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	88.2	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	93.3	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 736427)							
EB0810824-001	BH02B 7.0-7.55	EG035T: Mercury	7439-97-6	5.0 mg/kg	97.7	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 731410)							
EB0810762-003	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 732561)							
ES0811842-001	Anonymous	EP202: Mecoprop	93-65-2	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPA	94-74-6	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-D	94-75-7	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Triclopyr	55335-06-3	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-T	93-76-5	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Picloram	1918-02-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Clopyralid	1702-17-6	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 734717)							
EB0810824-005	QC 14	EG020A-T: Arsenic	7440-38-2	1.000 mg/L	90.5	70	130
		EG020A-T: Cadmium	7440-43-9	0.500 mg/L	87.9	70	130
		EG020A-T: Chromium	7440-47-3	1.000 mg/L	98.5	70	130
		EG020A-T: Copper	7440-50-8	1.000 mg/L	96.2	70	130
		EG020A-T: Lead	7439-92-1	1.000 mg/L	93.5	70	130
		EG020A-T: Nickel	7440-02-0	1.000 mg/L	92.8	70	130
		EG020A-T: Zinc	7440-66-6	1.000 mg/L	97.0	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 737350)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG035T: Total Recoverable Mercury by FIMS (QCLot: 737350) - continued							
EB0810824-005	QC 14	EG035T: Mercury	7439-97-6	0.020 mg/L	93.3	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 731726)							
EP0804470-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0810824**	Page	: 1 of 10
Amendment	: **2**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 12-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 6
Quote number	: EN/001/08	No. of samples analysed	: 5

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Pulp Bag								
BH02B 7.0-7.55,	BH02B 7.6-7.8,	**11-AUG-2008**	**12-AUG-2008**	---	----	**18-AUG-2008**	16-NOV-2008	✓
BH02B 7.8-8.0,	BH02B 9.3-9.4							
EA033-B: Potential Acidity								
Pulp Bag								
BH02B 7.0-7.55,	BH02B 7.6-7.8,	**11-AUG-2008**	**12-AUG-2008**	---	----	**18-AUG-2008**	16-NOV-2008	✓
BH02B 7.8-8.0,	BH02B 9.3-9.4							
EA033-C: Acid Neutralising Capacity								
Pulp Bag								
BH02B 7.0-7.55,	BH02B 7.6-7.8,	**11-AUG-2008**	**12-AUG-2008**	---	----	**18-AUG-2008**	16-NOV-2008	✓
BH02B 7.8-8.0,	BH02B 9.3-9.4							
EA033-D: Retained Acidity								
Pulp Bag								
BH02B 7.0-7.55,	BH02B 7.6-7.8,	**11-AUG-2008**	**12-AUG-2008**	---	----	**18-AUG-2008**	16-NOV-2008	✓
BH02B 7.8-8.0,	BH02B 9.3-9.4							
EA033-E: Acid Base Accounting								
Pulp Bag								
BH02B 7.0-7.55,	BH02B 7.6-7.8,	**11-AUG-2008**	**12-AUG-2008**	---	----	**18-AUG-2008**	16-NOV-2008	✓
BH02B 7.8-8.0,	BH02B 9.3-9.4							
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH02B 7.0-7.55,	BH02B 7.6-7.8,	**11-AUG-2008**	**----**	----	----	**15-AUG-2008**	18-AUG-2008	✓
BH02B 7.8-8.0,	BH02B 9.3-9.4							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
BH02B 7.0-7.55,	BH02B 7.6-7.8,	**11-AUG-2008**	**21-AUG-2008**	07-FEB-2009	✓	**21-AUG-2008**	07-FEB-2009	✓
BH02B 7.8-8.0,	BH02B 9.3-9.4							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH02B 7.0-7.55, BH02B 7.6-7.8, BH02B 7.8-8.0, BH02B 9.3-9.4	**11-AUG-2008**	**21-AUG-2008**	07-FEB-2009	✓	**21-AUG-2008**	08-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH02B 7.0-7.55, BH02B 7.6-7.8, BH02B 7.8-8.0, BH02B 9.3-9.4	**11-AUG-2008**	**19-AUG-2008**	---	----	**19-AUG-2008**	08-SEP-2008	✓
EP007: Total Carbon (TC)							
Pulp Bag							
BH02B 7.0-7.55, BH02B 7.6-7.8, BH02B 7.8-8.0, BH02B 9.3-9.4	**11-AUG-2008**	**19-AUG-2008**	---	----	**19-AUG-2008**	07-FEB-2009	✓
EP068C: Triazines							
Soil Glass Jar - Unpreserved							
BH02B 7.0-7.55, BH02B 7.6-7.8, BH02B 7.8-8.0, BH02B 9.3-9.4	**11-AUG-2008**	**15-AUG-2008**	25-AUG-2008	✓	**19-AUG-2008**	24-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH02B 7.0-7.55, BH02B 7.6-7.8, BH02B 7.8-8.0, BH02B 9.3-9.4	**11-AUG-2008**	**15-AUG-2008**	25-AUG-2008	✓	**19-AUG-2008**	24-SEP-2008	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Soil Glass Jar - Unpreserved							
BH02B 7.0-7.55, BH02B 7.6-7.8, BH02B 7.8-8.0, BH02B 9.3-9.4	**11-AUG-2008**	**19-AUG-2008**	25-AUG-2008	✓	**19-AUG-2008**	28-SEP-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC 14	**11-AUG-2008**	**20-AUG-2008**	07-FEB-2009	✓	**20-AUG-2008**	07-FEB-2009	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC 14	**11-AUG-2008**	**22-OCT-2008**	07-FEB-2009	✓	**22-OCT-2008**	07-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC 14	**11-AUG-2008**	**----**	----	----	**22-AUG-2008**	08-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC 14	**11-AUG-2008**	**----**	----	----	**19-AUG-2008**	08-SEP-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC 14	**11-AUG-2008**	**15-AUG-2008**	18-AUG-2008	✓	**18-AUG-2008**	24-SEP-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC 14	**11-AUG-2008**	**15-AUG-2008**	18-AUG-2008	✓	**18-AUG-2008**	24-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC 14	**11-AUG-2008**	**15-AUG-2008**	18-AUG-2008	✓	**18-AUG-2008**	24-SEP-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	5	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	5	**20.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	16	**6.3**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	11	**9.1**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 1995
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Total Inorganic Carbon	EP006	SOIL	In-house. Determined as the difference between Total Carbon and Organic Carbon.
Total Carbon	EP007	SOIL	In-house. Dried and pulverised sample is combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved Carbon (as CO2) is measured by infra-red detector
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	SOIL	In-House, LCMS (Electrospray in negative mode). Residues of acid herbicides are extracted from soil samples under the alkaline condition. An aliquot of the alkaline aqueous phase is taken and acidified before a SPE cleanup. After eluting off from the SPE cartridge, residues of acid herbicides are dissolved in HPLC mobile phase prior to instrument analysis.
Radionucleide Analysis (Solid)	RAN-SOL	SOIL	Radon and Radium, Gross alpha and beta radiation analysis of solid matrices conducted by Subcontracting Laboratory

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Extraction for Phenoxy Acid Herbicides in Soils.	* EP202-PR	SOIL	In-House: Alkaline extract followed by SPE clean up of acidified portion of the sample extract.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG005T: Total Metals by ICP-AES	830304-002	----	**Arsenic**	7440-38-2	76.9 %	79.7-120%	**Recovery less than lower control limit**
EG005T: Total Metals by ICP-AES	830304-002	----	**Copper**	7440-50-8	89.8 %	90.2-122%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB0810824-001	BH02B 7.0-7.55	**Manganese**	7439-96-5	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	1	16	6.3	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	1	11	9.1	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	1	20	5.0	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Environmental Division
Brisbane
Work Order
EB0810850

Telephone : +61-7-3243 7222

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address:	julian_dobos@urscorp.com
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS	COC SEQUENCE NUMBER
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259	✓ Standard - 5 days Non standard	(1) 2 3 4 please circle 2
URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	
URS PM:	Rob Ully	SITE :	GLNG SANTOS		
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	
COMMENTS:	Please see overleaf for specific analytes		(1) Caution - Samples may contain hazardous substances		

FOR LABORATORY USE ONLY

Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE: TIME:	DATE: TIME:	DATE: 14/8/08 TIME: 08:45

SAMPLE DETAILS | CONTAINER TYPE & PRESERVATIVE | ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH Field and pH Fox	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's Specific 13	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH26 0.0-0.6	12/08/08	S	1	1										✓	✓	✓	✓	✓	✓	✓		✓					✓
2	BH26 0.7-1.0	"	"	1	1										✓	✓	✓	✓	✓	✓	✓		✓					
3	BH26 1.1-1.45	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
4	BH26 1.5-2.0	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
5	BH26 3.2-3.45	"	"	2	1										✓	✓					✓		✓					✓
6	BH26 3.5-3.9	"	S	1	1										✓	✓					✓		✓					✓
7	BH26 4.0-4.2	"	C	1											✓	✓					✓		✓					✓
8	BH26 5.6-5.7	"	"	1											✓	✓					✓		✓					✓
9	BH26 13.0-13.12	"	"	1											✓	✓					✓		✓					✓
10	BH26 15.95-16.26	"	"	2											✓	✓					✓		✓					✓
11	QC15	"	"	1	1										✓	✓					✓		✓					✓
12	QC16	"	"	1	1										✓	✓					✓		✓					✓
TOTAL															12	12	4	4	4	4	12		12					8

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	**LABORATORY:**	ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY
PHONE NO:	(07) 3243 2111	**PHONE NO:**	(07) 32437222	TURNAROUND DETAILS: ☑ Standard - 5 days ☐ Non standard	COC SEQUENCE NUMBER: 1 (2) 3 4 (please circle 2)
FAX NO:	(07) 3243 2199	**FAX NO:**	(07) 32437259		Custody Seal ? Y N NA Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C
URS PROJECT NO:	42626228.52000	**PO NO:**		**RELINQUISHED BY:**	**RECEIVED BY:** DATE: TIME:
URS PM:	Rob Ully	**SITE :**	GLNG SANTOS		**RELINQUISHED BY:** DATE: TIME:
URS SAMPLERS :	Julian Dobos 0417 382 975	**Client PM:**	Emma Hicks (SANTOS)	DATE: TIME:	**RECEIVED BY:** Rex DATE: 14/08/08 09:45
COMMENTS:	Please see overleaf for specific analytes			(1) Caution - Samples may contain hazardous substances	ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

| | SAMPLE DETAILS | | | CONTAINER TYPE & PRESERVATIVE | | | | |

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EB0810850**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228 52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 14-AUG-2008	Issue Date	: 14-AUG-2008 17:07
Client Requested Due Date	: 21-AUG-2008	Scheduled Reporting Date	: **21-AUG-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 7.4 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 13
Sercurity Seal	: Intact.	No. of samples analysed	: 13

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-13 OC/OP/PCB
EB0810850-001	12-AUG-2008 15:00	BH26 0.0-0.6	✓	✓	✓	✓	✓	✓
EB0810850-002	12-AUG-2008 15:00	BH26 0.7-1.0	✓	✓	✓	✓	✓	✓
EB0810850-003	12-AUG-2008 15:00	BH26 1.1-1.45	✓		✓	✓	✓	✓
EB0810850-004	12-AUG-2008 15:00	BH26 1.5-2.0	✓	✓	✓	✓	✓	✓
EB0810850-005	12-AUG-2008 15:00	BH26 3.2-3.45	✓	✓	✓		✓	
EB0810850-006	12-AUG-2008 15:00	BH26 3.5-3.9	✓	✓	✓		✓	
EB0810850-007	12-AUG-2008 15:00	BH26 4.0-4.2	✓	✓	✓		✓	
EB0810850-008	12-AUG-2008 15:00	BH26 5.6-5.7	✓	✓	✓		✓	
EB0810850-009	12-AUG-2008 15:00	BH26 13.0-13.12	✓	✓	✓		✓	
EB0810850-010	12-AUG-2008 15:00	BH26 15.95-16.26	✓	✓	✓		✓	
EB0810850-011	12-AUG-2008 15:00	QC15	✓	✓	✓		✓	
EB0810850-012	12-AUG-2008 15:00	QC16	✓	✓	✓		✓	

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)	WATER - W-13 OC/OP/PCB
EB0810850-013	12-AUG-2008 15:00	QC17	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0810850**	Page	: 1 of 15
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228 52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 14-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 13
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EG005T (Total Metals) Sample EB0810850-001 (BH26 0.0-0.6) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.**
- **LCS recovery for EG005T (Total Metals) fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC17 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Pesticides: Results for Monocrotophos in water samples should be scrutinised as QC data indicates abnormally low recovery.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **TBT: Sample QC17 shows poor surrogate recovery. Insufficient sample for re-extraction and re-analysis.**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45
				Client sampling date / time: 12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00
				EB0810850-001	EB0810850-002	EB0810850-003	EB0810850-004	EB0810850-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.3	8.5	7.8	7.7	8.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	1.35	0.59	1.03	1.09	0.74
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	841	371	643	681	463
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.56	1.04	1.16	1.42	1.10
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	312	208	233	284	220
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.50	0.33	0.37	0.45	0.35
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	1.01	0.37	0.78	0.79	0.51
Net Acidity (acidity units)	----	10	mole H+ / t	632	232	488	492	316
Liming Rate	----	1	kg CaCO3/t	47	17	37	37	24
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	52.0	41.6	42.5	42.5	21.8
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	6810	8520	7520	7770	3390
Arsenic	7440-38-2	5	mg/kg	18	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	31	14	15	14	5
Copper	7440-50-8	5	mg/kg	26	30	30	29	33
Iron	7439-89-6	50	mg/kg	20800	10800	12300	12800	6480
Lead	7439-92-1	5	mg/kg	9	9	8	8	7
Manganese	7439-96-5	5	mg/kg	208	151	137	205	26
Nickel	7440-02-0	2	mg/kg	18	8	9	8	2
Zinc	7440-66-6	5	mg/kg	27	31	27	27	5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	1.95	0.75	0.96	1.23	0.41
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45
				Client sampling date / time: 12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00
				EB0810850-001	EB0810850-002	EB0810850-003	EB0810850-004	EB0810850-005
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<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	----
beta-BHC	319-85-7	0.05	mg/kg	<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	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	<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	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<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	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	<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	----
Endrin	72-20-8	0.05	mg/kg	<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	----
4.4`-DDD	72-54-8	0.05	mg/kg	<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	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<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	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg	<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	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Diazinon	333-41-5	0.05	mg/kg	<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	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Parathion	56-38-2	0.2	mg/kg	<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	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<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	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45
				Client sampling date / time: 12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00
				EB0810850-001	EB0810850-002	EB0810850-003	EB0810850-004	EB0810850-005
EP068B: Organophosphorus Pesticides (OP) - Continued								
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg	<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	----
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**58.6**	**57.1**	**58.6**	**54.8**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**68.8**	**69.4**	**63.7**	**65.2**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**85.0**	**86.5**	**80.3**	**82.1**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**81.6**	**81.9**	**74.7**	**81.6**	**82.9**
2-Chlorophenol-D4	93951-73-6	0.1	%	**89.3**	**90.7**	**79.5**	**89.9**	**89.7**
2.4.6-Tribromophenol	118-79-6	0.1	%	**72.0**	**66.7**	**62.6**	**66.8**	**61.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**90.5**	**92.1**	**81.4**	**90.2**	**91.1**
Anthracene-d10	1719-06-8	0.1	%	**82.7**	**81.2**	**80.1**	**71.4**	**73.5**
4-Terphenyl-d14	1718-51-0	0.1	%	**100**	**100**	**97.9**	**97.4**	**97.6**
EP090S: Organotin Surrogate								

Analytical Results

Sub-Matrix: SOIL			Client sample ID	BH26 0.0-0.6	BH26 0.7-1.0	BH26 1.1-1.45	BH26 1.5-2.0	BH26 3.2-3.45
			Client sampling date / time	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00
Compound	CAS Number	LOR	Unit	EB0810850-001	EB0810850-002	EB0810850-003	EB0810850-004	EB0810850-005
EP090S: Organotin Surrogate - Continued								
Tripropyltin	----	0.1	%	**52.1**	**40.6**	**50.9**	**47.3**	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH26 3.5-3.9	BH26 4.0-4.2	BH26 5.6-5.7	BH26 13.0-13.12	BH26 15.95-16.26
Client sampling date / time				12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00
				EB0810850-006	EB0810850-007	EB0810850-008	EB0810850-009	EB0810850-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.2	8.0	7.8	7.5	7.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.34	0.54	0.06	0.04	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	211	338	35	23	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.96	0.70	0.91	0.63	0.48
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	192	139	182	127	96
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.31	0.22	0.29	0.20	0.15
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.13	0.39	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	83	245	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	6	18	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	22.6	20.5	17.4	15.9	16.4
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	2040	1400	2870	2060
Arsenic	7440-38-2	5	mg/kg	<5	6	<5	15	5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	7	<2	2	<2	<2
Copper	7440-50-8	5	mg/kg	33	18	26	20	16
Iron	7439-89-6	50	mg/kg	----	4670	1610	20900	4030
Lead	7439-92-1	5	mg/kg	6	<5	<5	6	<5
Manganese	7439-96-5	5	mg/kg	----	<5	<5	84	8
Nickel	7440-02-0	2	mg/kg	<2	<2	<2	9	<2
Zinc	7440-66-6	5	mg/kg	<5	<5	<5	44	16
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	0.2	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.32	0.11	0.14	0.03	0.02
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH26 3.5-3.9	BH26 4.0-4.2	BH26 5.6-5.7	BH26 13.0-13.12	BH26 15.95-16.26
				Client sampling date / time: 12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00	12-AUG-2008 15:00
				EB0810850-006	EB0810850-007	EB0810850-008	EB0810850-009	EB0810850-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**95.2**	**96.0**	**86.5**	**81.0**	**77.1**
2-Chlorophenol-D4	93951-73-6	0.1	%	**101**	**104**	**93.5**	**92.3**	**84.3**
2.4.6-Tribromophenol	118-79-6	0.1	%	**62.9**	**69.0**	**69.5**	**71.5**	**65.9**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**98.7**	**101**	**94.3**	**79.4**	**74.9**
Anthracene-d10	1719-06-8	0.1	%	**74.4**	**78.4**	**81.2**	**104**	**91.1**
4-Terphenyl-d14	1718-51-0	0.1	%	**99.3**	**103**	**99.7**	**78.2**	**72.4**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: QC15	QC16	----	----	----
				Client sampling date / time: 12-AUG-2008 15:00	12-AUG-2008 15:00	----	----	----
				EB0810850-011	EB0810850-012	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**7.4**	**7.6**	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	**0.41**	**0.54**	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**255**	**336**	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**0.77**	**0.99**	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**154**	**198**	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**0.25**	**0.32**	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	**0.24**	**0.33**	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	**153**	**205**	----	----	----
Liming Rate	----	1	kg CaCO3/t	**11**	**15**	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**21.5**	**22.2**	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**6**	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**6**	**7**	----	----	----
Copper	7440-50-8	5	mg/kg	**28**	**507**	----	----	----
Lead	7439-92-1	5	mg/kg	**6**	**7**	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	<2	----	----	----
Zinc	7440-66-6	5	mg/kg	<5	**110**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.29**	**0.23**	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	QC15	QC16	----	----	----
				Client sampling date / time	12-AUG-2008 15:00	12-AUG-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		EB0810850-011	EB0810850-012	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**67.0**	**74.2**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**76.4**	**87.9**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**58.6**	**62.0**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**73.9**	**78.3**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**82.7**	**105**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**66.7**	**78.9**	----	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	QC17	----	----	----	----
				Client sampling date / time	12-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0810850-013	----	----	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0002**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		**2**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<5	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<2.4	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<2.4	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L		<2.4	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L		<2.4	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L		<2.4	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<2.4	----	----	----	----
Aldrin	309-00-2	0.5	µg/L		<2.4	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<2.4	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<2.4	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<2.4	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<2.4	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<2.4	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<2.4	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<2.4	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<2.4	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<2.4	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<2.4	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L		<2.4	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<2.4	----	----	----	----
Methoxychlor	72-43-5	2	µg/L		<2	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.5	µg/L		<2.4	----	----	----	----

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: QC17	----	----	----	----
				Client sampling date / time: 12-AUG-2008 15:00	----	----	----	----
				EB0810850-013	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Demeton-S-methyl	919-86-8	0.5	µg/L	<2.4	----	----	----	----
Monocrotophos	6923-22-4	2	µg/L	<2	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<2.4	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<2.4	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<2.4	----	----	----	----
Parathion-methyl	298-00-0	2	µg/L	<2	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<2.4	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<2.4	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<2.4	----	----	----	----
Parathion	56-38-2	2	µg/L	<2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<2.4	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<2.4	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<2.4	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<2.4	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<2.4	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<2.4	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<2.4	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<2.4	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
EP090: Organotin Compounds (Soluble)								
Tributyltin	56573-85-4	2	ngSn/L	<2	----	----	----	----
EP066S: PCB Surrogate								

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: QC17	----	----	----	----
				Client sampling date / time: 12-AUG-2008 15:00	----	----	----	----
				EB0810850-013	----	----	----	----
EP066S: PCB Surrogate - Continued								
Decachlorobiphenyl	2051-24-3	0.1	%	**72.2**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**76.6**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**95.4**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**29.6**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**78.4**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**72.4**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**72.5**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**74.7**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**74.9**	----	----	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**10.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141
EP090S: Organotin Surrogate			
Tripropyltin	----	10	108

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	14-Aug-08
Project :	42626228 52000	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810850	BH26 0.0-0.6	001	0%	10%	31%	59%
EB0810850	BH26 0.7-1.0	002	0%	2%	35%	63%
EB0810850	BH26 1.1-1.45	003	0%	5%	34%	61%
EB0810850	BH26 1.5-2.0	004	0%	4%	34%	62%
EB0810850	BH26 3.2-3.45	005	2%	18%	33%	47%
EB0810850	BH26 3.5-3.9	006	2%	11%	48%	39%
EB0810850	QC15	011	5%	11%	42%	42%
EB0810850	QC16	012	2%	11%	39%	48%

Remarks :	Samples analysed as received. This is a replacement report that supercedes all previous reports.		
Test Procedure :	AS1289.3.6.3	Report Date:	10-Oct-08
Prepared by :	Dianne Blane	Checked by	PK

Certificate of Analysis

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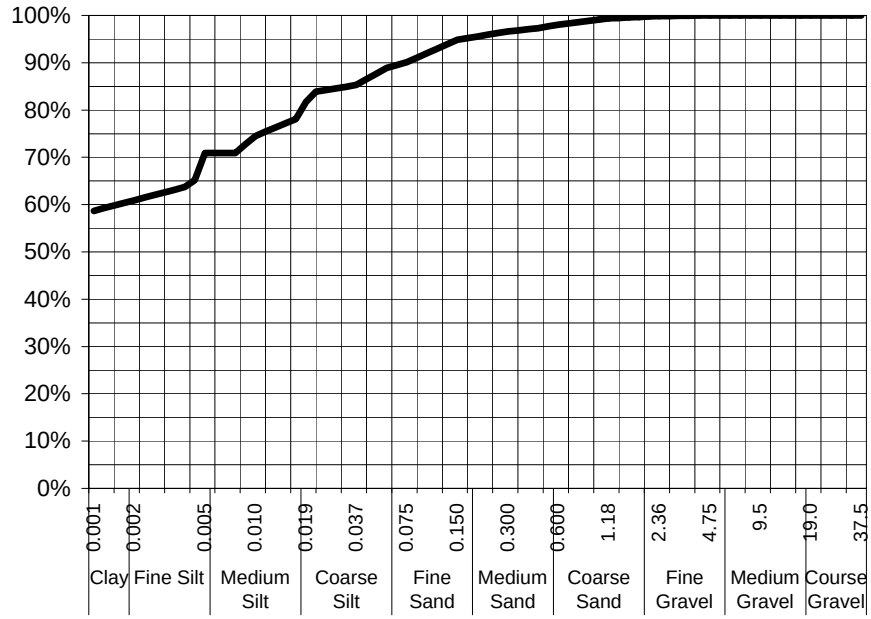
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	14-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810850-001_1 / PSD
PROJECT:	42626228 52000	**SAMPLE ID:**	BH26 0.0-0.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	98%
0.425	97%
0.300	97%
0.150	95%
0.075	90%
Particle Size (microns)	
37	85%
19	82%
10	75%
5	71%
4	64%
1	59%

Samples analysed as received.

Sample Comments:	*Samples analysed as received.* *This is a replacement report that supercedes all previous reports.*	**Analysed:**	22-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Wet silt & clay	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

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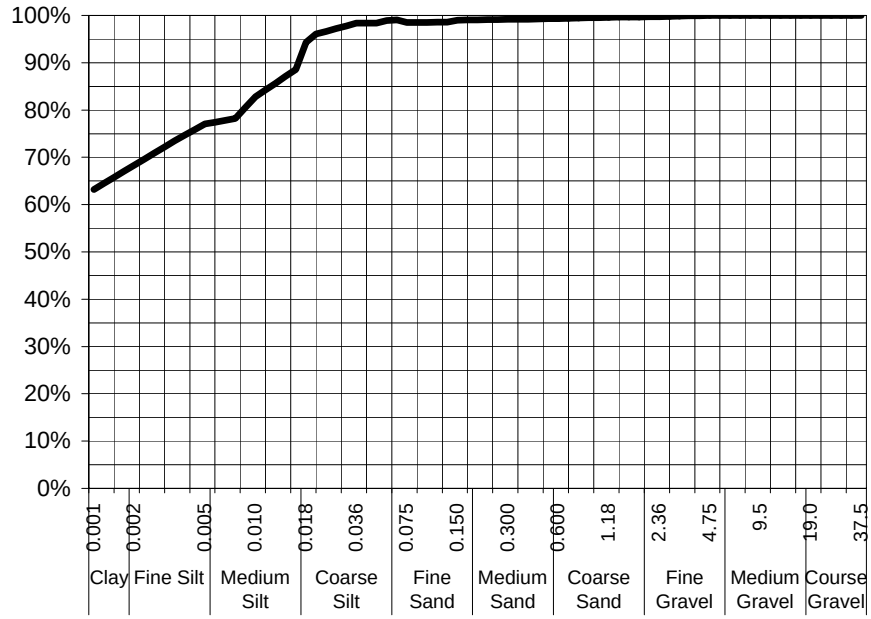
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	14-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810850-002_1 / PSD
PROJECT:	42626228 52000	**SAMPLE ID:**	BH26 0.7-1.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	99%
0.075	99%
Particle Size (microns)	
36	98%
18	94%
10	83%
5	77%
3	75%
1	63%

Samples analysed as received.

Sample Comments:	*Samples analysed as received.* *This is a replacement report that supercedes all previous reports.*	**Analysed:**	22-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Plastic clay	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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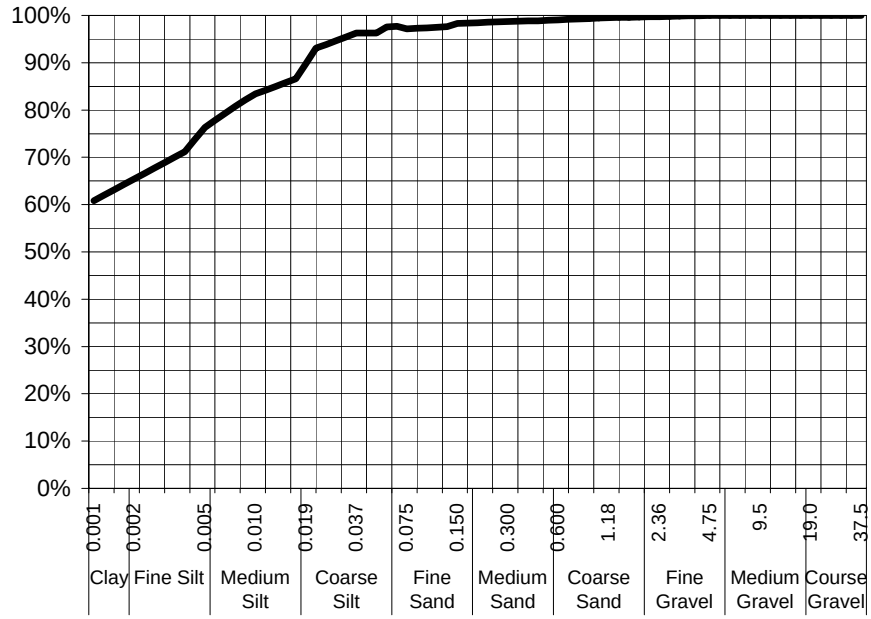
CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	14-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810850-003_1 / PSD
PROJECT:	42626228 52000	**SAMPLE ID:**	BH26 1.1-1.45

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	98%
0.075	97%
Particle Size (microns)	
37	96%
19	90%
10	83%
5	76%
3	71%
1	61%

Samples analysed as received.

Sample Comments:	*Samples analysed as received.* *This is a replacement report that supercedes all previous reports.*	**Analysed:**	22-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Plastic clay	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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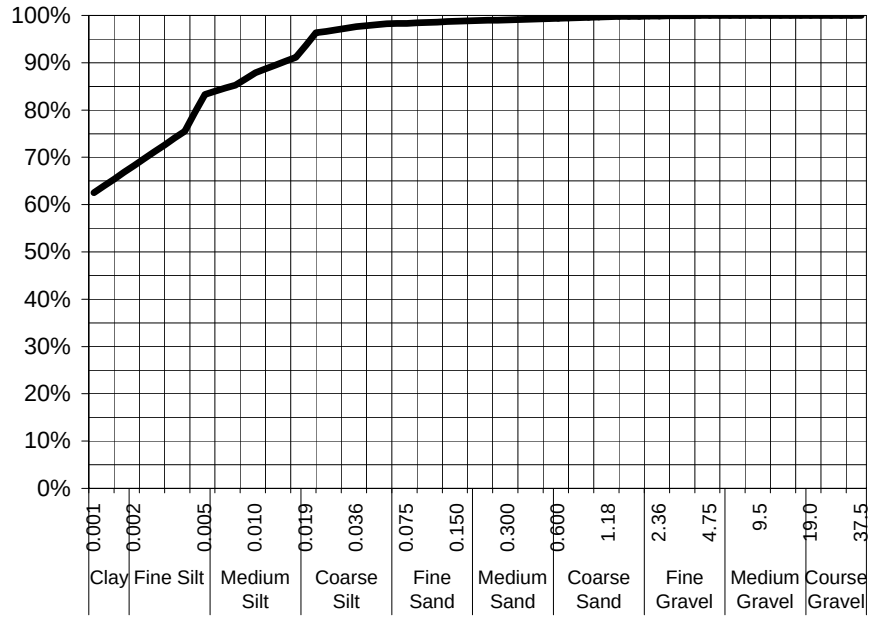
CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	14-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810850-004_1 / PSD
PROJECT:	42626228 52000	**SAMPLE ID:**	BH26 1.5-2.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	99%
0.075	98%
Particle Size (microns)	
36	98%
19	94%
10	88%
5	83%
3	76%
1	62%

Samples analysed as received.

Sample Comments:	*Samples analysed as received.* *This is a replacement report that supercedes all previous reports.*	**Analysed:**	22-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Plastic clay	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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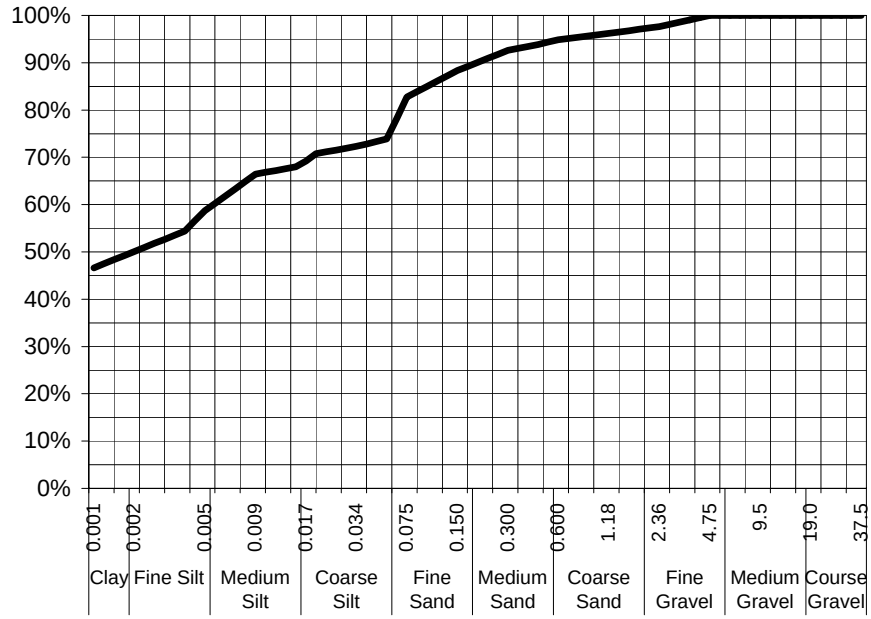
CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	14-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810850-005_1 / PSD
PROJECT:	42626228 52000	**SAMPLE ID:**	BH26 3.2-3.45

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	96%
0.600	95%
0.425	94%
0.300	93%
0.150	88%
0.075	83%
Particle Size (microns)	
34	72%
17	69%
9	66%
5	59%
3	54%
1	47%

Samples analysed as received.

Sample Comments:	*Samples analysed as received.* *This is a replacement report that supercedes all previous reports.*	**Analysed:**	22-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Plastic clay & grit	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

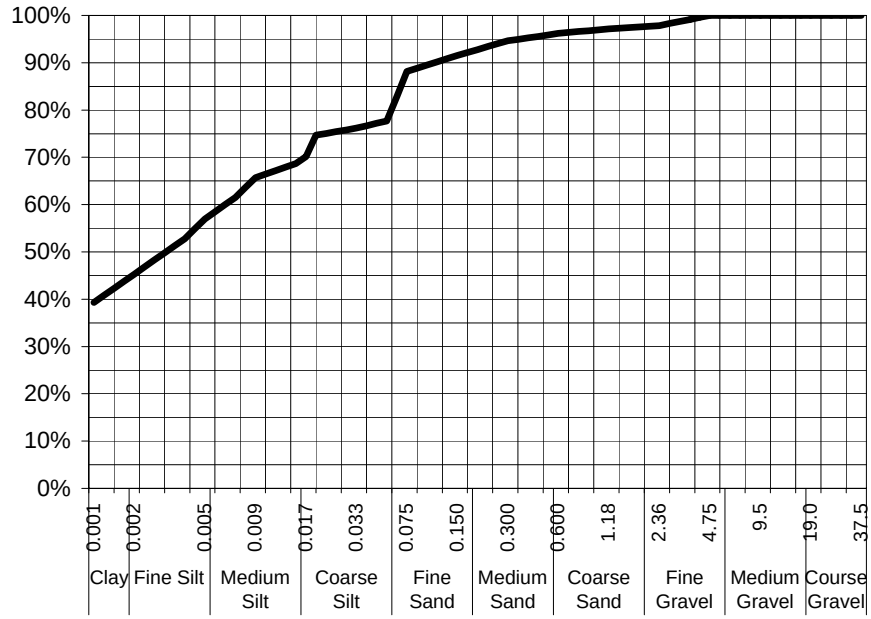
ALS Laboratory Group Pty Ltd
5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	14-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810850-006_1 / PSD
PROJECT:	42626228 52000	**SAMPLE ID:**	BH26 3.5-3.9

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	97%
0.600	96%
0.425	96%
0.300	95%
0.150	92%
0.075	88%
Particle Size (microns)	
33	76%
17	70%
9	66%
5	57%
3	53%
1	39%

Samples analysed as received.

Sample Comments:	*Samples analysed as received.* *This is a replacement report that supercedes all previous reports.*	**Analysed:**	22-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay & rock	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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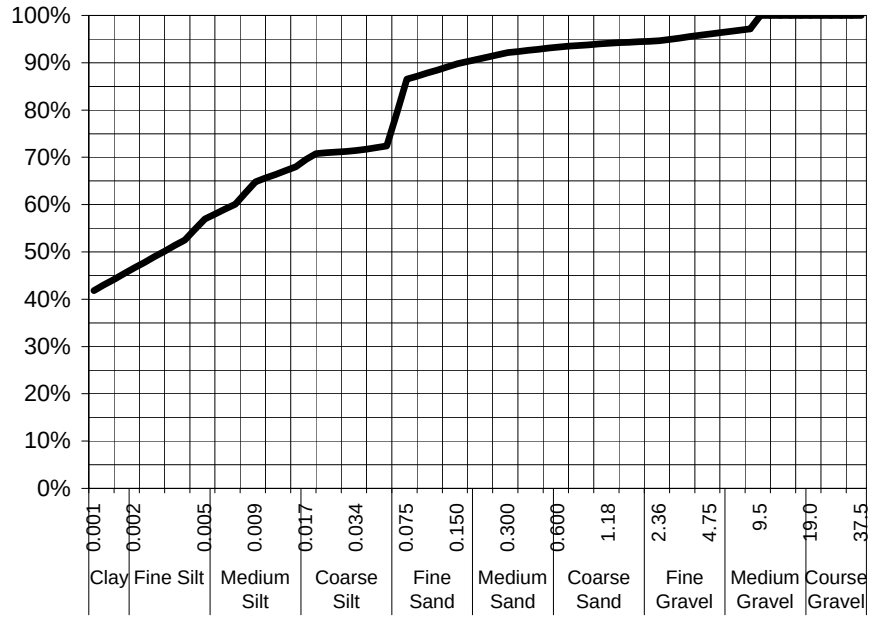
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	14-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810850-011_1 / PSD
PROJECT:	42626228 52000	**SAMPLE ID:**	QC15

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	96%
2.36	95%
1.18	94%
0.600	93%
0.425	93%
0.300	92%
0.150	90%
0.075	87%
Particle Size (microns)	
34	71%
17	70%
9	65%
5	57%
3	53%
1	42%

Samples analysed as received.

Sample Comments:	*Samples analysed as received.* *This is a replacement report that supercedes all previous reports.*	**Analysed:**	22-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay & rock	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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Authorised Signatory

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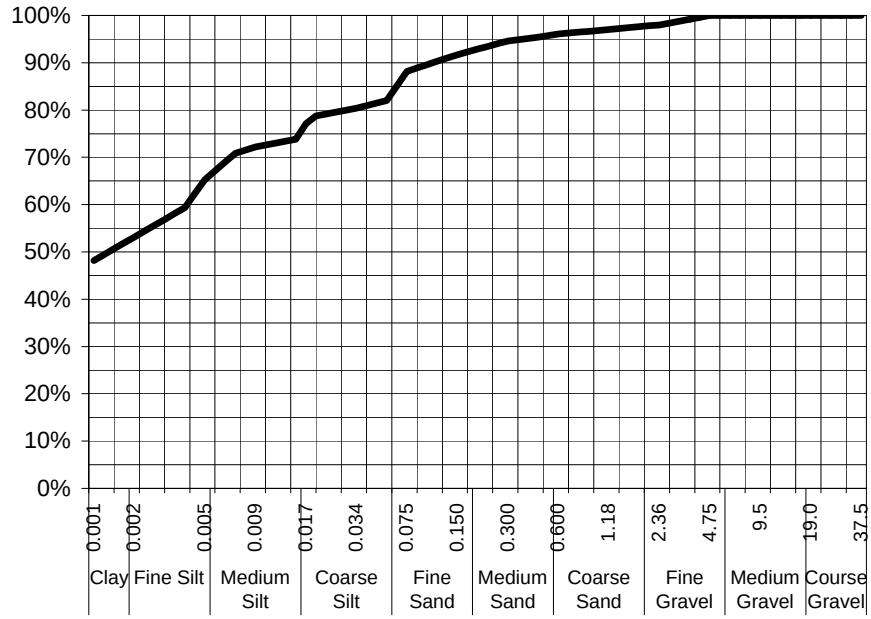
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	14-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0810850-012_1 / PSD
PROJECT:	42626228 52000	**SAMPLE ID:**	QC16

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	97%
0.600	96%
0.425	95%
0.300	95%
0.150	92%
0.075	88%
Particle Size (microns)	
34	80%
17	77%
9	72%
5	65%
3	59%
1	48%

Samples analysed as received.

Sample Comments:	*Samples analysed as received.* *This is a replacement report that supercedes all previous reports.*	**Analysed:**	22-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay & rock	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Peter Keyte
Manager, Newcastle
Authorised Signatory

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	14-Aug-08
Project :	42626228 52000	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0810850	BH26 0.0-0.6	001	0%	10%	31%	59%
EB0810850	BH26 0.7-1.0	002	0%	2%	35%	63%
EB0810850	BH26 1.1-1.45	003	0%	5%	34%	61%
EB0810850	BH26 1.5-2.0	004	0%	4%	34%	62%
EB0810850	BH26 3.2-3.45	005	2%	18%	33%	47%
EB0810850	BH26 3.5-3.9	006	2%	11%	48%	39%
EB0810850	QC15	011	5%	11%	42%	42%
EB0810850	QC16	012	2%	11%	39%	48%

Remarks :	Samples analysed as received. This is a replacement report that supercedes all previous reports.		
Test Procedure :	AS1289.3.6.3	Report Date:	10-Oct-08
Prepared by :	Dianne Blane	Checked by	PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0810850**	Page	: 1 of 17
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228 52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 14-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 13
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 732730)									
EB0810850-001	BH26 0.0-0.6	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.3	8.4	1.2	0% - 20%
EB0810850-011	QC15	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	7.4	7.4	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 732730)									
EB0810850-001	BH26 0.0-0.6	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	1.35	1.39	2.8	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	841	865	2.8	0% - 20%
EB0810850-011	QC15	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.41	0.41	0.0	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	255	259	1.3	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 732730)									
EB0810850-001	BH26 0.0-0.6	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.56	1.56	0.0	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.50	0.50	0.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	312	312	0.0	0% - 20%
EB0810850-011	QC15	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.77	0.76	1.4	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.25	0.24	0.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	154	152	1.4	0% - 50%
EA055: Moisture Content (QC Lot: 733993)									
EB0810850-004	BH26 1.5-2.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	42.5	40.5	4.8	0% - 20%
EB0810850-011	QC15	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	21.5	21.5	0.0	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 733573)									
EB0810850-001	BH26 0.0-0.6	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	31	18	# 54.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	18	11	45.4	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	18	16	12.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	26	25	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	9	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	208	222	6.5	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	27	28	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 733573) - continued									
EB0810850-001	BH26 0.0-0.6	EG005T: Aluminium	7429-90-5	50	mg/kg	6810	6940	1.8	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	20800	22400	7.5	0% - 20%
EB0810850-011	QC15	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	<5	22.5	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	27	6.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	5	24.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	57	62	9.6	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	3210	3730	15.0	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	3770	3640	3.6	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 733574)									
EB0810850-001	BH26 0.0-0.6	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0810850-011	QC15	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 733688)									
EB0810850-001	BH26 0.0-0.6	EP005: Total Organic Carbon	----	0.02	%	1.95	1.91	2.1	0% - 20%
EB0810850-011	QC15	EP005: Total Organic Carbon	----	0.02	%	0.29	0.29	0.0	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 731409)									
EB0810762-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810850-002	BH26 0.7-1.0	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 731408)									
EB0810762-002	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: beta-BHC	319-85-7	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: delta-BHC	319-86-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Heptachlor	76-44-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Aldrin	309-00-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 731408) - continued									
EB0810762-002	Anonymous	EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810850-002	BH26 0.7-1.0	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 731408)									
EB0810762-002	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dimethoate	60-51-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Diazinon	333-41-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Malathion	121-75-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Fenthion	55-38-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Ethion	563-12-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 731408) - continued									
EB0810762-002	Anonymous	EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Parathion	56-38-2	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0810850-002	BH26 0.7-1.0	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 731410)									
EB0810762-002	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 731410) - continued									
EB0810762-012	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 731414)									
EB0810850-001	BH26 0.0-0.6	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0810894-003	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 731414) - continued									
EB0810894-003	Anonymous	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QC Lot: 731403)									
EB0810850-001	BH26 0.0-0.6	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 733534)									
EB0810836-001	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810877-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 733834)									
EB0810837-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810876-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 732744)									
EB0810733-004	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0810846-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (Soluble) (QC Lot: 732558)									
EB0810880-001	Anonymous	EP090S: Tributyltin	56573-85-4	2	ngSn/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 732730)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 732730)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 732730)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 733573)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	85.4	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	88.3	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	# 85.7	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	90.7	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	87.1	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	88.0	87.8	122
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	# 86.3	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 733574)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	92.5	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 733688)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	101	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 731409)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	78.3	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 731408)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.25 mg/kg	92.2	58.4	114
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.25 mg/kg	91.6	57.7	107
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.25 mg/kg	90.0	59.3	113
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	89.5	59.1	113
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	84.6	56	117

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 731408) - continued								
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.25 mg/kg	95.4	57.3	119
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.25 mg/kg	87.3	58.2	111
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.25 mg/kg	87.5	60.4	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	83.4	60.3	114
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.25 mg/kg	78.3	56	117
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	84.0	60.8	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	75.0	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	73.8	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	101	47	133
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.25 mg/kg	78.0	58.5	114
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	81.3	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	77.0	46.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.25 mg/kg	77.2	53.6	120
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	76.2	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	75.2	51.6	124
EP068: Methoxychlor	72-43-5	0.05	mg/kg	----	0.25 mg/kg	94.5	52.4	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 731408)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.25 mg/kg	89.0	43.9	113
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	43.1	31.8	112
EP068: Monocrotophos	6923-22-4	0.05	mg/kg	----	0.25 mg/kg	100	33	130
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.25 mg/kg	102	46.4	129
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.25 mg/kg	107	57.1	114
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.25 mg/kg	93.5	58.9	113
EP068: Parathion-methyl	298-00-0	0.05	mg/kg	----	0.25 mg/kg	# 119	54.8	112
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.25 mg/kg	109	57.8	119
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.25 mg/kg	86.5	68	109
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.25 mg/kg	90.0	62.2	115
EP068: Parathion	56-38-2	0.05	mg/kg	----	0.25 mg/kg	108	54.7	113
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.25 mg/kg	93.3	51.9	121
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.25 mg/kg	91.9	58	118
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.25 mg/kg	89.9	59.8	115
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.25 mg/kg	96.1	32.5	101
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.25 mg/kg	91.6	59.6	116
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.25 mg/kg	106	58.4	115

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 731408) - continued								
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.25 mg/kg	75.9	56.9	117
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.25 mg/kg	64.5	42	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 731410)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	89.5	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	92.1	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	89.5	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	91.5	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	93.1	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	89.2	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	98.6	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	97.9	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	100	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	86.0	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	91.3	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	90.8	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	86.8	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	93.2	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	92.3	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	88.5	52	128
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 731414)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	89.6	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	92.5	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	91.2	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	91.2	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	101	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	82.4	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	96.1	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	95.9	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	96.7	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	84.2	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	93.1	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	88.5	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	89.4	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	96.3	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	96.1	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	92.3	52	128
EP090: Organotin Compounds (QCLot: 731403)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	50.4	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 733534)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	90.8	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	96.3	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	108	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	97.7	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	99.1	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	98.2	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	100	81	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 733834)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	104	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 732744)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 732922)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	75.5	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 732921)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	81.6	57.1	122
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	81.4	52	118
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	81.8	58.2	126
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	80.6	54.2	127
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	82.0	52	131
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	84.0	47.1	128
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	92.9	57	126
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	81.1	57	119
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	84.3	53.4	120
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	88.0	53.6	131
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	84.7	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	90.8	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	87.5	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	82.6	49.1	135
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	91.9	55.2	123
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	96.7	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	89.4	54.3	126
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	85.4	50	136
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	76.1	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	84.6	47.3	137
EP068: Methoxychlor	72-43-5	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	79.3	40	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 732921)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 732921) - continued								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	88.7	53.6	125
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	77.4	49.2	135
EP068: Monocrotophos	6923-22-4	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	# Not Determined	17.5	100
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	72.9	51.3	125
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	76.6	57.4	126
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	83.8	54.6	123
EP068: Parathion-methyl	298-00-0	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	81.0	53.6	126
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	83.8	54.2	129
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	81.3	59.2	120
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	83.3	57.6	121
EP068: Parathion	56-38-2	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	104	51.8	126
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	82.5	54.7	122
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	85.4	54.7	130
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	95.4	54.8	120
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	72.2	48.3	126
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	81.6	53.7	121
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	84.4	54.6	130
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	95.2	53.4	128
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	69.0	34	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 732923)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	89.5	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	88.9	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	93.5	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	96.1	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	100	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	90.9	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	88.8	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	87.1	51	117
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Recovery Limits (%)
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 732923) - continued								
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	74.6	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	76.4	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	90.7	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	87.2	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	89.4	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	92.2	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	92.8	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	92.1	42	126
		1.0	µg/L	<1.0	----	----	----	----
EP090: Organotin Compounds (Soluble) (QCLot: 732558)								
EP090S: Tributyltin	56573-85-4	2	ngSn/L	<2	1470 ngSn/L	39.1	29	100

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 733573)							
EB0810850-002	BH26 0.7-1.0	EG005T: Arsenic	7440-38-2	50 mg/kg	80.7	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	88.8	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	86.4	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	92.4	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	89.5	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	93.3	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	88.0	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	90.8	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 733574)							
EB0810850-002	BH26 0.7-1.0	EG035T: Mercury	7439-97-6	5.0 mg/kg	86.0	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 731409)							
EB0810762-003	Anonymous	EP066: Total Polychlorinated biphenyls	----	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QCLot: 731408)							
EB0810762-003	Anonymous	EP068: gamma-BHC	58-89-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Heptachlor	76-44-8	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Aldrin	309-00-2	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	Anonymous	Anonymous	Anonymous	Anonymous
EP068B: Organophosphorus Pesticides (OP) (QCLot: 731408)							
EB0810762-003	Anonymous	EP068: Diazinon	333-41-5	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Chlorpyrifos-methyl	5598-13-0	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Pirimphos-ethyl	23505-41-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Bromophos-ethyl	4824-78-6	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Prothiofos	34643-46-4	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 731410)							
EB0810762-003	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 731414)							
EB0810850-002	BH26 0.7-1.0	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	93.2	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	110	70	130
EP090: Organotin Compounds (QCLot: 731403)							
EB0810850-002	BH26 0.7-1.0	EP090: Tributyltin	56573-85-4	25 µgSn/kg	37.9	20	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 733534)							
EB0810836-002	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 733834)							
EB0810837-001	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (Soluble) (QCLot: 732558)							
EB0810880-001	Anonymous	EP090S: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0810850**	Page	: 1 of 11
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228 52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 14-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 13
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
Pulp Bag							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0, BH26 3.2-3.45, BH26 3.5-3.9, BH26 4.0-4.2, BH26 5.6-5.7, BH26 13.0-13.12, BH26 15.95-16.26, QC15, QC16	**12-AUG-2008**	**14-AUG-2008**	---	----	**18-AUG-2008**	16-NOV-2008	✓
EA033-B: Potential Acidity							
Pulp Bag							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0, BH26 3.2-3.45, BH26 3.5-3.9, BH26 4.0-4.2, BH26 5.6-5.7, BH26 13.0-13.12, BH26 15.95-16.26, QC15, QC16	**12-AUG-2008**	**14-AUG-2008**	---	----	**18-AUG-2008**	16-NOV-2008	✓
EA033-C: Acid Neutralising Capacity							
Pulp Bag							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0, BH26 3.2-3.45, BH26 3.5-3.9, BH26 4.0-4.2, BH26 5.6-5.7, BH26 13.0-13.12, BH26 15.95-16.26, QC15, QC16	**12-AUG-2008**	**14-AUG-2008**	---	----	**18-AUG-2008**	16-NOV-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity							
Pulp Bag							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0, BH26 3.2-3.45, BH26 3.5-3.9, BH26 4.0-4.2, BH26 5.6-5.7, BH26 13.0-13.12, BH26 15.95-16.26, QC15, QC16	**12-AUG-2008**	**14-AUG-2008**	---	----	**18-AUG-2008**	16-NOV-2008	✓
EA033-E: Acid Base Accounting							
Pulp Bag							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0, BH26 3.2-3.45, BH26 3.5-3.9, BH26 4.0-4.2, BH26 5.6-5.7, BH26 13.0-13.12, BH26 15.95-16.26, QC15, QC16	**12-AUG-2008**	**14-AUG-2008**	---	----	**18-AUG-2008**	16-NOV-2008	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0, BH26 3.2-3.45, BH26 3.5-3.9, BH26 4.0-4.2, BH26 5.6-5.7, BH26 13.0-13.12, BH26 15.95-16.26, QC15, QC16	**12-AUG-2008**	**----**	----	----	**19-AUG-2008**	19-AUG-2008	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0, BH26 3.2-3.45, BH26 3.5-3.9, BH26 4.0-4.2, BH26 5.6-5.7, BH26 13.0-13.12, BH26 15.95-16.26, QC15, QC16	**12-AUG-2008**	**19-AUG-2008**	08-FEB-2009	✓	**19-AUG-2008**	08-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0, BH26 3.2-3.45, BH26 3.5-3.9, BH26 4.0-4.2, BH26 5.6-5.7, BH26 13.0-13.12, BH26 15.95-16.26, QC15, QC16	**12-AUG-2008**	**19-AUG-2008**	08-FEB-2009	✓	**20-AUG-2008**	09-SEP-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0, BH26 3.2-3.45, BH26 3.5-3.9, BH26 4.0-4.2, BH26 5.6-5.7, BH26 13.0-13.12, BH26 15.95-16.26, QC15, QC16	**12-AUG-2008**	**19-AUG-2008**	---	----	**19-AUG-2008**	09-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0	**12-AUG-2008**	**15-AUG-2008**	26-AUG-2008	✓	**19-AUG-2008**	24-SEP-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0	**12-AUG-2008**	**15-AUG-2008**	26-AUG-2008	✓	**19-AUG-2008**	24-SEP-2008	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0	**12-AUG-2008**	**15-AUG-2008**	26-AUG-2008	✓	**19-AUG-2008**	24-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0, BH26 3.2-3.45, BH26 3.5-3.9, BH26 4.0-4.2, BH26 5.6-5.7	**12-AUG-2008**	**15-AUG-2008**	26-AUG-2008	✓	**18-AUG-2008**	24-SEP-2008	✓
Soil Glass Jar - Unpreserved							
BH26 13.0-13.12, BH26 15.95-16.26, QC15, QC16	**12-AUG-2008**	**15-AUG-2008**	26-AUG-2008	✓	**19-AUG-2008**	24-SEP-2008	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH26 0.0-0.6, BH26 0.7-1.0, BH26 1.1-1.45, BH26 1.5-2.0	**12-AUG-2008**	**15-AUG-2008**	26-AUG-2008	✓	**18-AUG-2008**	24-SEP-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC17	**12-AUG-2008**	**19-AUG-2008**	08-FEB-2009	✓	**19-AUG-2008**	08-FEB-2009	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC17	**12-AUG-2008**	**----**	----	----	**19-AUG-2008**	09-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC17	**12-AUG-2008**	**----**	----	----	**18-AUG-2008**	09-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC17	**12-AUG-2008**	**19-AUG-2008**	19-AUG-2008	✓	**20-AUG-2008**	28-SEP-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC17	**12-AUG-2008**	**19-AUG-2008**	19-AUG-2008	✓	**20-AUG-2008**	28-SEP-2008	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved							
QC17	**12-AUG-2008**	**19-AUG-2008**	19-AUG-2008	✓	**20-AUG-2008**	28-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC17	**12-AUG-2008**	**19-AUG-2008**	19-AUG-2008	✓	**20-AUG-2008**	28-SEP-2008	✓
EP090: Organotin Compounds (Soluble)							
Amber Glass Bottle - Unpreserved							
QC17	**12-AUG-2008**	**18-AUG-2008**	11-OCT-2008	✓	**18-AUG-2008**	27-SEP-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	32	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	32	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	32	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	4	**25.0**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	32	**6.3**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 1995
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Organotin Compounds (Soluble)	EP090S	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Organotin Sample Preparation	ORG34	WATER	In-house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0810850-001	BH26 0.0-0.6	**Chromium**	7440-47-3	54.1 %	0-50%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EG005T: Total Metals by ICP-AES	826872-002	----	**Chromium**	7440-47-3	85.7 %	87.2-121%	**Recovery less than lower control limit**
EG005T: Total Metals by ICP-AES	826872-002	----	**Zinc**	7440-66-6	86.3 %	86.7-119%	**Recovery less than lower control limit**
EP068B: Organophosphorus Pesticides (OP)	824115-002	----	**Parathion-methyl**	298-00-0	119 %	54.8-112%	**Recovery greater than upper control limit**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068B: Organophosphorus Pesticides (OP)	826134-008	----	**Monocrotophos**	6923-22-4	Not Determined	----	**Standard recovery not determined, result less than LOR**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0811004

Telephone : +61-7-3243 7222

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: 1 2 3 4 (please circle 1)
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		
URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	
URS PM:	Rob Ully	SITE :	GLNG SANTOS		
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	
COMMENTS:	Please see overleaf for specific analytes			(1) Caution - Samples may contain hazardous substances	

FOR LABORATORY USE ONLY

Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
15/8/08		
DATE: TIME: 13:15	DATE: TIME:	DATE:

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL 10C	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's 13 specific	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide QHSS	Particle Size Determination Det.	Pore Water Ammonia	Phenoxy Acid Syd	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
1	BH26 19.0-19.3	14/08/08	S	2	1										ON HOLD														
2	BH4 0.0-0.3	"	"	2	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
3	BH4 1.5-2.0	"	"	2	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
4	BH4 2.0-2.2	"	"	1	1										✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	
5	BH4 2.2-2.5	"	"	1	1										✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	
6	BH4 2.5-2.95	"	"	1											✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	
7	BH4 3.2-3.7	"	"	2	1										✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	
8	QC18	"	"	1	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
9	QC19	"	"	1	1										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
10	QC20	"	"			2	1	1								✓		✓	✓	✓								✓	
TOTAL															9	9	4	5	5	5	8	8	8	8	8	8	5		

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0811004**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 15-AUG-2008	Issue Date	: 18-AUG-2008 13:50
Client Requested Due Date	: 22-AUG-2008	Scheduled Reporting Date	: **29-AUG-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 7.4 C - Ice present
No. of coolers/boxes	: 1 LARGE	No. of samples received	: 10
Sercurity Seal	: Intact.	No. of samples analysed	: 9

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Radionuclide Testing has been subcontracted to QHSS.**
- **TBT Analysis has been cancelled from sample QC20 due to insufficient sample volume provided.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	(On Hold) SOIL No analysis requested	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP006 (solids) Total Inorganic Carbon (TIC)	SOIL - EP068C Triazines by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins
EB0811004-001	14-AUG-2008 15:00	BH26 19.0-19.3	✓							
EB0811004-002	14-AUG-2008 15:00	BH4 0.0-0.3		✓	✓	✓	✓	✓	✓	✓
EB0811004-003	14-AUG-2008 15:00	BH4 1.5-2.0		✓	✓	✓	✓	✓	✓	✓
EB0811004-004	14-AUG-2008 15:00	BH4 2.0-2.2			✓	✓	✓	✓	✓	
EB0811004-005	14-AUG-2008 15:00	BH4 2.2-2.5			✓	✓	✓	✓	✓	
EB0811004-006	14-AUG-2008 15:00	BH4 2.5-2.95			✓	✓	✓	✓	✓	
EB0811004-007	14-AUG-2008 15:00	BH4 3.2-3.7			✓	✓	✓	✓	✓	
EB0811004-008	14-AUG-2008 15:00	QC18		✓	✓	✓	✓	✓	✓	✓
EB0811004-009	14-AUG-2008 15:00	QC19		✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP202(solids) Phenoxyacetic acids	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-13 OC/OP/PCB
EB0811004-002	14-AUG-2008 15:00	BH4 0.0-0.3	✓	✓	✓
EB0811004-003	14-AUG-2008 15:00	BH4 1.5-2.0	✓	✓	✓
EB0811004-004	14-AUG-2008 15:00	BH4 2.0-2.2	✓	✓	
EB0811004-005	14-AUG-2008 15:00	BH4 2.2-2.5	✓	✓	
EB0811004-006	14-AUG-2008 15:00	BH4 2.5-2.95	✓	✓	
EB0811004-007	14-AUG-2008 15:00	BH4 3.2-3.7	✓	✓	
EB0811004-008	14-AUG-2008 15:00	QC18	✓	✓	✓
EB0811004-009	14-AUG-2008 15:00	QC19	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP075 SIM PAH only SIM - PAH only	WATER - W-02T 8 metals (Total)	WATER - W-13 OC/OP/PCB
EB0811004-010	14-AUG-2008 15:00	QC20	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com
- Trigger - Subcontract Report	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com
- Trigger - Subcontract Report	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com
- Trigger - Subcontract Report	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0811004**	Page	: 1 of 15
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 15-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 10
Quote number	: EN/001/08	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Gaston Allende		Organics
Herman Lin	Senior Inorganic Chemist	Inorganics
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **It has been noted that the duplicate for sample BH4 0.0-0.3 has failed for both Mn and Fe. ALS is unable to repeat the analysis as the samples have been disposed.**
- **LCS recovery for EG020T (Total Metals) fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC20 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Pesticides: Sample BH4 1.5-2.0 shows poor matrix spike recovery due to matrix interference. Confirmed by visual inspection and re-analysis.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC20	----	----	----	----
				Client sampling date / time	14-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0811004-010	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		**0.001**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		**0.002**	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.002**	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<1.0	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<1.0	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L		<1.0	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L		<1.0	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L		<1.0	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<1.0	----	----	----	----
Aldrin	309-00-2	0.5	µg/L		<1.0	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<1.0	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<1.0	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<1.0	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<1.0	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<1.0	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<1.0	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<1.0	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<1.0	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<1.0	----	----	----	----
Methoxychlor	72-43-5	2	µg/L		<2	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.5	µg/L		<1.0	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC20	----	----	----	----
				Client sampling date / time	14-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0811004-010	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Monocrotophos	6923-22-4	2	µg/L		<2	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L		<1.0	----	----	----	----
Diazinon	333-41-5	0.5	µg/L		<1.0	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L		<1.0	----	----	----	----
Parathion-methyl	298-00-0	2	µg/L		<2	----	----	----	----
Malathion	121-75-5	0.5	µg/L		<1.0	----	----	----	----
Fenthion	55-38-9	0.5	µg/L		<1.0	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L		<1.0	----	----	----	----
Parathion	56-38-2	2	µg/L		<2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L		<1.0	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L		<1.0	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L		<1.0	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L		<1.0	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L		<1.0	----	----	----	----
Ethion	563-12-2	0.5	µg/L		<1.0	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L		<1.0	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L		<1.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**104**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**110**	----	----	----	----

Analytical Results

Sub-Matrix: **LIQUID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC20	----	----	----	----
				Client sampling date / time: 14-AUG-2008 15:00	----	----	----	----
				EB0811004-010	**----**	**----**	**----**	**----**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**125**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**33.5**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**80.6**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**105**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**89.3**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**85.4**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**103**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH4 0.0-0.3	BH4 1.5-2.0	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95
				Client sampling date / time: 14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00
				EB0811004-002	EB0811004-003	EB0811004-004	EB0811004-005	EB0811004-006
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.5	9.2	9.4	9.3	7.9
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.06	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	36	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	26.8	0.91	1.01	0.44	1.11
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	5370	182	201	88	221
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	8.60	0.29	0.32	0.14	0.35
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	25.2	11.0	20.4	19.9	18.5
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	4600	4030	3200	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	13	5	<5	<5	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	13	3	<2	9	4
Copper	7440-50-8	5	mg/kg	8	14	<5	11	15
Iron	7439-89-6	50	mg/kg	19500	20400	2210	----	----
Lead	7439-92-1	5	mg/kg	<5	<5	<5	9	20
Manganese	7439-96-5	5	mg/kg	469	92	9	----	----
Nickel	7440-02-0	2	mg/kg	7	3	<2	6	5
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	15	17	6	18	36
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.28	0.05	0.04	0.08	0.05

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH4 0.0-0.3	BH4 1.5-2.0	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95
				Client sampling date / time: 14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00
				EB0811004-002	EB0811004-003	EB0811004-004	EB0811004-005	EB0811004-006
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	**3.14**	**0.02**	**0.04**	**0.02**	**0.05**
EP007: Total Carbon (TC)								
Total Carbon	----	0.02	%	**3.42**	**0.07**	**0.08**	**0.10**	**0.10**
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	----	----	----
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	----	----	----
Total Chlordane (sum)	----	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	----	----	----
Endosulfan (sum)	115-29-7	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	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH4 0.0-0.3	BH4 1.5-2.0	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95
				Client sampling date / time: 14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00
				EB0811004-002	EB0811004-003	EB0811004-004	EB0811004-005	EB0811004-006
EP068B: Organophosphorus Pesticides (OP) - Continued								
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	----	----	----
EP068C: Triazines								
Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Simazine	122-34-9	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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02
Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02

Analytical Results

Sub-Matrix: SOLID				Client sample ID	BH4 0.0-0.3	BH4 1.5-2.0	BH4 2.0-2.2	BH4 2.2-2.5	BH4 2.5-2.95
				Client sampling date / time	14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00
Compound	CAS Number	LOR	Unit		EB0811004-002	EB0811004-003	EB0811004-004	EB0811004-005	EB0811004-006
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued									
MCPA	94-74-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
2.4-DP	120-36-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
2.4-D	94-75-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Triclopyr	55335-06-3	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
2.4.5-T	93-76-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
MCPB	94-81-5	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Picloram	1918-02-1	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Clopyralid	1702-17-6	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg		<0.02	<0.02	<0.02	<0.02	<0.02
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**54.9**	**53.0**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**73.0**	**63.1**	**62.0**	**59.9**	**56.8**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**87.4**	**73.5**	**62.1**	**67.5**	**62.2**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**90.8**	**101**	**87.6**	**92.4**	**93.5**
2-Chlorophenol-D4	93951-73-6	0.1	%		**94.4**	**108**	**91.3**	**94.5**	**97.1**
2.4.6-Tribromophenol	118-79-6	0.1	%		**87.6**	**98.4**	**83.7**	**80.7**	**83.1**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**100**	**109**	**94.2**	**96.0**	**103**
Anthracene-d10	1719-06-8	0.1	%		**87.0**	**106**	**92.5**	**87.3**	**87.7**
4-Terphenyl-d14	1718-51-0	0.1	%		**103**	**123**	**106**	**102**	**103**
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**57.8**	**54.6**	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.1	%		**115**	**97.0**	**112**	**108**	**114**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH4 3.2-3.7	QC18	QC19	----	----
				Client sampling date / time: 14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	----	----
				EB0811004-007	EB0811004-008	EB0811004-009	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.0**	**7.4**	**8.9**	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**0.55**	**0.52**	**0.79**	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**110**	**103**	**157**	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**0.18**	**0.16**	**0.25**	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**12.9**	**12.1**	**18.0**	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**4520**	**3960**	**3800**	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	----	----
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	**3**	**4**	**3**	----	----
Copper	7440-50-8	5	mg/kg	**16**	**11**	<5	----	----
Iron	7439-89-6	50	mg/kg	**19100**	**17200**	**6170**	----	----
Lead	7439-92-1	5	mg/kg	<5	<5	**9**	----	----
Manganese	7439-96-5	5	mg/kg	**135**	**50**	**25**	----	----
Nickel	7440-02-0	2	mg/kg	**6**	**3**	<2	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	<2	----	----
Zinc	7440-66-6	5	mg/kg	**32**	**17**	**12**	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	<0.02	**0.03**	**0.03**	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH4 3.2-3.7	QC18	QC19	----	----
				Client sampling date / time: 14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	----	----
				EB0811004-007	EB0811004-008	EB0811004-009	----	----
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	<0.02	<0.02	**0.03**	----	----
EP007: Total Carbon (TC)								
Total Carbon	----	0.02	%	<0.02	**0.03**	**0.06**	----	----
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	----	----
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	----	----
Total Chlordane (sum)	----	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	----	----
Endosulfan (sum)	115-29-7	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	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH4 3.2-3.7	QC18	QC19	----	----
				Client sampling date / time: 14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	----	----
				EB0811004-007	EB0811004-008	EB0811004-009	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
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	----	----
EP068C: Triazines								
Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Simazine	122-34-9	0.05	mg/kg	<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	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<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	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	<0.5	<0.5	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	<0.02	----	----
Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	<0.02	----	----

Analytical Results

Sub-Matrix: SOLID				Client sample ID	BH4 3.2-3.7	QC18	QC19	----	----
				Client sampling date / time	14-AUG-2008 15:00	14-AUG-2008 15:00	14-AUG-2008 15:00	----	----
Compound	CAS Number	LOR	Unit		EB0811004-007	EB0811004-008	EB0811004-009	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued									
MCPA	94-74-6	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
2.4-DP	120-36-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
2.4-D	94-75-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Triclopyr	55335-06-3	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
2.4.5-T	93-76-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
MCPB	94-81-5	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Picloram	1918-02-1	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Clopyralid	1702-17-6	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
Fluroxypyr	69377-81-7	0.02	mg/kg		<0.02	<0.02	<0.02	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	45.4	53.8	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		58.3	53.6	64.3	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		65.0	59.9	70.8	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		95.3	100	94.6	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		98.7	102	98.1	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		94.3	94.8	94.3	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		107	108	108	----	----
Anthracene-d10	1719-06-8	0.1	%		98.4	101	101	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		115	117	118	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		----	58.7	67.9	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.1	%		116	109	119	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	70	130

Queensland Government

Queensland **Health**

Inquiries: Megan Cook
Telephone: 07 3000 9686
Facsimile: 07 3274 9123

Reference: EB0811004

Requested by: Tim Kilmister
Australian Laboratory Services PTY LTD
PO Box 66
Everton Park QLD 4053

RADIOACTIVITY ANALYSIS REPORT No. 08PQ336-344

SAMPLE

description: 9 x sample/s for: Radioactivity (U/Th) analysis using High Resolution Gamma Spectrometry

date received: 19th August 2008

METHOD - Gamma Spectrometry

Method: Adapted from ISO10703:1997-05-01 'Water Quality - Determination of the activity concentration of radionuclides by high resolution gamma-ray spectrometry'
All errors are quoted at the 2 sigma (95%) confidence level

Sample preparation: Samples was passed through a 1mm sieve and sealed in a poly jar counting geometry. The sample may be considered as having attained secular equilibrium.

Sample geometry: Soil: 100 mL polypropylene jar geometry

Detector specification:

Model number:	GMX 18190	*Serial number:*	26-N-1627B
Efficiency (rel. to 3" NaI):	~ 20%	*Energy resolution @ 1332keV:*	< 2.00 keV

Traceability: Reference source/s: Uranium 400 ± 2 µg/g (as uranium - 238 in secular equilibrium with decay progeny) IAEA Reference Material RGU-1, Report IAEA/RL/148, 1987, & Thorium 800 ± 2 µg/g (as thorium - 232 in secular equilibrium with decay progeny) IAEA Reference Material RGTh-1, Report IAEA/RL/148, 1987, used for system calibration.

Calibration file name: 2S_100J030908RK.Clb
Radionuclide library: EnviroNat_2.lib
Last calib. Validation: 3rd August 2008

RESULTS

Refer to attached results table 08PQ336-344

COMMENT

Results indicate individual radionuclide concentration only. Correction factors for full decay series activity should be applied before comparison to regulatory compliance / guideline / action levels as required.

M Cook
Chemist
24th October 2008

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Gamma Spectrometry Results – Report No: 08PQ336-344

Queensland Government
Queensland Health

SAMPLE DESCRIPTION		ANALYSIS DETAILS			RESULTS (Bq.kg^{-1})					
Lab number	Sample identification	Date sampled	Date prepared	Date analysed	U-238[1]	Ra-226[2]	Th-232	Ra-224[2]	K-40	Other
08PQ336	BH26 19.0-19.3	14/08/2008	22/09/2008	13/10/2008	60±20	43±5	50±10	40±3	1000±80	N/D
08PQ337	BH4 0.0-0.3	14/08/2008	22/09/2008	14/10/2008	<30	<5	<10	<3	<60	N/D
08PQ338	BH4 1.5-2.0	14/08/2008	22/09/2008	15/10/2008	30±20	23±3	36±7	38±3	610±50	N/D
08PQ339	BH4 2.0-2.2	14/08/2008	22/09/2008	16/10/2008	<40	18±3	30±10	32±4	520±60	N/D
08PQ340	BH4 2.2-2.5	14/08/2008	22/09/2008	17/10/2008	<80	19±6	30±20	36±5	550±90	N/D
08PQ341	BH4 2.5-2.95	14/08/2008	22/09/2008	17/10/2008	<50	21±4	40±10	36±4	530±70	N/D
08PQ342	BH4 3.2-3.7	14/08/2008	22/09/2008	20/10/2008	<40	27±4	31±9	32±4	760±60	N/D
08PQ343	QC18	14/08/2008	22/09/2008	21/10/2008	<50	13±4	29±9	33±5	560±70	N/D
08PQ344	QC19	14/08/2008	22/09/2008	23/10/2008	<50	15±3	40±10	35±4	550±60	N/D

NOTES

[1] Uranium 238 results derived from thorium 234 data.

[2] Radium 224 and 226 results derived from decay progeny unless otherwise stated.

[3] Thorium-232 results derived from decay progeny unless otherwise stated.

N/D Not detected above system minimum detection level

M Cook 24th October 2008

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File G:\[Physics\Analytical Laboratory\Analysis - Samples 2008 2009\08PQ336 344 GS1\08PQ336 344 GS1 table DOC

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	15-Aug-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811004	BH4 0.0-0.3	002	34%	47%	7%	12%
EB0811004	BH4 1.5-2.0	003	18%	12%	45%	25%
EB0811004	BH4 2.0-2.2	004	4%	19%	38%	39%
EB0811004	BH4 2.2-2.5	005	15%	25%	31%	29%
EB0811004	BH4 2.5-2.95	006	2%	34%	37%	27%
EB0811004	BH4 3.2-3.7	007	27%	9%	45%	19%
EB0811004	QC18	008	11%	19%	39%	31%
EB0811004	QC19	009	18%	12%	35%	35%

Remarks :	Samples analysed as received. This is a replacement report that supercedes all previous reports.		
Test Procedure :	AS1289.3.6.3	Report Date:	30-Sep-08
Prepared by :	Dianne Blane	Checked by	PK

Certificate of Analysis

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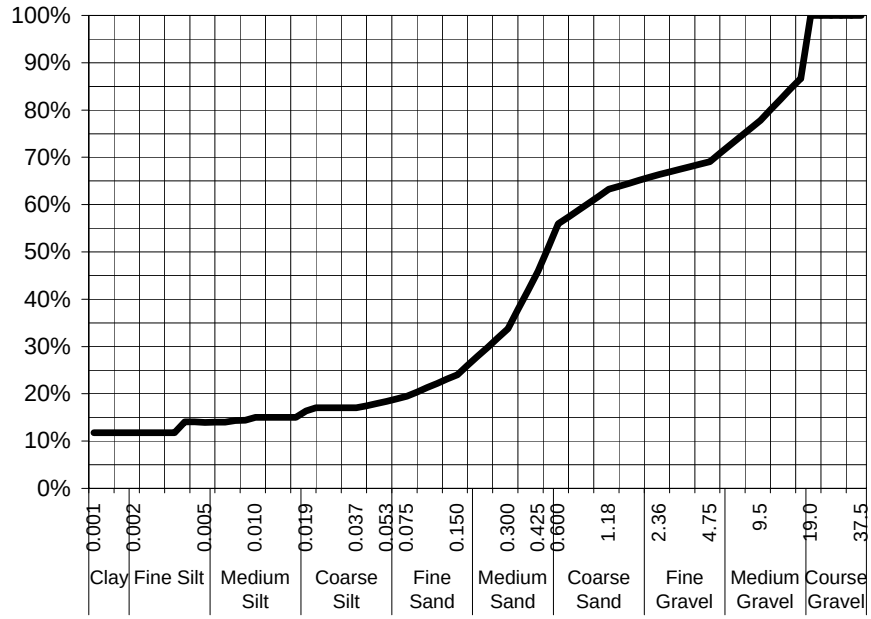
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	15-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811004-002_1 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH4 0.0-0.3

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	78%
4.75	69%
2.36	66%
1.18	63%
0.600	56%
0.425	46%
0.300	34%
0.150	24%
0.075	19%
Particle Size (microns)	
37	17%
19	16%
10	15%
5	14%
3	14%
1	12%

Samples analysed as received.

This is a replacement report that supercedes all previous reports.

Sample Comments:		**Analysed:**	24-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Wet grey sand, shell & rock	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

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ALS Environmental

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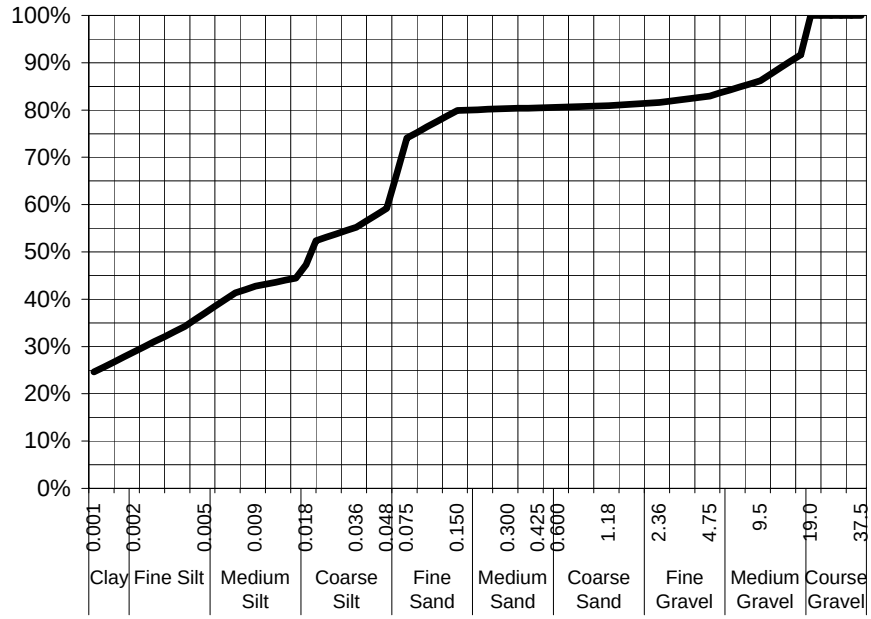
CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	15-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811004-003_1 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH4 1.5-2.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	86%
4.75	83%
2.36	82%
1.18	81%
0.600	81%
0.425	80%
0.300	80%
0.150	80%
0.075	74%
Particle Size (microns)	
36	55%
18	47%
9	43%
5	37%
3	34%
1	25%

Samples analysed as received.

This is a replacement report that supercedes all previous reports.

Sample Comments:		**Analysed:**	24-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	White & ochre hard clay paste	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Peter Keyte
Manager, Newcastle
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Certificate of Analysis

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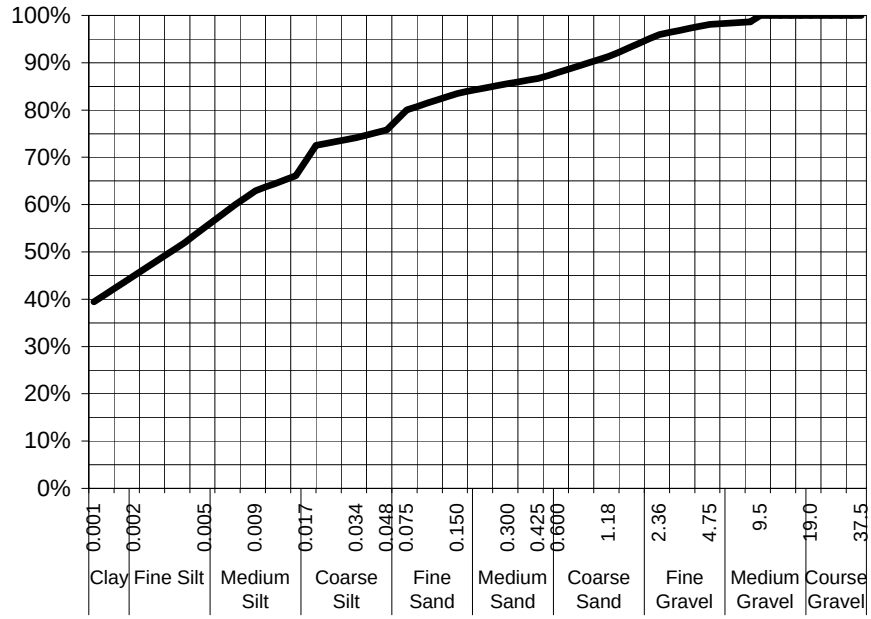
CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	15-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811004-004_1 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH4 2.0-2.2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	96%
1.18	91%
0.600	88%
0.425	87%
0.300	86%
0.150	84%
0.075	80%
Particle Size (microns)	
34	74%
17	69%
9	63%
5	55%
3	52%
1	39%

Samples analysed as received.

This is a replacement report that supercedes all previous reports.

Sample Comments:		**Analysed:**	24-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	White & ochre hard clay paste	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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Certificate of Analysis

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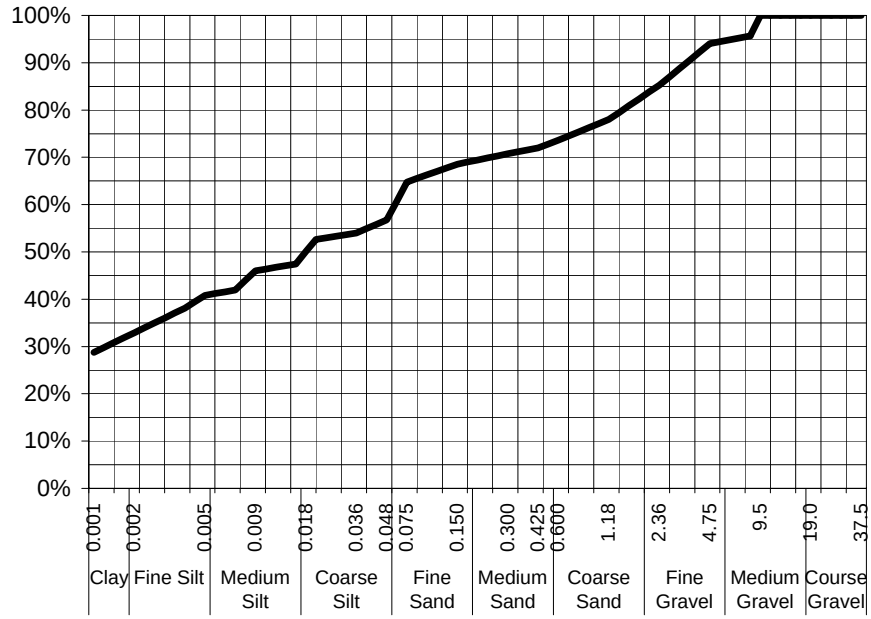
CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	15-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811004-005_1 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH4 2.2-2.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	94%
2.36	85%
1.18	78%
0.600	74%
0.425	72%
0.300	71%
0.150	69%
0.075	65%
Particle Size (microns)	
36	54%
18	50%
9	46%
5	41%
3	38%
1	29%

Samples analysed as received.

This is a replacement report that supercedes all previous reports.

Sample Comments:		**Analysed:**	24-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	White & ochre hard clay paste	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

ALS Laboratory Group Pty Ltd
5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	15-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811004-006_1 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH4 2.5-2.95

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	96%
0.600	94%
0.425	92%
0.300	90%
0.150	83%
0.075	69%
Particle Size (microns)	
36	65%
18	58%
10	51%
5	44%
3	39%
1	27%

Samples analysed as received.

This is a replacement report that supercedes all previous reports.

Sample Comments:	*The mass of sample supplied does not meet that required by AS 1289.1.1.*	**Analysed:**	24-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	White & ochre hard clay paste	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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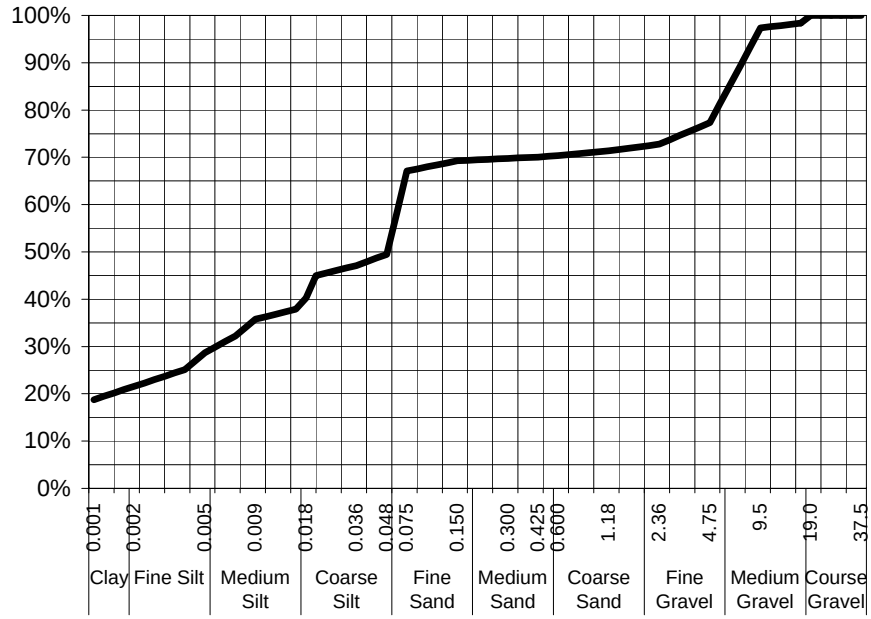
Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	15-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811004-007_1 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH4 3.2-3.7

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	97%
4.75	77%
2.36	73%
1.18	71%
0.600	70%
0.425	70%
0.300	70%
0.150	69%
0.075	67%
Particle Size (microns)	
36	47%
18	40%
9	36%
5	29%
3	25%
1	19%

Samples analysed as received.

This is a replacement report that supercedes all previous reports.

Sample Comments:		**Analysed:**	24-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	White & ochre hard clay paste	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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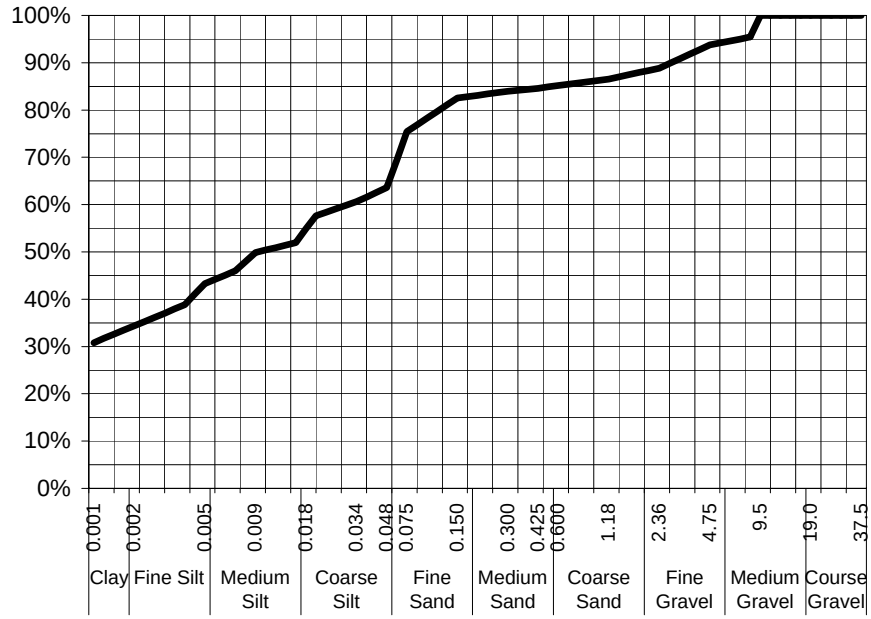
Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	15-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811004-008_1 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC18

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	94%
2.36	89%
1.18	87%
0.600	85%
0.425	85%
0.300	84%
0.150	83%
0.075	75%
Particle Size (microns)	
34	61%
18	55%
9	50%
5	43%
3	39%
1	31%

Samples analysed as received.

This is a replacement report that supercedes all previous reports.

Sample Comments:	*The mass of sample supplied does not meet that required by AS 1289.1.1.*	**Analysed:**	24-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	White & ochre hard clay paste	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Peter Keyte
Manager, Newcastle
Authorised Signatory

Certificate of Analysis

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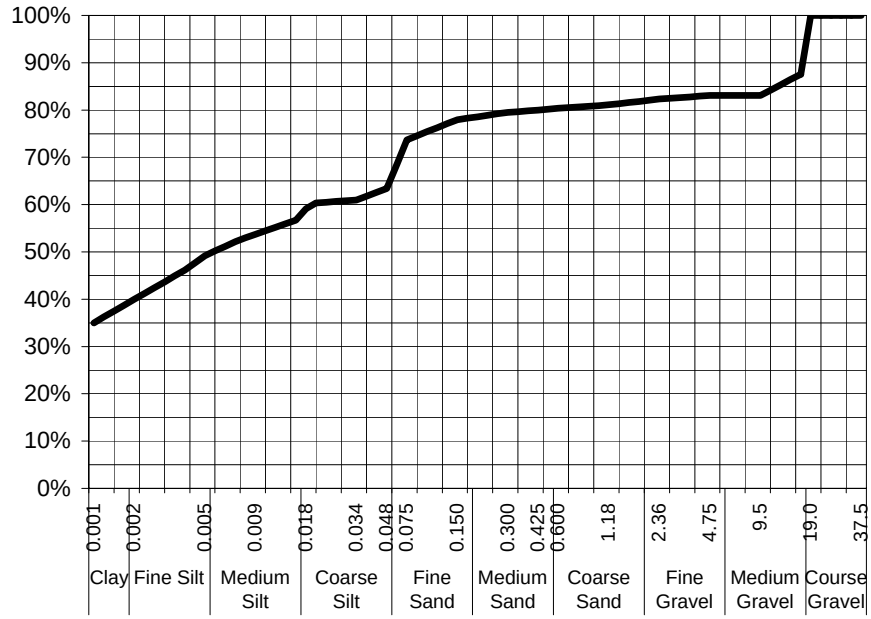
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	10-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	15-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811004-009_1 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC19

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	83%
4.75	83%
2.36	82%
1.18	81%
0.600	80%
0.425	80%
0.300	79%
0.150	78%
0.075	74%
Particle Size (microns)	
34	61%
18	59%
9	54%
5	49%
3	46%
1	35%

Samples analysed as received.

This is a replacement report that supercedes all previous reports.

Sample Comments:		**Analysed:**	24-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	White & ochre hard clay paste	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	15-Aug-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811004	BH4 0.0-0.3	002	34%	47%	7%	12%
EB0811004	BH4 1.5-2.0	003	18%	12%	45%	25%
EB0811004	BH4 2.0-2.2	004	4%	19%	38%	39%
EB0811004	BH4 2.2-2.5	005	15%	25%	31%	29%
EB0811004	BH4 2.5-2.95	006	2%	34%	37%	27%
EB0811004	BH4 3.2-3.7	007	27%	9%	45%	19%
EB0811004	QC18	008	11%	19%	39%	31%
EB0811004	QC19	009	18%	12%	35%	35%

Remarks :	Samples analysed as received.		
Test Procedure :	AS1289.3.6.3	Report Date:	30-Sep-08
Prepared by :	Dianne Blane	Checked by	PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0811004**	Page	: 1 of 17
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 15-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 10
Quote number	: EN/001/08	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Gaston Allende		Organics
Herman Lin	Senior Inorganic Chemist	Inorganics
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 736102)									
EB0811004-002	BH4 0.0-0.3	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.5	9.5	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 736102)									
EB0811004-002	BH4 0.0-0.3	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.06	0.05	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	36	33	8.4	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 736102)									
EB0811004-002	BH4 0.0-0.3	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	26.8	25.8	4.1	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	8.60	8.26	4.1	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	5370	5150	4.1	0% - 20%
EA055: Moisture Content (QC Lot: 737211)									
EB0811004-004	BH4 2.0-2.2	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	20.4	21.8	6.5	0% - 20%
EB0811088-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 737245)									
EB0811004-002	BH4 0.0-0.3	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	13	15	13.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	7	11	41.4	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	13	11	21.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	7	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	469	338	# 32.4	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	15	16	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	4600	4900	6.4	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	19500	15800	# 21.0	0% - 20%
EB0811320-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 737245) - continued									
EB0811320-003	Anonymous	EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 737246)									
EB0811004-002	BH4 0.0-0.3	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0811320-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 735930)									
EB0811004-002	BH4 0.0-0.3	EP005: Total Organic Carbon	----	0.02	%	0.28	0.27	3.6	0% - 50%
EP007: Total Carbon (TC) (QC Lot: 735931)									
EB0811004-002	BH4 0.0-0.3	EP007: Total Carbon	----	0.02	%	3.42	3.46	1.2	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 736543)									
EB0811004-002	BH4 0.0-0.3	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 736542)									
EB0811004-002	BH4 0.0-0.3	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP0804525-060	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: beta-BHC	319-85-7	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: delta-BHC	319-86-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Heptachlor	76-44-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 736542) - continued									
EP0804525-060	Anonymous	EP068: Aldrin	309-00-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 736542)									
EB0811004-002	BH4 0.0-0.3	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP0804525-060	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dimethoate	60-51-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Diazinon	333-41-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 736542) - continued									
EP0804525-060	Anonymous	EP068: Malathion	121-75-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Fenthion	55-38-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Ethion	563-12-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Parathion	56-38-2	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP068C: Triazines (QC Lot: 736542)									
EB0811004-002	BH4 0.0-0.3	EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Simazine	122-34-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP0804525-060	Anonymous	EP068: Atrazine	1912-24-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Simazine	122-34-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 736492)									
EB0811004-002	BH4 0.0-0.3	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 734595)									
EB0810900-001	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 737001)									
EB0811004-002	BH4 0.0-0.3	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 737001) - continued									
EB0811004-002	BH4 0.0-0.3	EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
EB0811120-001	Anonymous	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Dicamba	1918-00-9	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Mecoprop	93-65-2	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPA	94-74-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4-D	94-75-7	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: MCPB	94-81-5	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Picloram	1918-02-1	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 734720)									
EB0811004-010	QC20	EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.002	<0.001	76.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	<0.001	87.2	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EB0811084-004	Anonymous	EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 734720) - continued									
EB0811084-004	Anonymous	EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 734721)									
EB0811004-010	QC20	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 736102)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 736102)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 736102)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 737245)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	104	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	98.0	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	107	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	107	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	102	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	106	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	103	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 737246)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	92.5	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 735930)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP007: Total Carbon (TC) (QCLot: 735931)								
EP007: Total Carbon	----	0.02	%	<0.02	100 %	101	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 736543)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	66.8	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 736542)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 736542) - continued								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.25 mg/kg	67.4	58.4	114
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.25 mg/kg	67.2	57.7	107
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.25 mg/kg	66.0	59.3	113
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	62.8	59.1	113
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	60.8	56	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.25 mg/kg	63.3	57.3	119
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.25 mg/kg	72.1	58.2	111
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.25 mg/kg	62.3	60.4	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	64.0	60.3	114
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.25 mg/kg	66.3	56	117
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	63.5	60.8	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	61.2	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	67.9	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	74.3	47	133
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.25 mg/kg	68.4	58.5	114
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	73.9	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	63.7	46.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.25 mg/kg	# 52.7	53.6	120
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	53.3	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	60.4	51.6	124
EP068: Methoxychlor	72-43-5	0.05	mg/kg	----	0.25 mg/kg	59.2	52.4	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 736542)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.25 mg/kg	65.2	43.9	113
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	53.6	31.8	112
EP068: Monocrotophos	6923-22-4	0.05	mg/kg	----	0.25 mg/kg	84.1	33	130
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.25 mg/kg	63.0	46.4	129
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.25 mg/kg	66.8	57.1	114
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.25 mg/kg	62.5	58.9	113
EP068: Parathion-methyl	298-00-0	0.05	mg/kg	----	0.25 mg/kg	62.1	54.8	112
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.25 mg/kg	67.3	57.8	119
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.25 mg/kg	# 61.4	68	109
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.25 mg/kg	64.8	62.2	115
EP068: Parathion	56-38-2	0.05	mg/kg	----	0.25 mg/kg	83.4	54.7	113
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.25 mg/kg	66.0	51.9	121

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 736542) - continued								
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.25 mg/kg	67.1	58	118
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.25 mg/kg	75.1	59.8	115
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.25 mg/kg	63.6	32.5	101
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.25 mg/kg	63.4	59.6	116
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.25 mg/kg	67.4	58.4	115
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.25 mg/kg	62.7	56.9	117
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.25 mg/kg	46.4	42	130
EP068C: Triazines (QCLot: 736542)								
EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	0.25 mg/kg	70.5	58.6	112
EP068: Simazine	122-34-9	0.05	mg/kg	<0.05	0.25 mg/kg	86.7	70	117
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 736492)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	85.4	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	91.2	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	79.4	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	81.4	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	81.7	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	77.3	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	80.1	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	81.2	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	85.1	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	70.5	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	81.5	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	81.8	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	77.3	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	82.5	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	80.4	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	79.7	52	128
EP090: Organotin Compounds (QCLot: 734595)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	53.9	28	129
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 737001)								
EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	0.1 mg/kg	90.4	54.4	136
EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	0.1 mg/kg	80.6	45.5	144
EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	0.1 mg/kg	82.5	51.7	146
EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	0.1 mg/kg	127	60	140
EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	0.1 mg/kg	117	56.8	143
EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	0.1 mg/kg	127	50	141
EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	0.1 mg/kg	88.2	68.5	139
EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	0.1 mg/kg	122	50.8	145

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 737001) - continued								
EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	0.1 mg/kg	110	40.8	135
EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	0.1 mg/kg	107	57.4	142
EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	0.1 mg/kg	76.3	38.9	147
EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	0.1 mg/kg	85.9	48.7	138
EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	0.1 mg/kg	81.6	59.4	149
EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	0.1 mg/kg	102	53.2	145

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 734720)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	# 124	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	89.0	75.7	110
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	# 126	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	101	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	100	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	103	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	106	81	127
EG020T: Total Metals by ICP-MS (QCLot: 734721)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 98.5	120	123
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 734795)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	66.8	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 734794)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	94.6	57.1	122
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	78.9	52	118
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	95.5	58.2	126
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	97.0	54.2	127
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	82.5	52	131
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	66.9	47.1	128
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	67.3	57	126
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	69.6	57	119
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	76.3	53.4	120
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	74.2	53.6	131
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	74.0	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	74.0	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	71.2	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	75.6	49.1	135
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	76.0	55.2	123
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	76.3	54.3	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 734794) - continued								
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	86.0	54.3	126
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	78.3	50	136
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	67.6	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	73.2	47.3	137
EP068: Methoxychlor	72-43-5	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	67.8	40	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 734794)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	72.6	53.6	125
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	92.6	49.2	135
EP068: Monocrotophos	6923-22-4	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	# 10.2	17.5	100
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	75.4	51.3	125
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	92.9	57.4	126
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	78.5	54.6	123
EP068: Parathion-methyl	298-00-0	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	88.8	53.6	126
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	82.3	54.2	129
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	81.3	59.2	120
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	75.7	57.6	121
EP068: Parathion	56-38-2	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	77.6	51.8	126
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	74.8	54.7	122
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	77.5	54.7	130
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	73.2	54.8	120
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	83.1	48.3	126
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	71.7	53.7	121
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	77.8	54.6	130
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	72.0	53.4	128
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	81.9	34	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 734793)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	72.3	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	78.5	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	75.6	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	79.3	55	118
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 734793) - continued								
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	80.6	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	86.0	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	86.7	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	87.6	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	90.5	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	78.2	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	80.0	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	81.7	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	77.9	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	82.9	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	80.4	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	79.3	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 737245)							
EB0811004-003	BH4 1.5-2.0	EG005T: Arsenic	7440-38-2	50 mg/kg	92.6	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	98.9	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	101	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	104	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	101	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	116	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	99.0	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	105	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 737246)							
EB0811004-003	BH4 1.5-2.0	EG035T: Mercury	7439-97-6	5.0 mg/kg	89.1	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 736543)							
EB0811004-003	BH4 1.5-2.0	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	71.9	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 736542)							
EB0811004-003	BH4 1.5-2.0	EP068: gamma-BHC	58-89-9	0.25 mg/kg	# 53.2	70	130
		EP068: Heptachlor	76-44-8	0.25 mg/kg	# 54.1	70	130
		EP068: Aldrin	309-00-2	0.25 mg/kg	# 53.5	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	# 49.7	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	# 47.5	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	# 39.2	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 736542)							
EB0811004-003	BH4 1.5-2.0	EP068: Diazinon	333-41-5	0.25 mg/kg	# 54.2	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.25 mg/kg	# 50.0	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.25 mg/kg	# 56.8	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.25 mg/kg	# 58.8	70	130
		EP068: Prothiofos	34643-46-4	0.25 mg/kg	# 47.3	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 736492)							
EB0811004-003	BH4 1.5-2.0	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	109	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	115	70	130
EP090: Organotin Compounds (QCLot: 734595)							
EB0810900-001	Anonymous	EP090: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 737001)							
EB0811004-002	BH4 0.0-0.3	EP202: Mecoprop	93-65-2	0.1 mg/kg	105	70	130
		EP202: MCPA	94-74-6	0.1 mg/kg	124	70	130
		EP202: 2.4-D	94-75-7	0.1 mg/kg	79.7	70	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: Spike Recovery (%) MS	Matrix Spike (MS) Report: Recovery Limits (%) Low	Matrix Spike (MS) Report: Recovery Limits (%) High
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 737001) - continued							
EB0811004-002	BH4 0.0-0.3	EP202: Triclopyr	55335-06-3	0.1 mg/kg	112	70	130
		EP202: 2.4.5-T	93-76-5	0.1 mg/kg	99.2	70	130
		EP202: Picloram	1918-02-1	0.1 mg/kg	73.8	70	130
		EP202: Clopyralid	1702-17-6	0.1 mg/kg	76.3	70	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: Spike Recovery (%) MS	Matrix Spike (MS) Report: Recovery Limits (%) Low	Matrix Spike (MS) Report: Recovery Limits (%) High
EG020T: Total Metals by ICP-MS (QCLot: 734720)							
EB0811083-001	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0811004**	Page	: 1 of 12
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 15-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 10
Quote number	: EN/001/08	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**14-AUG-2008**	---	----	**21-AUG-2008**	19-NOV-2008	✓
BH4 2.0-2.2,	BH4 2.2-2.5,							
BH4 2.5-2.95,	BH4 3.2-3.7,							
QC18,	QC19							
EA033-B: Potential Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**14-AUG-2008**	---	----	**21-AUG-2008**	19-NOV-2008	✓
BH4 2.0-2.2,	BH4 2.2-2.5,							
BH4 2.5-2.95,	BH4 3.2-3.7,							
QC18,	QC19							
EA033-C: Acid Neutralising Capacity								
Snap Lock Bag - frozen on receipt at ALS								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**14-AUG-2008**	---	----	**21-AUG-2008**	19-NOV-2008	✓
BH4 2.0-2.2,	BH4 2.2-2.5,							
BH4 2.5-2.95,	BH4 3.2-3.7,							
QC18,	QC19							
EA033-D: Retained Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**14-AUG-2008**	---	----	**21-AUG-2008**	19-NOV-2008	✓
BH4 2.0-2.2,	BH4 2.2-2.5,							
BH4 2.5-2.95,	BH4 3.2-3.7,							
QC18,	QC19							
EA033-E: Acid Base Accounting								
Snap Lock Bag - frozen on receipt at ALS								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**14-AUG-2008**	---	----	**21-AUG-2008**	19-NOV-2008	✓
BH4 2.0-2.2,	BH4 2.2-2.5,							
BH4 2.5-2.95,	BH4 3.2-3.7,							
QC18,	QC19							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**----**	----	----	**22-AUG-2008**	21-AUG-2008	×
BH4 2.0-2.2,	BH4 2.2-2.5,							
BH4 2.5-2.95,	BH4 3.2-3.7,							
QC18,	QC19							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**22-AUG-2008**	10-FEB-2009	✓	**22-AUG-2008**	10-FEB-2009	✓
BH4 2.0-2.2,	BH4 2.2-2.5,							
BH4 2.5-2.95,	BH4 3.2-3.7,							
QC18,	QC19							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**22-AUG-2008**	10-FEB-2009	✓	**25-AUG-2008**	11-SEP-2008	✓
BH4 2.0-2.2,	BH4 2.2-2.5,							
BH4 2.5-2.95,	BH4 3.2-3.7,							
QC18,	QC19							
EP005: Total Organic Carbon (TOC)								
Pulp Bag								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**21-AUG-2008**	---	----	**21-AUG-2008**	11-SEP-2008	✓
BH4 2.0-2.2,	BH4 2.2-2.5,							
BH4 2.5-2.95,	BH4 3.2-3.7,							
QC18,	QC19							
EP007: Total Carbon (TC)								
Pulp Bag								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**21-AUG-2008**	---	----	**21-AUG-2008**	10-FEB-2009	✓
BH4 2.0-2.2,	BH4 2.2-2.5,							
BH4 2.5-2.95,	BH4 3.2-3.7,							
QC18,	QC19							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**22-AUG-2008**	28-AUG-2008	✓	**25-AUG-2008**	01-OCT-2008	✓
QC18,	QC19							
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved								
BH4 0.0-0.3,	BH4 1.5-2.0,	**14-AUG-2008**	**22-AUG-2008**	28-AUG-2008	✓	**25-AUG-2008**	01-OCT-2008	✓
QC18,	QC19							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved							
BH4 0.0-0.3, BH4 1.5-2.0, QC18, QC19	**14-AUG-2008**	**22-AUG-2008**	28-AUG-2008	✓	**25-AUG-2008**	01-OCT-2008	✓
EP068C: Triazines							
Soil Glass Jar - Unpreserved							
BH4 0.0-0.3, BH4 1.5-2.0, BH4 2.0-2.2, BH4 2.2-2.5, BH4 2.5-2.95, BH4 3.2-3.7, QC18, QC19	**14-AUG-2008**	**22-AUG-2008**	28-AUG-2008	✓	**25-AUG-2008**	01-OCT-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH4 0.0-0.3, BH4 1.5-2.0, BH4 2.0-2.2, BH4 2.2-2.5, BH4 2.5-2.95, BH4 3.2-3.7, QC18, QC19	**14-AUG-2008**	**21-AUG-2008**	28-AUG-2008	✓	**25-AUG-2008**	30-SEP-2008	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH4 0.0-0.3, BH4 1.5-2.0, QC18, QC19	**14-AUG-2008**	**20-AUG-2008**	28-AUG-2008	✓	**25-AUG-2008**	29-SEP-2008	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Soil Glass Jar - Unpreserved							
BH4 0.0-0.3, BH4 1.5-2.0, BH4 2.0-2.2, BH4 2.2-2.5, BH4 2.5-2.95, BH4 3.2-3.7, QC18, QC19	**14-AUG-2008**	**22-AUG-2008**	28-AUG-2008	✓	**22-AUG-2008**	01-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC20	**14-AUG-2008**	**20-AUG-2008**	10-FEB-2009	✓	**20-AUG-2008**	10-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC20	**14-AUG-2008**	**----**	----	----	**27-AUG-2008**	11-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC20	**14-AUG-2008**	**20-AUG-2008**	21-AUG-2008	✓	**21-AUG-2008**	29-SEP-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC20	**14-AUG-2008**	**20-AUG-2008**	21-AUG-2008	✓	**21-AUG-2008**	29-SEP-2008	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved							
QC20	**14-AUG-2008**	**20-AUG-2008**	21-AUG-2008	✓	**21-AUG-2008**	29-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC20	**14-AUG-2008**	**20-AUG-2008**	21-AUG-2008	✓	**21-AUG-2008**	29-SEP-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Pesticides by GCMS	EP068	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	**25.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Metals by ICP-MS - Suite A	EG020A-T	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis (Sieving)	EA150	SOIL	Particle Size Analysis by Sieving according to AS1289.3.6.1 - 1995
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Total Inorganic Carbon	EP006	SOIL	In-house. Determined as the difference between Total Carbon and Organic Carbon.
Total Carbon	EP007	SOIL	In-house. Dried and pulverised sample is combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved Carbon (as CO2) is measured by infra-red detector
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.

Analytical Methods	Method	Matrix	Method Descriptions
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	SOIL	In-House, LCMS (Electrospray in negative mode). Residues of acid herbicides are extracted from soil samples under the alkaline condition. An aliquot of the alkaline aqueous phase is taken and acidified before a SPE cleanup. After eluting off from the SPE cartridge, residues of acid herbicides are dissolved in HPLC mobile phase prior to instrument analysis.
Radionucleide Analysis (Solid)	RAN-SOL	SOIL	Radon and Radium, Gross alpha and beta radiation analysis of solid matrices conducted by Subcontracting Laboratory
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Extraction for Phenoxy Acid Herbicides in Soils.	* EP202-PR	SOIL	In-House: Alkaline extract followed by SPE clean up of acidified portion of the sample extract.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.

Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0811004-002	BH4 0.0-0.3	**Iron**	7439-89-6	21.0 %	0-20%	**RPD exceeds LOR based limits**
EG005T: Total Metals by ICP-AES	EB0811004-002	BH4 0.0-0.3	**Manganese**	7439-96-5	32.4 %	0-20%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	830462-002	----	**Endosulfan sulfate**	1031-07-8	52.7 %	53.6-120%	**Recovery less than lower control limit**
EP068B: Organophosphorus Pesticides (OP)	830462-002	----	**Fenthion**	55-38-9	61.4 %	68-109%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	EB0811004-003	BH4 1.5-2.0	**gamma-BHC**	58-89-9	53.2 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0811004-003	BH4 1.5-2.0	**Heptachlor**	76-44-8	54.1 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0811004-003	BH4 1.5-2.0	**Aldrin**	309-00-2	53.5 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0811004-003	BH4 1.5-2.0	**Dieldrin**	60-57-1	49.7 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0811004-003	BH4 1.5-2.0	**Endrin**	72-20-8	47.5 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0811004-003	BH4 1.5-2.0	**4.4`-DDT**	50-29-3	39.2 %	70-130%	**Recovery less than lower data quality objective**
EP068B: Organophosphorus Pesticides (OP)	EB0811004-003	BH4 1.5-2.0	**Diazinon**	333-41-5	54.2 %	70-130%	**Recovery less than lower data quality objective**
EP068B: Organophosphorus Pesticides (OP)	EB0811004-003	BH4 1.5-2.0	**Chlorpyrifos-methyl**	5598-13-0	50.0 %	70-130%	**Recovery less than lower data quality objective**
EP068B: Organophosphorus Pesticides (OP)	EB0811004-003	BH4 1.5-2.0	**Pirimphos-ethyl**	23505-41-1	56.8 %	70-130%	**Recovery less than lower data quality objective**
EP068B: Organophosphorus Pesticides (OP)	EB0811004-003	BH4 1.5-2.0	**Bromophos-ethyl**	4824-78-6	58.8 %	70-130%	**Recovery less than lower data quality objective**
EP068B: Organophosphorus Pesticides (OP)	EB0811004-003	BH4 1.5-2.0	**Prothiofos**	34643-46-4	47.3 %	70-130%	**Recovery less than lower data quality objective**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	828316-002	----	**Antimony**	7440-36-0	124 %	84.6-112%	**Recovery greater than upper control limit**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries - Continued							
EG020T: Total Metals by ICP-MS	828316-002	----	**Chromium**	7440-47-3	126 %	80.9-125%	**Recovery greater than upper control limit**
EG020T: Total Metals by ICP-MS	828316-002	----	**Silver**	7440-22-4	98.5 %	120-123%	**Recovery less than lower control limit**
EP068B: Organophosphorus Pesticides (OP)	828410-017	----	**Monocrotophos**	6923-22-4	10.2 %	17.5-100%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **LIQUID**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP068T: Organophosphorus Pesticide Surrogate	EB0811004-010	QC20	**DEF**	78-48-8	125 %	10-110 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method		*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH4 0.0-0.3,	BH4 1.5-2.0,	----	----	----	22-AUG-2008	21-AUG-2008	**1**
BH4 2.0-2.2,	BH4 2.2-2.5,						
BH4 2.5-2.95,	BH4 3.2-3.7,						
QC18,	QC19						

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0811130

Telephone : + 61-7-3243 7222

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259

All results to be provided in MRED format
email address: julian_dobos@urscorp.com

TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard

COC SEQUENCE NUMBER: (1) 2 3 4 — please circle 2

FOR LABORATORY USE ONLY
Custody Seal ? (Y) N NA
Free ice / frozen icebricks present upon receipt? (Y) N
Random Sample Temperature on Receipt 2.8 °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS		[signature]	19.8.08	13.30
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME:	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA (G) HCl TOC	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH$_{Field}$ and pH$_{Fox}$	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon (Prep Sample)	Radionuclide	Particle Size Determination (New)	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH17 0.0-0.4	18/08/08	S	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
2	BH17 0.5-1.0	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
3	BH17 1.0-1.1	"	"	1											✓	✓	✓	✓	✓	✓	✓		✓					
4	BH17 1.2-1.5	"	S	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
5	BH17 1.55-2.0	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
6	BH17 2.3-2.8	"	S	2	1										✓	✓					✓		✓					✓
7	BH17 3.0-3.5	"	S	2	1										✓	✓					✓		✓					✓
8	BH17 5.0-5.45	"	S	2	1										✓	✓					✓		✓					✓
9	BH17 5.4-5.6	"	S	2	1										✓	✓					✓		✓					✓
10	BH17 9.6-9.8	"	S	1	1										✓	✓					✓		✓					✓
11	QC21	"	L			2	1	1								✓		✓	✓	✓								✓
12	QC22	"	S	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
TOTAL																												

1 jar → 1 Bag.

Marked as BH17 5.2-5.45 → 1 jar 1 Bag. →

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259

All results to be provided in MRED format
email address: julian_dobos@urscorp.com

TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard

COC SEQUENCE NUMBER: 1 (2) 3 4 — please circle 2

URS PROJECT NO:	42626228.52000	PO NO:	
URS PM:	Rob Ully	SITE :	GLNG SANTOS
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)

RELINQUISHED BY: DATE: TIME:

FOR LABORATORY USE ONLY

Custody Seal ? Y N NA

Free ice / frozen icebricks present upon receipt? Y N

Random Sample Temperature on Receipt °C

RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
JE	19.8.08	13.30
DATE: TIME:	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
13	QC23	18/08/08	S	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
14	QC24	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
15	QC25	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
TOTAL																												

1 Jar
1 Bag

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EB0811130**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 19-AUG-2008	Issue Date	: 21-AUG-2008 11:12
Client Requested Due Date	: 26-AUG-2008	Scheduled Reporting Date	: **02-SEP-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.8 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 15
Sercurity Seal	: Intact.	No. of samples analysed	: 15

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Please be advised that sample BH17 5.0-5.45 was labelled BH17 5.2-5.45.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins	SOIL - S-02 8 Metals (incl. Digestion)
EB0811130-001	18-AUG-2008 15:00	BH17 0.0-0.4	✓	✓	✓	✓	✓	✓	✓	✓
EB0811130-002	18-AUG-2008 15:00	BH17 0.5-1.0	✓	✓	✓	✓	✓	✓	✓	✓
EB0811130-003	18-AUG-2008 15:00	BH17 1.0-1.1	✓	✓	✓	✓	✓	✓	✓	✓
EB0811130-004	18-AUG-2008 15:00	BH17 1.2-1.5	✓	✓	✓	✓	✓	✓	✓	✓
EB0811130-005	18-AUG-2008 15:00	BH17 1.55-2.0	✓	✓	✓	✓	✓	✓	✓	✓
EB0811130-006	18-AUG-2008 15:00	BH17 2.3-2.8	✓	✓	✓			✓		✓
EB0811130-007	18-AUG-2008 15:00	BH17 3.0-3.5	✓	✓	✓			✓		✓
EB0811130-008	18-AUG-2008 15:00	BH17 5.0-5.45	✓	✓	✓			✓		✓
EB0811130-009	18-AUG-2008 15:00	BH17 5.4-5.6	✓	✓	✓			✓		✓
EB0811130-010	18-AUG-2008 15:00	BH17 9.6-9.8	✓	✓	✓			✓		✓
EB0811130-012	18-AUG-2008 15:00	QC22	✓	✓	✓	✓	✓	✓	✓	✓
EB0811130-013	18-AUG-2008 15:00	QC23	✓	✓	✓	✓	✓	✓	✓	✓
EB0811130-014	18-AUG-2008 15:00	QC24	✓	✓	✓	✓	✓	✓	✓	✓
EB0811130-015	18-AUG-2008 15:00	QC25	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0811130-011	18-AUG-2008 15:00	QC21	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0811130**	Page	: 1 of 14
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 19-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 15
Quote number	: EN/001/08	No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Herman Lin	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **LCS recovery for EG020T (Total Metals) fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **PAH: Insufficient sample for BH17 1.0-1.1 and QC25 have been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Pesticide/PCB: Unable to analyse samples BH17 1.0-1.1 and QC25 due to insufficient sample.**
- **Pesticide: Sample BH17 0.5-1.0 shows poor matrix spike recovery due to matrix interference. Confirmed by visual inspection.**
- **Pesticides/PCB: Insufficient sample for QC21 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **TBT: Poor surrogate recovery for sample BH17 1.0-1.1 due to possible sample matrix interference. Insufficient sample for re-extraction.**

Analytical Results

Sub-Matrix: **LIQUID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC21	----	----	----	----
				Client sampling date / time: 18-AUG-2008 15:00	----	----	----	----
				EB0811130-011	**----**	**----**	**----**	**----**
EG020T: Total Metals by ICP-MS								
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.001**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.006**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.5	µg/L	<0.9	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.9	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.9	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.9	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.9	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.9	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.9	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC21	----	----	----	----
				Client sampling date / time	18-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0811130-011	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**75.6**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**47.3**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**54.8**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**37.0**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**80.6**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**142**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**93.1**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**99.1**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**119**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH17 0.0-0.4	BH17 0.5-1.0	BH17 1.0-1.1	BH17 1.2-1.5	BH17 1.55-2.0
Client sampling date / time				18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00
				EB0811130-001	EB0811130-002	EB0811130-003	EB0811130-004	EB0811130-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.2	8.9	9.4	8.4	7.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.35	0.56	0.03	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	221	353	19	12	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	14.6	10.3	1.73	0.87	0.86
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	2930	2050	346	173	171
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	4.70	3.29	0.55	0.28	0.27
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	38.5	41.4	14.9	20.2	19.6
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	8160	13100	<50	9910	10300
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	16	15	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	16	24	<2	14	15
Copper	7440-50-8	5	mg/kg	12	20	<5	32	32
Iron	7439-89-6	50	mg/kg	17300	25400	<50	22200	21300
Lead	7439-92-1	5	mg/kg	6	11	<5	6	<5
Manganese	7439-96-5	5	mg/kg	474	424	<5	237	261
Nickel	7440-02-0	2	mg/kg	10	13	<2	18	21
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	23	39	<5	58	55
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.60	0.82	0.07	0.12	0.14

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH17 0.0-0.4	BH17 0.5-1.0	BH17 1.0-1.1	BH17 1.2-1.5	BH17 1.55-2.0
				Client sampling date / time: 18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00
				EB0811130-001	EB0811130-002	EB0811130-003	EB0811130-004	EB0811130-005
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	----	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<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
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<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
Endrin	72-20-8	0.05	mg/kg	<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
Endrin aldehyde	7421-93-4	0.05	mg/kg	<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
Endrin ketone	53494-70-5	0.05	mg/kg	<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	<2.0	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<2.0	<0.5	<0.5
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**68.2**	**67.7**	----	**78.3**	**69.4**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**81.1**	**78.8**	----	**90.7**	**79.1**
EP068T: Organophosphorus Pesticide Surrogate								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH17 0.0-0.4	BH17 0.5-1.0	BH17 1.0-1.1	BH17 1.2-1.5	BH17 1.55-2.0
				Client sampling date / time: 18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00
				EB0811130-001	EB0811130-002	EB0811130-003	EB0811130-004	EB0811130-005
EP068T: Organophosphorus Pesticide Surrogate - Continued								
DEF	78-48-8	0.1	%	**78.1**	**76.2**	----	**87.3**	**75.5**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**75.3**	**74.8**	**133**	**79.4**	**81.5**
2-Chlorophenol-D4	93951-73-6	0.1	%	**85.1**	**78.6**	**129**	**81.0**	**86.1**
2.4.6-Tribromophenol	118-79-6	0.1	%	**70.4**	**63.3**	**57.2**	**86.6**	**66.0**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**78.6**	**69.7**	**132**	**74.8**	**79.5**
Anthracene-d10	1719-06-8	0.1	%	**124**	**112**	**124**	**78.1**	**72.4**
4-Terphenyl-d14	1718-51-0	0.1	%	**100**	**88.9**	**157**	**110**	**97.1**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**55.4**	**42.2**	**21.1**	**48.3**	**64.0**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH17 2.3-2.8	BH17 3.0-3.5	BH17 5.0-5.45	BH17 5.4-5.6	BH17 9.6-9.8
				Client sampling date / time: 18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00
				EB0811130-006	EB0811130-007	EB0811130-008	EB0811130-009	EB0811130-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	7.3	6.6	6.4	6.6	6.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.96	1.46	----	0.44	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	192	292	----	89	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.31	0.47	----	0.14	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	22.9	21.6	25.2	19.3	14.4
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	9800	8510	----	3880
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	6	<5	7	<5	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	14	14	15	8	24
Copper	7440-50-8	5	mg/kg	42	29	31	5	19
Iron	7439-89-6	50	mg/kg	----	25000	25800	----	18200
Lead	7439-92-1	5	mg/kg	6	6	9	5	7
Manganese	7439-96-5	5	mg/kg	----	428	691	----	146
Nickel	7440-02-0	2	mg/kg	15	12	12	2	7
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	52	53	48	11	14
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.07	0.17	0.10	0.02	<0.02

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH17 2.3-2.8	BH17 3.0-3.5	BH17 5.0-5.45	BH17 5.4-5.6	BH17 9.6-9.8
				Client sampling date / time: 18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00
				EB0811130-006	EB0811130-007	EB0811130-008	EB0811130-009	EB0811130-010
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**71.2**	**81.0**	**89.6**	**80.7**	**73.4**
2-Chlorophenol-D4	93951-73-6	0.1	%	**65.8**	**87.1**	**88.0**	**74.4**	**63.1**
2.4.6-Tribromophenol	118-79-6	0.1	%	**54.3**	**61.3**	**42.2**	**72.9**	**79.2**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**70.4**	**81.0**	**95.8**	**61.8**	**41.1**
Anthracene-d10	1719-06-8	0.1	%	**76.7**	**72.5**	**95.9**	**84.8**	**79.0**
4-Terphenyl-d14	1718-51-0	0.1	%	**105**	**107**	**125**	**112**	**109**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	QC22	QC23	QC24	QC25	----
				Client sampling date / time	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	----
					EB0811130-012	EB0811130-013	EB0811130-014	EB0811130-015	----
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		**8.9**	**9.0**	**8.6**	**7.2**	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	----
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.02	% S		**0.50**	**0.49**	**0.02**	<0.02	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		**314**	**309**	**14**	<10	----
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		**11.4**	**9.44**	**1.11**	**0.77**	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		**2270**	**1880**	**222**	**154**	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		**3.64**	**3.02**	**0.36**	**0.25**	----
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		**1.5**	**1.5**	**1.5**	**1.5**	----
Net Acidity (sulfur units)	----	0.02	% S		<0.02	<0.02	<0.02	<0.02	----
Net Acidity (acidity units)	----	10	mole H+ / t		<10	<10	<10	<10	----
Liming Rate	----	1	kg CaCO3/t		<1	<1	<1	<1	----
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		**29.7**	**35.6**	**19.6**	**19.7**	----
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		**10800**	**10800**	**9240**	**11300**	----
Antimony	7440-36-0	5	mg/kg		<5	<5	<5	**21**	----
Arsenic	7440-38-2	5	mg/kg		**12**	**8**	<5	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg		**20**	**22**	**16**	**18**	----
Copper	7440-50-8	5	mg/kg		**16**	**15**	**28**	**36**	----
Iron	7439-89-6	50	mg/kg		**20000**	**19100**	**21100**	**24100**	----
Lead	7439-92-1	5	mg/kg		**8**	**9**	**6**	**6**	----
Manganese	7439-96-5	5	mg/kg		**347**	**385**	**275**	**304**	----
Nickel	7440-02-0	2	mg/kg		**11**	**12**	**18**	**23**	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Zinc	7440-66-6	5	mg/kg		**32**	**34**	**50**	**62**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	**0.1**	**0.2**	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**0.73**	**0.88**	**0.13**	**0.04**	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	QC22	QC23	QC24	QC25	----
				Client sampling date / time	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	----
					EB0811130-012	EB0811130-013	EB0811130-014	EB0811130-015	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		<0.10	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<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	<2.0	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<2.0	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	<0.5	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**63.7**	**71.4**	**74.2**	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**72.8**	**82.7**	**88.1**	----	----
EP068T: Organophosphorus Pesticide Surrogate									

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	QC22	QC23	QC24	QC25	----
				Client sampling date / time	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	18-AUG-2008 15:00	----
					EB0811130-012	EB0811130-013	EB0811130-014	EB0811130-015	----
EP068T: Organophosphorus Pesticide Surrogate - Continued									
DEF	78-48-8	0.1	%		**69.7**	**79.7**	**85.9**	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**82.5**	**82.0**	**84.4**	**88.4**	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**84.0**	**77.6**	**84.8**	**83.2**	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**81.8**	**73.6**	**59.8**	**47.1**	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**81.8**	**72.9**	**74.3**	**91.3**	----
Anthracene-d10	1719-06-8	0.1	%		**76.2**	**73.9**	**70.0**	**72.8**	----
4-Terphenyl-d14	1718-51-0	0.1	%		**106**	**126**	**120**	**117**	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**70.9**	**64.1**	**37.6**	**74.0**	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 19-Aug-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811130	BH17 0.0-0.4	001	9%	41%	23%	27%
EB0811130	BH17 0.5-1.0	002	9%	32%	28%	31%
EB0811130	BH17 1.0-1.1	003	25%	40%	19%	16%
EB0811130	BH17 1.2-1.5	004	4%	21%	43%	32%
EB0811130	BH17 1.55-2.0	005	0%	14%	48%	38%
EB0811130	BH17 2.3-2.8	006	0%	12%	44%	44%
EB0811130	BH17 3.0-3.5	007	0%	4%	46%	50%
EB0811130	BH17 5.0-5.45	008	0%	16%	40%	44%
EB0811130	BH17 5.4-5.6	009	0%	45%	30%	25%
EB0811130	BH17 9.6-9.8	010	5%	32%	30%	33%
EB0811130	QC22	012	13%	37%	23%	27%
EB0811130	QC23	013	14%	36%	24%	26%
EB0811130	QC24	014	0%	5%	57%	38%
EB0811130	QC25	015	0%	13%	50%	37%

Remarks :
Test Procedure : AS1289.3.6.2/AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 1-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 19-Aug-2008

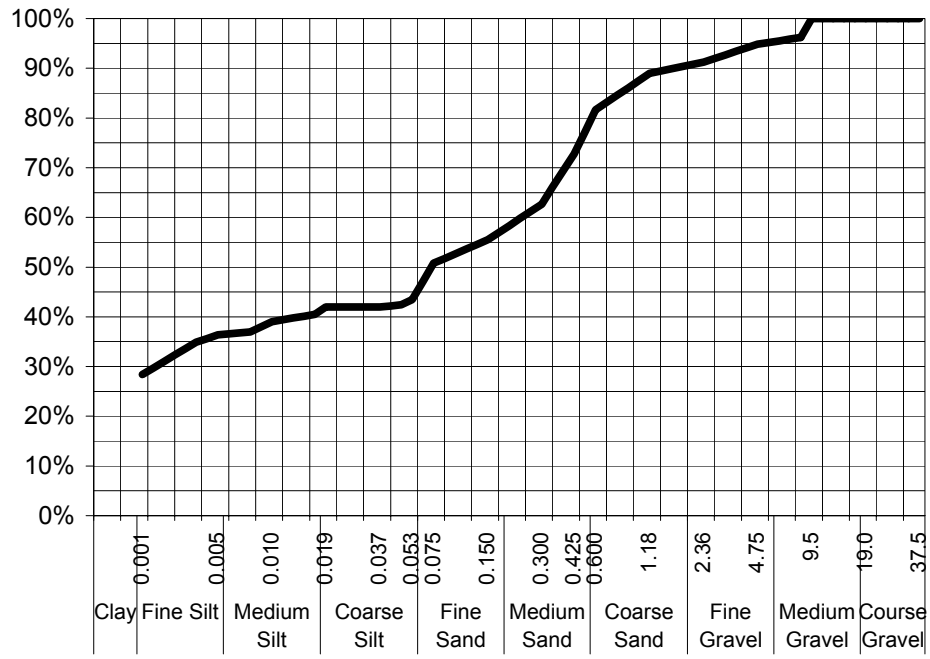
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811130-001 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH17 0.0-0.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	95%
2.36	91%
1.18	89%
0.600	82%
0.425	73%
0.300	63%
0.150	56%
0.075	51%
Particle Size (microns)	
37	42%
19	42%
10	39%
5	36%
3	35%
1	28%

Samples analysed as received.

Sample Comments:

Analysed: 21-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Dark wet mud, grit & shell

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.2/AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

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CLIENT: Rob Ully

DATE REPORTED: 1-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 19-Aug-2008

ADDRESS: GPO Box 302
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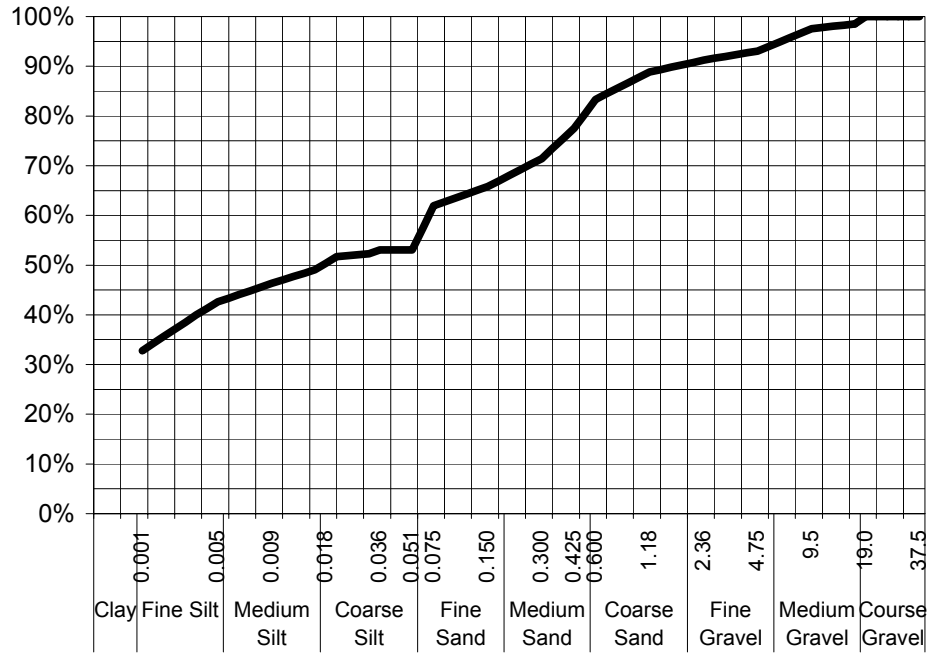
REPORT NO: EB0811130-002 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH17 0.5-1.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	98%
4.75	93%
2.36	91%
1.18	89%
0.600	83%
0.425	78%
0.300	71%
0.150	66%
0.075	62%
Particle Size (microns)	
36	53%
18	50%
9	46%
5	43%
3	40%
1	33%

Samples analysed as received.

Sample Comments:

Analysed: 21-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Dark wet mud, grit & shell

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.2/AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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Authorised Signatory

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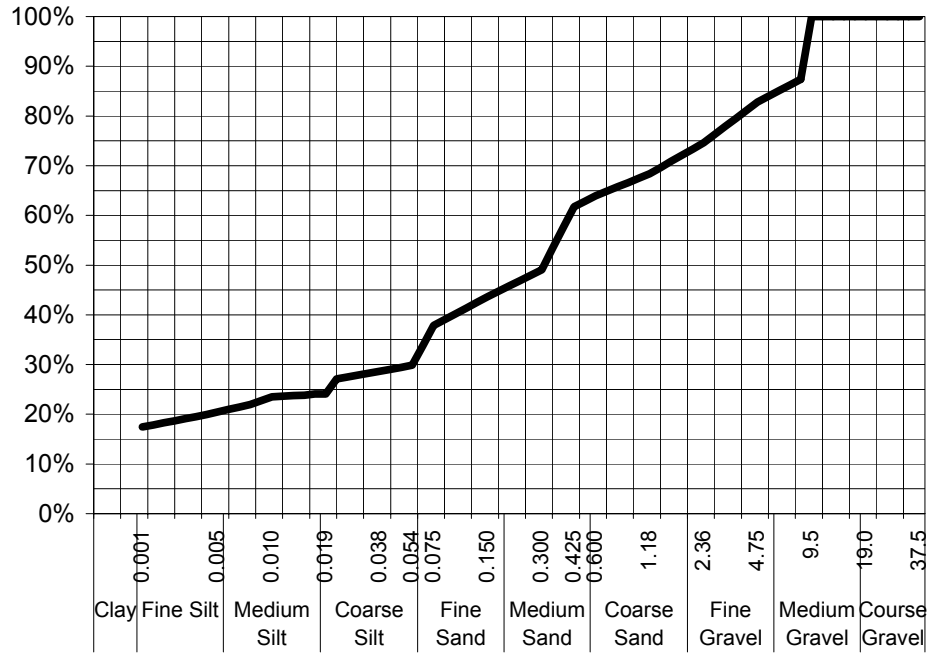
Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	1-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	19-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811130-003 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH17 1.0-1.1

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	83%
2.36	75%
1.18	68%
0.600	64%
0.425	62%
0.300	49%
0.150	44%
0.075	38%
Particle Size (microns)	
38	29%
19	24%
10	24%
5	20%
4	20%
1	17%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	21-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.2/AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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CLIENT: Rob Ully

DATE REPORTED: 1-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 19-Aug-2008

ADDRESS: GPO Box 302
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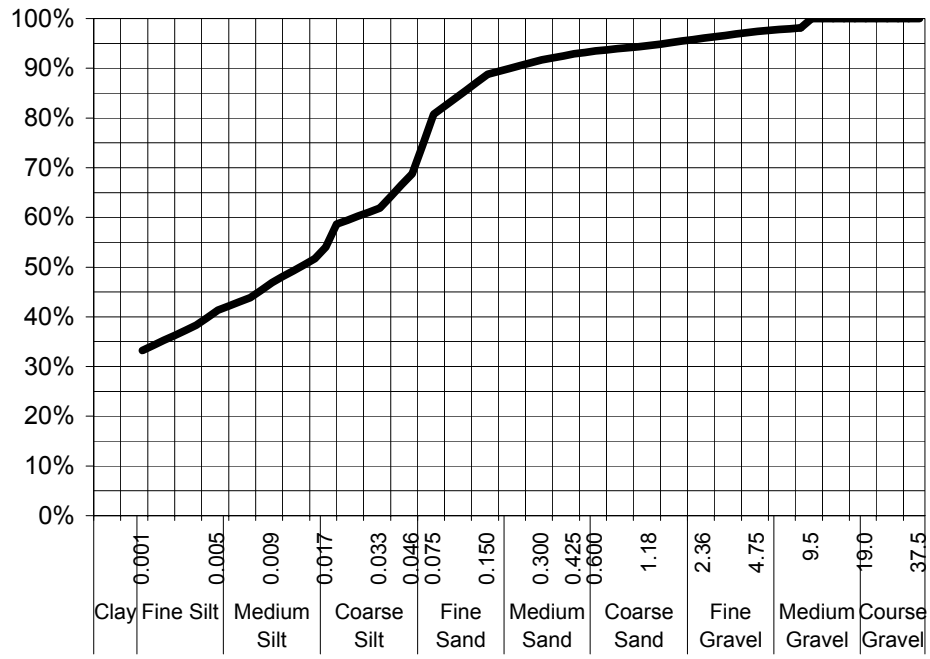
REPORT NO: EB0811130-004 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH17 1.2-1.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	97%
2.36	96%
1.18	95%
0.600	93%
0.425	93%
0.300	92%
0.150	89%
0.075	81%
Particle Size (microns)	
33	62%
17	54%
9	47%
5	41%
3	38%
1	33%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Clay & grit

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 21-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

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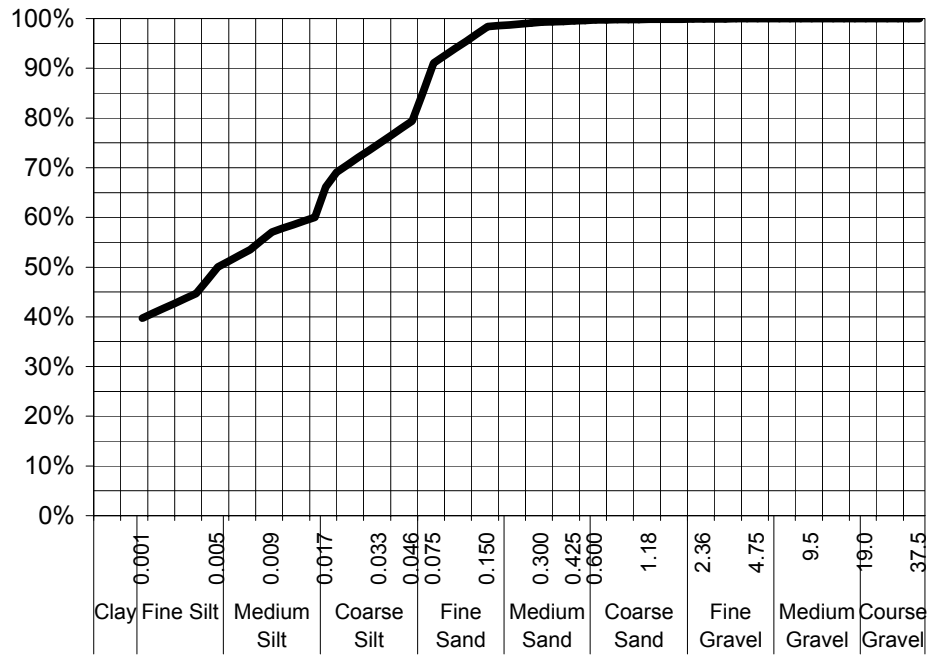
REPORT NO: EB0811130-005 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH17 1.55-2.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	98%
0.075	91%
Particle Size (microns)	
33	75%
17	66%
9	57%
5	50%
3	45%
1	40%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Clay & grit

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 21-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

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DATE RECEIVED: 19-Aug-2008

ADDRESS: GPO Box 302
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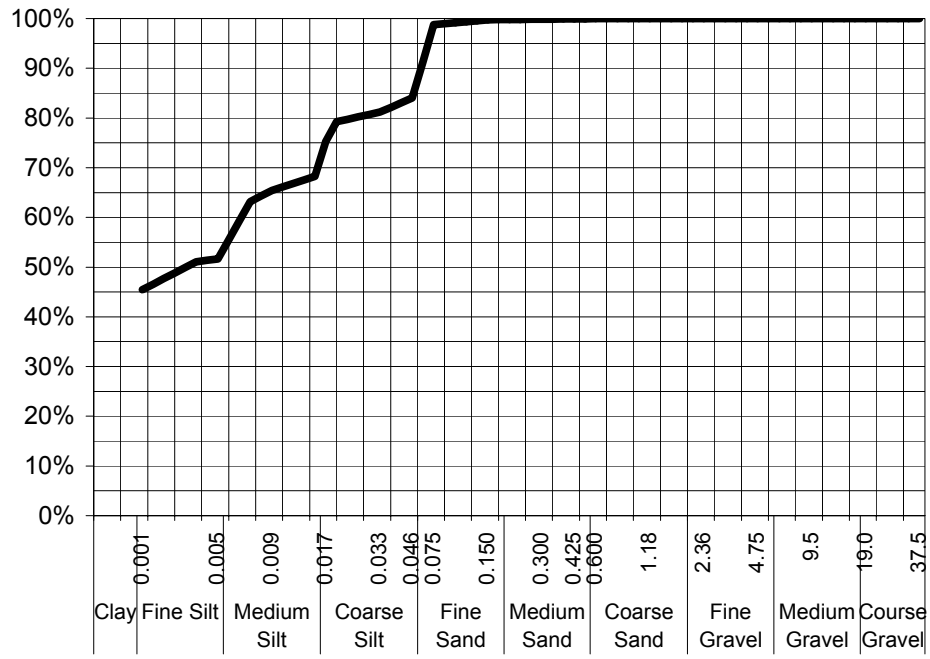
REPORT NO: EB0811130-006 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH17 2.3-2.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	100%
0.075	99%
Particle Size (microns)	
33	81%
17	75%
9	65%
5	52%
3	51%
1	45%

Samples analysed as received.

Sample Comments:

Analysed: 21-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay & grit

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.2/AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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CLIENT: Rob Ully

DATE REPORTED: 1-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 19-Aug-2008

ADDRESS: GPO Box 302
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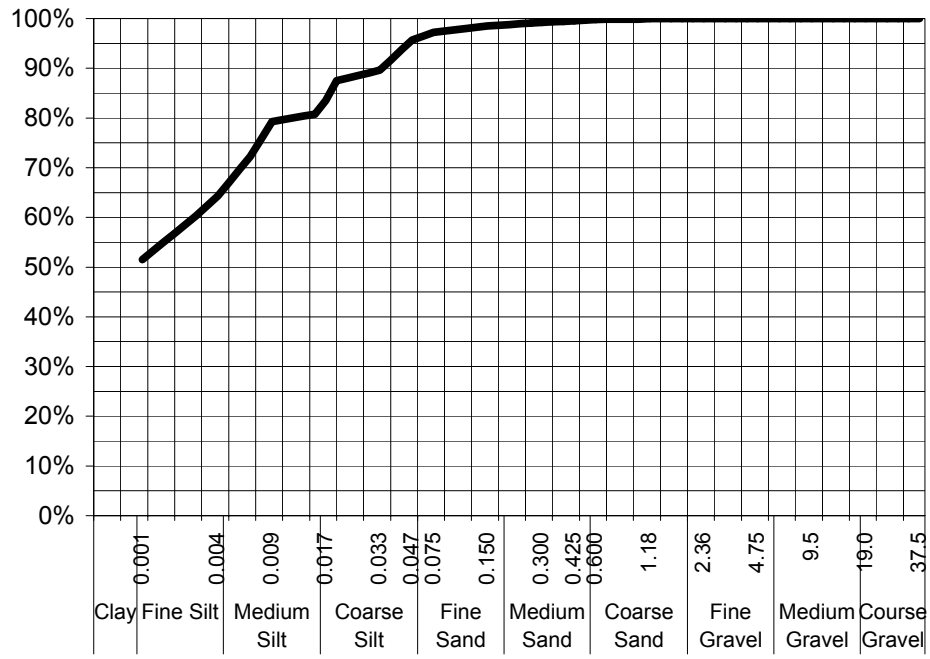
REPORT NO: EB0811130-007 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH17 3.0-3.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	99%
0.075	97%
Particle Size (microns)	
33	90%
17	84%
9	79%
4	64%
3	60%
1	52%

Samples analysed as received.

Sample Comments:

Analysed: 21-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay & grit

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.2/AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 1-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 19-Aug-2008

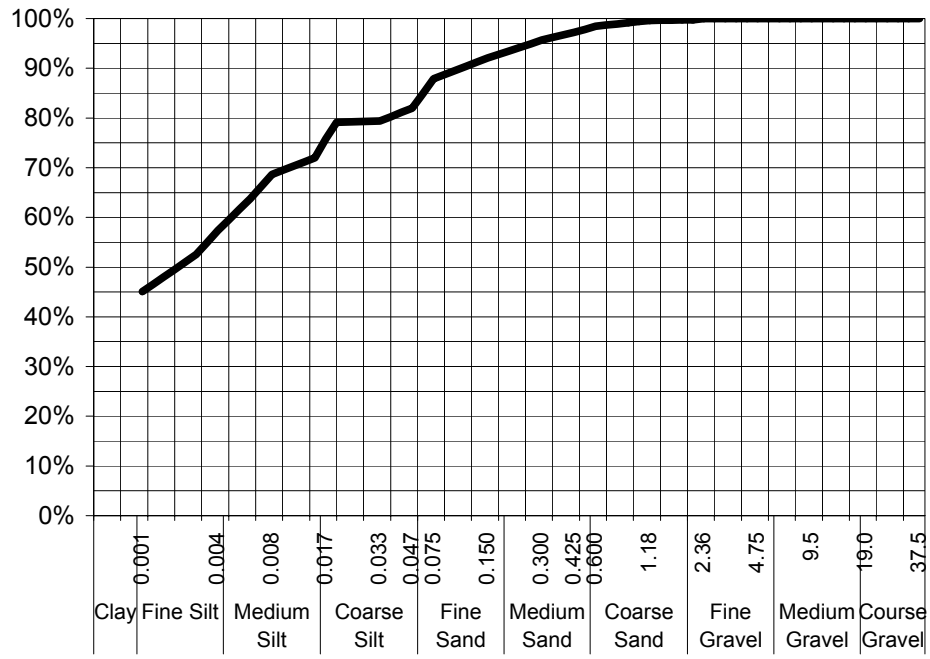
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811130-008 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH17 5.0-5.45

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	98%
0.425	97%
0.300	96%
0.150	92%
0.075	88%
Particle Size (microns)	
33	79%
17	76%
8	69%
4	57%
3	53%
1	45%

Samples analysed as received.

Sample Comments:

Analysed: 21-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay, grit & shell

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.2/AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

ALS Laboratory Group Pty Ltd
5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 1-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 19-Aug-2008

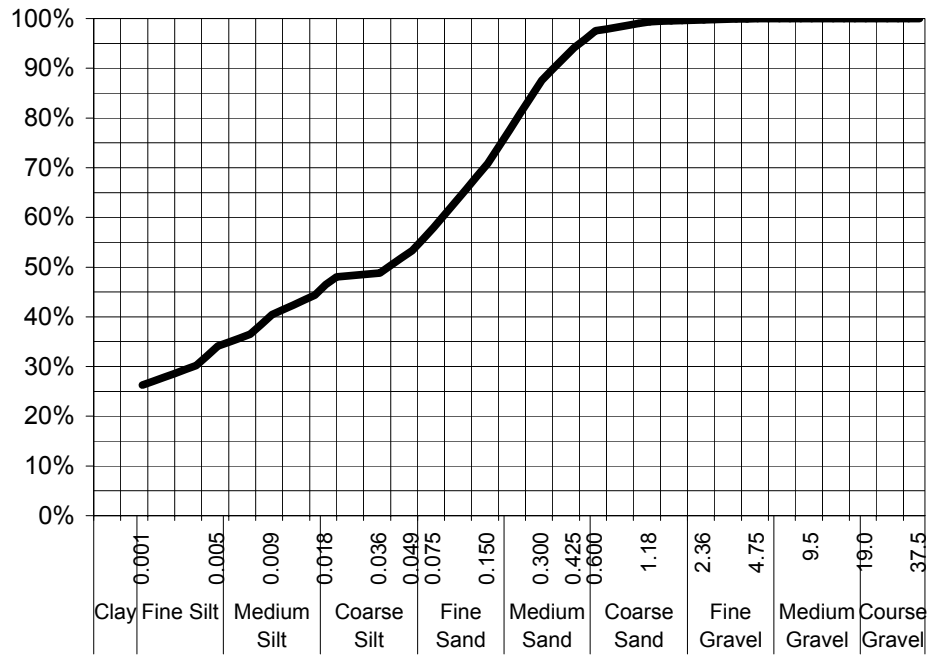
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811130-009 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH17 5.4-5.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	98%
0.425	94%
0.300	88%
0.150	71%
0.075	58%
Particle Size (microns)	
36	49%
18	46%
9	40%
5	34%
3	30%
1	26%

Samples analysed as received.

Sample Comments:

Analysed: 21-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay, grit & shell

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.2/AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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DATE REPORTED: 1-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 19-Aug-2008

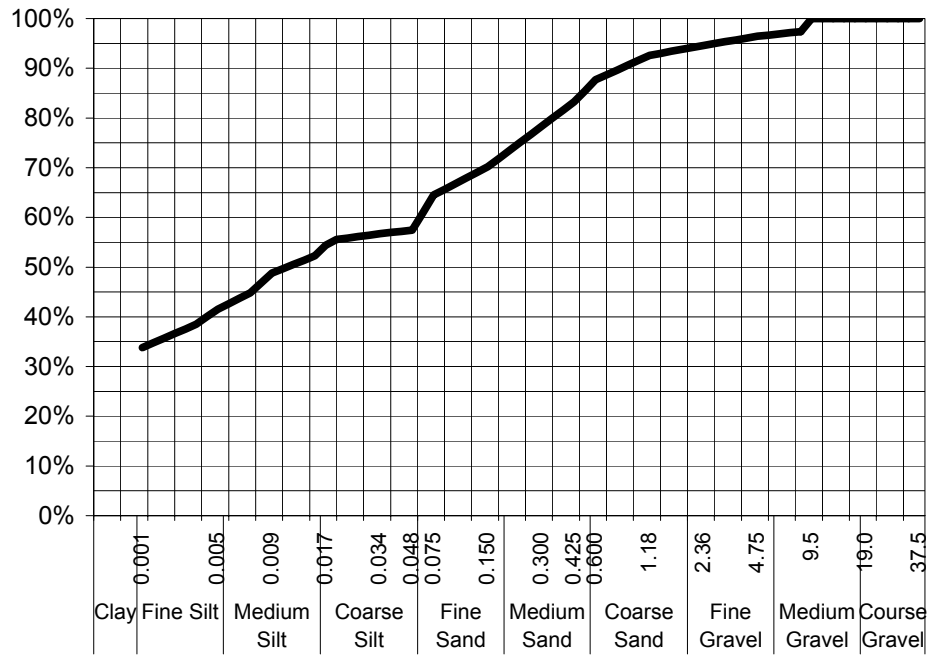
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811130-010 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH17 9.6-9.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	96%
2.36	95%
1.18	93%
0.600	88%
0.425	83%
0.300	78%
0.150	70%
0.075	65%
Particle Size (microns)	
34	57%
17	54%
9	49%
5	42%
3	38%
1	34%

Samples analysed as received.

Sample Comments:

Analysed: 21-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay, grit & shell

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.2/AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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Authorised Signatory

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DATE REPORTED: 1-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 19-Aug-2008

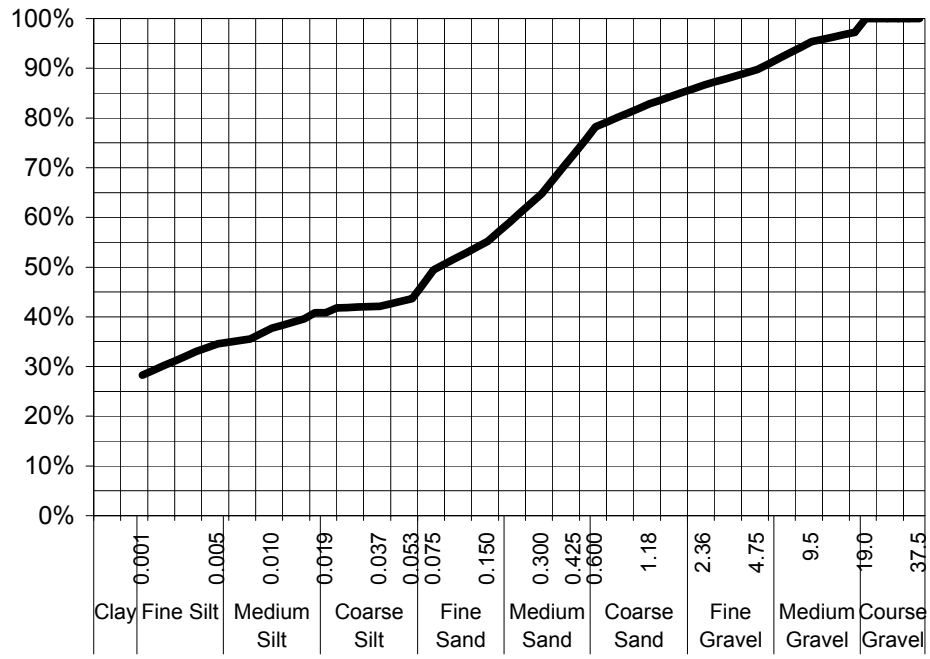
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811130-012 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC22

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	95%
4.75	90%
2.36	87%
1.18	83%
0.600	78%
0.425	73%
0.300	65%
0.150	55%
0.075	49%
Particle Size (microns)	
37	42%
19	41%
10	38%
5	35%
3	33%
1	28%

Samples analysed as received.

Sample Comments:

Analysed: 21-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Dark wet mud, grit & shell

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.2/AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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CLIENT: Rob Ully

DATE REPORTED: 1-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 19-Aug-2008

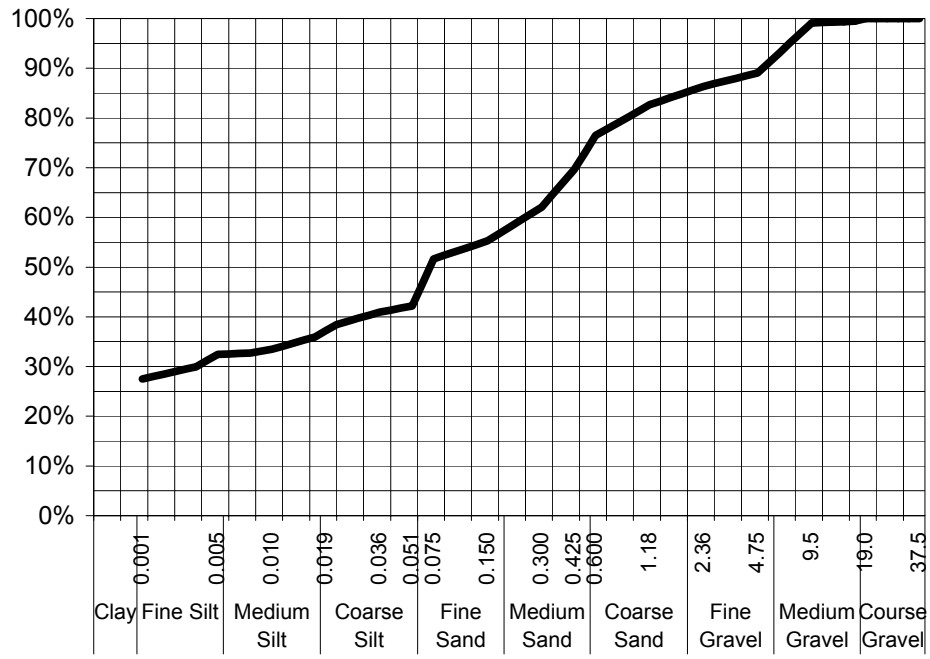
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811130-013 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC23

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	99%
4.75	89%
2.36	86%
1.18	83%
0.600	76%
0.425	70%
0.300	62%
0.150	55%
0.075	52%
Particle Size (microns)	
36	41%
19	37%
10	33%
5	32%
3	30%
1	27%

Samples analysed as received.

Sample Comments:

Analysed: 21-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Dark wet mud, grit & shell

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.2/AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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Authorised Signatory

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Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 1-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 19-Aug-2008

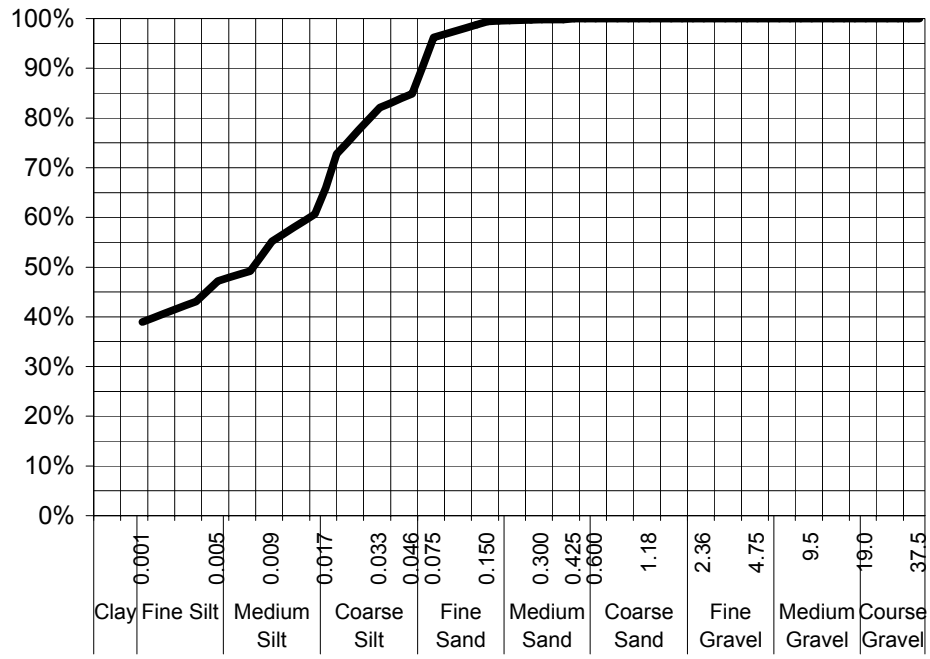
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811130-014 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC24

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	96%
Particle Size (microns)	
33	82%
17	66%
9	55%
5	47%
3	43%
1	39%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Clay & grit

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 21-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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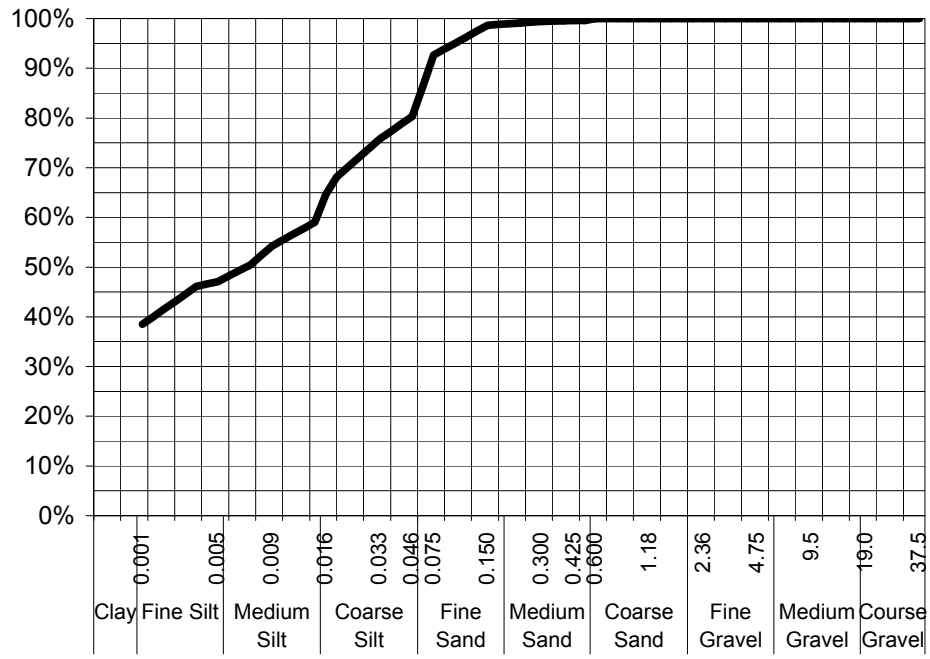
Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	1-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	19-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811130-015 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC25

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	99%
0.075	93%
Particle Size (microns)	
33	76%
16	65%
9	54%
5	47%
3	46%
1	38%

Samples analysed as received.

Sample Comments:		**Analysed:**	21-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay & grit	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.2/AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52
Date Received : 19-Aug-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811130	BH17 0.0-0.4	001	9%	41%	22%	28%
EB0811130	BH17 0.5-1.0	002	9%	32%	26%	33%
EB0811130	BH17 1.0-1.1	003	25%	40%	18%	17%
EB0811130	BH17 1.2-1.5	004	4%	21%	42%	33%
EB0811130	BH17 1.55-2.0	005	0%	14%	46%	40%
EB0811130	BH17 2.3-2.8	006	0%	12%	43%	45%
EB0811130	BH17 3.0-3.5	007	0%	4%	44%	52%
EB0811130	BH17 5.0-5.45	008	0%	16%	39%	45%
EB0811130	BH17 5.4-5.6	009	0%	45%	29%	26%
EB0811130	BH17 9.6-9.8	010	5%	32%	29%	34%
EB0811130	QC22	012	13%	37%	22%	28%
EB0811130	QC23	013	14%	36%	23%	27%
EB0811130	QC24	014	0%	5%	56%	39%
EB0811130	QC25	015	0%	13%	49%	38%

Remarks :
Test Procedure : AS1289.3.6.2/AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0811130**	Page	: 1 of 13
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 19-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Order number	: ----		
		No. of samples received	: 15
Quote number	: EN/001/08	No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Herman Lin	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 736106)									
EB0811130-001	BH17 0.0-0.4	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.2	9.2	0.0	0% - 20%
EB0811130-012	QC22	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.9	8.9	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 736106)									
EB0811130-001	BH17 0.0-0.4	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.35	0.32	11.3	0% - 50%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	221	197	11.3	0% - 50%
EB0811130-012	QC22	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.50	0.54	6.9	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	314	336	6.9	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 736106)									
EB0811130-001	BH17 0.0-0.4	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	14.6	14.8	0.7	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	4.70	4.73	0.7	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	2930	2950	0.7	0% - 20%
EB0811130-012	QC22	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	11.4	11.5	1.1	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	3.64	3.68	1.1	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	2270	2300	1.1	0% - 20%
EA055: Moisture Content (QC Lot: 737655)									
EB0811121-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0811130-007	BH17 3.0-3.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	21.6	21.6	0.0	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 742579)									
EB0811130-001	BH17 0.0-0.4	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	18	7.4	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	11	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	16	14	11.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	12	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	7	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 742579) - continued									
EB0811130-001	BH17 0.0-0.4	EG005T: Manganese	7439-96-5	5	mg/kg	474	480	1.3	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	23	27	14.8	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	8160	8890	8.6	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	17300	17700	2.6	0% - 20%
EB0811130-012	QC22	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	20	19	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	11	11	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	11	10.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	16	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	347	288	18.6	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	32	32	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	10800	10700	1.4	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	20000	19300	3.5	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 742580)									
EB0811130-001	BH17 0.0-0.4	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0811130-012	QC22	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 736500)									
EB0811130-001	BH17 0.0-0.4	EP005: Total Organic Carbon	----	0.02	%	0.60	0.61	1.6	0% - 20%
EB0811130-012	QC22	EP005: Total Organic Carbon	----	0.02	%	0.73	0.70	4.2	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 742237)									
EB0811130-001	BH17 0.0-0.4	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EB0811213-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QC Lot: 742236)									
EB0811130-001	BH17 0.0-0.4	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EB0811150-002	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 742236) - continued									
EB0811150-002	Anonymous	EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 740068)									
EB0811130-001	BH17 0.0-0.4	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0811130-012	QC22	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 738691)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP090: Organotin Compounds (QC Lot: 738691) - continued									
EB0811130-001	BH17 0.0-0.4	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit
EB0811213-002	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 736536)									
EB0811130-011	QC21	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.006	<0.005	24.9	No Limit
EB0811167-005	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 736537)									
EB0811130-011	QC21	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 743215)									
EB0811130-011	QC21	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EB0811351-005	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 736106)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 736106)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 736106)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 742579)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	95.8	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	101	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	97.4	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	100	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	98.4	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	98.1	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	98.4	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 742580)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	107	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 736500)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	103	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 742237)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	68.0	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 742236)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	78.9	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	83.1	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	84.5	60.8	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 742236) - continued								
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	83.4	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	77.9	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	68.7	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	87.1	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	84.3	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	65.8	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	89.9	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 740068)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	92.7	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	89.6	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	93.8	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	94.0	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	97.2	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	90.0	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	90.6	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	87.8	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	85.0	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	83.0	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	83.4	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	102	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	96.4	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	96.6	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	96.2	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	96.2	52	128
EP090: Organotin Compounds (QCLot: 738691)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	55.8	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 736536)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	108	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	103	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	106	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	115	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	109	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	109	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	108	81.5	117

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 736536) - continued								
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	101	81	127
EG020T: Total Metals by ICP-MS (QCLot: 736537)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 88.6	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 743215)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	110	84.2	118
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 736605)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	89.3	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 736604)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	91.0	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	91.4	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	91.9	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	104	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	93.7	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	85.7	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	100	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	92.2	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	73.9	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	91.7	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 736606)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	75.0	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	88.9	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	82.9	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	89.7	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	86.6	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	79.3	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	85.6	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	86.8	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	92.9	53	115
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 736606) - continued								
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	75.5	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	93.7	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	87.6	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	85.6	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	96.6	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	94.6	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	91.4	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 742579)							
EB0811130-002	BH17 0.5-1.0	EG005T: Arsenic	7440-38-2	50 mg/kg	96.3	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	101	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	99.7	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	107	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	103	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	99.2	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	107	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 742580)							
EB0811130-002	BH17 0.5-1.0	EG035T: Mercury	7439-97-6	5.0 mg/kg	103	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 742237)							
EB0811130-002	BH17 0.5-1.0	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	70.1	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 742236)							
EB0811130-002	BH17 0.5-1.0	EP068: gamma-BHC	58-89-9	0.25 mg/kg	72.2	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	80.8	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	79.0	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	# Not Determined	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 740068)							
EB0811130-002	BH17 0.5-1.0	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	77.1	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	80.7	70	130
EP090: Organotin Compounds (QCLot: 738691)							
EB0811130-002	BH17 0.5-1.0	EP090: Tributyltin	56573-85-4	25 µgSn/kg	24.0	20	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 736536)							
EB0811137-001	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG035T: Total Recoverable Mercury by FIMS (QCLot: 743215)							
EB0811130-011	QC21	EG035T: Mercury	7439-97-6	0.0100 mg/L	90.4	70	130

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0811130**	Page	: 1 of 12
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 19-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Order number	: ----		
		No. of samples received	: 15
Quote number	: EN/001/08	No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Pulp Bag								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**19-AUG-2008**	---	----	**21-AUG-2008**	17-NOV-2008	✓
BH17 1.0-1.1,	BH17 1.2-1.5,							
BH17 1.55-2.0,	BH17 2.3-2.8,							
BH17 3.0-3.5,	BH17 5.0-5.45,							
BH17 5.4-5.6,	BH17 9.6-9.8,							
QC22,	QC23,							
QC24,	QC25							
EA033-B: Potential Acidity								
Pulp Bag								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**19-AUG-2008**	---	----	**21-AUG-2008**	17-NOV-2008	✓
BH17 1.0-1.1,	BH17 1.2-1.5,							
BH17 1.55-2.0,	BH17 2.3-2.8,							
BH17 3.0-3.5,	BH17 5.0-5.45,							
BH17 5.4-5.6,	BH17 9.6-9.8,							
QC22,	QC23,							
QC24,	QC25							
EA033-C: Acid Neutralising Capacity								
Pulp Bag								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**19-AUG-2008**	---	----	**21-AUG-2008**	17-NOV-2008	✓
BH17 1.0-1.1,	BH17 1.2-1.5,							
BH17 1.55-2.0,	BH17 2.3-2.8,							
BH17 3.0-3.5,	BH17 5.0-5.45,							
BH17 5.4-5.6,	BH17 9.6-9.8,							
QC22,	QC23,							
QC24,	QC25							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity								
Pulp Bag								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**19-AUG-2008**	---	----	**21-AUG-2008**	17-NOV-2008	✓
BH17 1.0-1.1,	BH17 1.2-1.5,							
BH17 1.55-2.0,	BH17 2.3-2.8,							
BH17 3.0-3.5,	BH17 5.0-5.45,							
BH17 5.4-5.6,	BH17 9.6-9.8,							
QC22,	QC23,							
QC24,	QC25							
EA033-E: Acid Base Accounting								
Pulp Bag								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**19-AUG-2008**	---	----	**21-AUG-2008**	17-NOV-2008	✓
BH17 1.0-1.1,	BH17 1.2-1.5,							
BH17 1.55-2.0,	BH17 2.3-2.8,							
BH17 3.0-3.5,	BH17 5.0-5.45,							
BH17 5.4-5.6,	BH17 9.6-9.8,							
QC22,	QC23,							
QC24,	QC25							
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**----**	----	----	**22-AUG-2008**	25-AUG-2008	✓
BH17 1.0-1.1,	BH17 1.2-1.5,							
BH17 1.55-2.0,	BH17 2.3-2.8,							
BH17 3.0-3.5,	BH17 5.0-5.45,							
BH17 5.4-5.6,	BH17 9.6-9.8,							
QC22,	QC23,							
QC24,	QC25							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**02-SEP-2008**	14-FEB-2009	✓	**02-SEP-2008**	14-FEB-2009	✓
BH17 1.0-1.1,	BH17 1.2-1.5,							
BH17 1.55-2.0,	BH17 2.3-2.8,							
BH17 3.0-3.5,	BH17 5.0-5.45,							
BH17 5.4-5.6,	BH17 9.6-9.8,							
QC22,	QC23,							
QC24,	QC25							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**02-SEP-2008**	14-FEB-2009	✓	**02-SEP-2008**	15-SEP-2008	✓
BH17 1.0-1.1,	BH17 1.2-1.5,							
BH17 1.55-2.0,	BH17 2.3-2.8,							
BH17 3.0-3.5,	BH17 5.0-5.45,							
BH17 5.4-5.6,	BH17 9.6-9.8,							
QC22,	QC23,							
QC24,	QC25							
EP005: Total Organic Carbon (TOC)								
Pulp Bag								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**21-AUG-2008**	---	----	**21-AUG-2008**	15-SEP-2008	✓
BH17 1.0-1.1,	BH17 1.2-1.5,							
BH17 1.55-2.0,	BH17 2.3-2.8,							
BH17 3.0-3.5,	BH17 5.0-5.45,							
BH17 5.4-5.6,	BH17 9.6-9.8,							
QC22,	QC23,							
QC24,	QC25							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**28-AUG-2008**	01-SEP-2008	✓	**01-SEP-2008**	07-OCT-2008	✓
BH17 1.2-1.5,	BH17 1.55-2.0,							
QC22,	QC23,							
QC24								
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**28-AUG-2008**	01-SEP-2008	✓	**01-SEP-2008**	07-OCT-2008	✓
BH17 1.2-1.5,	BH17 1.55-2.0,							
QC22,	QC23,							
QC24								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved								
BH17 0.0-0.4,	BH17 0.5-1.0,	**18-AUG-2008**	**26-AUG-2008**	01-SEP-2008	✓	**29-AUG-2008**	05-OCT-2008	✓
BH17 1.0-1.1,	BH17 1.2-1.5,							
BH17 1.55-2.0,	BH17 2.3-2.8,							
BH17 3.0-3.5,	BH17 5.0-5.45,							
BH17 5.4-5.6,	BH17 9.6-9.8,							
QC22,	QC23,							
QC24,	QC25							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH17 0.0-0.4, BH17 0.5-1.0, BH17 1.0-1.1, BH17 1.2-1.5, BH17 1.55-2.0, QC22, QC23, QC24, QC25	**18-AUG-2008**	**25-AUG-2008**	01-SEP-2008	✓	**28-AUG-2008**	04-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC21	**18-AUG-2008**	**21-AUG-2008**	14-FEB-2009	✓	**21-AUG-2008**	14-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC21	**18-AUG-2008**	**----**	----	----	**29-AUG-2008**	15-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC21	**18-AUG-2008**	**22-AUG-2008**	25-AUG-2008	✓	**26-AUG-2008**	01-OCT-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC21	**18-AUG-2008**	**22-AUG-2008**	25-AUG-2008	✓	**26-AUG-2008**	01-OCT-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC21	**18-AUG-2008**	**22-AUG-2008**	25-AUG-2008	✓	**26-AUG-2008**	01-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	16	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB0811130-002	BH17 0.5-1.0	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP068A: Organochlorine Pesticides (OC)	EB0811130-002	BH17 0.5-1.0	**4.4`-DDT**	50-29-3	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	830456-002	----	**Silver**	7440-22-4	88.6 %	120-123%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **SOLID**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	EB0811130-003	BH17 1.0-1.1	**Phenol-d6**	13127-88-3	133 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0811130-003	BH17 1.0-1.1	**2-Fluorobiphenyl**	321-60-8	132 %	30-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0811130-003	BH17 1.0-1.1	**4-Terphenyl-d14**	1718-51-0	157 %	18-137 %	**Recovery greater than upper data quality objective**

Sub-Matrix: **LIQUID**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	EB0811130-011	QC21	**2.4.6-Tribromophenol**	118-79-6	142 %	10-123 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0811213

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: (1) 2 3 4 (please circle) (1)
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		
URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	
URS PM:	Rob Ully	SITE :	GLNG SANTOS		
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	

FOR LABORATORY USE ONLY

Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

RECEIVED BY: DATE: 20/8 TIME: 13:50

RELINQUISHED BY: DATE: TIME:

RECEIVED DATE:

Telephone : +61-7-3243 7222

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCl 7DC	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH16 0.5-0.95	19/08/08	S	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
2	BH16 1.0-1.45	19/08/08	S	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
3	BH16 1.5-2.0	"	S	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
4	BH16 3.4-3.6	"	"	2	1										✓	✓					✓		✓					✓
5	BH16 4.2-4.6	"	"	2	1										✓	✓					✓		✓					✓
6	BH16 5.7-6.0	"	"	1	1										✓	✓					✓		✓					✓
7	BH16 6.2-6.5	"	"	1	1										✓	✓					✓		✓					✓
8	BH16 8.2-8.45	"	"	1	1										✓	✓					✓		✓					✓
9	QC26	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
10	QC27	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
11	QC28	"	"			2	1	1								✓		✓	✓	✓	✓							
TOTAL															10	11	5	6	6	6	11		10				5	

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0811213**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 20-AUG-2008	Issue Date	: 21-AUG-2008 17:01
Client Requested Due Date	: 27-AUG-2008	Scheduled Reporting Date	: **03-SEP-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.1 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 11
Sercurity Seal	: Intact.	No. of samples analysed	: 11

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins	SOIL - S-02 8 Metals (incl. Digestion)
EB0811213-001	19-AUG-2008 15:00	BH16 0.5-0.95	✓	✓	✓	✓	✓	✓	✓	✓
EB0811213-002	19-AUG-2008 15:00	BH16 1.0-1.45	✓	✓	✓	✓	✓	✓	✓	✓
EB0811213-003	19-AUG-2008 15:00	BH16 1.5-2.0	✓	✓	✓	✓	✓	✓	✓	✓
EB0811213-004	19-AUG-2008 15:00	BH16 3.4-3.6	✓	✓	✓			✓		✓
EB0811213-005	19-AUG-2008 15:00	BH16 4.2-4.6	✓	✓	✓			✓		✓
EB0811213-006	19-AUG-2008 15:00	BH16 5.7-6.0	✓	✓	✓			✓		✓
EB0811213-007	19-AUG-2008 15:00	BH16 6.2-6.5	✓	✓	✓			✓		✓
EB0811213-008	19-AUG-2008 15:00	BH16 8.2-8.45	✓	✓	✓			✓		✓
EB0811213-009	19-AUG-2008 15:00	QC26	✓	✓	✓	✓	✓	✓	✓	✓
EB0811213-010	19-AUG-2008 15:00	QC27	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0811213-011	19-AUG-2008 15:00	QC28	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS		
- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com
- Trigger - Subcontract Report	Email	julian_dobos@urscorp.com
MR ROB ULLY		
- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com
- Trigger - Subcontract Report	Email	rob_ully@urscorp.com
RESULTS ADDRESS		
- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com
- Trigger - Subcontract Report	Email	brisbane@urscorp.com
THE ACCOUNTS BRISBANE		
- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0811213**	Page	: 1 of 11
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 20-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 11
Quote number	: EN/001/08	No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Herman Lin	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EG005T (Total Metals): Sample EB0811213-007 (BH16 6.2-6.5) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.**
- **LCS recovery for EG020T (Total Metals) fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC28 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC28	----	----	----	----
				Client sampling date / time	19-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0811213-011	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.010**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<0.9	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.9	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.9	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.9	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<0.9	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.9	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<0.9	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.9	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.9	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L		<0.9	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**78.6**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**103**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**108**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH16 0.5-0.95	BH16 1.0-1.45	BH16 1.5-2.0	BH16 3.4-3.6	BH16 4.2-4.6
				Client sampling date / time: 19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00
				EB0811213-001	EB0811213-002	EB0811213-003	EB0811213-004	EB0811213-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.6	7.8	7.4	7.4	6.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.68	0.61	0.50	0.54	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	422	379	311	338	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	6.16	1.39	1.52	3.57	0.38
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1230	278	304	714	77
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.97	0.44	0.49	1.14	0.12
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.31	0.17	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	194	109	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	14	8	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	47.4	41.3	38.4	29.2	21.0
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	10600	10500	9360	6230	2730
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	17	8	8	14	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	16	14	15	3
Copper	7440-50-8	5	mg/kg	21	27	25	30	<5
Iron	7439-89-6	50	mg/kg	22400	18200	18700	11800	830
Lead	7439-92-1	5	mg/kg	9	9	8	7	<5
Manganese	7439-96-5	5	mg/kg	232	507	363	186	<5
Nickel	7440-02-0	2	mg/kg	11	10	9	8	<2
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	37	31	29	19	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	1.37	0.72	0.69	0.35	0.04

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH16 0.5-0.95	BH16 1.0-1.45	BH16 1.5-2.0	BH16 3.4-3.6	BH16 4.2-4.6
				Client sampling date / time: 19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00
				EB0811213-001	EB0811213-002	EB0811213-003	EB0811213-004	EB0811213-005
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**74.9**	**74.2**	**66.4**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**70.8**	**76.8**	**69.4**	----	----
EP068T: Organophosphorus Pesticide Surrogate								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH16 0.5-0.95	BH16 1.0-1.45	BH16 1.5-2.0	BH16 3.4-3.6	BH16 4.2-4.6
				Client sampling date / time: 19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00
				EB0811213-001	EB0811213-002	EB0811213-003	EB0811213-004	EB0811213-005
EP068T: Organophosphorus Pesticide Surrogate - Continued								
DEF	78-48-8	0.1	%	**81.8**	**78.1**	**69.2**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**82.4**	**91.6**	**91.6**	**81.3**	**88.3**
2-Chlorophenol-D4	93951-73-6	0.1	%	**87.9**	**89.8**	**84.8**	**70.9**	**74.6**
2.4.6-Tribromophenol	118-79-6	0.1	%	**74.8**	**79.2**	**79.8**	**73.1**	**59.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**78.9**	**85.4**	**82.5**	**46.3**	**74.6**
Anthracene-d10	1719-06-8	0.1	%	**68.8**	**74.7**	**72.6**	**77.7**	**68.6**
4-Terphenyl-d14	1718-51-0	0.1	%	**107**	**113**	**114**	**114**	**111**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**68.7**	**53.1**	**56.5**	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH16 5.7-6.0	BH16 6.2-6.5	BH16 8.2-8.45	QC26	QC27
				Client sampling date / time: 19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00
				EB0811213-006	EB0811213-007	EB0811213-008	EB0811213-009	EB0811213-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.3	5.5	5.6	7.6	7.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	5	4	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	0.65	0.52
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	404	325
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	1.27	1.12
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	254	224
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	0.41	0.36
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	0.38	0.28
Net Acidity (acidity units)	----	10	mole H+ / t	<10	11	<10	235	175
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	18	13
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	25.4	25.6	27.6	41.8	40.6
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	2400	4000	3140	10800	10700
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	16	<5	8	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	<2	20	5	16	16
Copper	7440-50-8	5	mg/kg	<5	36	<5	26	27
Iron	7439-89-6	50	mg/kg	800	37000	2480	17100	16500
Lead	7439-92-1	5	mg/kg	<5	5	<5	8	8
Manganese	7439-96-5	5	mg/kg	<5	<5	<5	162	220
Nickel	7440-02-0	2	mg/kg	<2	2	<2	10	9
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	<5	10	<5	30	30
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.03	0.05	<0.02	0.87	0.60

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH16 5.7-6.0	BH16 6.2-6.5	BH16 8.2-8.45	QC26	QC27
				Client sampling date / time: 19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00
				EB0811213-006	EB0811213-007	EB0811213-008	EB0811213-009	EB0811213-010
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	----	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	<0.05
trans-Chlordane	5103-74-2	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
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
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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	----	----	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	**66.6**	**64.5**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	**70.5**	**67.3**
EP068T: Organophosphorus Pesticide Surrogate								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH16 5.7-6.0	BH16 6.2-6.5	BH16 8.2-8.45	QC26	QC27
				Client sampling date / time: 19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00	19-AUG-2008 15:00
				EB0811213-006	EB0811213-007	EB0811213-008	EB0811213-009	EB0811213-010
EP068T: Organophosphorus Pesticide Surrogate - Continued								
DEF	78-48-8	0.1	%	----	----	----	**70.5**	**68.6**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**67.8**	**88.0**	**104**	**108**	**109**
2-Chlorophenol-D4	93951-73-6	0.1	%	**61.2**	**77.4**	**93.6**	**99.8**	**98.4**
2.4.6-Tribromophenol	118-79-6	0.1	%	**60.6**	**86.2**	**92.3**	**92.8**	**95.1**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**58.0**	**61.7**	**102**	**76.9**	**76.9**
Anthracene-d10	1719-06-8	0.1	%	**51.4**	**106**	**114**	**117**	**115**
4-Terphenyl-d14	1718-51-0	0.1	%	**88.8**	**108**	**113**	**117**	**115**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	----	----	**62.6**	**74.6**

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

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TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 20-Aug-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811213	BH16 0.5-0.95	001	5%	17%	39%	39%
EB0811213	BH16 1.0-1.45	002	0%	5%	44%	51%
EB0811213	BH16 1.5-2.0	003	0%	9%	43%	48%
EB0811213	BH16 3.4-3.6	004	5%	17%	41%	37%
EB0811213	BH16 4.2-4.6	005	0%	19%	40%	41%
EB0811213	BH16 5.7-6.0	006	1%	27%	42%	30%
EB0811213	BH16 6.2-6.5	007	15%	44%	23%	18%
EB0811213	BH16 8.2-8.45	008	4%	18%	38%	40%
EB0811213	QC26	009	1%	9%	44%	46%
EB0811213	QC27	010	0%	5%	52%	43%

Remarks :
Test Procedure : AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Certificate of Analysis

ALS Laboratory Group Pty Ltd
5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 29-Aug-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 20-Aug-2008

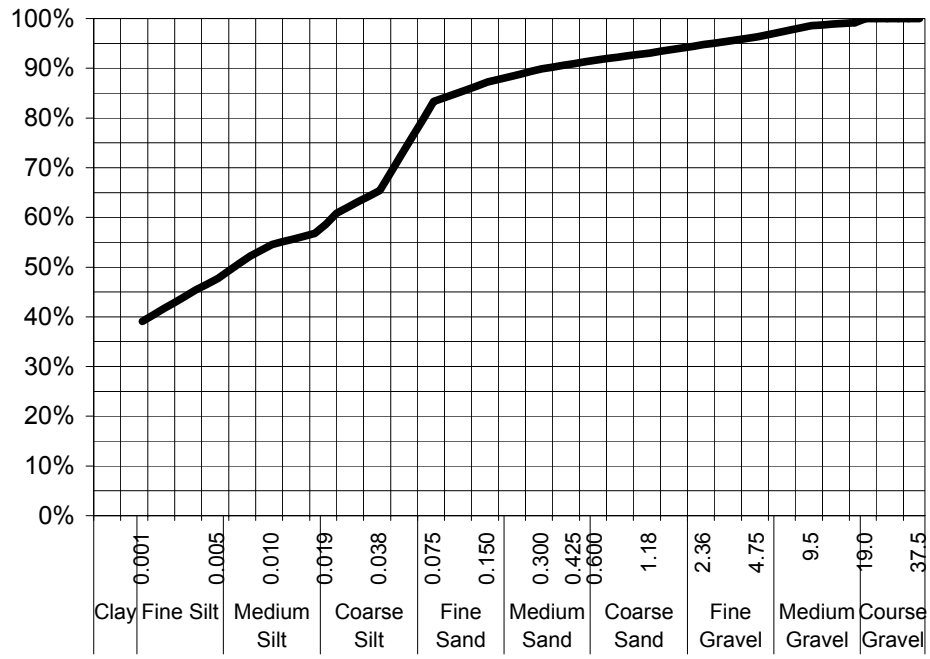
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811213-001 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH16 0.5-0.95

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	99%
4.75	96%
2.36	95%
1.18	93%
0.600	92%
0.425	91%
0.300	90%
0.150	87%
0.075	83%
Particle Size (microns)	
38	65%
19	59%
10	55%
5	48%
3	45%
1	39%

Samples analysed as received.

Sample Comments:

Analysed: 22-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay & grit

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 29-Aug-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 20-Aug-2008

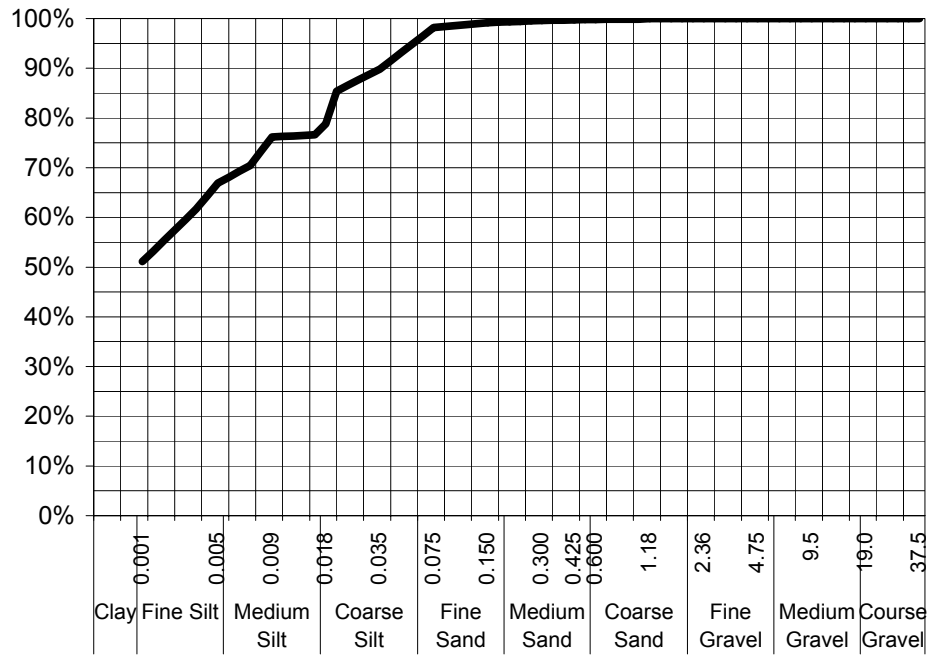
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811213-002 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH16 1.0-1.45

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%
Particle Size (microns)	
35	90%
18	79%
9	76%
5	67%
3	62%
1	51%

Samples analysed as received.

Sample Comments:

Analysed: 22-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay & grit

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 29-Aug-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 20-Aug-2008

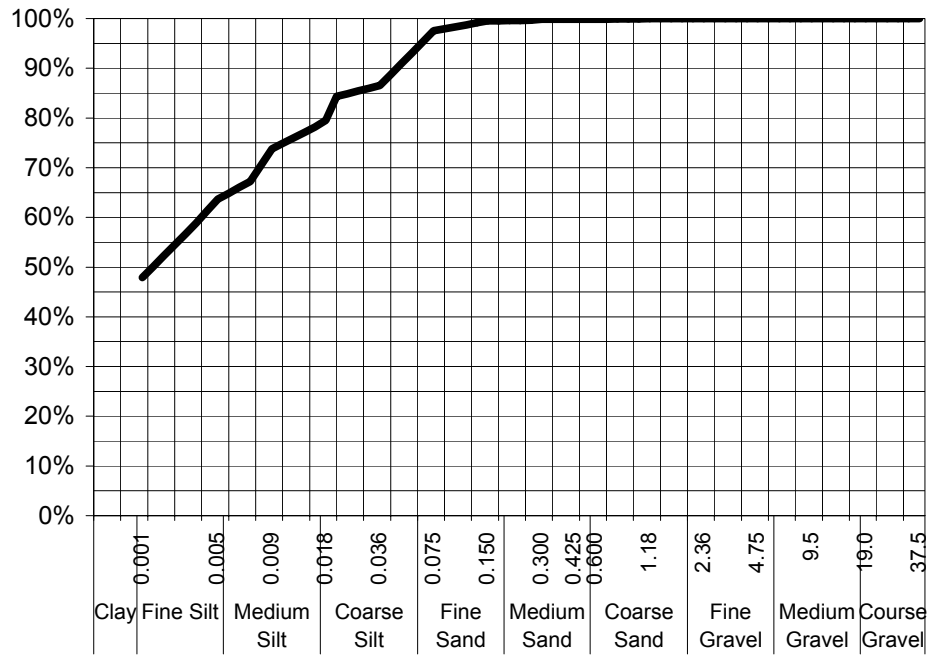
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811213-003 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH16 1.5-2.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	100%
0.075	98%
Particle Size (microns)	
36	87%
18	80%
9	74%
5	64%
3	59%
1	48%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Grey clay & grit

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 22-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

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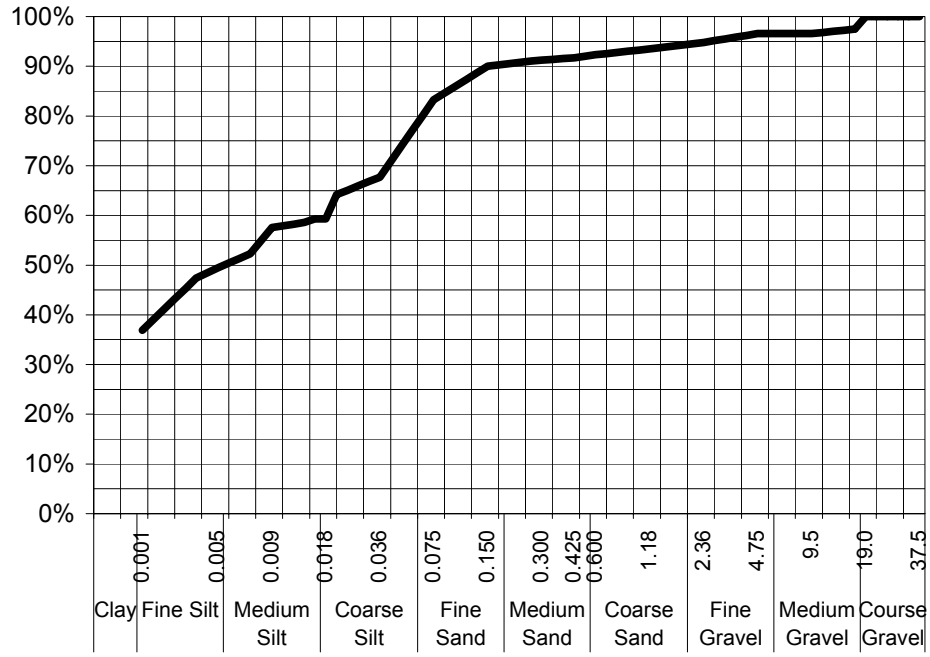
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	29-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	20-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811213-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH16 3.4-3.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	97%
4.75	97%
2.36	95%
1.18	94%
0.600	92%
0.425	92%
0.300	91%
0.150	90%
0.075	83%
Particle Size (microns)	
36	68%
18	59%
9	58%
5	49%
3	47%
1	37%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Grey clay & grit

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 22-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

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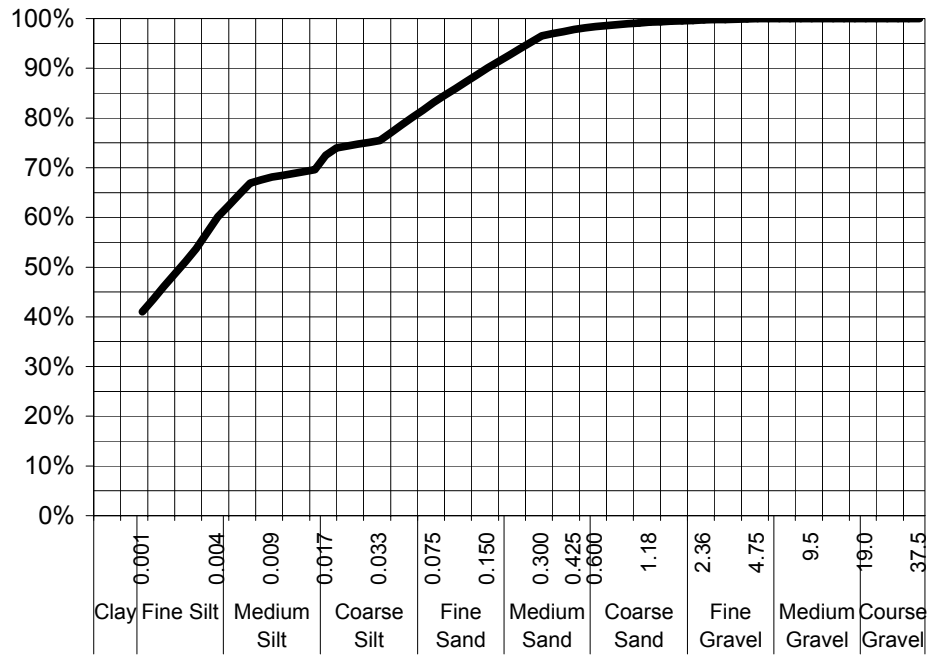
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	29-Aug-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	20-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811213-005 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH16 4.2-4.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	98%
0.425	98%
0.300	97%
0.150	90%
0.075	83%
Particle Size (microns)	
33	75%
17	73%
9	68%
4	60%
3	54%
1	41%

Samples analysed as received.

Sample Comments:		**Analysed:**	22-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	White/ochre crumbly clay & sand	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 29-Aug-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 20-Aug-2008

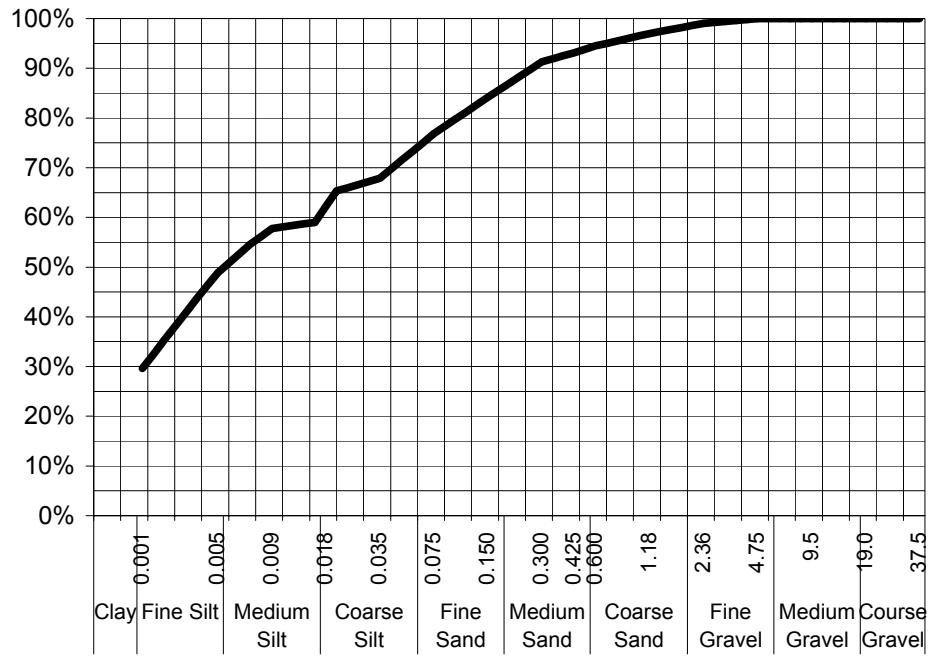
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811213-006 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH16 5.7-6.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	97%
0.600	94%
0.425	93%
0.300	91%
0.150	84%
0.075	77%
Particle Size (microns)	
35	68%
18	62%
9	58%
5	49%
3	44%
1	30%

Samples analysed as received.

Sample Comments:

Analysed: 22-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: White/ochre crumbly clay & sand

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
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ALS Environmental

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CLIENT: Rob Ully

COMPANY: URS Australia Pty Ltd (Qld)

ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

PROJECT: 42626228.52

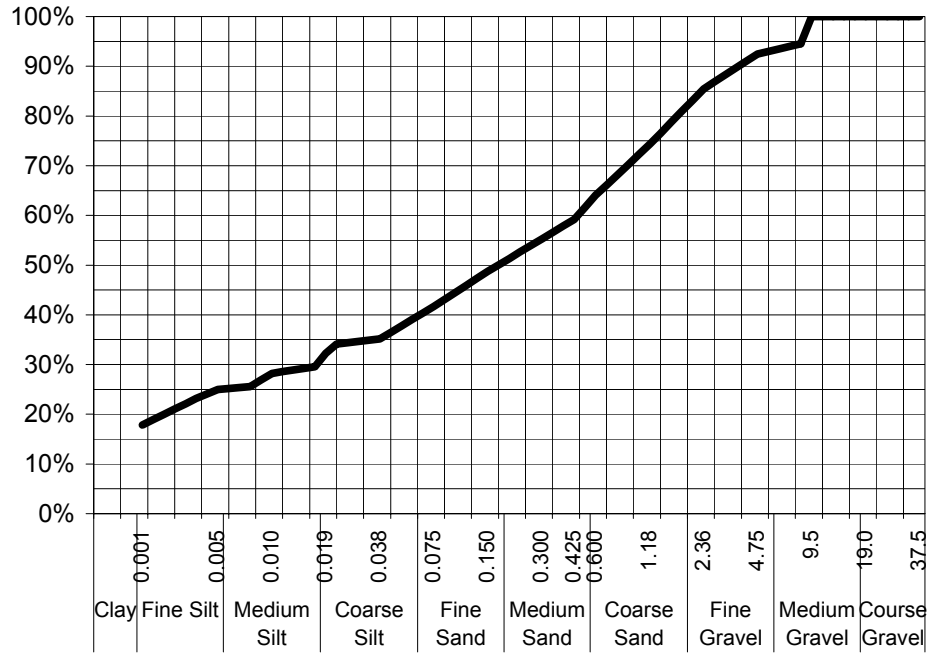
DATE REPORTED: 29-Aug-2008

DATE RECEIVED: 20-Aug-2008

REPORT NO: EB0811213-007 / PSD

SAMPLE ID: BH16 6.2-6.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	92%
2.36	85%
1.18	74%
0.600	64%
0.425	59%
0.300	55%
0.150	49%
0.075	42%
Particle Size (microns)	
38	35%
19	32%
10	28%
5	25%
4	23%
1	18%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Ochre crumbly clay & sand

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 22-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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Authorised Signatory

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 29-Aug-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 20-Aug-2008

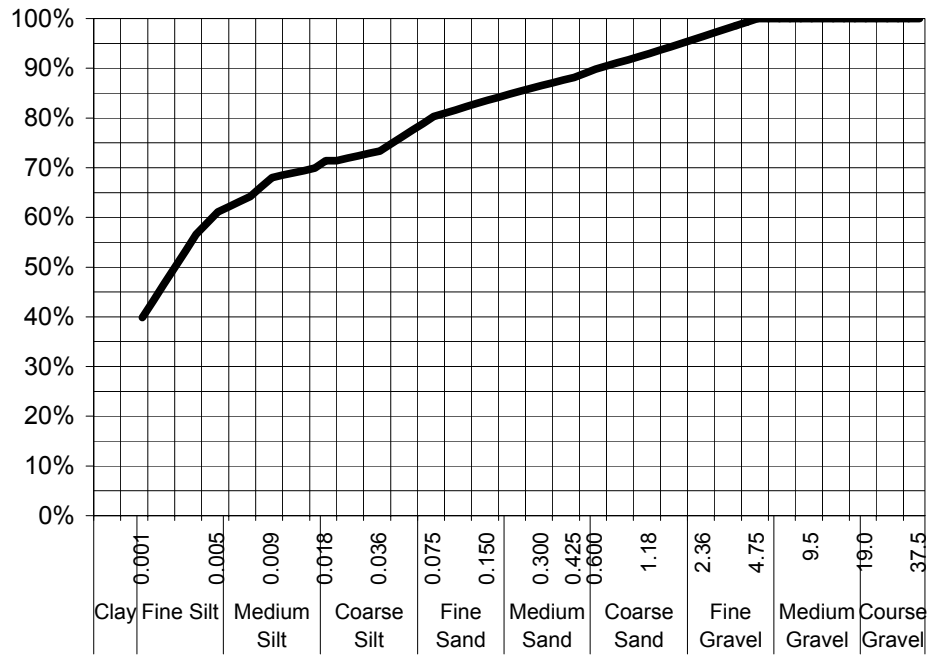
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811213-008 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH16 8.2-8.45

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	96%
1.18	93%
0.600	90%
0.425	88%
0.300	87%
0.150	84%
0.075	80%
Particle Size (microns)	
36	73%
18	71%
9	68%
5	61%
3	57%
1	40%

Samples analysed as received.

Sample Comments:

Analysed: 22-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Ochre crumbly clay & sand

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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Warabrook, NSW 2304
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samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

COMPANY: URS Australia Pty Ltd (Qld)

ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

PROJECT: 42626228.52

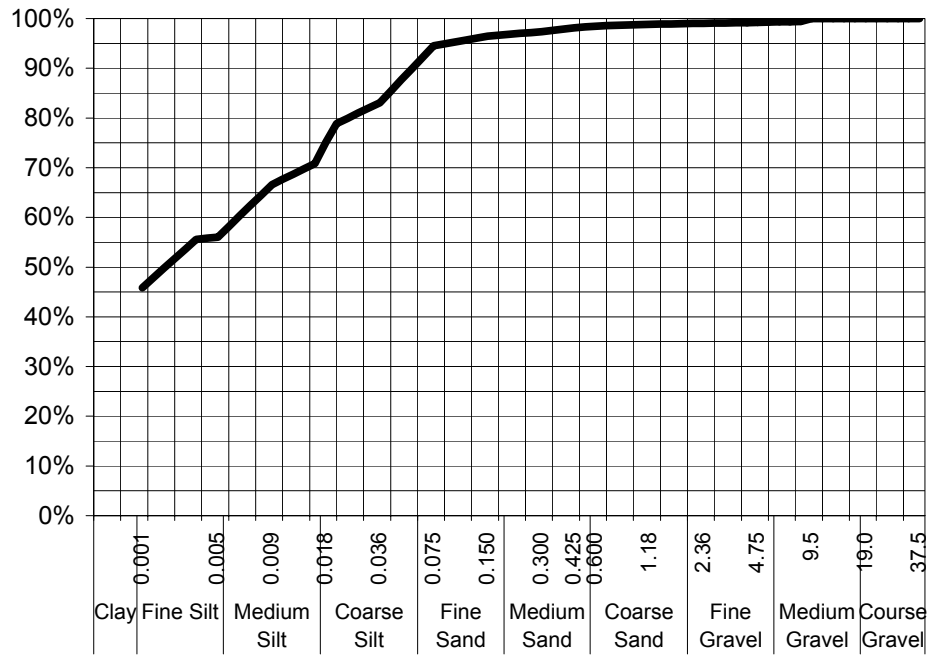
DATE REPORTED: 29-Aug-2008

DATE RECEIVED: 20-Aug-2008

REPORT NO: EB0811213-009 / PSD

SAMPLE ID: QC26

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	99%
1.18	99%
0.600	98%
0.425	98%
0.300	97%
0.150	96%
0.075	95%
Particle Size (microns)	
36	83%
18	75%
9	67%
5	56%
3	56%
1	46%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Grey clay & grit

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 22-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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5 Rosegum Road
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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 29-Aug-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 20-Aug-2008

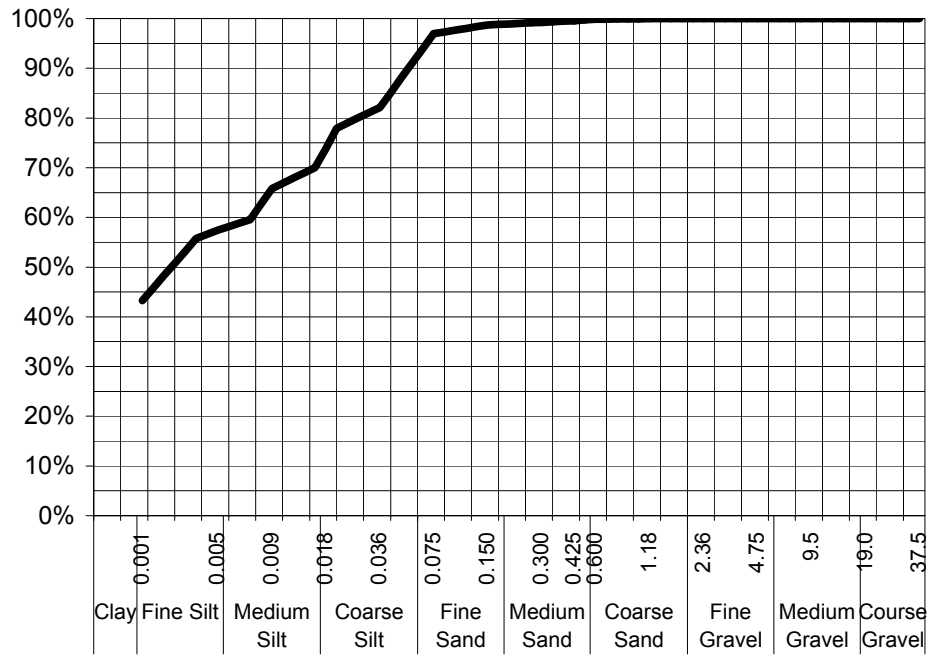
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811213-010 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC27

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	99%
0.075	97%
Particle Size (microns)	
36	82%
18	74%
9	66%
5	57%
3	56%
1	43%

Samples analysed as received.

Sample Comments:

Analysed: 22-Aug-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay & grit

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52
Date Received : 20-Aug-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811213	BH16 0.5-0.95	001	5%	17%	39%	39%
EB0811213	BH16 1.0-1.45	002	0%	5%	44%	51%
EB0811213	BH16 1.5-2.0	003	0%	9%	43%	48%
EB0811213	BH16 3.4-3.6	004	5%	17%	41%	37%
EB0811213	BH16 4.2-4.6	005	0%	19%	40%	41%
EB0811213	BH16 5.7-6.0	006	1%	27%	42%	30%
EB0811213	BH16 6.2-6.5	007	15%	44%	23%	18%
EB0811213	BH16 8.2-8.45	008	4%	18%	38%	40%
EB0811213	QC26	009	1%	9%	44%	46%
EB0811213	QC27	010	0%	5%	52%	43%

Remarks :
Test Procedure : AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0811213**	Page	: 1 of 14
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 20-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Order number	: ----		
		No. of samples received	: 11
Quote number	: EN/001/08	No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Herman Lin	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 740732)									
EB0811213-001	BH16 0.5-0.95	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.6	8.6	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 740732)									
EB0811213-001	BH16 0.5-0.95	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.68	0.76	11.7	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	422	474	11.7	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 740732)									
EB0811213-001	BH16 0.5-0.95	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	6.16	6.31	2.5	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.97	2.02	2.5	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1230	1260	2.5	0% - 20%
EA055: Moisture Content (QC Lot: 737671)									
EB0811173-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0811203-007	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EA055: Moisture Content (QC Lot: 737672)									
EB0811213-005	BH16 4.2-4.6	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	21.0	20.8	1.2	0% - 20%
EB0811230-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 742579)									
EB0811130-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811130-012	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 742579) - continued									
EB0811130-012	Anonymous	EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 742581)									
EB0811213-007	BH16 6.2-6.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	20	10	# 63.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	<2	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	16	8	70.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	36	22	46.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	10	7	44.6	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	4000	3880	2.9	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	37000	20800	# 56.2	0% - 20%
EB0811298-007	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 742580)									
EB0811130-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811130-012	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 742582)									
EB0811213-007	BH16 6.2-6.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0811298-007	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 737566)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP005: Total Organic Carbon (TOC) (QC Lot: 737566) - continued									
EB0811213-001	BH16 0.5-0.95	EP005: Total Organic Carbon	----	0.02	%	1.37	1.40	2.2	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 742237)									
EB0811130-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811213-002	BH16 1.0-1.45	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 742236)									
EB0811130-001	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811150-002	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 740068)									
EB0811130-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 740068) - continued									
EB0811130-001	Anonymous	EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811130-012	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 740070)									
EB0811213-007	BH16 6.2-6.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0811298-007	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 740070) - continued									
EB0811298-007	Anonymous	EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QC Lot: 738691)									
EB0811130-001	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811213-002	BH16 1.0-1.45	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 739306)									
EB0811213-011	QC28	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.010	<0.005	63.8	No Limit
EB0811311-007	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 739307)									
EB0811213-011	QC28	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 743215)									
EB0811130-011	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0811351-005	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 740088)									
EB0811213-011	QC28	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP005: Total Organic Carbon (TOC) (QC Lot: 740088) - continued									
EB0811409-003	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 740732)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 740732)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 740732)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 742579)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	95.8	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	101	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	97.4	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	100	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	98.4	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	98.1	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	98.4	86.7	119
EG005T: Total Metals by ICP-AES (QCLot: 742581)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	107	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	106	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	102	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	103	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	105	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	106	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 742581) - continued								
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	104	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 742580)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	107	79.5	129
EG035T: Total Recoverable Mercury by FIMS (QCLot: 742582)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	115	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 737566)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 742237)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	68.0	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 742236)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	78.9	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	83.1	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	84.5	60.8	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	83.4	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	77.9	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	68.7	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	87.1	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	84.3	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	65.8	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	89.9	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 740068)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	92.7	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	89.6	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	93.8	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	94.0	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	97.2	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	90.0	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	90.6	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	87.8	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	85.0	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	83.0	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	83.4	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	102	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	96.4	55	116

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 740068) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	96.6	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	96.2	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	96.2	52	128
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 740070)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	85.0	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	78.8	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	94.5	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	102	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	# 125	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	87.9	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	96.6	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	94.8	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	95.5	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	82.2	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	110	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	89.4	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	104	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	103	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	101	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	107	52	128
EP090: Organotin Compounds (QCLot: 738691)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	55.8	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 739306)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	97.2	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	95.1	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	98.9	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	101	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	101	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	100	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	103	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	106	81	127
EG020T: Total Metals by ICP-MS (QCLot: 739307)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 86.3	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 743215)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	110	84.2	118

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP005: Total Organic Carbon (TOC) (QCLot: 740088)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 736605)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	89.3	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 736604)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	91.0	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	91.4	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	91.9	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	104	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	93.7	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	85.7	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	100	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	92.2	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	73.9	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	91.7	47.3	137

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 742579)							
EB0811130-002	Anonymous	EG005T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QCLot: 742581)							
EB0811213-008	BH16 8.2-8.45	EG005T: Arsenic	7440-38-2	50 mg/kg	92.1	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	103	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	99.4	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	104	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	107	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	102	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	102	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	111	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 742580)							
EB0811130-002	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 742582)							
EB0811213-008	BH16 8.2-8.45	EG035T: Mercury	7439-97-6	5.0 mg/kg	114	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 742237)							
EB0811130-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QCLot: 742236)							
EB0811130-002	Anonymous	EP068: gamma-BHC	58-89-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 740068)							
EB0811130-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 740070)							
EB0811213-008	BH16 8.2-8.45	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	95.7	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	93.9	70	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EP090: Organotin Compounds (QCLot: 738691)							
EB0811130-002	Anonymous	EP090: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 739306)							
EB0811296-023	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 743215)							
EB0811130-011	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0811213**	Page	: 1 of 9
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 20-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Order number	: ----		
		No. of samples received	: 11
Quote number	: EN/001/08	No. of samples analysed	: 11

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH16 0.5-0.95,	BH16 1.0-1.45,	**19-AUG-2008**	**20-AUG-2008**	---	----	**28-AUG-2008**	25-NOV-2008	✓
BH16 1.5-2.0,	BH16 3.4-3.6,							
BH16 4.2-4.6,	BH16 5.7-6.0,							
BH16 6.2-6.5,	BH16 8.2-8.45,							
QC26,	QC27							
EA033-B: Potential Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH16 0.5-0.95,	BH16 1.0-1.45,	**19-AUG-2008**	**20-AUG-2008**	---	----	**28-AUG-2008**	25-NOV-2008	✓
BH16 1.5-2.0,	BH16 3.4-3.6,							
BH16 4.2-4.6,	BH16 5.7-6.0,							
BH16 6.2-6.5,	BH16 8.2-8.45,							
QC26,	QC27							
EA033-C: Acid Neutralising Capacity								
Snap Lock Bag - frozen on receipt at ALS								
BH16 0.5-0.95,	BH16 1.0-1.45,	**19-AUG-2008**	**20-AUG-2008**	---	----	**28-AUG-2008**	25-NOV-2008	✓
BH16 1.5-2.0,	BH16 3.4-3.6,							
BH16 4.2-4.6,	BH16 5.7-6.0,							
BH16 6.2-6.5,	BH16 8.2-8.45,							
QC26,	QC27							
EA033-D: Retained Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH16 0.5-0.95,	BH16 1.0-1.45,	**19-AUG-2008**	**20-AUG-2008**	---	----	**28-AUG-2008**	25-NOV-2008	✓
BH16 1.5-2.0,	BH16 3.4-3.6,							
BH16 4.2-4.6,	BH16 5.7-6.0,							
BH16 6.2-6.5,	BH16 8.2-8.45,							
QC26,	QC27							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting								
Snap Lock Bag - frozen on receipt at ALS								
BH16 0.5-0.95,	BH16 1.0-1.45,	**19-AUG-2008**	**20-AUG-2008**	---	----	**28-AUG-2008**	25-NOV-2008	✓
BH16 1.5-2.0,	BH16 3.4-3.6,							
BH16 4.2-4.6,	BH16 5.7-6.0,							
BH16 6.2-6.5,	BH16 8.2-8.45,							
QC26,	QC27							
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH16 0.5-0.95,	BH16 1.0-1.45,	**19-AUG-2008**	**----**	----	----	**22-AUG-2008**	26-AUG-2008	✓
BH16 1.5-2.0,	BH16 3.4-3.6,							
BH16 4.2-4.6,	BH16 5.7-6.0,							
BH16 6.2-6.5,	BH16 8.2-8.45,							
QC26,	QC27							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
BH16 0.5-0.95,	BH16 1.0-1.45,	**19-AUG-2008**	**02-SEP-2008**	15-FEB-2009	✓	**02-SEP-2008**	15-FEB-2009	✓
BH16 1.5-2.0,	BH16 3.4-3.6,							
BH16 4.2-4.6,	BH16 5.7-6.0,							
BH16 6.2-6.5,	BH16 8.2-8.45,							
QC26,	QC27							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
BH16 0.5-0.95,	BH16 1.0-1.45,	**19-AUG-2008**	**02-SEP-2008**	15-FEB-2009	✓	**02-SEP-2008**	16-SEP-2008	✓
BH16 1.5-2.0,	BH16 3.4-3.6,							
BH16 4.2-4.6,	BH16 5.7-6.0,							
BH16 6.2-6.5,	BH16 8.2-8.45,							
QC26,	QC27							
EP005: Total Organic Carbon (TOC)								
Pulp Bag								
BH16 0.5-0.95,	BH16 1.0-1.45,	**19-AUG-2008**	**22-AUG-2008**	---	----	**25-AUG-2008**	16-SEP-2008	✓
BH16 1.5-2.0,	BH16 3.4-3.6,							
BH16 4.2-4.6,	BH16 5.7-6.0,							
BH16 6.2-6.5,	BH16 8.2-8.45,							
QC26,	QC27							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
BH16 0.5-0.95,	BH16 1.0-1.45,	**19-AUG-2008**	**28-AUG-2008**	02-SEP-2008	✓	**01-SEP-2008**	07-OCT-2008	✓
BH16 1.5-2.0,	QC26,							
QC27								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH16 0.5-0.95, BH16 1.0-1.45, BH16 1.5-2.0, QC26, QC27	**19-AUG-2008**	**28-AUG-2008**	02-SEP-2008	✓	**01-SEP-2008**	07-OCT-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH16 0.5-0.95, BH16 1.0-1.45, BH16 1.5-2.0, BH16 3.4-3.6, BH16 4.2-4.6, BH16 5.7-6.0, BH16 6.2-6.5, BH16 8.2-8.45, QC26, QC27	**19-AUG-2008**	**26-AUG-2008**	02-SEP-2008	✓	**29-AUG-2008**	05-OCT-2008	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH16 0.5-0.95, BH16 1.0-1.45, BH16 1.5-2.0, QC26, QC27	**19-AUG-2008**	**25-AUG-2008**	02-SEP-2008	✓	**28-AUG-2008**	04-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC28	**19-AUG-2008**	**25-AUG-2008**	15-FEB-2009	✓	**25-AUG-2008**	15-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC28	**19-AUG-2008**	**----**	----	----	**29-AUG-2008**	16-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC28	**19-AUG-2008**	**----**	----	----	**26-AUG-2008**	16-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC28	**19-AUG-2008**	**22-AUG-2008**	26-AUG-2008	✓	**26-AUG-2008**	01-OCT-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC28	**19-AUG-2008**	**22-AUG-2008**	26-AUG-2008	✓	**26-AUG-2008**	01-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	1	10	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	4	40	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	38	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	16	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	38	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	38	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	10	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	38	**5.3**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	38	**5.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	38	**5.3**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Pesticides	EP068	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Pesticides	EP068	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0811213-007	BH16 6.2-6.5	**Chromium**	7440-47-3	63.1 %	0-50%	**RPD exceeds LOR based limits**
EG005T: Total Metals by ICP-AES	EB0811213-007	BH16 6.2-6.5	**Iron**	7439-89-6	56.2 %	0-20%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	834394-002	----	**Phenanthrene**	85-01-8	125 %	60-112%	**Recovery greater than upper control limit**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	833448-002	----	**Silver**	7440-22-4	86.3 %	120-123%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0811298

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URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259

All results to be provided in MRED format
email address: julian_dobos@urscorp.com

TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard

COC SEQUENCE NUMBER: 1 2 3 4 (please circle 2)

FOR LABORATORY USE ONLY
Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: Rex	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 21.08 TIME: 16:30	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH15 0-0.45	20/08/08	S	1	1										✓	✓	✓	✓	✓	✓	✓		✓					
2	BH15 0.5-0.95	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
3	BH15 1.0-1.45	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
4	BH15 1.5-2.0	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
5	BH15 2.5-2.8	"	"	2	1										✓	✓					✓		✓					✓
6	BH15 2.85-3.0	"	"	2	1										✓	✓					✓		✓					✓
7	BH15 3.0-3.2	"	"	1											✓	✓					✓		✓					✓
8	BH15 3.5-3.85	"	"	1	1										✓	✓					✓		✓					✓
9	BH15 4.0-3.0	"	"	2											✓	✓					✓		✓					✓
10	BH15 5.1-5.3	"	"	2											✓	✓					✓		✓					✓
11	QC29	"	"	1	1										✓	✓	✓	✓	✓	✓	✓		✓					
12	QC30	"	"	1	1										✓	✓	✓	✓	✓	✓	✓		✓					
TOTAL																												

URS CHAIN OF CUSTODY

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PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259

All results to be provided in MRED format
email address: julian_dobos@urscorp.com

TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard

COC SEQUENCE NUMBER: 1 (2) 3 4 — please circle 2

FOR LABORATORY USE ONLY
Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: Rex	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 11.8.08 TIME: 1630	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL TOC	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
13	QC31	20/08/08	S	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
14	QC32	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
15	QC33	"	"			1	1	1								✓		✓	✓	✓	✓							
TOTAL																												

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0811298**	Page	: 1 of 13
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228 52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 21-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 15
Quote number	: EN/001/08	No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Herman Lin	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EG005T (Total Metals): Sample EB0811213-007 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.**
- **LCS recovery for EG020T (Total Metals) fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC33 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Pesticides: Sample BH15 0.5-0.95 shows poor matrix spike recovery due to matrix interference. Confirmed by re-extraction and re-analysis.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH15 0-0.45	BH15 0.5-0.95	BH15 1.0-1.45	BH15 1.5-2.0	BH15 2.5-2.8
				Client sampling date / time: 20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00
				EB0811298-001	EB0811298-002	EB0811298-003	EB0811298-004	EB0811298-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.2	7.9	7.9	7.2	7.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.92	0.98	0.20	0.02	0.08
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	571	610	124	14	53
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	9.98	0.92	1.05	0.63	0.97
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1990	185	209	126	195
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	3.20	0.30	0.34	0.20	0.31
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.78	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	487	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	36	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	61.8	49.6	25.3	21.4	19.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	12800	11200	9040	6050	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	49	12	9	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	28	19	9	7	7
Copper	7440-50-8	5	mg/kg	23	24	52	28	51
Iron	7439-89-6	50	mg/kg	37200	22800	10000	5310	----
Lead	7439-92-1	5	mg/kg	11	9	10	6	<5
Manganese	7439-96-5	5	mg/kg	313	405	871	33	----
Nickel	7440-02-0	2	mg/kg	18	11	27	7	6
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	63	35	14	22	20
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	1.47	1.29	0.56	0.23	0.28

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH15 0-0.45	BH15 0.5-0.95	BH15 1.0-1.45	BH15 1.5-2.0	BH15 2.5-2.8
				Client sampling date / time: 20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00
				EB0811298-001	EB0811298-002	EB0811298-003	EB0811298-004	EB0811298-005
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<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	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	<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	----
Endrin	72-20-8	0.05	mg/kg	<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	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<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	----
Endrin ketone	53494-70-5	0.05	mg/kg	<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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**62.8**	**52.5**	**61.6**	**62.2**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**71.7**	**59.2**	**67.7**	**66.8**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**74.6**	**59.5**	**67.5**	**65.6**	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH15 0-0.45	BH15 0.5-0.95	BH15 1.0-1.45	BH15 1.5-2.0	BH15 2.5-2.8
				Client sampling date / time: 20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00
				EB0811298-001	EB0811298-002	EB0811298-003	EB0811298-004	EB0811298-005
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**114**	**104**	**108**	**106**	**105**
2-Chlorophenol-D4	93951-73-6	0.1	%	**102**	**95.7**	**94.5**	**94.8**	**91.6**
2.4.6-Tribromophenol	118-79-6	0.1	%	**98.1**	**89.7**	**93.4**	**88.3**	**98.5**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**77.9**	**104**	**70.8**	**73.6**	**120**
Anthracene-d10	1719-06-8	0.1	%	**99.6**	**108**	**113**	**112**	**86.8**
4-Terphenyl-d14	1718-51-0	0.1	%	**102**	**108**	**115**	**113**	**88.6**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**89.2**	**50.3**	**78.0**	**63.1**	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH15 2.85-3.0	BH15 3.0-3.2	BH15 3.5-3.85	BH15 4.0-5.0	BH15 5.1-5.3
Client sampling date / time				20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00
				EB0811298-006	EB0811298-007	EB0811298-008	EB0811298-009	EB0811298-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.9	7.2	7.6	7.0	6.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	0.22	0.29	0.13	0.15
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	44	58	27	29
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	0.07	0.09	0.04	0.05
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	12.4	12.0	6.4	21.0	11.1
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	3900	----	1230	1510
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	68	7	2	3	10
Copper	7440-50-8	5	mg/kg	23	13	<5	7	15
Iron	7439-89-6	50	mg/kg	----	10600	----	5240	9430
Lead	7439-92-1	5	mg/kg	<5	<5	<5	<5	<5
Manganese	7439-96-5	5	mg/kg	----	48	----	15	22
Nickel	7440-02-0	2	mg/kg	14	4	<2	<2	24
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	16	17	<5	<5	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.04	0.04	0.03	0.03	0.04

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH15 2.85-3.0	BH15 3.0-3.2	BH15 3.5-3.85	BH15 4.0-5.0	BH15 5.1-5.3
Client sampling date / time				20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00
				EB0811298-006	EB0811298-007	EB0811298-008	EB0811298-009	EB0811298-010
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**104**	**108**	**92.0**	**101**	**107**
2-Chlorophenol-D4	93951-73-6	0.1	%	**94.0**	**96.8**	**78.6**	**90.3**	**94.5**
2.4.6-Tribromophenol	118-79-6	0.1	%	**85.3**	**94.5**	**70.0**	**91.1**	**90.1**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**125**	**94.7**	**84.4**	**113**	**106**
Anthracene-d10	1719-06-8	0.1	%	**63.7**	**79.9**	**73.8**	**70.8**	**84.3**
4-Terphenyl-d14	1718-51-0	0.1	%	**70.5**	**81.1**	**80.6**	**74.3**	**92.4**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	QC29	QC30	QC31	QC32	----
				Client sampling date / time	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	----
					EB0811298-011	EB0811298-012	EB0811298-013	EB0811298-014	----
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		**8.4**	**8.4**	**7.8**	**7.4**	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	----
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.02	% S		**0.81**	**0.82**	<0.02	**0.05**	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		**506**	**513**	<10	**29**	----
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		**11.2**	**9.03**	<0.01	**0.90**	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		**2250**	**1800**	<10	**180**	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		**3.60**	**2.89**	<0.01	**0.29**	----
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		**1.5**	**1.5**	**1.5**	**1.5**	----
Net Acidity (sulfur units)	----	0.02	% S		<0.02	<0.02	<0.02	<0.02	----
Net Acidity (acidity units)	----	10	mole H+ / t		<10	<10	<10	<10	----
Liming Rate	----	1	kg CaCO3/t		<1	<1	<1	<1	----
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		**46.4**	**55.7**	**20.2**	**16.0**	----
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		**8900**	**11900**	**6320**	**5230**	----
Antimony	7440-36-0	5	mg/kg		<5	<5	<5	<5	----
Arsenic	7440-38-2	5	mg/kg		**22**	**35**	<5	<5	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg		**27**	**24**	**8**	**6**	----
Copper	7440-50-8	5	mg/kg		**17**	**22**	**66**	**40**	----
Iron	7439-89-6	50	mg/kg		**21900**	**31000**	**10200**	**6990**	----
Lead	7439-92-1	5	mg/kg		**8**	**11**	**6**	<5	----
Manganese	7439-96-5	5	mg/kg		**214**	**274**	**49**	**53**	----
Nickel	7440-02-0	2	mg/kg		**15**	**15**	**9**	**8**	----
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	----
Zinc	7440-66-6	5	mg/kg		**40**	**55**	**25**	**18**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**1.83**	**1.70**	**0.23**	**0.39**	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	QC29	QC30	QC31	QC32	----
				Client sampling date / time	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	----
					EB0811298-011	EB0811298-012	EB0811298-013	EB0811298-014	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		<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	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		<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	----
Endrin	72-20-8	0.05	mg/kg		<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	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<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	----
Endrin ketone	53494-70-5	0.05	mg/kg		<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	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<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	----
Chrysene	218-01-9	0.5	mg/kg		<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	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<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	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<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	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	<0.5	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**64.3**	**58.7**	**57.0**	**54.8**	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**70.2**	**65.6**	**60.1**	**57.4**	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**69.3**	**67.3**	**60.7**	**58.1**	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	QC29	QC30	QC31	QC32	----
				Client sampling date / time	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	20-AUG-2008 15:00	----
					EB0811298-011	EB0811298-012	EB0811298-013	EB0811298-014	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**100**	**98.3**	**104**	**104**	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**90.0**	**89.0**	**91.6**	**95.0**	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**87.2**	**91.7**	**91.6**	**86.8**	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**107**	**108**	**109**	**124**	----
Anthracene-d10	1719-06-8	0.1	%		**69.2**	**72.4**	**70.1**	**66.2**	----
4-Terphenyl-d14	1718-51-0	0.1	%		**74.8**	**80.2**	**76.4**	**74.3**	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**62.9**	**54.1**	**60.2**	**57.9**	----

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: QC33	----	----	----	----
				Client sampling date / time: 20-AUG-2008 15:00	----	----	----	----
				EB0811298-015	**----**	**----**	**----**	**----**
EG020T: Total Metals by ICP-MS								
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0014**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	**1**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.5	µg/L	<0.9	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.9	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.9	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.9	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.9	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.9	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**65.4**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**83.8**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**77.5**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0811298**	Page	: 1 of 12
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228 52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 21-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 15
Quote number	: EN/001/08	No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Herman Lin	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 741865)									
EB0811298-001	BH15 0-0.45	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.2	8.2	0.0	0% - 20%
EB0811298-011	QC29	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.4	8.4	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 741865)									
EB0811298-001	BH15 0-0.45	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.92	0.92	0.0	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	571	571	0.0	0% - 20%
EB0811298-011	QC29	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.81	0.84	3.4	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	506	524	3.4	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 741865)									
EB0811298-001	BH15 0-0.45	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	9.98	9.98	0.0	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	3.20	3.20	0.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1990	1990	0.0	0% - 20%
EB0811298-011	QC29	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	11.2	11.1	1.0	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	3.60	3.56	1.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	2250	2220	1.0	0% - 20%
EA055: Moisture Content (QC Lot: 739817)									
EB0811230-015	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0811298-004	BH15 1.5-2.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	21.4	21.2	0.8	0% - 20%
EA055: Moisture Content (QC Lot: 739818)									
EB0811310-007	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0811340-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 742581)									
EB0811213-007	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 742581) - continued									
EB0811213-007	Anonymous	EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811298-007	BH15 3.0-3.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	7	8	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	14	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	48	53	9.4	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	17	20	17.3	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	3900	4250	8.4	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	10600	10400	2.2	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 742582)									
EB0811213-007	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811298-007	BH15 3.0-3.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 739143)									
EB0811298-001	BH15 0-0.45	EP005: Total Organic Carbon	----	0.02	%	1.47	1.47	0.0	0% - 20%
EB0811298-011	QC29	EP005: Total Organic Carbon	----	0.02	%	1.83	1.78	2.8	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 743258)									
EB0811298-001	BH15 0-0.45	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 743257)									
EB0811298-001	BH15 0-0.45	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EB0811298-014	QC32	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 743257) - continued									
EB0811298-014	QC32	EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 740070)									
EB0811213-007	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811298-007	BH15 3.0-3.2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP090: Organotin Compounds (QC Lot: 738691)									
EB0811130-001	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811213-002	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QC Lot: 739636)									
EB0811203-018	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811296-016	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 739306)									
EB0811213-011	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0811311-007	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 739307)									
EB0811213-011	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 743215)									
EB0811130-011	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0811351-005	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 740088)									
EB0811213-011	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0811409-003	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 741865)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 741865)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 741865)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 742581)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	107	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	106	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	102	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	103	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	105	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	106	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	104	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 742582)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	115	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 739143)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 743258)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	69.2	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 743257)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	83.9	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	84.7	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	85.8	60.8	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 743257) - continued								
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	84.7	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	80.8	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	82.3	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	91.4	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	83.9	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	91.9	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	87.7	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 740070)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	85.0	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	78.8	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	94.5	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	102	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	# 125	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	87.9	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	96.6	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	94.8	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	95.5	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	82.2	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	110	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	89.4	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	104	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	103	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	101	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	107	52	128
EP090: Organotin Compounds (QCLot: 738691)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	55.8	28	129
EP090: Organotin Compounds (QCLot: 739636)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	----	25 µgSn/kg	127	28	129
				<0.5	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 739306)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	97.2	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	95.1	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	98.9	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	101	80.9	125

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 739306) - continued								
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	101	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	100	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	103	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	106	81	127
EG020T: Total Metals by ICP-MS (QCLot: 739307)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 86.3	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 743215)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	110	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 740088)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 739940)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	69.3	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 739937)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	# 49.6	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	116	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	116	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	95.4	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	93.7	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	105	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	100	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	92.9	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	112	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	97.8	47.3	137

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 742581)							
EB0811213-008	Anonymous	EG005T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 742582)							
EB0811213-008	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 743258)							
EB0811298-002	BH15 0.5-0.95	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	70.3	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 743257)							
EB0811298-002	BH15 0.5-0.95	EP068: gamma-BHC	58-89-9	0.25 mg/kg	81.7	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	78.8	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	78.0	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	# 29.8	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 740070)							
EB0811213-008	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QCLot: 738691)							
EB0811130-002	Anonymous	EP090: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QCLot: 739636)							
EB0811296-001	Anonymous	EP090: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 739306)							
EB0811296-023	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG020T: Total Metals by ICP-MS (QCLot: 739306) - continued							
EB0811296-023	Anonymous	EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 743215)							
EB0811130-011	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0811298**	Page	: 1 of 11
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228 52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 21-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 15
Quote number	: EN/001/08	No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
Snap Lock Bag - frozen on receipt at ALS							
BH15 0-0.45, BH15 0.5-0.95, BH15 1.0-1.45, BH15 1.5-2.0, BH15 2.5-2.8, BH15 2.85-3.0, BH15 3.0-3.2, QC29, QC30, QC31, QC32	**20-AUG-2008**	**21-AUG-2008**	20-AUG-2009	✓	**28-AUG-2008**	19-NOV-2008	✓
Soil Glass Jar - Unpreserved							
BH15 3.5-3.85, BH15 4.0-5.0, BH15 5.1-5.3	**20-AUG-2008**	**21-AUG-2008**	21-AUG-2008	✓	**28-AUG-2008**	19-NOV-2008	✓
EA033-B: Potential Acidity							
Snap Lock Bag - frozen on receipt at ALS							
BH15 0-0.45, BH15 0.5-0.95, BH15 1.0-1.45, BH15 1.5-2.0, BH15 2.5-2.8, BH15 2.85-3.0, BH15 3.0-3.2, QC29, QC30, QC31, QC32	**20-AUG-2008**	**21-AUG-2008**	20-AUG-2009	✓	**28-AUG-2008**	19-NOV-2008	✓
Soil Glass Jar - Unpreserved							
BH15 3.5-3.85, BH15 4.0-5.0, BH15 5.1-5.3	**20-AUG-2008**	**21-AUG-2008**	21-AUG-2008	✓	**28-AUG-2008**	19-NOV-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity							
Snap Lock Bag - frozen on receipt at ALS							
BH15 0-0.45, BH15 0.5-0.95, BH15 1.0-1.45, BH15 1.5-2.0, BH15 2.5-2.8, BH15 2.85-3.0, BH15 3.0-3.2, QC29, QC30, QC31, QC32	**20-AUG-2008**	**21-AUG-2008**	20-AUG-2009	✓	**28-AUG-2008**	19-NOV-2008	✓
Soil Glass Jar - Unpreserved							
BH15 3.5-3.85, BH15 4.0-5.0, BH15 5.1-5.3	**20-AUG-2008**	**21-AUG-2008**	21-AUG-2008	✓	**28-AUG-2008**	19-NOV-2008	✓
EA033-D: Retained Acidity							
Snap Lock Bag - frozen on receipt at ALS							
BH15 0-0.45, BH15 0.5-0.95, BH15 1.0-1.45, BH15 1.5-2.0, BH15 2.5-2.8, BH15 2.85-3.0, BH15 3.0-3.2, QC29, QC30, QC31, QC32	**20-AUG-2008**	**21-AUG-2008**	20-AUG-2009	✓	**28-AUG-2008**	19-NOV-2008	✓
Soil Glass Jar - Unpreserved							
BH15 3.5-3.85, BH15 4.0-5.0, BH15 5.1-5.3	**20-AUG-2008**	**21-AUG-2008**	21-AUG-2008	✓	**28-AUG-2008**	19-NOV-2008	✓
EA033-E: Acid Base Accounting							
Snap Lock Bag - frozen on receipt at ALS							
BH15 0-0.45, BH15 0.5-0.95, BH15 1.0-1.45, BH15 1.5-2.0, BH15 2.5-2.8, BH15 2.85-3.0, BH15 3.0-3.2, QC29, QC30, QC31, QC32	**20-AUG-2008**	**21-AUG-2008**	20-AUG-2009	✓	**28-AUG-2008**	19-NOV-2008	✓
Soil Glass Jar - Unpreserved							
BH15 3.5-3.85, BH15 4.0-5.0, BH15 5.1-5.3	**20-AUG-2008**	**21-AUG-2008**	21-AUG-2008	✓	**28-AUG-2008**	19-NOV-2008	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH15 0-0.45, BH15 0.5-0.95, BH15 1.0-1.45, BH15 1.5-2.0, BH15 2.5-2.8, BH15 2.85-3.0, BH15 3.0-3.2, BH15 3.5-3.85, BH15 4.0-5.0, BH15 5.1-5.3, QC29, QC30, QC31, QC32	**20-AUG-2008**	**----**	----	----	**26-AUG-2008**	27-AUG-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
BH15 0-0.45,	BH15 0.5-0.95,	**20-AUG-2008**	**02-SEP-2008**	16-FEB-2009	✓	**02-SEP-2008**	16-FEB-2009	✓
BH15 1.0-1.45,	BH15 1.5-2.0,							
BH15 2.5-2.8,	BH15 2.85-3.0,							
BH15 3.0-3.2,	BH15 3.5-3.85,							
BH15 4.0-5.0,	BH15 5.1-5.3,							
QC29,	QC30,							
QC31,	QC32							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
BH15 0-0.45,	BH15 0.5-0.95,	**20-AUG-2008**	**02-SEP-2008**	16-FEB-2009	✓	**02-SEP-2008**	17-SEP-2008	✓
BH15 1.0-1.45,	BH15 1.5-2.0,							
BH15 2.5-2.8,	BH15 2.85-3.0,							
BH15 3.0-3.2,	BH15 3.5-3.85,							
BH15 4.0-5.0,	BH15 5.1-5.3,							
QC29,	QC30,							
QC31,	QC32							
EP005: Total Organic Carbon (TOC)								
Pulp Bag								
BH15 0-0.45,	BH15 0.5-0.95,	**20-AUG-2008**	**26-AUG-2008**	---	----	**27-AUG-2008**	17-SEP-2008	✓
BH15 1.0-1.45,	BH15 1.5-2.0,							
BH15 2.5-2.8,	BH15 2.85-3.0,							
BH15 3.0-3.2,	BH15 3.5-3.85,							
BH15 4.0-5.0,	BH15 5.1-5.3,							
QC29,	QC30,							
QC31,	QC32							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
BH15 0-0.45,	BH15 0.5-0.95,	**20-AUG-2008**	**29-AUG-2008**	03-SEP-2008	✓	**02-SEP-2008**	08-OCT-2008	✓
BH15 1.0-1.45,	BH15 1.5-2.0,							
QC29,	QC30,							
QC31,	QC32							
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved								
BH15 0-0.45,	BH15 0.5-0.95,	**20-AUG-2008**	**29-AUG-2008**	03-SEP-2008	✓	**02-SEP-2008**	08-OCT-2008	✓
BH15 1.0-1.45,	BH15 1.5-2.0,							
QC29,	QC30,							
QC31,	QC32							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH15 0-0.45, BH15 0.5-0.95, BH15 1.0-1.45, BH15 1.5-2.0, BH15 2.5-2.8, BH15 2.85-3.0, BH15 3.0-3.2, BH15 3.5-3.85, BH15 4.0-5.0, BH15 5.1-5.3, QC29, QC30, QC31, QC32	**20-AUG-2008**	**26-AUG-2008**	03-SEP-2008	✓	**29-AUG-2008**	05-OCT-2008	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH15 0-0.45, BH15 0.5-0.95, BH15 1.0-1.45, BH15 1.5-2.0, QC29, QC30	**20-AUG-2008**	**25-AUG-2008**	03-SEP-2008	✓	**28-AUG-2008**	04-OCT-2008	✓
Soil Glass Jar - Unpreserved							
QC31, QC32	**20-AUG-2008**	**26-AUG-2008**	03-SEP-2008	✓	**28-AUG-2008**	05-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC33	**20-AUG-2008**	**25-AUG-2008**	16-FEB-2009	✓	**25-AUG-2008**	16-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC33	**20-AUG-2008**	**----**	----	----	**29-AUG-2008**	17-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC33	**20-AUG-2008**	**----**	----	----	**26-AUG-2008**	17-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC33	**20-AUG-2008**	**27-AUG-2008**	27-AUG-2008	✓	**28-AUG-2008**	06-OCT-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC33	**20-AUG-2008**	**27-AUG-2008**	27-AUG-2008	✓	**28-AUG-2008**	06-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	4	39	**10.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	4	38	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	2	38	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	2	38	**5.3**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	11	**9.1**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Pesticides	EP068	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Pesticides	EP068	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	834394-002	----	**Phenanthrene**	85-01-8	125 %	60-112%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	EB0811298-002	BH15 0.5-0.95	**4.4`-DDT**	50-29-3	29.8 %	70-130%	**Recovery less than lower data quality objective**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	833448-002	----	**Silver**	7440-22-4	86.3 %	120-123%	**Recovery less than lower control limit**
EP068A: Organochlorine Pesticides (OC)	834209-002	----	**gamma-BHC**	58-89-9	49.6 %	54.2-127%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	EB0811298-001	BH15 0-0.45	**Phenol-d6**	13127-88-3	114 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0811298-005	BH15 2.5-2.8	**2-Fluorobiphenyl**	321-60-8	120 %	30-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0811298-006	BH15 2.85-3.0	**2-Fluorobiphenyl**	321-60-8	125 %	30-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0811298-014	QC32	**2-Fluorobiphenyl**	321-60-8	124 %	30-115 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0811611

Telephone : +61-7-3243 7222

URS CHAIN OF CUSTODY

ADDRESS: URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY Custody Seal ? Y N NA
PHONE NO: (07) 3243 2111	PHONE NO: (07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	Free ice / frozen icebricks present upon receipt? Y N
FAX NO: (07) 3243 2199	FAX NO: (07) 32437259	COC SEQUENCE NUMBER: 1 2 3 4 please circle 2	Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: Rex 27/8/08	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME: 11:45	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (TOC)	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromium Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH18 0.7 -0.85	26/08/08	S	1	1										✓	✓	✓	✓	✓	✓	✓		✓					
2	BH18 0.9 -1.2	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
3	BH18 1.3 -1.7	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
4	BH18 2.6 -3.0	"	"	2	1										✓	✓					✓		✓					✓
5	BH18 3.0 -3.2	"	"	2	1										✓	✓					✓		✓					✓
6	BH18 4.6 -4.9	"	"	2	1										✓	✓					✓		✓					✓
7	BH18 4.9 -5.1	"	"	1	1										✓	✓					✓		✓					✓
8	BH18 5.7 -6.0	"	"	2	1										✓	✓					✓		✓					✓
9	BH18 7.6 -7.1	"	"	1											✓	✓					✓		✓					✓
10	BH18 7.7 -8.1	"	"	1	1										✓	✓					✓		✓					✓
11	BH18 9.6 -10.0	"	"	2	1										✓	✓					✓		✓					✓
12	BH18 10.2 -10.5	"	"	2	1										✓	✓					✓		✓					✓
TOTAL															12	12	3	3	3	3	12		12					9

URS CHAIN OF CUSTODY

FOR LABORATORY USE ONLY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	Custody Seal? Y N NA Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: 1 2 3 4 (please circle) 2
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: 27/8/8 11:35	RELINQUISHED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS			
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME:	DATE: TIME:

COMMENTS:	Please see overleaf for specific analytes	(1) Caution - Samples may contain hazardous substances	ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE										ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES																	
				Solid		Liquid																									
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
13	BH 18 11.3 - 11.5	26/08/08	S	2	1										✓	✓					✓		✓					✓	
14	BH 18 12 - 12.4	"	"	2	1										✓	✓					✓		✓					✓	
15	BH 18 13.0 - 13.25	"	"	1	1										✓	✓					✓		✓					✓	
16	BH 18 14.0 - 14.5	"	"	2	1										✓	✓					✓		✓					✓	
17	BH 18 15.6 - 16.0	"	"	2	1										✓	✓					✓		✓					✓	
18	BH 19 16.2 - 16.5	"	"	1	1										✓	✓					✓		✓					✓	
19	QC 34	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓						
20	QC 35	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓						
21	QC 36	"	"	1	1										✓	✓					✓		✓					✓	
22	QC 37	"	"	1	1										✓	✓					✓		✓					✓	
23	QC 38	"	L			2	1	1								✓		✓	✓	✓	✓								
~~24~~																													
TOTAL															10	11	2	3	3	3	11		10					8	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0811611**	Page	: 1 of 17
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 27-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 23
Quote number	: EN/001/08	No. of samples analysed	: 23

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Virginia Minerals - PREP

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **LCS recovery for EG020T (Total Metals) fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides: Sample BH18 0.9-1.2 shows poor matrix spike recovery due to sample matrix interference. Confirmed by visual inspection.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **TBT: Matrix Spike not determined due to primary sample dilution for matrix interrference.**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH18 0.7-0.85	BH18 0.9-1.2	BH18 1.3-1.7	BH18 2.6-3.0	BH18 3.0-3.2
				Client sampling date / time: 26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00
				EB0811611-001	EB0811611-002	EB0811611-003	EB0811611-004	EB0811611-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.5	9.6	9.4	9.2	9.0
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.09	0.06	0.24	1.00	0.98
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	59	37	152	626	612
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	7.91	21.9	21.9	14.2	16.1
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1580	4380	4380	2830	3220
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.53	7.02	7.02	4.54	5.16
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	28.5	21.9	27.0	21.9	26.8
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	3260	2170	3480	----	2880
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	10	12	11	13	37
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	9	7	8	10	11
Copper	7440-50-8	5	mg/kg	<5	<5	5	5	7
Iron	7439-89-6	50	mg/kg	14400	12200	12900	----	21900
Lead	7439-92-1	5	mg/kg	<5	<5	<5	<5	<5
Manganese	7439-96-5	5	mg/kg	623	812	999	----	607
Nickel	7440-02-0	2	mg/kg	5	4	5	6	7
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	15	7	10	10	12
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.41	0.15	0.39	1.43	1.43

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH18 0.7-0.85	BH18 0.9-1.2	BH18 1.3-1.7	BH18 2.6-3.0	BH18 3.0-3.2
				Client sampling date / time: 26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00
				EB0811611-001	EB0811611-002	EB0811611-003	EB0811611-004	EB0811611-005
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**54.8**	**65.5**	**53.1**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**73.3**	**66.3**	**68.0**	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH18 0.7-0.85	BH18 0.9-1.2	BH18 1.3-1.7	BH18 2.6-3.0	BH18 3.0-3.2
				Client sampling date / time	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00
Compound	CAS Number	LOR	Unit		EB0811611-001	EB0811611-002	EB0811611-003	EB0811611-004	EB0811611-005
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		74.5	67.4	70.0	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		96.9	98.1	94.2	108	98.9
2-Chlorophenol-D4	93951-73-6	0.1	%		88.3	89.1	84.0	96.6	90.9
2.4.6-Tribromophenol	118-79-6	0.1	%		75.8	73.9	75.8	80.4	76.3
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		66.7	87.2	86.7	108	71.3
Anthracene-d10	1719-06-8	0.1	%		130	130	131	153	125
4-Terphenyl-d14	1718-51-0	0.1	%		94.2	88.5	85.9	99.2	91.1
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		100	105	77.6	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH18 4.6-4.9	BH18 4.9-5.1	BH18 5.7-6.0	BH18 7.6-7.7	BH18 7.7-8.1
				Client sampling date / time: 26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00
				EB0811611-006	EB0811611-007	EB0811611-008	EB0811611-009	EB0811611-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.5	9.0	9.5	9.0	9.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.16	0.26	0.17	0.52	0.07
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	100	159	109	322	44
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	17.6	10.7	14.5	6.74	10.5
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3510	2140	2890	1350	2100
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	5.62	3.43	4.64	2.16	3.37
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	21.9	20.6	20.4	22.4	16.5
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	3720	----	3270	6100	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	12	13	20	11	5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	11	12	10	12	8
Copper	7440-50-8	5	mg/kg	6	8	5	13	<5
Iron	7439-89-6	50	mg/kg	14200	----	13300	15600	----
Lead	7439-92-1	5	mg/kg	<5	<5	<5	5	<5
Manganese	7439-96-5	5	mg/kg	1400	----	733	155	----
Nickel	7440-02-0	2	mg/kg	6	7	6	6	4
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	11	15	9	19	8
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.30	0.40	0.28	0.67	0.09

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH18 4.6-4.9	BH18 4.9-5.1	BH18 5.7-6.0	BH18 7.6-7.7	BH18 7.7-8.1
				Client sampling date / time: 26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00
				EB0811611-006	EB0811611-007	EB0811611-008	EB0811611-009	EB0811611-010
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**97.2**	**101**	**98.8**	**97.4**	**97.9**
2-Chlorophenol-D4	93951-73-6	0.1	%	**87.8**	**91.4**	**88.5**	**90.9**	**86.0**
2.4.6-Tribromophenol	118-79-6	0.1	%	**74.4**	**73.7**	**74.9**	**79.8**	**73.9**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**103**	**68.4**	**86.0**	**87.7**	**87.4**
Anthracene-d10	1719-06-8	0.1	%	**134**	**152**	**133**	**127**	**128**
4-Terphenyl-d14	1718-51-0	0.1	%	**89.7**	**94.4**	**92.4**	**91.2**	**85.7**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH18 9.6-10.0	BH18 10.2-10.5	BH18 11.3-11.5	BH18 12-12.4	BH18 13.0-13.25
Client sampling date / time				26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00
				EB0811611-011	EB0811611-012	EB0811611-013	EB0811611-014	EB0811611-015
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.3	9.1	8.1	7.6	7.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.22	0.32	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	137	198	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	9.46	7.88	0.69	0.81	0.34
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1890	1570	138	163	69
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	3.03	2.52	0.22	0.26	0.11
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	29.4	27.2	22.4	18.4	19.9
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	7370	7610	10700	10800	11800
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	10	16	<5	<5	5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	15	15	17	15	16
Copper	7440-50-8	5	mg/kg	12	17	63	34	52
Iron	7439-89-6	50	mg/kg	18300	20600	26500	26800	35900
Lead	7439-92-1	5	mg/kg	6	8	9	6	10
Manganese	7439-96-5	5	mg/kg	217	461	3750	222	1670
Nickel	7440-02-0	2	mg/kg	8	9	20	12	14
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	23	25	58	49	56
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.32	0.46	0.05	0.08	0.08

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH18 9.6-10.0	BH18 10.2-10.5	BH18 11.3-11.5	BH18 12-12.4	BH18 13.0-13.25
				Client sampling date / time: 26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00
				EB0811611-011	EB0811611-012	EB0811611-013	EB0811611-014	EB0811611-015
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**100**	**99.4**	**99.6**	**97.3**	**102**
2-Chlorophenol-D4	93951-73-6	0.1	%	**95.0**	**94.9**	**88.6**	**90.4**	**95.1**
2.4.6-Tribromophenol	118-79-6	0.1	%	**75.0**	**72.0**	**76.0**	**70.1**	**72.9**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**87.2**	**106**	**65.9**	**102**	**69.6**
Anthracene-d10	1719-06-8	0.1	%	**126**	**118**	**126**	**141**	**118**
4-Terphenyl-d14	1718-51-0	0.1	%	**91.2**	**82.1**	**89.8**	**87.8**	**88.9**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH18 14.0-14.5	BH18 15.6-16.0	BH18 16.2-16.5	QC 34	QC 35
				Client sampling date / time: 26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00
				EB0811611-016	EB0811611-017	EB0811611-018	EB0811611-019	EB0811611-020
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.9	6.8	7.1	9.4	9.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.02	<0.02	<0.02	0.14	0.15
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	15	<10	<10	87	94
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.37	0.25	0.05	16.4	12.9
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	74	49	<10	3280	2580
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.12	0.08	0.02	5.25	4.14
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	19.5	21.8	17.5	21.1	23.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	10800	4780	1420	3200	4130
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	16	14	11	12
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	15	8	6	8	11
Copper	7440-50-8	5	mg/kg	32	42	<5	<5	7
Iron	7439-89-6	50	mg/kg	22800	19000	11600	13700	17300
Lead	7439-92-1	5	mg/kg	6	7	6	<5	<5
Manganese	7439-96-5	5	mg/kg	191	275	12	817	429
Nickel	7440-02-0	2	mg/kg	8	25	<2	5	6
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	38	44	5	11	17
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.05	0.05	0.02	0.29	0.40

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH18 14.0-14.5	BH18 15.6-16.0	BH18 16.2-16.5	QC 34	QC 35
				Client sampling date / time: 26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00
				EB0811611-016	EB0811611-017	EB0811611-018	EB0811611-019	EB0811611-020
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	----	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	<0.05
trans-Chlordane	5103-74-2	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
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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	----	----	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	**55.8**	**55.8**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	**70.6**	**75.8**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH18 14.0-14.5	BH18 15.6-16.0	BH18 16.2-16.5	QC 34	QC 35
				Client sampling date / time: 26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00	26-AUG-2008 15:00
				EB0811611-016	EB0811611-017	EB0811611-018	EB0811611-019	EB0811611-020
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	----	----	**73.4**	**78.3**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**95.9**	**90.5**	**99.9**	**95.4**	**102**
2-Chlorophenol-D4	93951-73-6	0.1	%	**82.9**	**87.3**	**93.2**	**86.3**	**91.0**
2.4.6-Tribromophenol	118-79-6	0.1	%	**70.1**	**69.2**	**76.7**	**70.7**	**73.5**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**71.0**	**92.4**	**70.4**	**65.4**	**89.1**
Anthracene-d10	1719-06-8	0.1	%	**125**	**116**	**138**	**132**	**134**
4-Terphenyl-d14	1718-51-0	0.1	%	**86.6**	**81.2**	**93.8**	**80.7**	**89.0**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	----	----	**95.4**	**60.0**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: QC 36	QC 37	----	----	----
				Client sampling date / time: 26-AUG-2008 15:00	26-AUG-2008 15:00	----	----	----
				EB0811611-021	EB0811611-022	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.6**	**9.6**	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	**0.03**	**0.06**	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**20**	**37**	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**10.7**	**10.6**	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**2130**	**2130**	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**3.42**	**3.41**	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	----	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**15.8**	**13.7**	----	----	----
EG005T: Total Metals by ICP-AES								
Antimony	7440-36-0	5	mg/kg	<5	<5	----	----	----
Arsenic	7440-38-2	5	mg/kg	**5**	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**8**	**6**	----	----	----
Copper	7440-50-8	5	mg/kg	<5	<5	----	----	----
Lead	7439-92-1	5	mg/kg	<5	<5	----	----	----
Nickel	7440-02-0	2	mg/kg	**4**	**3**	----	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	----	----
Zinc	7440-66-6	5	mg/kg	**8**	**5**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.06**	**0.09**	----	----	----
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	----	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: QC 36	QC 37	----	----	----
				Client sampling date / time: 26-AUG-2008 15:00	26-AUG-2008 15:00	----	----	----
				EB0811611-021	EB0811611-022	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**100**	**97.4**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**94.9**	**92.4**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**84.5**	**84.9**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**89.6**	**94.1**	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**85.9**	**87.6**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**104**	**104**	----	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	QC 38	----	----	----	----
				Client sampling date / time	26-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0811611-023	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<5	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<2.4	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<2.4	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<2.4	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<2.4	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<2.4	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<2.4	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<2.4	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L		<2.4	----	----	----	----
EP090: Organotin Compounds (Soluble)									
Tributyltin	56573-85-4	2	ngSn/L		<2	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**63.0**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**73.2**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**74.0**	----	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**29.2**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP090S: Organotin Surrogate			
Tripropyltin	----	10	108

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 27-Aug-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811611	BH18 0.7-0.85	001	1%	89%	3%	7%
EB0811611	BH18 0.9-1.2	002	13%	82%	0%	5%
EB0811611	BH18 1.3-1.7	003	8%	76%	5%	11%
EB0811611	BH18 2.6-3.0	004	6%	68%	13%	13%
EB0811611	BH18 3.0-3.2	005	6%	78%	8%	8%
EB0811611	BH18 4.6-4.9	006	16%	71%	5%	8%
EB0811611	BH18 4.9-5.1	007	7%	62%	11%	20%
EB0811611	BH18 5.7-6.0	008	7%	82%	4%	7%
EB0811611	BH18 7.6-7.7	009	2%	27%	25%	46%
EB0811611	BH18 7.7-8.1	010	12%	80%	4%	4%
EB0811611	BH18 9.6-10.0	011	16%	63%	8%	13%
EB0811611	BH18 10.2-10.5	012	6%	49%	18%	27%
EB0811611	BH18 11.3-11.5	013	0%	3%	49%	48%
EB0811611	BH18 12-12.4	014	0%	7%	48%	45%
EB0811611	BH18 13.0-1 3.25	015	0%	9%	42%	49%
EB0811611	BH18 14.0-14.5	016	0%	12%	40%	48%
EB0811611	BH18 15.6-16.0	017	0%	49%	25%	26%
EB0811611	BH18 16.2-16.5	018	0%	85%	8%	7%
EB0811611	QC 34	019	2%	85%	4%	9%
EB0811611	QC 35	020	14%	72%	5%	9%
EB0811611	QC 36	021	11%	78%	4%	7%
EB0811611	QC 37	022	11%	84%	0%	5%

Remarks :
Test Procedure : AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Certificate of Analysis

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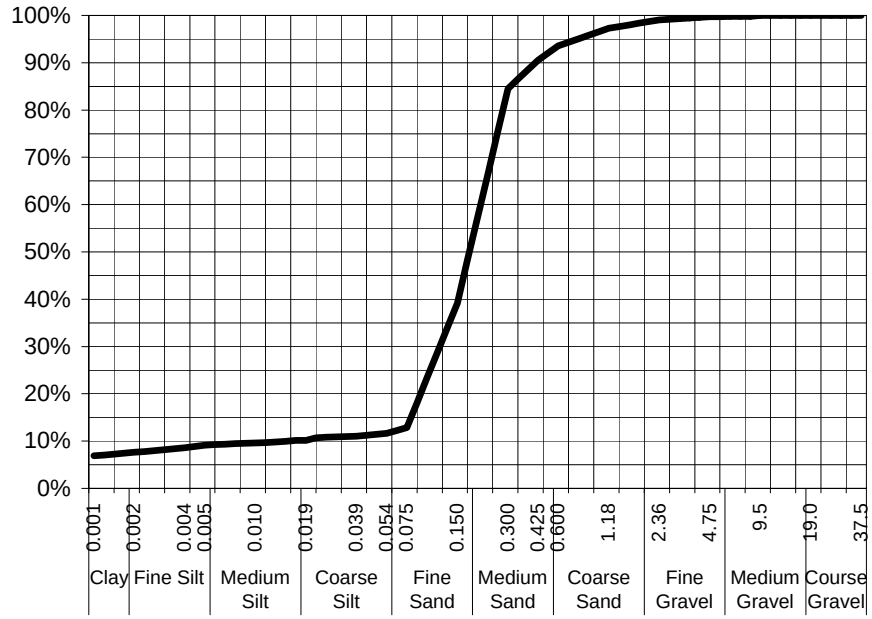
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-001 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 0.7-0.85

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	97%
0.600	94%
0.425	91%
0.300	85%
0.150	39%
0.075	13%
Particle Size (microns)	
39	11%
19	10%
10	10%
5	9%
4	9%
1	7%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Brown sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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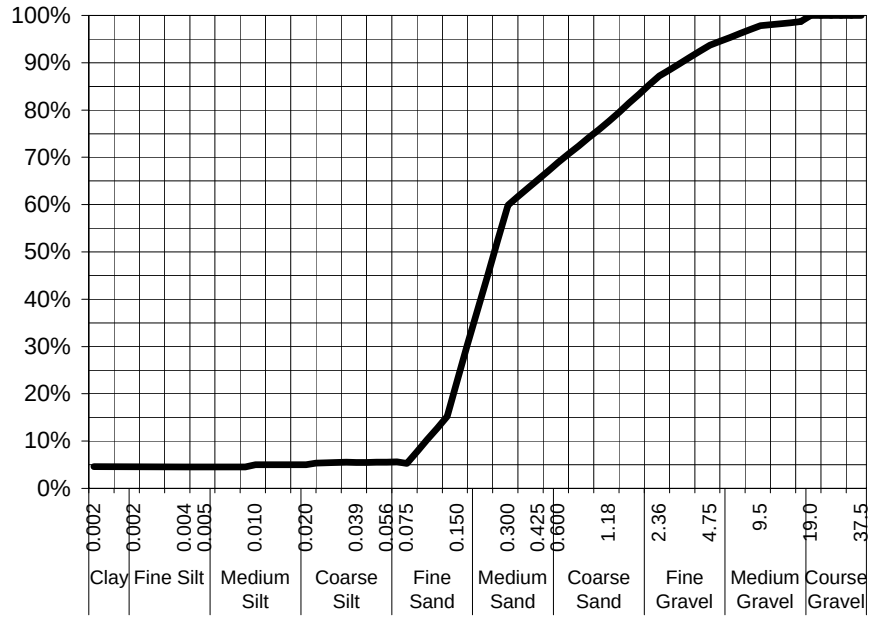
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-002 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 0.9-1.2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	98%
4.75	94%
2.36	87%
1.18	78%
0.600	69%
0.425	65%
0.300	60%
0.150	23%
0.075	5%
Particle Size (microns)	
39	5%
20	5%
10	5%
5	5%
4	5%
2	5%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & shell	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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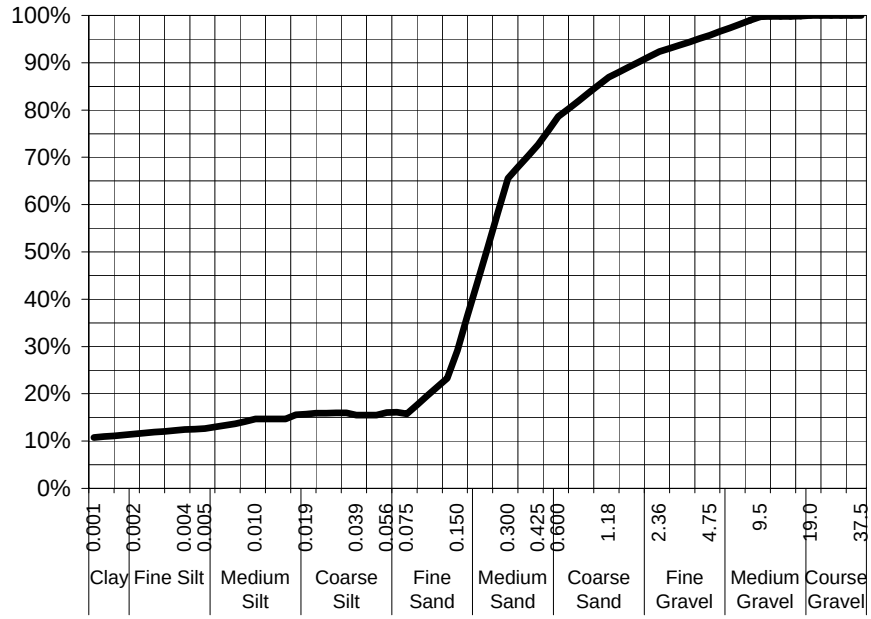
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-003 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 1.3-1.7

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	96%
2.36	92%
1.18	87%
0.600	79%
0.425	73%
0.300	66%
0.150	29%
0.075	16%
Particle Size (microns)	
39	16%
19	16%
10	15%
5	13%
4	12%
1	11%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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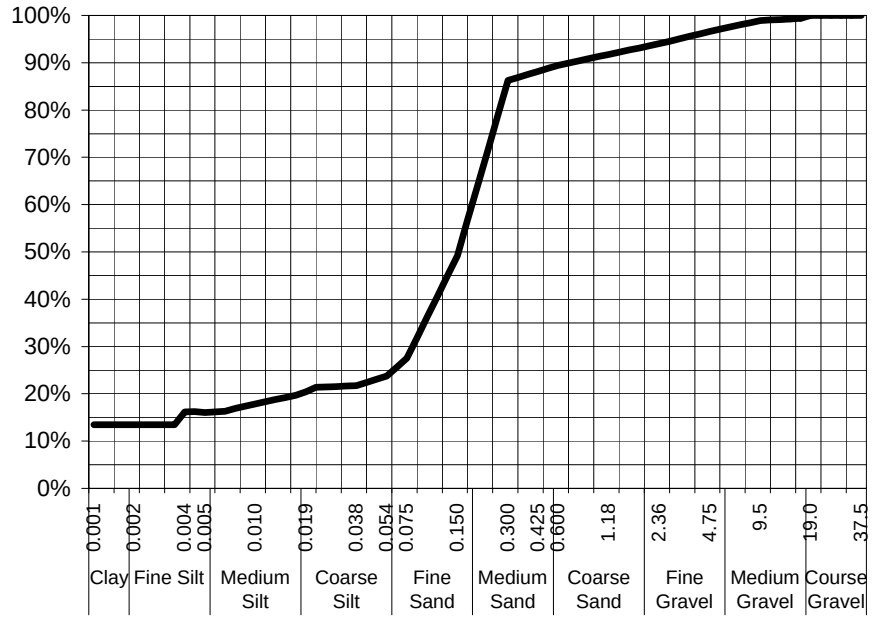
Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 2.6-3.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	99%
4.75	97%
2.36	94%
1.18	92%
0.600	89%
0.425	88%
0.300	86%
0.150	49%
0.075	28%
Particle Size (microns)	
38	22%
19	20%
10	18%
5	16%
4	16%
1	13%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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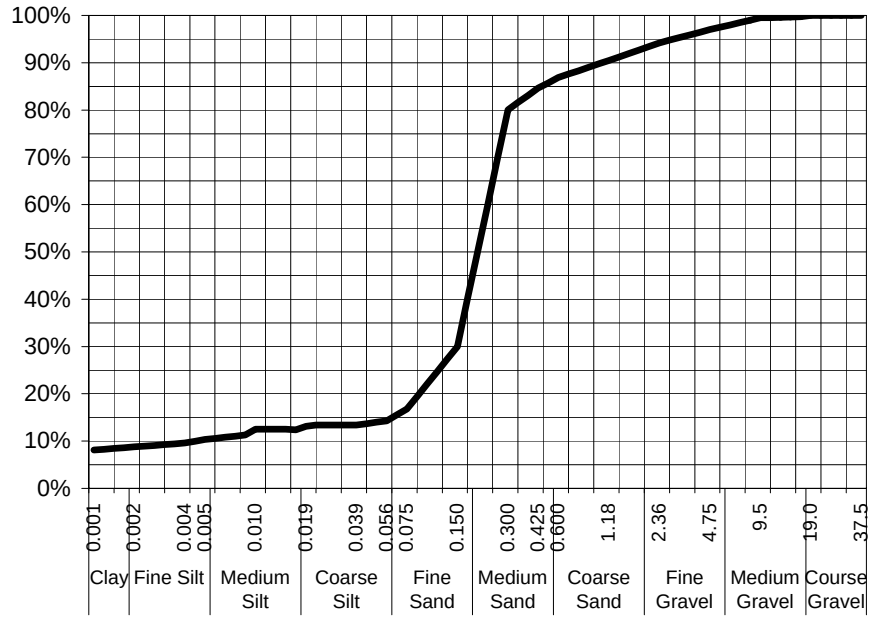
CLIENT:	Rob Ully	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-005 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 3.0-3.2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	99%
4.75	97%
2.36	94%
1.18	90%
0.600	87%
0.425	85%
0.300	80%
0.150	30%
0.075	17%
Particle Size (microns)	
39	13%
19	13%
10	13%
5	10%
4	10%
1	8%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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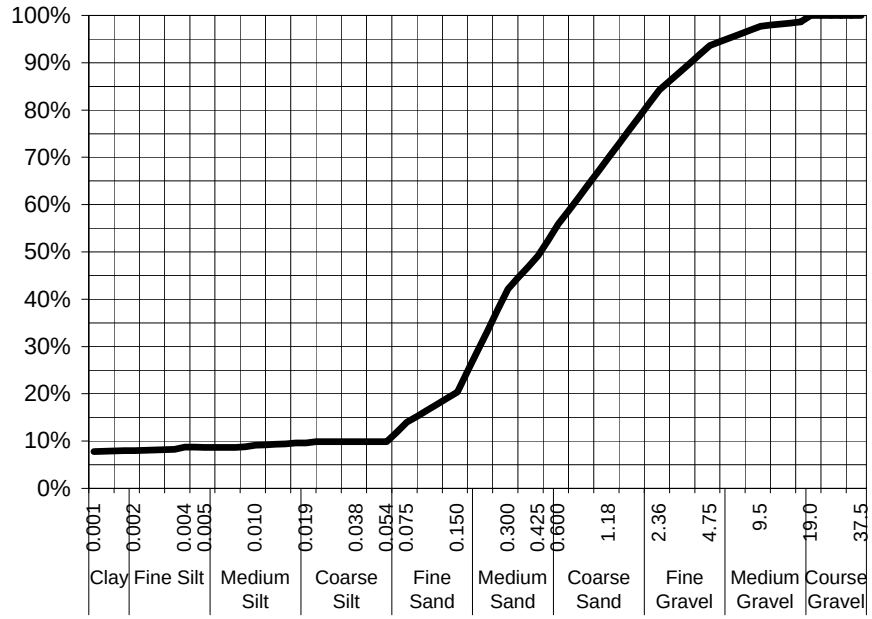
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-006 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 4.6-4.9

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	98%
4.75	94%
2.36	84%
1.18	70%
0.600	56%
0.425	49%
0.300	42%
0.150	20%
0.075	14%
Particle Size (microns)	
38	10%
19	10%
10	9%
5	9%
4	9%
1	8%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand, silt & shell

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 29-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

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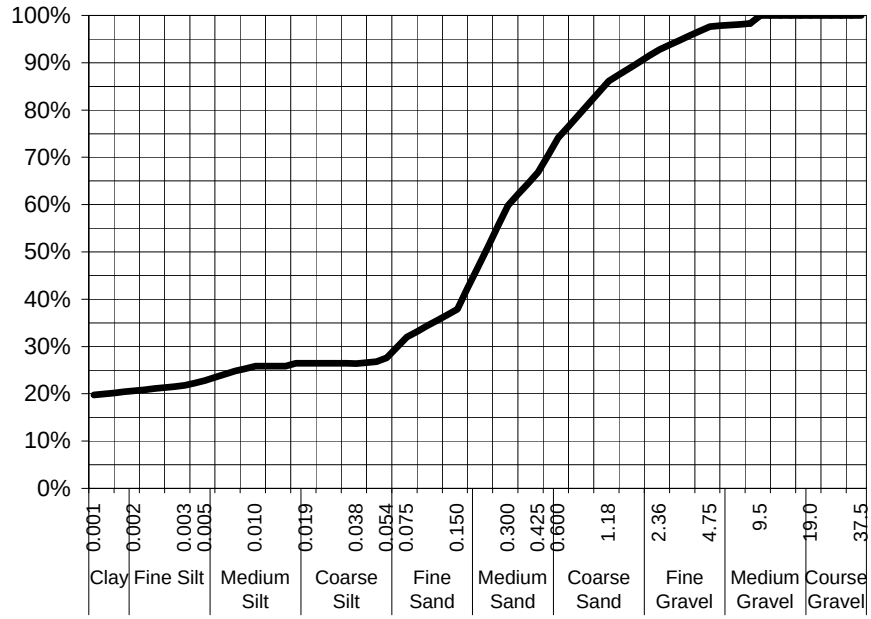
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-007 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 4.9-5.1

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	93%
1.18	86%
0.600	74%
0.425	67%
0.300	60%
0.150	38%
0.075	32%
Particle Size (microns)	
38	26%
19	26%
10	26%
5	23%
3	22%
1	20%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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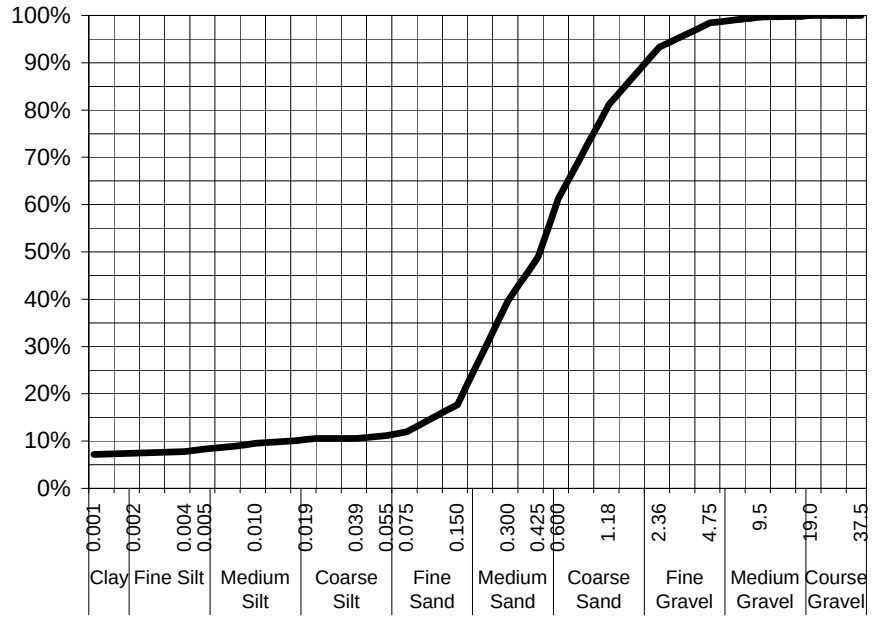
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-008 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 5.7-6.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	93%
1.18	81%
0.600	61%
0.425	49%
0.300	40%
0.150	18%
0.075	12%
Particle Size (microns)	
39	11%
19	10%
10	10%
5	8%
4	8%
1	7%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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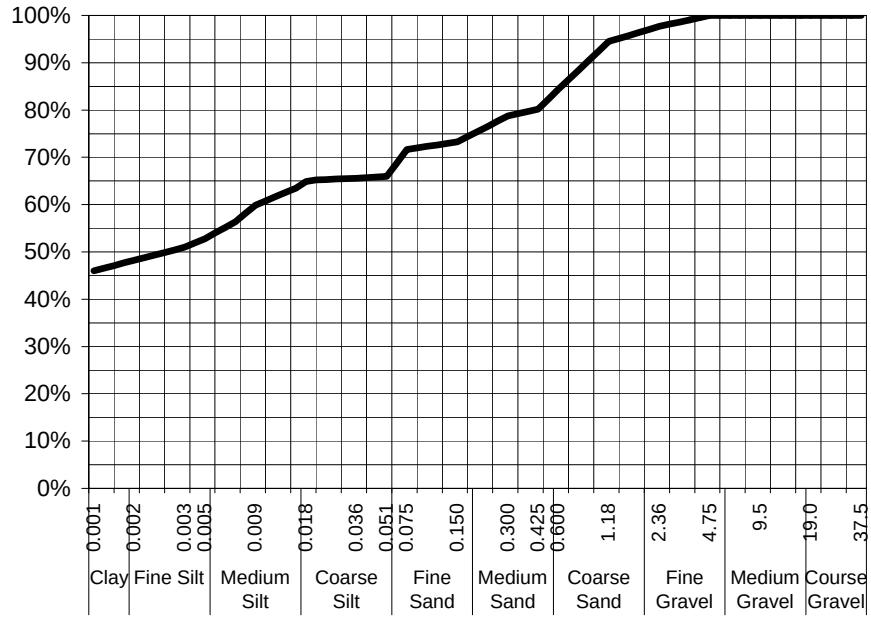
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-009 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 7.6-7.7

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	94%
0.600	84%
0.425	80%
0.300	79%
0.150	73%
0.075	72%
Particle Size (microns)	
36	66%
18	65%
9	60%
5	53%
3	51%
1	46%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & clay	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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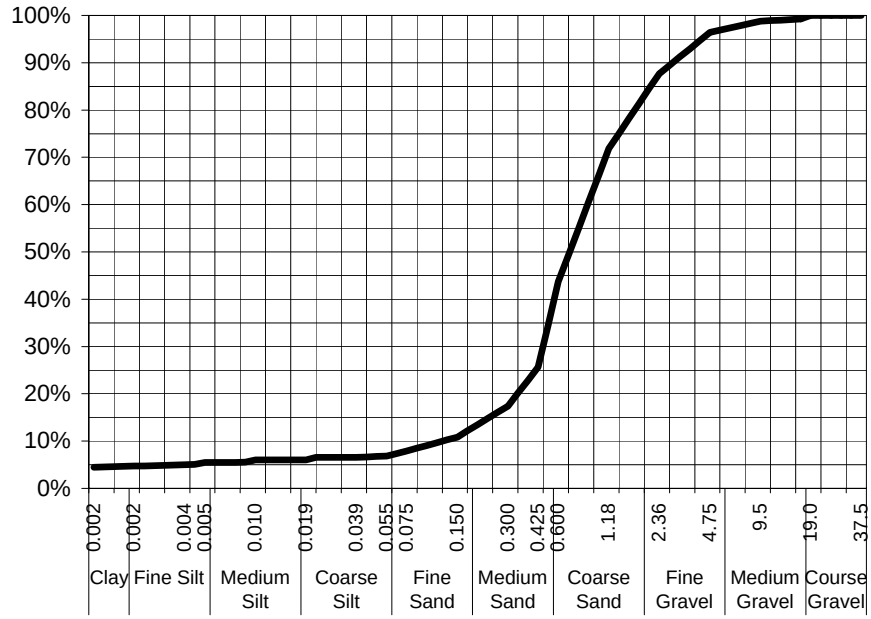
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-010 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 7.7-8.1

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	99%
4.75	96%
2.36	88%
1.18	72%
0.600	44%
0.425	26%
0.300	17%
0.150	11%
0.075	8%
Particle Size (microns)	
39	7%
19	6%
10	6%
5	6%
4	5%
2	4%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Coarse sand

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 29-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

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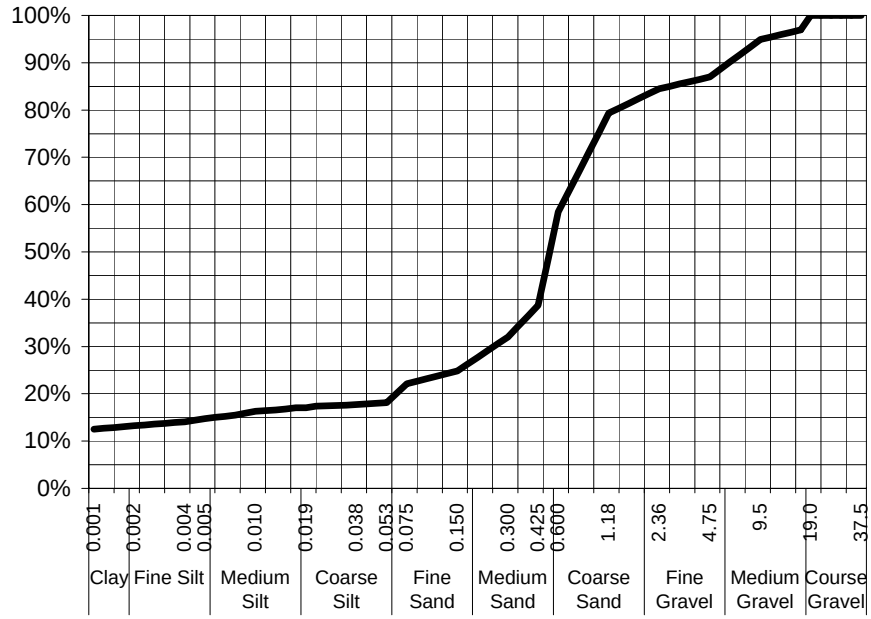
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-011 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 9.6-10.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	95%
4.75	87%
2.36	84%
1.18	79%
0.600	58%
0.425	39%
0.300	32%
0.150	25%
0.075	22%
Particle Size (microns)	
38	18%
19	17%
10	16%
5	15%
4	14%
1	13%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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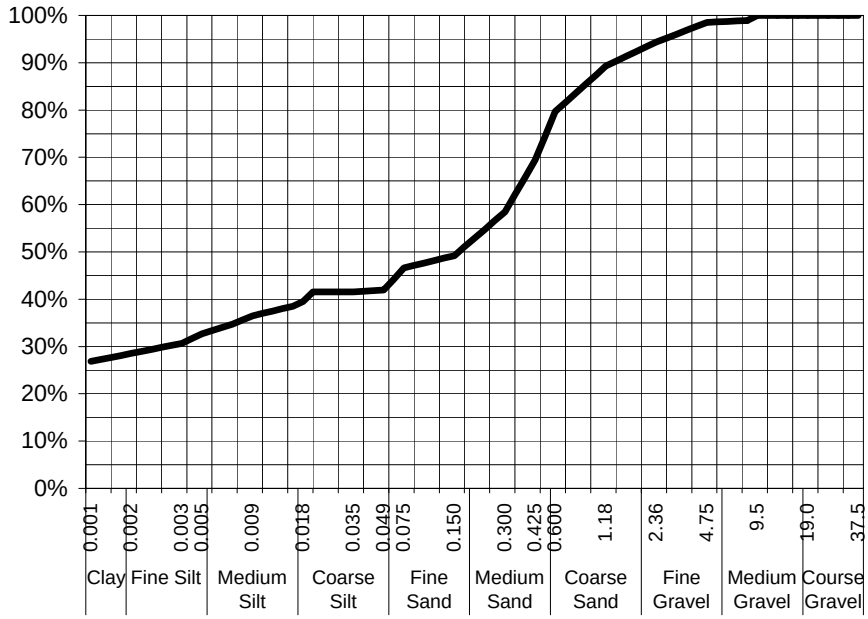
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-012 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 10.2-10.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	94%
1.18	89%
0.600	80%
0.425	69%
0.300	58%
0.150	49%
0.075	47%
Particle Size (microns)	
35	42%
18	40%
9	36%
5	33%
3	31%
1	27%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand, silt & clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 29-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

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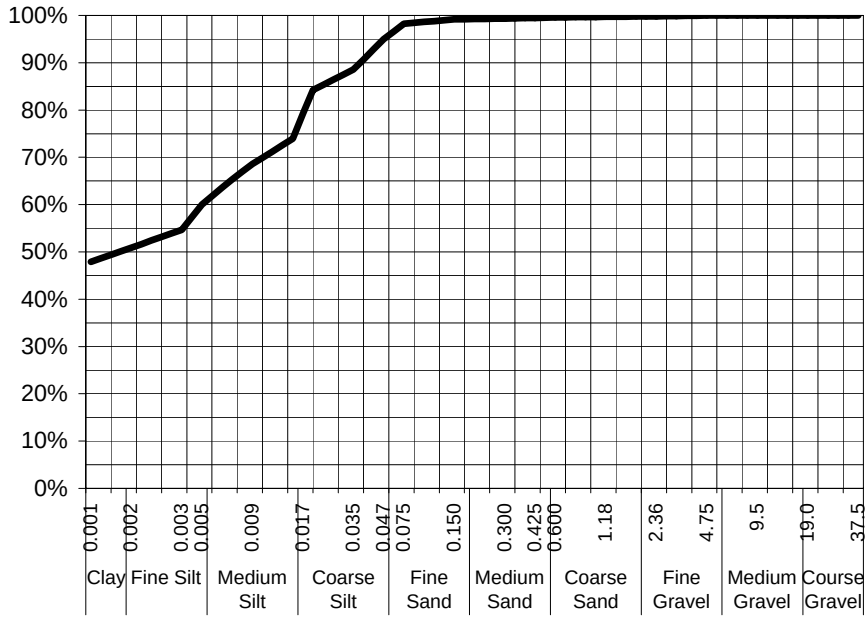
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-013 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 11.3-11.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	99%
0.300	99%
0.150	99%
0.075	98%
Particle Size (microns)	
35	89%
17	79%
9	69%
5	60%
3	55%
1	48%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Firm ochre clay	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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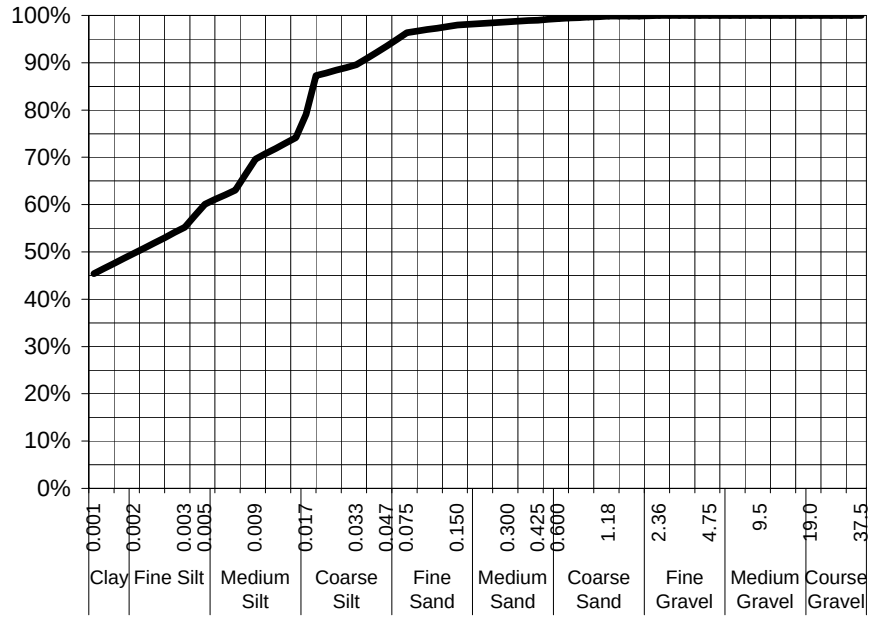
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-014 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 12-12.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	98%
0.075	96%
Particle Size (microns)	
33	90%
17	79%
9	70%
5	60%
3	55%
1	45%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Firm ochre clay	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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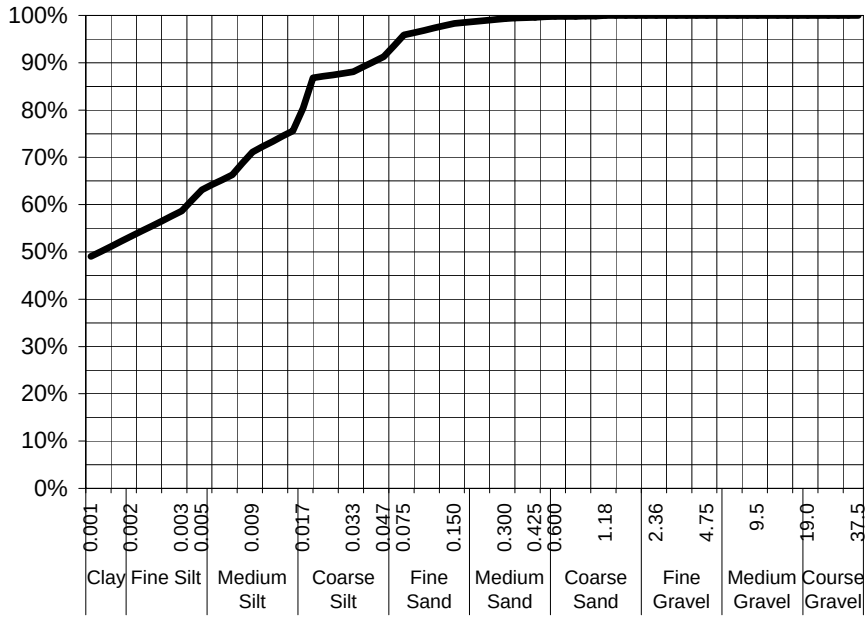
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-015 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 13.0-1 3.25

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	98%
0.075	96%
Particle Size (microns)	
33	88%
17	80%
9	71%
5	63%
3	59%
1	49%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Firm ochre clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 29-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

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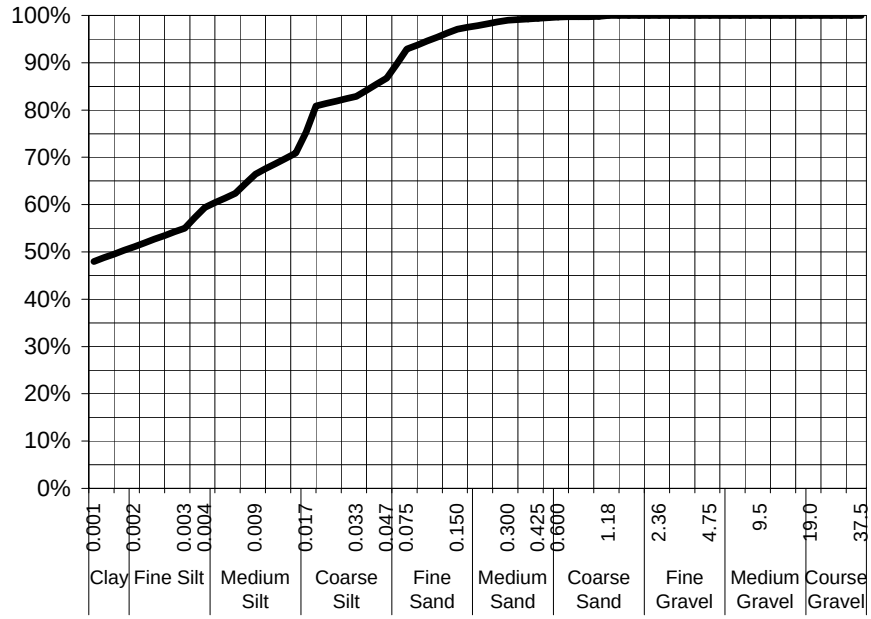
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-016 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 14.0-14.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	99%
0.300	99%
0.150	97%
0.075	93%
Particle Size (microns)	
33	83%
17	75%
9	66%
4	59%
3	55%
1	48%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Firm ochre clay	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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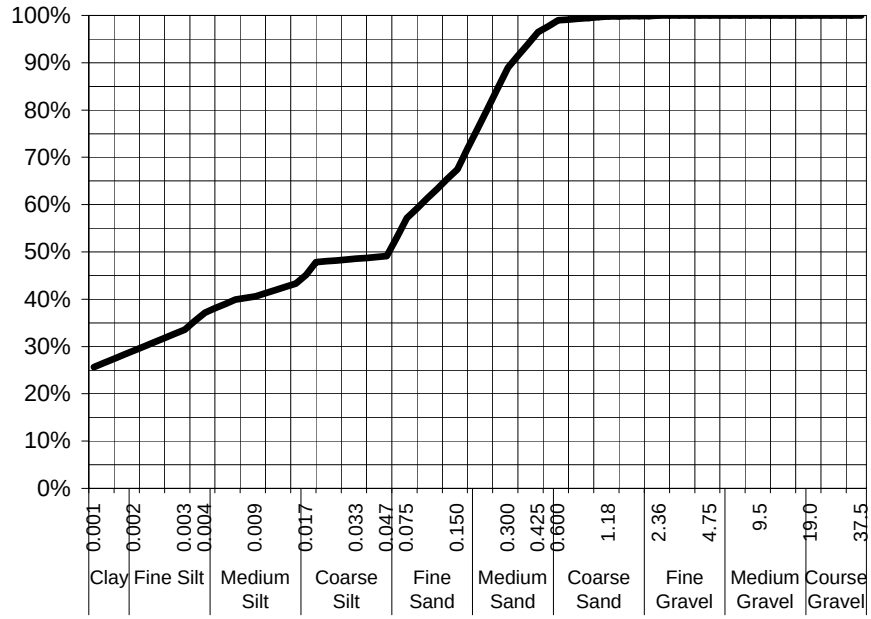
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-017 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 15.6-16.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	96%
0.300	89%
0.150	67%
0.075	57%
Particle Size (microns)	
33	49%
17	45%
9	41%
4	37%
3	34%
1	26%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Fine sand & clay	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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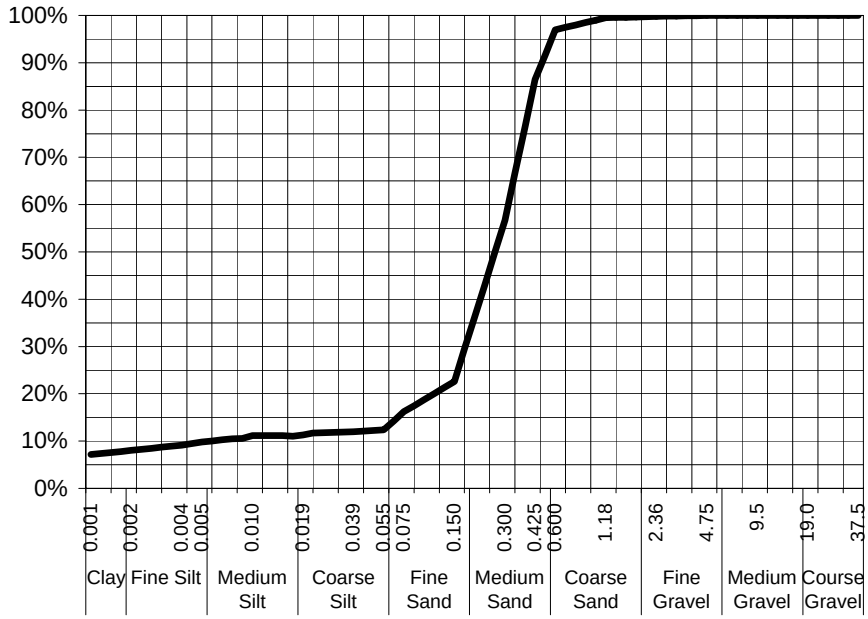
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-018 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH18 16.2-16.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	97%
0.425	86%
0.300	57%
0.150	23%
0.075	16%
Particle Size (microns)	
39	12%
19	11%
10	11%
5	10%
4	9%
1	7%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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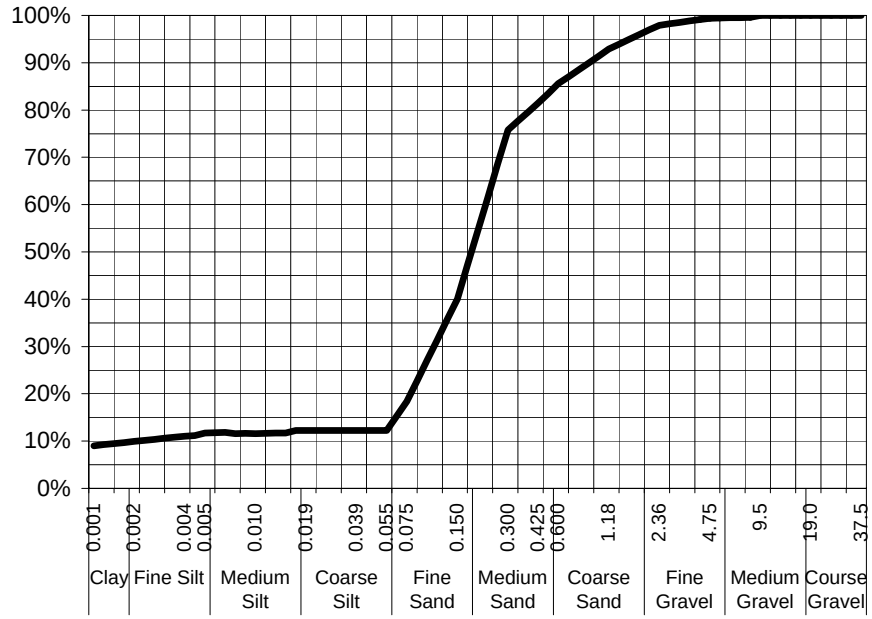
Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-019 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC 34

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	98%
1.18	93%
0.600	86%
0.425	81%
0.300	76%
0.150	40%
0.075	18%
Particle Size (microns)	
39	12%
19	12%
10	12%
5	12%
4	11%
1	9%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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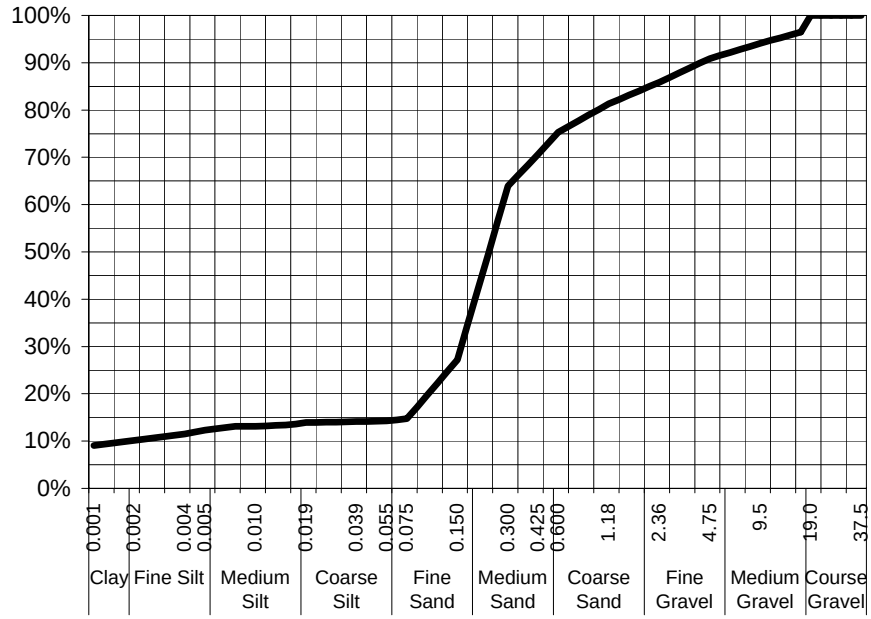
CLIENT:	Rob Ully	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-020 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC 35

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	94%
4.75	91%
2.36	86%
1.18	81%
0.600	75%
0.425	71%
0.300	64%
0.150	27%
0.075	15%
Particle Size (microns)	
39	14%
19	14%
10	13%
5	12%
4	11%
1	9%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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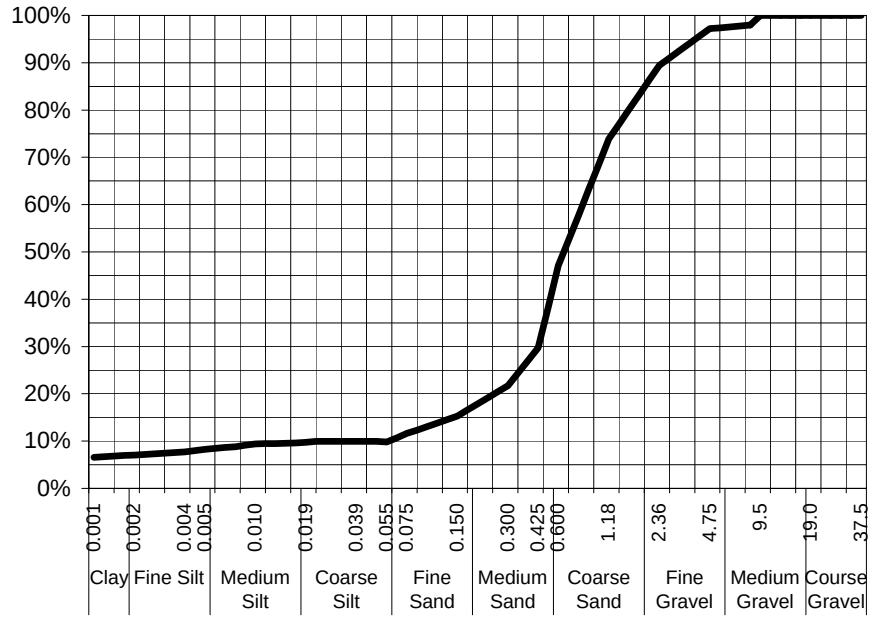
CLIENT:	Rob Ully	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-021 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC 36

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	97%
2.36	89%
1.18	74%
0.600	47%
0.425	30%
0.300	22%
0.150	15%
0.075	12%
Particle Size (microns)	
39	10%
19	10%
10	9%
5	8%
4	8%
1	7%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Aug-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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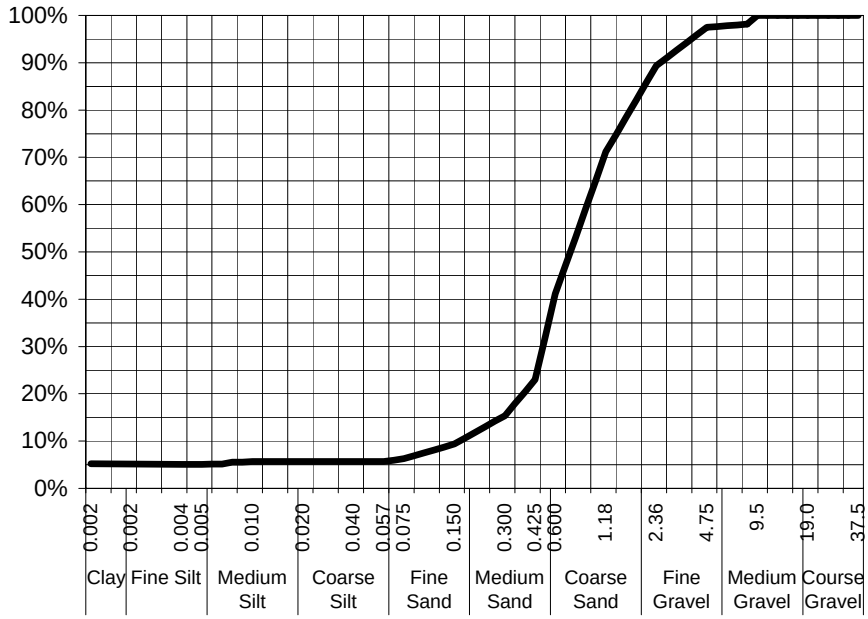
CLIENT:	Rob Ully	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	27-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811611-022 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC 37

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	97%
2.36	89%
1.18	71%
0.600	41%
0.425	23%
0.300	15%
0.150	9%
0.075	6%
Particle Size (microns)	
40	6%
20	6%
10	6%
5	5%
4	5%
2	5%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 29-Aug-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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Authorised Signatory

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Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 27-Aug-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811611	BH18 0.7-0.85	001	1%	89%	3%	7%
EB0811611	BH18 0.9-1.2	002	13%	82%	0%	5%
EB0811611	BH18 1.3-1.7	003	8%	76%	5%	11%
EB0811611	BH18 2.6-3.0	004	6%	68%	13%	13%
EB0811611	BH18 3.0-3.2	005	6%	78%	8%	8%
EB0811611	BH18 4.6-4.9	006	16%	71%	5%	8%
EB0811611	BH18 4.9-5.1	007	7%	62%	11%	20%
EB0811611	BH18 5.7-6.0	008	7%	82%	4%	7%
EB0811611	BH18 7.6-7.7	009	2%	27%	25%	46%
EB0811611	BH18 7.7-8.1	010	12%	80%	4%	4%
EB0811611	BH18 9.6-10.0	011	16%	63%	8%	13%
EB0811611	BH18 10.2-10.5	012	6%	49%	18%	27%
EB0811611	BH18 11.3-11.5	013	0%	3%	49%	48%
EB0811611	BH18 12-12.4	014	0%	7%	48%	45%
EB0811611	BH18 13.0-1 3.25	015	0%	9%	42%	49%
EB0811611	BH18 14.0-14.5	016	0%	12%	40%	48%
EB0811611	BH18 15.6-16.0	017	0%	49%	25%	26%
EB0811611	BH18 16.2-16.5	018	0%	85%	8%	7%
EB0811611	QC 34	019	2%	85%	4%	9%
EB0811611	QC 35	020	14%	72%	5%	9%
EB0811611	QC 36	021	11%	78%	4%	7%
EB0811611	QC 37	022	11%	84%	0%	5%

Remarks :
Test Procedure : AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0811611**	Page	: 1 of 15
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 27-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Order number	: ----		
		No. of samples received	: 23
Quote number	: EN/001/08	No. of samples analysed	: 23

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Virginia Minerals - PREP

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 752044)									
EB0811611-001	BH18 0.7-0.85	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.5	9.4	1.0	0% - 20%
EB0811611-011	BH18 9.6-10.0	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.3	9.4	1.1	0% - 20%
EA033-A: Actual Acidity (QC Lot: 752045)									
EB0811611-021	QC 36	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.6	9.6	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 752044)									
EB0811611-001	BH18 0.7-0.85	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.09	0.10	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	59	63	7.1	No Limit
EB0811611-011	BH18 9.6-10.0	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.22	0.22	0.0	0% - 50%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	137	137	0.0	0% - 50%
EA033-B: Potential Acidity (QC Lot: 752045)									
EB0811611-021	QC 36	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.03	0.03	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	20	22	10.5	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 752044)									
EB0811611-001	BH18 0.7-0.85	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	7.91	7.96	0.6	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.53	2.55	0.6	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1580	1590	0.6	0% - 20%
EB0811611-011	BH18 9.6-10.0	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	9.46	9.66	2.1	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	3.03	3.09	2.1	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1890	1930	2.1	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 752045)									
EB0811611-021	QC 36	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	10.7	10.9	2.5	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	3.42	3.50	2.5	0% - 20%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-C: Acid Neutralising Capacity (QC Lot: 752045) - continued									
EB0811611-021	QC 36	EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	2130	2190	2.5	0% - 20%
EA055: Moisture Content (QC Lot: 744568)									
EB0811514-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0811519-006	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EA055: Moisture Content (QC Lot: 744569)									
EB0811611-005	BH18 3.0-3.2	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	26.8	27.0	0.7	0% - 20%
EB0811611-012	BH18 10.2-10.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	27.2	28.3	4.0	0% - 20%
EA055: Moisture Content (QC Lot: 744570)									
EB0811705-014	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 747735)									
EB0811611-001	BH18 0.7-0.85	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	9	10	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	5	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	10	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	623	640	2.7	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	15	16	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	3260	3550	8.3	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	14400	14800	2.3	0% - 20%
EB0811611-011	BH18 9.6-10.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	15	15	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	7	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	9	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	12	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	6	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	217	231	6.2	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	23	23	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	7370	7140	3.1	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	18300	17800	2.4	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 747737)									
EB0811611-021	QC 36	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	6	29.6	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 747737) - continued									
EB0811611-021	QC 36	EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	8	6	20.4	No Limit
EB0811673-009	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 747736)									
EB0811611-001	BH18 0.7-0.85	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0811611-011	BH18 9.6-10.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 747738)									
EB0811611-021	QC 36	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0811673-009	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 743779)									
EB0811611-001	BH18 0.7-0.85	EP005: Total Organic Carbon	----	0.02	%	0.41	0.41	0.0	0% - 20%
EB0811611-011	BH18 9.6-10.0	EP005: Total Organic Carbon	----	0.02	%	0.32	0.31	3.2	0% - 50%
EP005: Total Organic Carbon (TOC) (QC Lot: 743780)									
EB0811611-021	QC 36	EP005: Total Organic Carbon	----	0.02	%	0.06	0.05	18.2	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 747352)									
EB0811611-001	BH18 0.7-0.85	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EB0811787-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QC Lot: 747351)									
EB0811611-001	BH18 0.7-0.85	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 747351) - continued									
EB0811787-001	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 747225)									
EB0811611-001	BH18 0.7-0.85	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0811611-011	BH18 9.6-10.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 747225) - continued									
EB0811611-011	BH18 9.6-10.0	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 747965)									
EB0811611-021	QC 36	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0811787-004	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QC Lot: 745651)									
EB0811511-001	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811673-010	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 751501)									
EB0811611-023	QC 38	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0001	0.0	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EB0811922-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 751502)									
EB0811611-023	QC 38	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 749264)									
EB0811611-023	QC 38	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0001	0.0	No Limit
EB0811767-008	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 743297)									
EB0811556-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0811611-023	QC 38	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0	No Limit
EP090: Organotin Compounds (Soluble) (QC Lot: 744510)									
EB0811655-001	Anonymous	EP090S: Tributyltin	56573-85-4	2	ngSn/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 752044)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-A: Actual Acidity (QCLot: 752045)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 752044)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-B: Potential Acidity (QCLot: 752045)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 752044)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 752045)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 747735)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	105	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	101	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	102	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	105	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	101	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	102	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	99.2	86.7	119
EG005T: Total Metals by ICP-AES (QCLot: 747737)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 747737) - continued								
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	108	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	100	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	104	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	102	90.2	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	103	85.9	116
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	104	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	103	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 747736)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	104	79.5	129
EG035T: Total Recoverable Mercury by FIMS (QCLot: 747738)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	105	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 743779)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	97.8	70	130
EP005: Total Organic Carbon (TOC) (QCLot: 743780)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	97.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 747352)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	80.9	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 747351)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	86.6	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	95.7	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	94.9	60.8	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	88.8	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	84.8	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	90.0	47	133
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.25 mg/kg	89.0	58.5	114
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	92.9	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	86.8	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	75.0	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	94.9	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747225)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	91.2	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	82.5	63	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747225) - continued								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	96.0	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	97.6	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	102	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	97.4	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	94.4	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	92.3	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	90.4	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	82.4	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	100	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	94.7	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	# 117	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	116	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	117	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	112	52	128
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747965)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	99.5	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	109	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	96.7	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	101	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	94.5	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	96.7	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	104	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	102	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	101	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	89.3	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	90.6	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	103	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	107	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	110	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	112	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	105	52	128
EP090: Organotin Compounds (QCLot: 745651)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	125	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 751501)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	99.3	84.6	112

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 751501) - continued								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	95.9	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	98.6	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	97.4	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	92.2	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	99.2	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	94.6	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	99.8	81	127
EG020T: Total Metals by ICP-MS (QCLot: 751502)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 91.1	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 749264)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	112	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 743297)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 745858)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	----	10 µg/L	72.9	56.7	114
				<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 745857)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	95.1	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	103	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	103	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	93.1	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	93.4	54.8	125
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	97.0	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	80.1	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	103	47.3	137
EP090: Organotin Compounds (Soluble) (QCLot: 744510)								
EP090S: Tributyltin	56573-85-4	2	ngSn/L	<2	1470 ngSn/L	84.7	29	100

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 747735)							
EB0811611-002	BH18 0.9-1.2	EG005T: Arsenic	7440-38-2	50 mg/kg	104	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	93.8	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	96.5	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	106	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	94.3	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	96.3	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	90.7	70	130
EG005T: Total Metals by ICP-AES (QCLot: 747737)							
EB0811611-022	QC 37	EG005T: Arsenic	7440-38-2	50 mg/kg	110	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	96.4	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	102	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	105	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	97.8	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	95.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 747736)							
EB0811611-002	BH18 0.9-1.2	EG035T: Mercury	7439-97-6	5.0 mg/kg	104	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 747738)							
EB0811611-022	QC 37	EG035T: Mercury	7439-97-6	5.0 mg/kg	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 747352)							
EB0811611-002	BH18 0.9-1.2	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	70.8	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 747351)							
EB0811611-002	BH18 0.9-1.2	EP068: gamma-BHC	58-89-9	0.25 mg/kg	# 64.3	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	98.6	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	75.2	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	# 66.2	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747225)							
EB0811611-002	BH18 0.9-1.2	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	99.3	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	108	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747965)							
EB0811611-022	QC 37	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	94.6	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	98.3	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP090: Organotin Compounds (QCLot: 745651)							
EB0811511-002	Anonymous	EP090: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 751501)							
EB0811705-002	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 749264)							
EB0811611-023	QC 38	EG035T: Mercury	7439-97-6	0.0100 mg/L	99.1	70	130
EP090: Organotin Compounds (Soluble) (QCLot: 744510)							
EB0811655-002	Anonymous	EP090S: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0811611**	Page	: 1 of 13
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 27-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Order number	: ----		
		No. of samples received	: 23
Quote number	: EN/001/08	No. of samples analysed	: 23

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Pulp Bag								
BH18 7.6-7.7		**26-AUG-2008**	**27-AUG-2008**	---	----	**11-SEP-2008**	09-DEC-2008	✓
Snap Lock Bag - frozen								
BH18 0.7-0.85,	BH18 0.9-1.2,	**26-AUG-2008**	**27-AUG-2008**	---	----	**11-SEP-2008**	09-DEC-2008	✓
BH18 1.3-1.7,	BH18 2.6-3.0,							
BH18 3.0-3.2,	BH18 4.6-4.9,							
BH18 4.9-5.1,	BH18 5.7-6.0,							
BH18 7.7-8.1,	BH18 9.6-10.0,							
BH18 10.2-10.5,	BH18 11.3-11.5,							
BH18 12-12.4,	BH18 13.0-13.25,							
BH18 14.0-14.5,	BH18 15.6-16.0,							
BH18 16.2-16.5,	QC 34,							
QC 35,	QC 36,							
QC 37								
EA033-B: Potential Acidity								
Pulp Bag								
BH18 7.6-7.7		**26-AUG-2008**	**27-AUG-2008**	---	----	**11-SEP-2008**	09-DEC-2008	✓
Snap Lock Bag - frozen								
BH18 0.7-0.85,	BH18 0.9-1.2,	**26-AUG-2008**	**27-AUG-2008**	---	----	**11-SEP-2008**	09-DEC-2008	✓
BH18 1.3-1.7,	BH18 2.6-3.0,							
BH18 3.0-3.2,	BH18 4.6-4.9,							
BH18 4.9-5.1,	BH18 5.7-6.0,							
BH18 7.7-8.1,	BH18 9.6-10.0,							
BH18 10.2-10.5,	BH18 11.3-11.5,							
BH18 12-12.4,	BH18 13.0-13.25,							
BH18 14.0-14.5,	BH18 15.6-16.0,							
BH18 16.2-16.5,	QC 34,							
QC 35,	QC 36,							
QC 37								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity							
Pulp Bag							
BH18 7.6-7.7	**26-AUG-2008**	**27-AUG-2008**	---	----	**11-SEP-2008**	09-DEC-2008	✓
Snap Lock Bag - frozen							
BH18 0.7-0.85, BH18 0.9-1.2, BH18 1.3-1.7, BH18 2.6-3.0, BH18 3.0-3.2, BH18 4.6-4.9, BH18 4.9-5.1, BH18 5.7-6.0, BH18 7.7-8.1, BH18 9.6-10.0, BH18 10.2-10.5, BH18 11.3-11.5, BH18 12-12.4, BH18 13.0-13.25, BH18 14.0-14.5, BH18 15.6-16.0, BH18 16.2-16.5, QC 34, QC 35, QC 36, QC 37	**26-AUG-2008**	**27-AUG-2008**	---	----	**11-SEP-2008**	09-DEC-2008	✓
EA033-D: Retained Acidity							
Pulp Bag							
BH18 7.6-7.7	**26-AUG-2008**	**27-AUG-2008**	---	----	**11-SEP-2008**	09-DEC-2008	✓
Snap Lock Bag - frozen							
BH18 0.7-0.85, BH18 0.9-1.2, BH18 1.3-1.7, BH18 2.6-3.0, BH18 3.0-3.2, BH18 4.6-4.9, BH18 4.9-5.1, BH18 5.7-6.0, BH18 7.7-8.1, BH18 9.6-10.0, BH18 10.2-10.5, BH18 11.3-11.5, BH18 12-12.4, BH18 13.0-13.25, BH18 14.0-14.5, BH18 15.6-16.0, BH18 16.2-16.5, QC 34, QC 35, QC 36, QC 37	**26-AUG-2008**	**27-AUG-2008**	---	----	**11-SEP-2008**	09-DEC-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting							
Pulp Bag							
BH18 7.6-7.7	**26-AUG-2008**	**27-AUG-2008**	---	----	**11-SEP-2008**	09-DEC-2008	✓
Snap Lock Bag - frozen							
BH18 0.7-0.85, BH18 0.9-1.2, BH18 1.3-1.7, BH18 2.6-3.0, BH18 3.0-3.2, BH18 4.6-4.9, BH18 4.9-5.1, BH18 5.7-6.0, BH18 7.7-8.1, BH18 9.6-10.0, BH18 10.2-10.5, BH18 11.3-11.5, BH18 12-12.4, BH18 13.0-13.25, BH18 14.0-14.5, BH18 15.6-16.0, BH18 16.2-16.5, QC 34, QC 35, QC 36, QC 37	**26-AUG-2008**	**27-AUG-2008**	---	----	**11-SEP-2008**	09-DEC-2008	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH18 0.7-0.85, BH18 0.9-1.2, BH18 1.3-1.7, BH18 2.6-3.0, BH18 3.0-3.2, BH18 4.6-4.9, BH18 4.9-5.1, BH18 5.7-6.0, BH18 7.6-7.7, BH18 7.7-8.1, BH18 9.6-10.0, BH18 10.2-10.5, BH18 11.3-11.5, BH18 12-12.4, BH18 13.0-13.25, BH18 14.0-14.5, BH18 15.6-16.0, BH18 16.2-16.5, QC 34, QC 35, QC 36, QC 37	**26-AUG-2008**	**----**	----	----	**01-SEP-2008**	02-SEP-2008	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH18 0.7-0.85, BH18 0.9-1.2, BH18 1.3-1.7, BH18 2.6-3.0, BH18 3.0-3.2, BH18 4.6-4.9, BH18 4.9-5.1, BH18 5.7-6.0, BH18 7.6-7.7, BH18 7.7-8.1, BH18 9.6-10.0, BH18 10.2-10.5, BH18 11.3-11.5, BH18 12-12.4, BH18 13.0-13.25, BH18 14.0-14.5, BH18 15.6-16.0, BH18 16.2-16.5, QC 34, QC 35, QC 36, QC 37	**26-AUG-2008**	**04-SEP-2008**	22-FEB-2009	✓	**04-SEP-2008**	22-FEB-2009	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
BH18 0.7-0.85,	BH18 0.9-1.2,	**26-AUG-2008**	**04-SEP-2008**	22-FEB-2009	✓	**04-SEP-2008**	23-SEP-2008	✓
BH18 1.3-1.7,	BH18 2.6-3.0,							
BH18 3.0-3.2,	BH18 4.6-4.9,							
BH18 4.9-5.1,	BH18 5.7-6.0,							
BH18 7.6-7.7,	BH18 7.7-8.1,							
BH18 9.6-10.0,	BH18 10.2-10.5,							
BH18 11.3-11.5,	BH18 12-12.4,							
BH18 13.0-13.25,	BH18 14.0-14.5,							
BH18 15.6-16.0,	BH18 16.2-16.5,							
QC 34,	QC 35,							
QC 36,	QC 37							
EP005: Total Organic Carbon (TOC)								
Pulp Bag								
BH18 0.7-0.85,	BH18 0.9-1.2,	**26-AUG-2008**	**01-SEP-2008**	---	----	**01-SEP-2008**	23-SEP-2008	✓
BH18 1.3-1.7,	BH18 2.6-3.0,							
BH18 3.0-3.2,	BH18 4.6-4.9,							
BH18 4.9-5.1,	BH18 5.7-6.0,							
BH18 7.6-7.7,	BH18 7.7-8.1,							
BH18 9.6-10.0,	BH18 10.2-10.5,							
BH18 11.3-11.5,	BH18 12-12.4,							
BH18 13.0-13.25,	BH18 14.0-14.5,							
BH18 15.6-16.0,	BH18 16.2-16.5,							
QC 34,	QC 35,							
QC 36,	QC 37							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
BH18 0.7-0.85,	BH18 0.9-1.2,	**26-AUG-2008**	**03-SEP-2008**	09-SEP-2008	✓	**05-SEP-2008**	13-OCT-2008	✓
BH18 1.3-1.7,	QC 34,							
QC 35								
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved								
BH18 0.7-0.85,	BH18 0.9-1.2,	**26-AUG-2008**	**03-SEP-2008**	09-SEP-2008	✓	**05-SEP-2008**	13-OCT-2008	✓
BH18 1.3-1.7,	QC 34,							
QC 35								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH18 0.7-0.85, BH18 0.9-1.2, BH18 1.3-1.7, BH18 2.6-3.0, BH18 3.0-3.2, BH18 4.6-4.9, BH18 4.9-5.1, BH18 5.7-6.0, BH18 7.6-7.7, BH18 7.7-8.1, BH18 9.6-10.0, BH18 10.2-10.5, BH18 11.3-11.5, BH18 12-12.4, BH18 13.0-13.25, BH18 14.0-14.5, BH18 15.6-16.0, BH18 16.2-16.5, QC 34, QC 35	**26-AUG-2008**	**03-SEP-2008**	09-SEP-2008	✓	**09-SEP-2008**	13-OCT-2008	✓
Soil Glass Jar - Unpreserved							
QC 36, QC 37	**26-AUG-2008**	**04-SEP-2008**	09-SEP-2008	✓	**09-SEP-2008**	14-OCT-2008	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH18 0.7-0.85, BH18 0.9-1.2, BH18 1.3-1.7, QC 34, QC 35	**26-AUG-2008**	**02-SEP-2008**	09-SEP-2008	✓	**05-SEP-2008**	12-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC 38	**26-AUG-2008**	**09-SEP-2008**	22-FEB-2009	✓	**09-SEP-2008**	22-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC 38	**26-AUG-2008**	**----**	----	----	**05-SEP-2008**	23-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC 38	**26-AUG-2008**	**----**	----	----	**29-AUG-2008**	23-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC 38	**26-AUG-2008**	**02-SEP-2008**	02-SEP-2008	✓	**04-SEP-2008**	12-OCT-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC 38	**26-AUG-2008**	**02-SEP-2008**	02-SEP-2008	✓	**04-SEP-2008**	12-OCT-2008	✓
EP090: Organotin Compounds (Soluble)							
Amber Glass Bottle - Unpreserved							
QC 38	**26-AUG-2008**	**01-SEP-2008**	25-OCT-2008	✓	**05-SEP-2008**	11-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	3	22	**13.6**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	5	44	**11.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	40	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	33	**12.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	34	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	3	22	**13.6**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	40	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	33	**6.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	34	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	22	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	2	22	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	40	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	33	**6.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	34	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	22	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	40	**5.0**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	33	**6.1**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	34	**5.9**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Organotin Compounds (Soluble)	EP090S	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Organotin Sample Preparation	ORG34	WATER	In-house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	843195-002	----	**Benzo(a)pyrene**	50-32-8	117 %	55-116%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB0811611-002	BH18 0.9-1.2	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP068A: Organochlorine Pesticides (OC)	EB0811611-002	BH18 0.9-1.2	**gamma-BHC**	58-89-9	64.3 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0811611-002	BH18 0.9-1.2	**4.4`-DDT**	50-29-3	66.2 %	70-130%	**Recovery less than lower data quality objective**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	848522-002	----	**Silver**	7440-22-4	91.1 %	120-123%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)T: PAH Surrogates	EB0811611-004	BH18 2.6-3.0	**Anthracene-d10**	1719-06-8	153 %	27-133 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0811611-006	BH18 4.6-4.9	**Anthracene-d10**	1719-06-8	134 %	27-133 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0811611-008	BH18 5.7-6.0	**Anthracene-d10**	1719-06-8	133 %	27-133 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0811611-014	BH18 12-12.4	**Anthracene-d10**	1719-06-8	141 %	27-133 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0811611-018	BH18 16.2-16.5	**Anthracene-d10**	1719-06-8	138 %	27-133 %	**Recovery greater than upper data quality objective**

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted - Continued							
EP075(SIM)T: PAH Surrogates	EB0811611-020	QC 35	**Anthracene-d10**	1719-06-8	134 %	27-133 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0811611-007	BH18 4.9-5.1	**Anthracene-d10**	1719-06-8	152 %	27-133 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0811673

Telephone : +61-7-3243 7222

URS CHAIN OF CUSTODY

ADDRESS: URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY Custody Seal ? Y N NA
PHONE NO: (07) 3243 2111	PHONE NO: (07) 32437222	TURNAROUND DETAILS ✓ Standard - 5 days Non standard	Free ice / frozen icebricks present upon receipt? Y N
FAX NO: (07) 3243 2199	FAX NO: (07) 32437259	COC SEQUENCE NUMBER (1) 2 3 4 please circle 1	Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 28/08 TIME: 18:50	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) TOC	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon Phosp	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH 14 1-1.5	27/08/08	S	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
2	BH 14 1.6-2	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
3	BH 14 3.5-4	"	"	2	1										✓	✓					✓		✓					✓
4	BH 14 4.1-4.6	"	"	2	1										✓	✓					✓		✓					
5	BH 14 5.3-5.5	"	"	2											✓	✓					✓		✓					
6	BH 14 7.1-7.4	"	"	2											✓	✓					✓		✓					
7	BH 14 7.8-8	"	"	1											✓	✓					✓		✓					
8	BH 14 8.2-8.5	"	"	1											✓	✓					✓		✓					
9	BH 14 8.6-8.85	"	"	1											✓	✓					✓		✓					
10	QC 39	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
11	QC 40	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
12	QC 41	"	L			2	1	1								✓		✓	✓	✓	✓							
TOTAL																												

1-4 2x80° Dry
5-6 2x80° Dry
7-9 2x80° Dry
10-11 2x80° Dry

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0811673**	Page	: 1 of 14
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 28-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 12
Quote number	: EN/001/08	No. of samples analysed	: 12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Virginia Minerals - PREP

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #2: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **LCS recovery for EG020T (Total Metals) fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC41 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH14 1-1.5	BH14 1.6-2	BH14 3.5-4	BH14 4.1-4.6	BH14 5.3-5.5
				Client sampling date / time: 27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00
				EB0811673-001	EB0811673-002	EB0811673-003	EB0811673-004	EB0811673-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.5	9.2	8.9	8.7	8.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	0.10	0.42	0.53	0.04
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	59	262	333	23
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	15.6	8.64	13.9	6.81	0.64
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3110	1730	2770	1360	128
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	4.99	2.77	4.44	2.18	0.21
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	23.8	22.3	23.6	31.8	19.1
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	2800	4160	6200	----	5240
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	13	12	11	12	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	7	10	13	18	8
Copper	7440-50-8	5	mg/kg	5	8	10	17	33
Iron	7439-89-6	50	mg/kg	12800	15400	15100	----	13600
Lead	7439-92-1	5	mg/kg	<5	<5	5	7	6
Manganese	7439-96-5	5	mg/kg	442	325	282	----	67
Nickel	7440-02-0	2	mg/kg	4	6	14	10	6
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	12	17	20	28	21
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.30	0.28	0.37	0.50	0.14

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH14 1-1.5	BH14 1.6-2	BH14 3.5-4	BH14 4.1-4.6	BH14 5.3-5.5
				Client sampling date / time: 27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00
				EB0811673-001	EB0811673-002	EB0811673-003	EB0811673-004	EB0811673-005
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----
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	----	----	----
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	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<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	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**52.3**	**58.3**	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**67.9**	**80.3**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH14 1-1.5	BH14 1.6-2	BH14 3.5-4	BH14 4.1-4.6	BH14 5.3-5.5
				Client sampling date / time: 27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00
				EB0811673-001	EB0811673-002	EB0811673-003	EB0811673-004	EB0811673-005
EP068T: Organophosphorus Pesticide Surrogate - Continued								
DEF	78-48-8	0.1	%	**70.1**	**82.9**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**126**	**88.0**	**107**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**123**	**84.8**	**102**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**112**	**76.8**	**88.6**	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**122**	**82.3**	**104**	----	----
Anthracene-d10	1719-06-8	0.1	%	**110**	**74.0**	**91.0**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**127**	**92.5**	**108**	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**150**	**132**	----	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH14 7.1-7.4	BH14 7.8-8	BH14 8.2-8.5	BH14 8.6-8.85	QC39
				Client sampling date / time: 27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00
				EB0811673-006	EB0811673-007	EB0811673-008	EB0811673-009	EB0811673-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.1	7.6	7.2	7.0	9.2
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	0.08
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	50
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.20	<0.01	0.49	0.37	12.7
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	39	<10	99	74	2540
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.06	<0.01	0.16	0.12	4.08
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	16.2	16.4	18.5	23.3	24.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	1300	----	9030	----	4940
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	11	<5	5	15
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	66	12	24	16	11
Copper	7440-50-8	5	mg/kg	6	23	21	21	10
Iron	7439-89-6	50	mg/kg	12400	----	22000	----	17400
Lead	7439-92-1	5	mg/kg	<5	8	14	11	<5
Manganese	7439-96-5	5	mg/kg	122	----	99	----	233
Nickel	7440-02-0	2	mg/kg	6	68	23	22	7
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	17	156	47	54	20
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.03	0.05	0.18	0.06	0.28

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH14 7.1-7.4	BH14 7.8-8	BH14 8.2-8.5	BH14 8.6-8.85	QC39
				Client sampling date / time: 27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00
				EB0811673-006	EB0811673-007	EB0811673-008	EB0811673-009	EB0811673-010
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	----	----	<0.10
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	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
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	----	----	----	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	**49.8**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	----	**67.9**
EP068T: Organophosphorus Pesticide Surrogate								

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH14 7.1-7.4	BH14 7.8-8	BH14 8.2-8.5	BH14 8.6-8.85	QC39
				Client sampling date / time: 27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00	27-AUG-2008 15:00
				EB0811673-006	EB0811673-007	EB0811673-008	EB0811673-009	EB0811673-010
EP068T: Organophosphorus Pesticide Surrogate - Continued								
DEF	78-48-8	0.1	%	----	----	----	----	**70.7**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	----	----	**106**
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	----	----	**101**
2.4.6-Tribromophenol	118-79-6	0.1	%	----	----	----	----	**94.9**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	----	**104**
Anthracene-d10	1719-06-8	0.1	%	----	----	----	----	**94.0**
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	----	**112**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	----	----	----	**85.6**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: QC40	----	----	----	----
				Client sampling date / time: 27-AUG-2008 15:00	----	----	----	----
				EB0811673-011	----	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.2**	----	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	**0.14**	----	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**88**	----	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**8.34**	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**1670**	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**2.67**	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**23.8**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**4170**	----	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	**12**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**11**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**8**	----	----	----	----
Iron	7439-89-6	50	mg/kg	**15700**	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Manganese	7439-96-5	5	mg/kg	**342**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**7**	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**19**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.24**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	QC40	----	----	----	----
				Client sampling date / time	27-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0811673-011	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	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	----	----	----	----
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	----	----	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**52.8**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**69.7**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									

Analytical Results

Sub-Matrix: SOIL				Client sample ID	QC40	----	----	----	----
				Client sampling date / time	27-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0811673-011	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate - Continued									
DEF	78-48-8	0.1	%		73.4	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		87.9	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		82.2	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		76.9	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		80.5	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		76.4	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		93.6	----	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		112	----	----	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	QC41	----	----	----	----
				Client sampling date / time	27-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0811673-012	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0002**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<5	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<2.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<2.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<2.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<2.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<2.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<2.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<2.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<2.5	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<2.5	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L		<2.5	----	----	----	----
EP090: Organotin Compounds (Soluble)									
Tributyltin	56573-85-4	2	ngSn/L		<2	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**79.2**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**85.2**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**81.8**	----	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**26.5**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP090S: Organotin Surrogate			
Tripropyltin	----	10	108

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 28-Aug-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811673	BH14 1-1.5	001	6%	85%	4%	5%
EB0811673	BH14 1.6-2	002	2%	77%	9%	12%
EB0811673	BH14 3.5-4	003	2%	36%	27%	35%
EB0811673	BH14 4.1-4.6	004	10%	26%	34%	30%
EB0811673	BH14 5.3-5.5	005	9%	39%	29%	23%
EB0811673	BH14 7.1-7.4	006	9%	70%	11%	10%
EB0811673	BH14 7.8-8	007	11%	53%	11%	25%
EB0811673	BH14 8.2-8.5	008	0%	4%	15%	81%
EB0811673	BH14 8.6-8.85	009	0%	6%	32%	62%
EB0811673	QC39	010	3%	76%	9%	12%
EB0811673	QC40	011	4%	80%	6%	10%

Remarks :
Test Procedure : AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Certificate of Analysis

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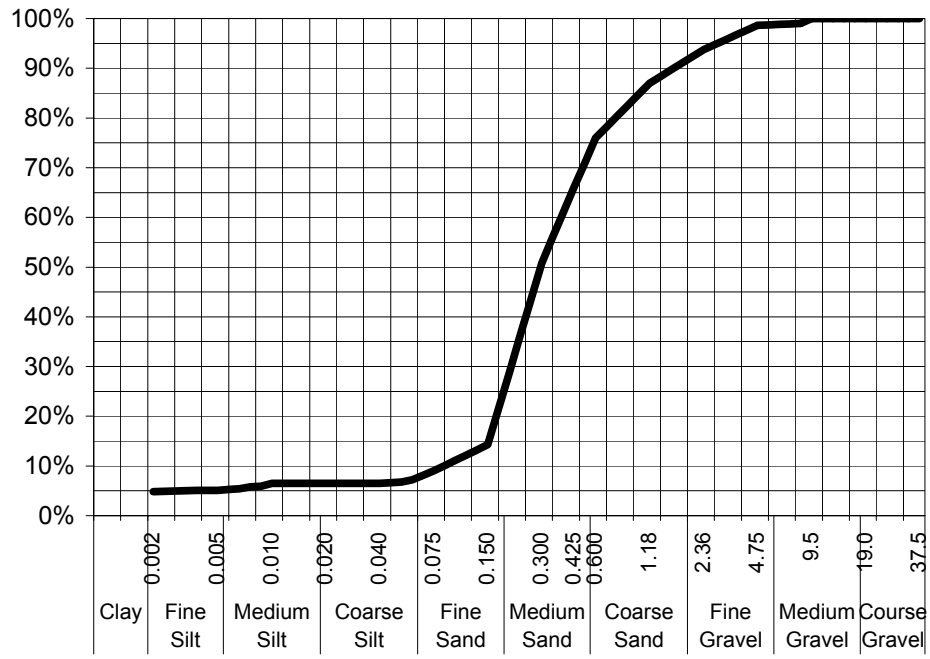
ALS Environmental

Newcastle, NSW

CLIENT:	Julian Dobos	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811673-001 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH14 1-1.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	94%
1.18	87%
0.600	76%
0.425	66%
0.300	51%
0.150	14%
0.075	9%
Particle Size (microns)	
40	7%
20	7%
10	7%
5	5%
4	5%

Samples analysed as received.

Sample Comments:		**Analysed:**	4-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Sand & silt	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Julian Dobos

COMPANY: URS Australia Pty Ltd (Qld)

ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

PROJECT: 42626228.52

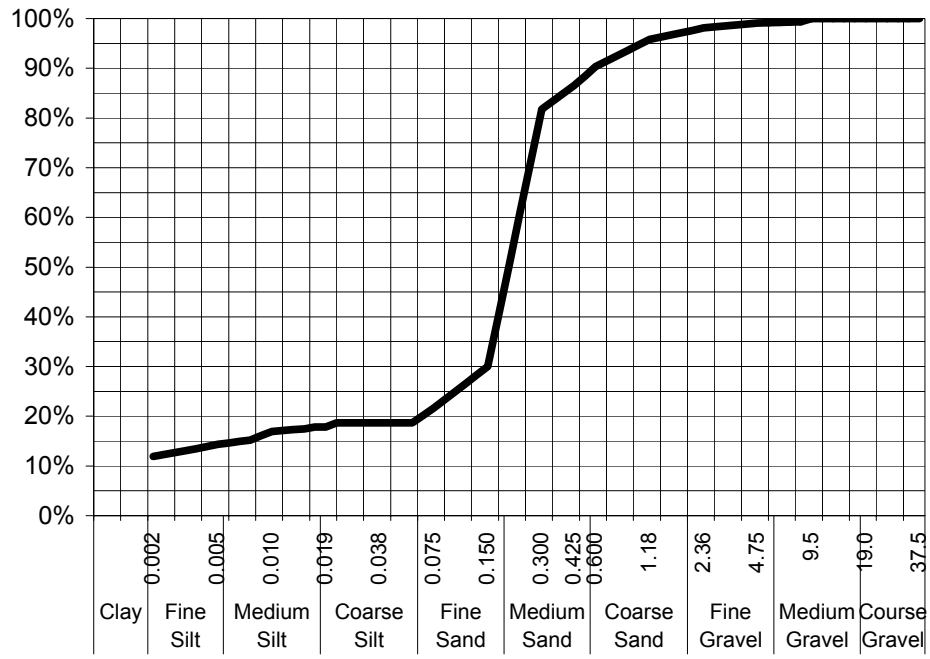
DATE REPORTED: 11-Sep-2008

DATE RECEIVED: 28-Aug-2008

REPORT NO: EB0811673-002 / PSD

SAMPLE ID: BH14 1.6-2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	98%
1.18	96%
0.600	90%
0.425	87%
0.300	82%
0.150	30%
0.075	22%
Particle Size (microns)	
38	19%
19	18%
10	17%
5	14%
4	13%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand silt & clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 4-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Julian Dobos

DATE REPORTED: 11-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 28-Aug-2008

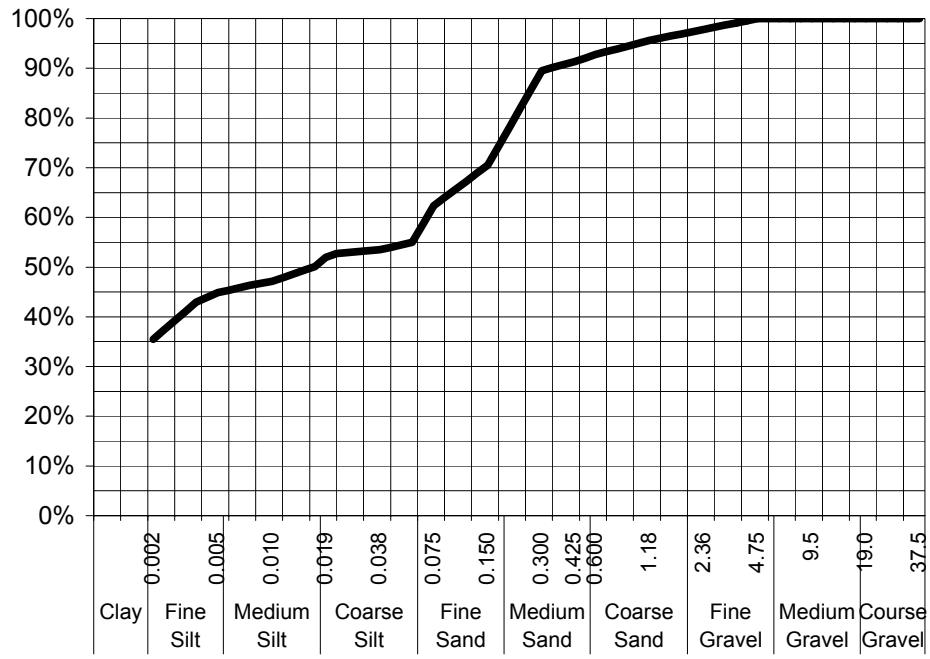
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811673-003 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH14 3.5-4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	96%
0.600	93%
0.425	91%
0.300	90%
0.150	71%
0.075	62%
Particle Size (microns)	
38	53%
19	52%
10	47%
5	45%
3	43%

Samples analysed as received.

Sample Comments:

Analysed: 4-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Sand silt & clay

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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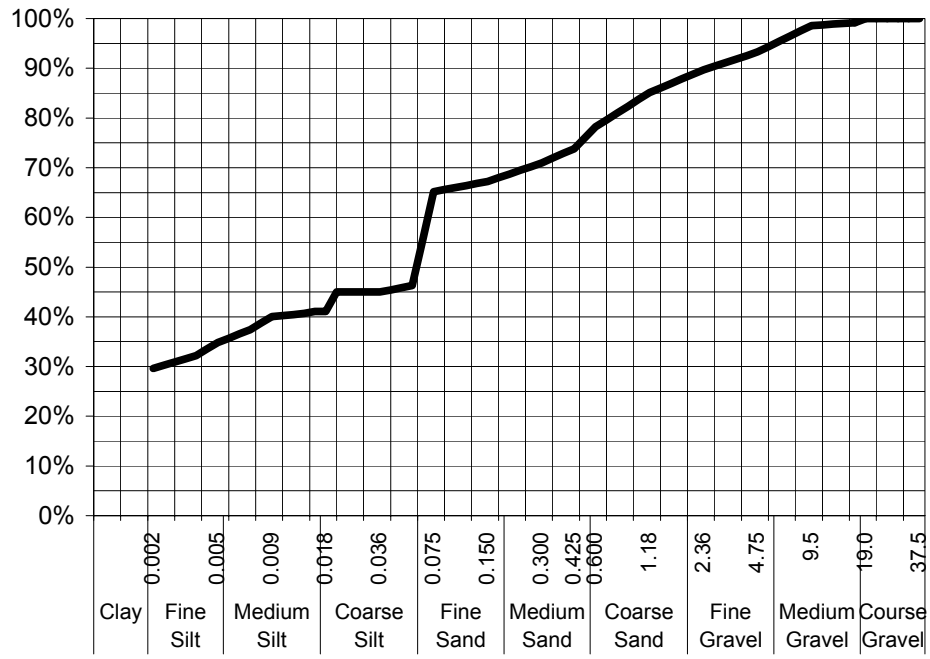
ALS Environmental

Newcastle, NSW

CLIENT:	Julian Dobos	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811673-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH14 4.1-4.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	99%
4.75	93%
2.36	90%
1.18	85%
0.600	78%
0.425	74%
0.300	71%
0.150	67%
0.075	65%
Particle Size (microns)	
36	45%
18	41%
9	40%
5	35%
3	32%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand silt & clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 4-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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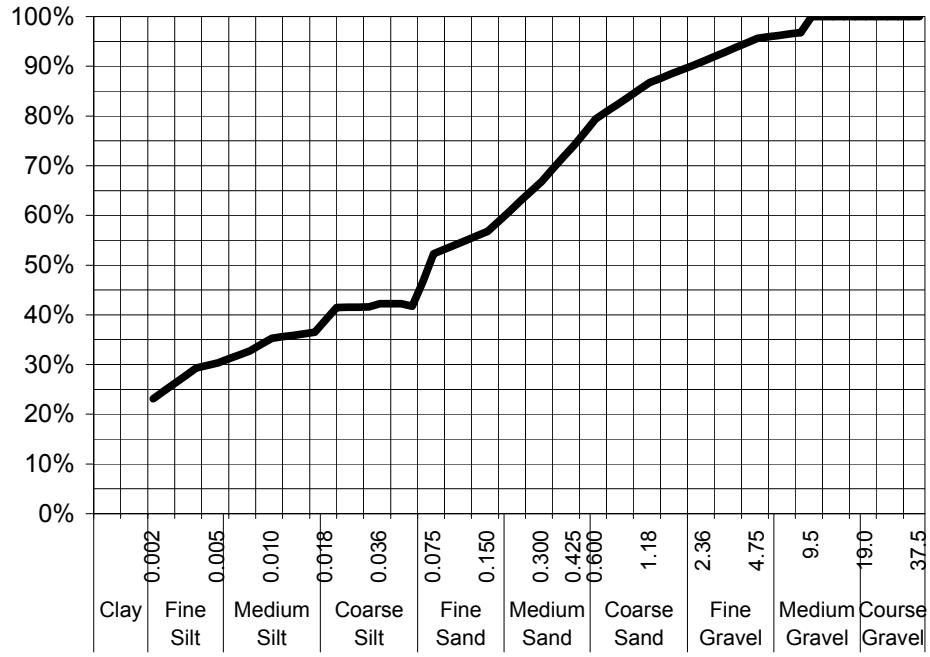
5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	Julian Dobos	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811673-005 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH14 5.3-5.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	96%
2.36	91%
1.18	87%
0.600	79%
0.425	74%
0.300	67%
0.150	57%
0.075	52%
Particle Size (microns)	
36	42%
18	39%
10	35%
5	30%
3	29%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand silt & clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 4-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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Authorised Signatory

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ALS Environmental

Newcastle, NSW

CLIENT: Julian Dobos

COMPANY: URS Australia Pty Ltd (Qld)

ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

PROJECT: 42626228.52

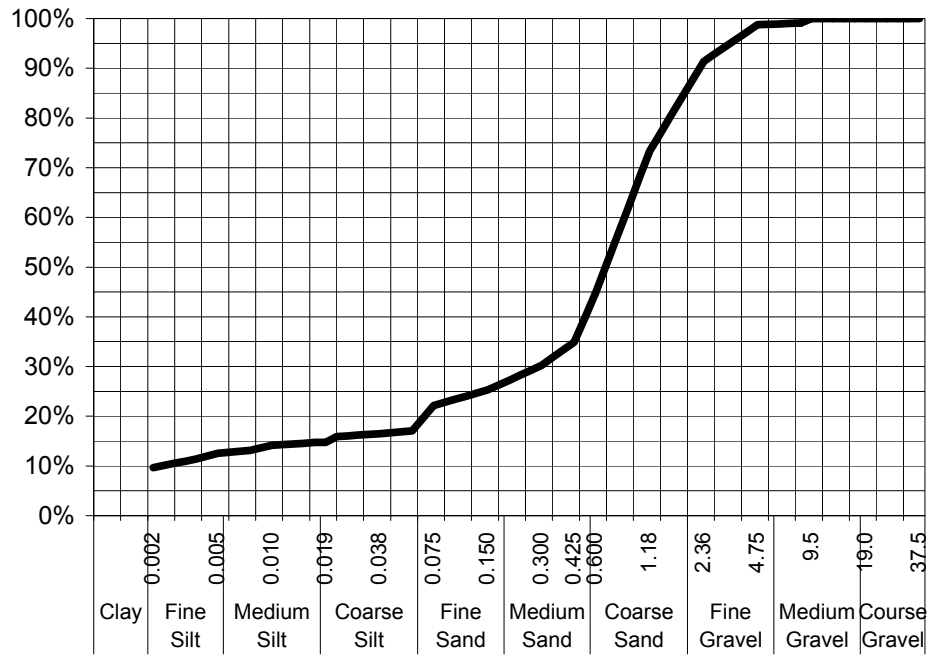
DATE REPORTED: 11-Sep-2008

DATE RECEIVED: 28-Aug-2008

REPORT NO: EB0811673-006 / PSD

SAMPLE ID: BH14 7.1-7.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	91%
1.18	73%
0.600	45%
0.425	35%
0.300	30%
0.150	25%
0.075	22%
Particle Size (microns)	
38	16%
19	15%
10	14%
5	13%
4	11%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand & silt

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 4-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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Authorised Signatory

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ALS Environmental

Newcastle, NSW

CLIENT: Julian Dobos

DATE REPORTED: 11-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 28-Aug-2008

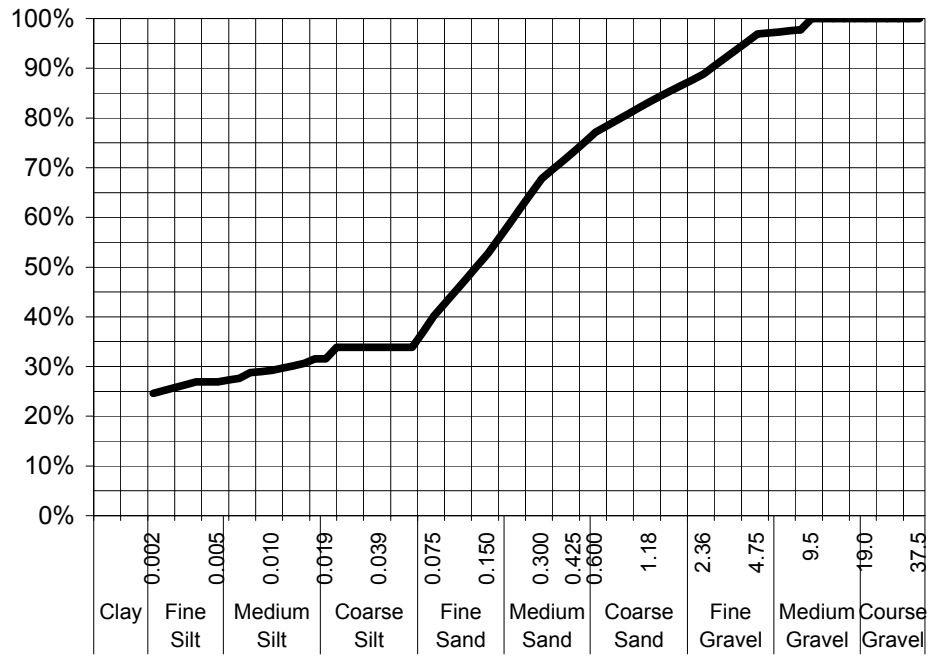
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811673-007 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH14 7.8-8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	97%
2.36	89%
1.18	83%
0.600	77%
0.425	73%
0.300	68%
0.150	53%
0.075	40%
Particle Size (microns)	
39	34%
19	32%
10	29%
5	27%
4	27%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Sand silt & clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 4-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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Authorised Signatory

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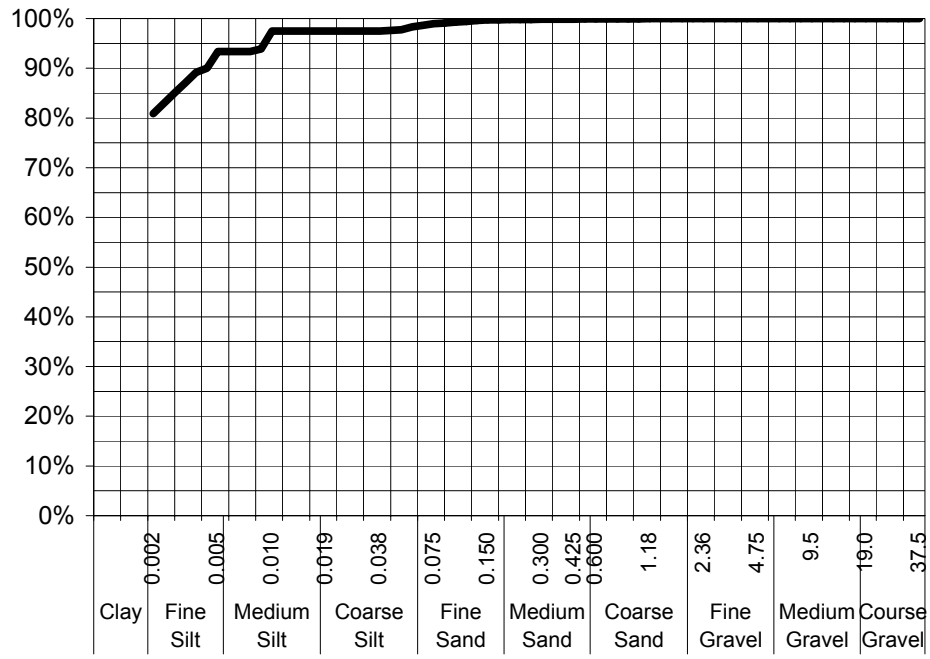
ALS Environmental

Newcastle, NSW

CLIENT:	Julian Dobos	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811673-008 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH14 8.2-8.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	100%
0.075	99%
Particle Size (microns)	
38	97%
19	97%
10	97%
5	93%
3	89%

Samples analysed as received.

Sample Comments:		**Analysed:**	4-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Ochre plastic clay	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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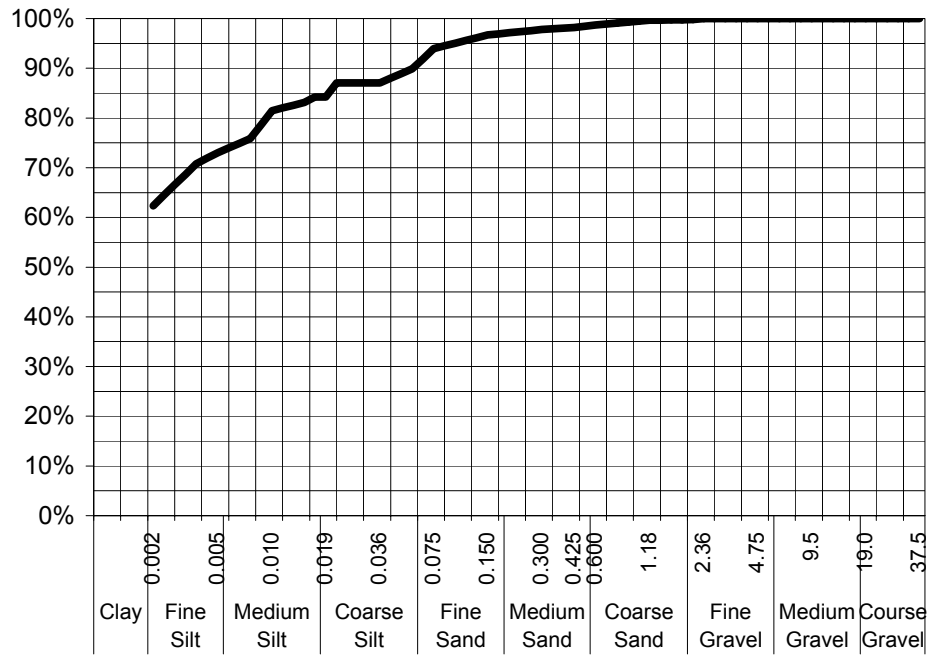
Newcastle, NSW

CLIENT:	Julian Dobos	**DATE REPORTED:**	11-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	28-Aug-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0811673-009 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH14 8.6-8.85

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	98%
0.300	98%
0.150	97%
0.075	94%
Particle Size (microns)	
36	87%
19	84%
10	81%
5	73%
3	71%

Samples analysed as received.

Sample Comments:		**Analysed:**	4-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Ochre plastic clay	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
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Authorised Signatory

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Newcastle, NSW

CLIENT: Julian Dobos

DATE REPORTED: 11-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 28-Aug-2008

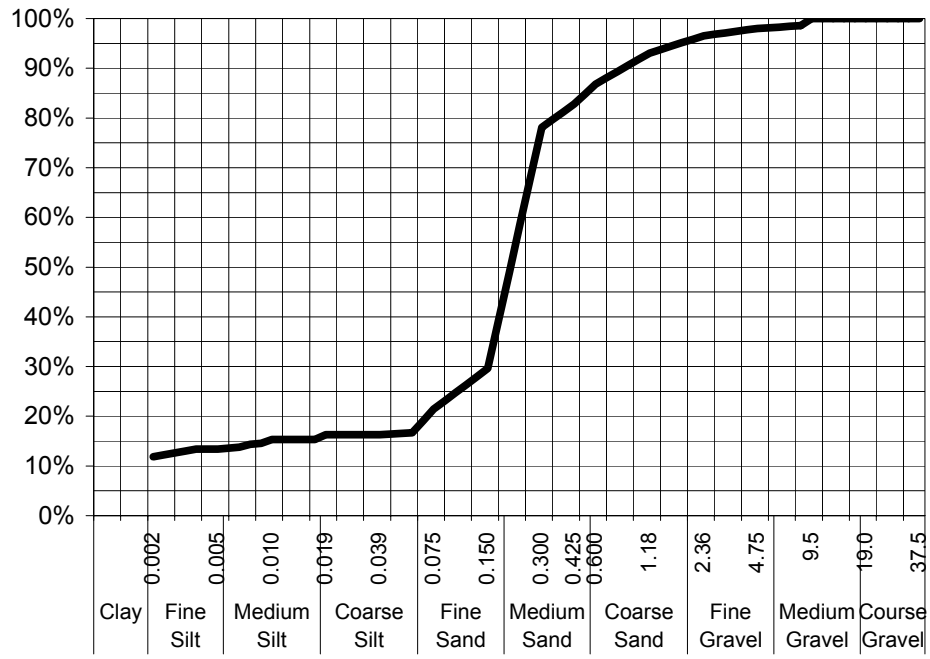
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811673-010 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC39

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	97%
1.18	93%
0.600	87%
0.425	83%
0.300	78%
0.150	30%
0.075	21%
Particle Size (microns)	
39	16%
19	16%
10	15%
5	13%
4	13%

Samples analysed as received.

Sample Comments:

Analysed: 4-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Sand

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

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Newcastle, NSW

CLIENT: Julian Dobos

DATE REPORTED: 11-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 28-Aug-2008

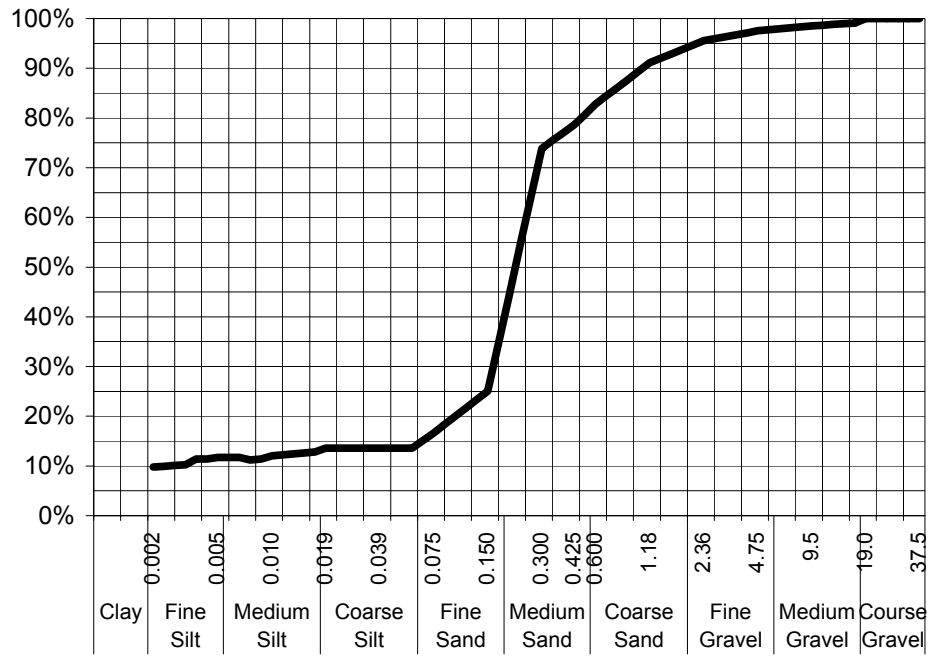
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811673-011 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC40

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	99%
4.75	98%
2.36	96%
1.18	91%
0.600	83%
0.425	79%
0.300	74%
0.150	25%
0.075	17%
Particle Size (microns)	
39	14%
19	14%
10	12%
5	12%
4	11%

Samples analysed as received.

Sample Comments:

Analysed: 4-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Sand

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 28-Aug-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811673	BH14 1-1.5	001	6%	85%	4%	5%
EB0811673	BH14 1.6-2	002	2%	77%	9%	12%
EB0811673	BH14 3.5-4	003	2%	36%	27%	35%
EB0811673	BH14 4.1-4.6	004	10%	26%	34%	30%
EB0811673	BH14 5.3-5.5	005	9%	39%	29%	23%
EB0811673	BH14 7.1-7.4	006	9%	70%	11%	10%
EB0811673	BH14 7.8-8	007	11%	53%	11%	25%
EB0811673	BH14 8.2-8.5	008	0%	4%	15%	81%
EB0811673	BH14 8.6-8.85	009	0%	6%	32%	62%
EB0811673	QC39	010	3%	76%	9%	12%
EB0811673	QC40	011	4%	80%	6%	10%

Remarks :
Test Procedure : AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0811673**	Page	: 1 of 12
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 28-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 12
Quote number	: EN/001/08	No. of samples analysed	: 12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Virginia Minerals - PREP

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 754118)									
EB0811673-001	BH14 1-1.5	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.5	9.5	0.0	0% - 20%
EB0811673-011	QC40	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.2	9.3	1.1	0% - 20%
EA033-B: Potential Acidity (QC Lot: 754118)									
EB0811673-001	BH14 1-1.5	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EB0811673-011	QC40	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.14	0.14	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	88	88	0.0	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 754118)									
EB0811673-001	BH14 1-1.5	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	15.6	15.5	0.2	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	4.99	4.98	0.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3110	3110	0.2	0% - 20%
EB0811673-011	QC40	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	8.34	8.32	0.3	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.67	2.66	0.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1670	1660	0.3	0% - 20%
EA055: Moisture Content (QC Lot: 746197)									
EB0811673-004	BH14 4.1-4.6	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	31.8	31.4	1.4	0% - 20%
EB0811673-011	QC40	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	23.8	24.9	4.3	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 747737)									
EB0811611-021	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 747737) - continued									
EB0811611-021	Anonymous	EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811673-009	BH14 8.6-8.85	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	14	10.6	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	22	23	4.9	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	21	26	21.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	12	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	170	144	16.6	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	54	48	13.6	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	8310	8280	0.4	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	27000	22200	19.8	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 747738)									
EB0811611-021	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811673-009	BH14 8.6-8.85	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.4	88.1	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 755276)									
EB0811673-001	BH14 1-1.5	EP005: Total Organic Carbon	----	0.02	%	0.30	0.32	6.4	0% - 50%
EB0811673-011	QC40	EP005: Total Organic Carbon	----	0.02	%	0.24	0.23	4.2	0% - 50%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 747352)									
EB0811611-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QC Lot: 747351)									
EB0811611-001	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-001	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 747351) - continued									
EB0811787-001	Anonymous	EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 747965)									
EB0811611-021	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-004	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QC Lot: 745651)									
EB0811511-001	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP090: Organotin Compounds (QC Lot: 745651) - continued									
EB0811673-010	QC39	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 752038)									
EB0811673-012	QC41	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0002	<0.0001	87.0	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EB0812016-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 752039)									
EB0811673-012	QC41	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 749264)									
EB0811611-023	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0811767-008	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 744968)									
EB0811673-012	QC41	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0	No Limit
EP090: Organotin Compounds (Soluble) (QC Lot: 744510)									
EB0811655-001	Anonymous	EP090S: Tributyltin	56573-85-4	2	ngSn/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 754118)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 754118)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 754118)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 747737)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	108	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	100	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	104	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	102	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	103	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	104	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	103	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 747738)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	105	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 755276)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 747352)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	80.9	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 747351)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	86.6	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	95.7	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	94.9	60.8	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 747351) - continued								
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	88.8	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	84.8	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	90.0	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	92.9	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	86.8	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	75.0	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	94.9	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747965)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	99.5	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	109	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	96.7	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	101	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	94.5	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	96.7	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	104	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	102	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	101	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	89.3	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	90.6	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	103	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	107	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	110	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	112	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	105	52	128
EP090: Organotin Compounds (QCLot: 745651)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	125	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 752038)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	92.0	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	85.1	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	91.0	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	97.1	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	96.4	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	90.6	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	96.8	81.5	117

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 752038) - continued								
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	104	81	127
EG020T: Total Metals by ICP-MS (QCLot: 752039)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 79.2	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 749264)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	112	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 744968)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	105	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 745858)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	----	10 µg/L	72.9	56.7	114
				<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 745857)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	95.1	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	103	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	103	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	93.1	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	93.4	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	90.5	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	96.7	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	97.0	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	80.1	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	103	47.3	137
EP090: Organotin Compounds (Soluble) (QCLot: 744510)								
EP090S: Tributyltin	56573-85-4	2	ngSn/L	<2	1470 ngSn/L	84.7	29	100

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 747737)							
EB0811611-022	Anonymous	EG005T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 747738)							
EB0811611-022	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 747352)							
EB0811611-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QCLot: 747351)							
EB0811611-002	Anonymous	EP068: gamma-BHC	58-89-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747965)							
EB0811611-022	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QCLot: 745651)							
EB0811511-002	Anonymous	EP090: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 752038)							
EB0811787-016	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 749264)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG035T: Total Recoverable Mercury by FIMS (QCLot: 749264) - continued							
EB0811611-023	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (Soluble) (QCLot: 744510)							
EB0811655-002	Anonymous	EP090S: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0811673**	Page	: 1 of 11
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 28-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 12
Quote number	: EN/001/08	No. of samples analysed	: 12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Pulp Bag								
BH14 5.3-5.5, BH14 7.8-8, BH14 8.6-8.85	BH14 7.1-7.4, BH14 8.2-8.5,	**27-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
Snap Lock Bag - frozen								
BH14 1-1.5, BH14 3.5-4, QC39,	BH14 1.6-2, BH14 4.1-4.6, QC40	**27-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
EA033-B: Potential Acidity								
Pulp Bag								
BH14 5.3-5.5, BH14 7.8-8, BH14 8.6-8.85	BH14 7.1-7.4, BH14 8.2-8.5,	**27-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
Snap Lock Bag - frozen								
BH14 1-1.5, BH14 3.5-4, QC39,	BH14 1.6-2, BH14 4.1-4.6, QC40	**27-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
EA033-C: Acid Neutralising Capacity								
Pulp Bag								
BH14 5.3-5.5, BH14 7.8-8, BH14 8.6-8.85	BH14 7.1-7.4, BH14 8.2-8.5,	**27-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
Snap Lock Bag - frozen								
BH14 1-1.5, BH14 3.5-4, QC39,	BH14 1.6-2, BH14 4.1-4.6, QC40	**27-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity							
Pulp Bag							
BH14 5.3-5.5, BH14 7.1-7.4, BH14 7.8-8, BH14 8.2-8.5, BH14 8.6-8.85	**27-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
Snap Lock Bag - frozen							
BH14 1-1.5, BH14 1.6-2, BH14 3.5-4, BH14 4.1-4.6, QC39, QC40	**27-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
EA033-E: Acid Base Accounting							
Pulp Bag							
BH14 5.3-5.5, BH14 7.1-7.4, BH14 7.8-8, BH14 8.2-8.5, BH14 8.6-8.85	**27-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
Snap Lock Bag - frozen							
BH14 1-1.5, BH14 1.6-2, BH14 3.5-4, BH14 4.1-4.6, QC39, QC40	**27-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH14 1-1.5, BH14 1.6-2, BH14 3.5-4, BH14 4.1-4.6, BH14 5.3-5.5, BH14 7.1-7.4, BH14 7.8-8, BH14 8.2-8.5, BH14 8.6-8.85, QC39, QC40	**27-AUG-2008**	**----**	----	----	**02-SEP-2008**	03-SEP-2008	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH14 1-1.5, BH14 1.6-2, BH14 3.5-4, BH14 4.1-4.6, BH14 5.3-5.5, BH14 7.1-7.4, BH14 7.8-8, BH14 8.2-8.5, BH14 8.6-8.85, QC39, QC40	**27-AUG-2008**	**04-SEP-2008**	23-FEB-2009	✓	**04-SEP-2008**	23-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH14 1-1.5, BH14 1.6-2, BH14 3.5-4, BH14 4.1-4.6, BH14 5.3-5.5, BH14 7.1-7.4, BH14 7.8-8, BH14 8.2-8.5, BH14 8.6-8.85, QC39, QC40	**27-AUG-2008**	**04-SEP-2008**	23-FEB-2009	✓	**04-SEP-2008**	24-SEP-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH14 1-1.5, BH14 1.6-2, BH14 3.5-4, BH14 4.1-4.6, BH14 5.3-5.5, BH14 7.1-7.4, BH14 7.8-8, BH14 8.2-8.5, BH14 8.6-8.85, QC39, QC40	**27-AUG-2008**	**16-SEP-2008**	---	----	**16-SEP-2008**	24-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
BH14 1-1.5, BH14 1.6-2, QC39, QC40	**27-AUG-2008**	**03-SEP-2008**	10-SEP-2008	✓	**05-SEP-2008**	13-OCT-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH14 1-1.5, BH14 1.6-2, QC39, QC40	**27-AUG-2008**	**03-SEP-2008**	10-SEP-2008	✓	**05-SEP-2008**	13-OCT-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH14 1-1.5, BH14 1.6-2, BH14 3.5-4, QC39, QC40	**27-AUG-2008**	**04-SEP-2008**	10-SEP-2008	✓	**09-SEP-2008**	14-OCT-2008	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH14 1-1.5, BH14 1.6-2, QC39, QC40	**27-AUG-2008**	**02-SEP-2008**	10-SEP-2008	✓	**05-SEP-2008**	12-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC41	**27-AUG-2008**	**10-SEP-2008**	23-FEB-2009	✓	**10-SEP-2008**	23-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC41	**27-AUG-2008**	**----**	----	----	**05-SEP-2008**	24-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC41	**27-AUG-2008**	**----**	----	----	**01-SEP-2008**	24-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC41	**27-AUG-2008**	**02-SEP-2008**	03-SEP-2008	✓	**04-SEP-2008**	12-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC41	**27-AUG-2008**	**02-SEP-2008**	03-SEP-2008	✓	**04-SEP-2008**	12-OCT-2008	✓
EP090: Organotin Compounds (Soluble)							
Amber Glass Bottle - Unpreserved							
QC41	**27-AUG-2008**	**01-SEP-2008**	26-OCT-2008	✓	**05-SEP-2008**	11-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	16	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	**7.1**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Compounds (Soluble)	EP090S	1	4	**25.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Organotin Compounds (Soluble)	EP090S	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Organotin Sample Preparation	ORG34	WATER	In-house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	849162-002	----	**Silver**	7440-22-4	79.2 %	120-123%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	EB0811673-001	BH14 1-1.5	**Phenol-d6**	13127-88-3	126 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0811673-001	BH14 1-1.5	**2-Fluorobiphenyl**	321-60-8	122 %	30-115 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EB0811787**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 29-AUG-2008	Issue Date	: 02-SEP-2008 12:09
Client Requested Due Date	: 05-SEP-2008	Scheduled Reporting Date	: **12-SEP-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 5.8 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 17
Sercurity Seal	: Intact.	No. of samples analysed	: 16

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Please be advised that an extra sample id BH13 12-5-12.7 was received. This sample will be put on hold unless notified otherwise.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	(On Hold) SOIL No analysis requested	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins
EB0811787-001	28-AUG-2008 15:00	BH13 1.0-1.6		✓	✓	✓	✓	✓	✓	✓
EB0811787-002	28-AUG-2008 15:00	BH13 1.6-2.3		✓	✓	✓	✓	✓	✓	✓
EB0811787-003	28-AUG-2008 15:00	BH13 4.9-5.3		✓	✓	✓			✓	
EB0811787-004	28-AUG-2008 15:00	BH13 7.3-7.4		✓	✓	✓			✓	
EB0811787-005	28-AUG-2008 15:00	BH13 7.7-8.05		✓	✓	✓			✓	
EB0811787-006	28-AUG-2008 15:00	BH13 8.05-8.3		✓	✓	✓			✓	
EB0811787-007	28-AUG-2008 15:00	BH13 8.3-8.6		✓	✓	✓			✓	
EB0811787-008	28-AUG-2008 15:00	BH13 9.0-9.15		✓	✓	✓			✓	
EB0811787-009	28-AUG-2008 15:00	BH13 11.2-11.3		✓	✓	✓			✓	
EB0811787-010	28-AUG-2008 15:00	BH13 11.3-11.4		✓	✓	✓			✓	
EB0811787-011	28-AUG-2008 15:00	BH13 11.9-12.07		✓	✓	✓			✓	
EB0811787-012	28-AUG-2008 15:00	BH13 11.9-12.07 CU...		✓	✓	✓			✓	
EB0811787-013	28-AUG-2008 15:00	BH13 12.95-14.3 CU...		✓	✓	✓			✓	
EB0811787-014	28-AUG-2008 15:00	QC 42		✓	✓	✓	✓	✓	✓	✓
EB0811787-015	28-AUG-2008 15:00	QC 43		✓	✓	✓	✓	✓	✓	✓
EB0811787-017	28-AUG-2008 15:00	BH13 12.5-12.7	✓							

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - S-02 8 Metals (incl. Digestion)
EB0811787-001	28-AUG-2008 15:00	BH13 1.0-1.6	✓
EB0811787-002	28-AUG-2008 15:00	BH13 1.6-2.3	✓
EB0811787-003	28-AUG-2008 15:00	BH13 4.9-5.3	✓
EB0811787-004	28-AUG-2008 15:00	BH13 7.3-7.4	✓
EB0811787-005	28-AUG-2008 15:00	BH13 7.7-8.05	✓
EB0811787-006	28-AUG-2008 15:00	BH13 8.05-8.3	✓
EB0811787-007	28-AUG-2008 15:00	BH13 8.3-8.6	✓
EB0811787-008	28-AUG-2008 15:00	BH13 9.0-9.15	✓

			SOIL - S-02 8 Metals (incl. Digestion)
EB0811787-009	28-AUG-2008 15:00	BH13 11.2-11.3	✓
EB0811787-010	28-AUG-2008 15:00	BH13 11.3-11.4	✓
EB0811787-011	28-AUG-2008 15:00	BH13 11.9-12.07	✓
EB0811787-012	28-AUG-2008 15:00	BH13 11.9-12.07 CU...	✓
EB0811787-013	28-AUG-2008 15:00	BH13 12.95-14.3 CU...	✓
EB0811787-014	28-AUG-2008 15:00	QC 42	✓
EB0811787-015	28-AUG-2008 15:00	QC 43	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0811787-016	28-AUG-2008 15:00	QC 44	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0811787**	Page	: 1 of 13
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 29-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 17
Quote number	: EN/001/08	No. of samples analysed	: 16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EG005T (Total Metals): Sample EB0811705-013 shows poor matrix spike recovery due to matrix interference. Confirmed by visual inspection.**
- **EG005T (Total Metals): Sample EB0811843-005 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.**
- **EG005T (Total Metals): Samples EB0811705-012 & EB0811787-008 (BH13 9.0-9.15) show poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.**
- **LCS recovery for total mercury by FIMS (EG035T) & EG020T (Total Metals) fall outside Dynamic Control Limits. This is however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides: Insufficient sample QC 44 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: **LIQUID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC 44	----	----	----	----
				Client sampling date / time: 28-AUG-2008 15:00	----	----	----	----
				EB0811787-016	**----**	**----**	**----**	**----**
EG020T: Total Metals by ICP-MS								
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0004**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.5	µg/L	<0.9	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.9	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.9	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.9	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.9	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.9	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.9	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**88.8**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**93.7**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**101**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH13 1.0-1.6	BH13 1.6-2.3	BH13 4.9-5.3	BH13 7.3-7.4	BH13 7.7-8.05
				Client sampling date / time: 28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00
				EB0811787-001	EB0811787-002	EB0811787-003	EB0811787-004	EB0811787-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.9	9.6	9.6	9.6	9.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.10	0.16	0.16	0.10	0.48
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	65	104	98	63	296
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	17.1	24.0	23.1	22.4	8.56
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3420	4790	4620	4480	1710
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	5.48	7.69	7.41	7.19	2.74
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	22.2	21.2	19.5	22.5	31.6
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	2580	2840	2490	4660	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	18	26	11	10	9
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	8	7	7	10	20
Copper	7440-50-8	5	mg/kg	<5	<5	<5	11	25
Iron	7439-89-6	50	mg/kg	16500	15800	10200	14100	----
Lead	7439-92-1	5	mg/kg	<5	<5	<5	<5	8
Manganese	7439-96-5	5	mg/kg	1730	808	934	840	----
Nickel	7440-02-0	2	mg/kg	6	5	5	6	10
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	10	6	<5	12	30
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.09	0.28	0.25	0.28	0.48

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH13 1.0-1.6	BH13 1.6-2.3	BH13 4.9-5.3	BH13 7.3-7.4	BH13 7.7-8.05
				Client sampling date / time: 28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00
				EB0811787-001	EB0811787-002	EB0811787-003	EB0811787-004	EB0811787-005
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----
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	----	----	----
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	----	----	----
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**58.4**	**53.2**	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**78.4**	**71.8**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH13 1.0-1.6	BH13 1.6-2.3	BH13 4.9-5.3	BH13 7.3-7.4	BH13 7.7-8.05
				Client sampling date / time: 28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00
				EB0811787-001	EB0811787-002	EB0811787-003	EB0811787-004	EB0811787-005
EP068T: Organophosphorus Pesticide Surrogate - Continued								
DEF	78-48-8	0.1	%	**82.4**	**73.8**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**91.4**	**97.7**	**93.0**	**98.4**	**84.4**
2-Chlorophenol-D4	93951-73-6	0.1	%	**85.6**	**93.6**	**86.0**	**92.3**	**80.3**
2.4.6-Tribromophenol	118-79-6	0.1	%	**78.3**	**87.7**	**56.6**	**86.0**	**39.5**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**84.9**	**94.3**	**77.2**	**92.6**	**58.1**
Anthracene-d10	1719-06-8	0.1	%	**79.5**	**86.0**	**56.8**	**88.4**	**38.9**
4-Terphenyl-d14	1718-51-0	0.1	%	**98.3**	**107**	**67.6**	**107**	**43.8**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**108**	**94.9**	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH13 8.05-8.3	BH13 8.3-8.6	BH13 9.0-9.15	BH13 11.2-11.3	BH13 11.3-11.4
Client sampling date / time				28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00
				EB0811787-006	EB0811787-007	EB0811787-008	EB0811787-009	EB0811787-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.4	9.4	9.5	9.6	8.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.17	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	105	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	10.4	9.93	6.04	1.73	0.25
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	2070	1980	1210	346	49
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	3.32	3.18	1.93	0.55	0.08
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	17.6	15.7	15.0	14.2	16.1
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	4600	----	3300	3200	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	8	11	7	9	28
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	11	10	9	8	10
Copper	7440-50-8	5	mg/kg	15	20	16	6	10
Iron	7439-89-6	50	mg/kg	14800	----	15500	16000	----
Lead	7439-92-1	5	mg/kg	7	8	5	<5	6
Manganese	7439-96-5	5	mg/kg	472	----	2490	76	----
Nickel	7440-02-0	2	mg/kg	13	16	9	7	11
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	18	27	14	17	28
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.19	0.11	0.09	0.02	<0.02

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH13 8.05-8.3	BH13 8.3-8.6	BH13 9.0-9.15	BH13 11.2-11.3	BH13 11.3-11.4
				Client sampling date / time: 28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00
				EB0811787-006	EB0811787-007	EB0811787-008	EB0811787-009	EB0811787-010
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**117**	**95.4**	**95.7**	**96.7**	**95.2**
2-Chlorophenol-D4	93951-73-6	0.1	%	**112**	**85.6**	**86.0**	**84.1**	**87.5**
2.4.6-Tribromophenol	118-79-6	0.1	%	**98.5**	**81.6**	**84.3**	**78.0**	**79.7**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**106**	**88.9**	**90.5**	**85.0**	**88.7**
Anthracene-d10	1719-06-8	0.1	%	**94.6**	**82.0**	**86.0**	**82.5**	**83.8**
4-Terphenyl-d14	1718-51-0	0.1	%	**118**	**101**	**105**	**98.1**	**103**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	BH13 11.9-12.07	BH13 11.9-12.07 CUTTINGS	BH13 12.95-14.3 CUTTINGS	QC 42	QC 43
				Client sampling date / time	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00
					EB0811787-011	EB0811787-012	EB0811787-013	EB0811787-014	EB0811787-015
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		8.2	9.3	8.6	9.6	9.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t		<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.02	% S		<0.02	<0.02	<0.02	0.07	0.12
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		<10	<10	<10	41	74
EA033-C: Acid Neutralising Capacity									
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3		0.15	0.40	0.25	20.8	18.9
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t		30	79	49	4160	3780
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S		0.05	0.13	0.08	6.67	6.06
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S		<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t		<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t		<1	<1	<1	<1	<1
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		19.5	15.5	21.0	21.9	25.2
EG005T: Total Metals by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		3030	----	3940	4600	2660
Antimony	7440-36-0	5	mg/kg		<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg		23	12	8	14	22
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		7	10	8	11	6
Copper	7440-50-8	5	mg/kg		12	8	10	7	<5
Iron	7439-89-6	50	mg/kg		32400	----	26000	16800	12900
Lead	7439-92-1	5	mg/kg		<5	<5	5	<5	<5
Manganese	7439-96-5	5	mg/kg		170	----	188	624	934
Nickel	7440-02-0	2	mg/kg		11	11	15	7	5
Silver	7440-22-4	2	mg/kg		<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg		24	28	31	14	6
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)									

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	BH13 11.9-12.07	BH13 11.9-12.07 CUTTINGS	BH13 12.95-14.3 CUTTINGS	QC 42	QC 43
				Client sampling date / time	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00
					EB0811787-011	EB0811787-012	EB0811787-013	EB0811787-014	EB0811787-015
EP005: Total Organic Carbon (TOC) - Continued									
Total Organic Carbon	----	0.02	%		**0.04**	**0.08**	**0.04**	**0.15**	**0.40**
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		----	----	----	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		----	----	----	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	<0.05	<0.05
trans-Chlordane	5103-74-2	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
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
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
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
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		----	----	----	<0.5	<0.5
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	**49.9**	**55.2**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	BH13 11.9-12.07	BH13 11.9-12.07 CUTTINGS	BH13 12.95-14.3 CUTTINGS	QC 42	QC 43
				Client sampling date / time	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00	28-AUG-2008 15:00
					EB0811787-011	EB0811787-012	EB0811787-013	EB0811787-014	EB0811787-015
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		----	----	----	**67.7**	**73.2**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		----	----	----	**70.6**	**74.9**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**99.2**	**102**	**101**	**94.5**	**81.0**
2-Chlorophenol-D4	93951-73-6	0.1	%		**90.6**	**91.9**	**93.6**	**98.3**	**88.3**
2.4.6-Tribromophenol	118-79-6	0.1	%		**84.2**	**81.8**	**81.7**	**91.6**	**75.6**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**93.1**	**95.4**	**96.0**	**86.4**	**77.8**
Anthracene-d10	1719-06-8	0.1	%		**88.0**	**92.8**	**90.1**	**97.2**	**84.8**
4-Terphenyl-d14	1718-51-0	0.1	%		**107**	**112**	**110**	**109**	**98.0**
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		----	----	----	**85.8**	**93.5**

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0811787**	Page	: 1 of 13
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 29-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 17
Quote number	: EN/001/08	No. of samples analysed	: 16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 751325)									
EB0811787-001	BH13 1.0-1.6	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.9	9.9	0.0	0% - 20%
EB0811787-011	BH13 11.9-12.07	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.2	8.1	1.2	0% - 20%
EA033-B: Potential Acidity (QC Lot: 751325)									
EB0811787-001	BH13 1.0-1.6	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.10	0.09	10.5	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	65	59	10.5	No Limit
EB0811787-011	BH13 11.9-12.07	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 751325)									
EB0811787-001	BH13 1.0-1.6	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	17.1	17.1	0.1	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	5.48	5.47	0.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3420	3410	0.1	0% - 20%
EB0811787-011	BH13 11.9-12.07	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.15	0.10	40.2	0% - 50%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.05	0.03	40.2	No Limit
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	30	20	40.2	No Limit
EA055: Moisture Content (QC Lot: 747313)									
EB0811699-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-004	BH13 7.3-7.4	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	22.5	23.9	6.3	0% - 20%
EA055: Moisture Content (QC Lot: 747314)									
EB0811826-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0811862-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 747747)									
EB0811705-012	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 747747) - continued									
EB0811705-012	Anonymous	EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-008	BH13 9.0-9.15	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	9	9	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	10	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	16	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	5	6	18.1	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	2490	1570	# 45.5	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	14	15	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	3300	3230	1.8	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	15500	17200	10.3	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 747748)									
EB0811705-012	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-008	BH13 9.0-9.15	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 746062)									
EB0811787-001	BH13 1.0-1.6	EP005: Total Organic Carbon	----	0.02	%	0.09	0.09	0.0	No Limit
EB0811787-011	BH13 11.9-12.07	EP005: Total Organic Carbon	----	0.02	%	0.04	0.04	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 747352)									
EB0811611-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-001	BH13 1.0-1.6	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 747351)									
EB0811611-001	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-001	BH13 1.0-1.6	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 747351) - continued									
EB0811787-001	BH13 1.0-1.6	EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 747965)									
EB0811611-021	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-004	BH13 7.3-7.4	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 747965) - continued									
EB0811787-004	BH13 7.3-7.4	EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 747967)									
EB0811787-014	QC 42	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 747256)									
EB0811787-014	QC 42	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit
EB0811799-006	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 752038)									
EB0811673-012	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812016-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 752038) - continued									
EB0812016-002	Anonymous	EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 752039)									
EB0811673-012	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 753008)									
EB0811705-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-016	QC 44	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 745628)									
EB0811772-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0811772-010	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 751325)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 751325)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 751325)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 747747)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	109	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	99.3	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	104	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	103	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	103	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	104	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	102	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 747748)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	# 79.4	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 746062)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 747352)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	80.9	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 747351)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	86.6	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	95.7	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	94.9	60.8	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Recovery Limits (%)
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 747351) - continued								
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	88.8	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	84.8	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	90.0	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	92.9	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	86.8	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	75.0	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	94.9	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747965)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	99.5	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	109	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	96.7	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	101	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	94.5	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	96.7	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	104	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	102	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	101	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	89.3	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	90.6	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	103	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	107	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	110	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	112	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	105	52	128
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747967)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	96.2	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	99.5	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	103	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	108	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	105	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	102	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	108	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	109	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	106	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	101	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	100	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	104	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	109	55	116

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747967) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	101	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	105	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	101	52	128
EP090: Organotin Compounds (QCLot: 747256)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	116	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 752038)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	92.0	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	85.1	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	91.0	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	97.1	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	96.4	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	90.6	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	96.8	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	104	81	127
EG020T: Total Metals by ICP-MS (QCLot: 752039)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 79.2	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 753008)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	106	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 745628)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	105	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 747004)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	66.5	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 747003)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	104	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	105	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	108	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	110	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	111	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	86.0	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	121	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	122	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	77.9	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	122	47.3	137

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 747747)							
EB0811705-013	Anonymous	EG005T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 747748)							
EB0811705-013	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 747352)							
EB0811611-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QCLot: 747351)							
EB0811611-002	Anonymous	EP068: gamma-BHC	58-89-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747965)							
EB0811611-022	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747967)							
EB0811787-015	QC 43	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	99.5	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	117	70	130
EP090: Organotin Compounds (QCLot: 747256)							
EB0811787-015	QC 43	EP090: Tributyltin	56573-85-4	25 µgSn/kg	122	20	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 752038)							
EB0811787-016	QC 44	EG020A-T: Arsenic	7440-38-2	1.000 mg/L	112	70	130
		EG020A-T: Cadmium	7440-43-9	0.500 mg/L	109	70	130
		EG020A-T: Chromium	7440-47-3	1.000 mg/L	112	70	130
		EG020A-T: Copper	7440-50-8	1.000 mg/L	119	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 752038) - continued							
EB0811787-016	QC 44	EG020A-T: Lead	7439-92-1	1.000 mg/L	109	70	130
		EG020A-T: Nickel	7440-02-0	1.000 mg/L	118	70	130
		EG020A-T: Zinc	7440-66-6	1.000 mg/L	115	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 753008)							
EB0811705-002	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QCLot: 747003)							
EB0811816-001	Anonymous	EP068: gamma-BHC	58-89-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0811787**	Page	: 1 of 10
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 29-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 18-DEC-2008
Order number	: ----		
		No. of samples received	: 17
Quote number	: EN/001/08	No. of samples analysed	: 16

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
Snap Lock Bag - frozen							
BH13 1.0-1.6, BH13 1.6-2.3, BH13 4.9-5.3, BH13 7.3-7.4, BH13 7.7-8.05, BH13 8.05-8.3, BH13 8.3-8.6, BH13 9.0-9.15, BH13 11.2-11.3, BH13 11.3-11.4, BH13 11.9-12.07, BH13 11.9-12.07 - CUTTINGS, BH13 12.95-14.3 - CUTTINGS, QC 42, QC 43	**28-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
EA033-B: Potential Acidity							
Snap Lock Bag - frozen							
BH13 1.0-1.6, BH13 1.6-2.3, BH13 4.9-5.3, BH13 7.3-7.4, BH13 7.7-8.05, BH13 8.05-8.3, BH13 8.3-8.6, BH13 9.0-9.15, BH13 11.2-11.3, BH13 11.3-11.4, BH13 11.9-12.07, BH13 11.9-12.07 - CUTTINGS, BH13 12.95-14.3 - CUTTINGS, QC 42, QC 43	**28-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
EA033-C: Acid Neutralising Capacity							
Snap Lock Bag - frozen							
BH13 1.0-1.6, BH13 1.6-2.3, BH13 4.9-5.3, BH13 7.3-7.4, BH13 7.7-8.05, BH13 8.05-8.3, BH13 8.3-8.6, BH13 9.0-9.15, BH13 11.2-11.3, BH13 11.3-11.4, BH13 11.9-12.07, BH13 11.9-12.07 - CUTTINGS, BH13 12.95-14.3 - CUTTINGS, QC 42, QC 43	**28-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity							
Snap Lock Bag - frozen							
BH13 1.0-1.6, BH13 1.6-2.3, BH13 4.9-5.3, BH13 7.3-7.4, BH13 7.7-8.05, BH13 8.05-8.3, BH13 8.3-8.6, BH13 9.0-9.15, BH13 11.2-11.3, BH13 11.3-11.4, BH13 11.9-12.07, BH13 11.9-12.07 - CUTTINGS, BH13 12.95-14.3 - CUTTINGS, QC 42, QC 43	**28-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
EA033-E: Acid Base Accounting							
Snap Lock Bag - frozen							
BH13 1.0-1.6, BH13 1.6-2.3, BH13 4.9-5.3, BH13 7.3-7.4, BH13 7.7-8.05, BH13 8.05-8.3, BH13 8.3-8.6, BH13 9.0-9.15, BH13 11.2-11.3, BH13 11.3-11.4, BH13 11.9-12.07, BH13 11.9-12.07 - CUTTINGS, BH13 12.95-14.3 - CUTTINGS, QC 42, QC 43	**28-AUG-2008**	**29-AUG-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH13 1.0-1.6, BH13 1.6-2.3, BH13 4.9-5.3, BH13 7.3-7.4, BH13 7.7-8.05, BH13 8.05-8.3, BH13 8.3-8.6, BH13 9.0-9.15, BH13 11.2-11.3, BH13 11.3-11.4, BH13 11.9-12.07, BH13 11.9-12.07 - CUTTINGS, BH13 12.95-14.3 - CUTTINGS, QC 42, QC 43	**28-AUG-2008**	**----**	----	----	**03-SEP-2008**	04-SEP-2008	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH13 1.0-1.6, BH13 1.6-2.3, BH13 4.9-5.3, BH13 7.3-7.4, BH13 7.7-8.05, BH13 8.05-8.3, BH13 8.3-8.6, BH13 9.0-9.15, BH13 11.2-11.3, BH13 11.3-11.4, BH13 11.9-12.07, BH13 11.9-12.07 - CUTTINGS, BH13 12.95-14.3 - CUTTINGS, QC 42, QC 43	**28-AUG-2008**	**04-SEP-2008**	24-FEB-2009	✓	**04-SEP-2008**	24-FEB-2009	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH13 1.0-1.6, BH13 1.6-2.3, BH13 4.9-5.3, BH13 7.3-7.4, BH13 7.7-8.05, BH13 8.05-8.3, BH13 8.3-8.6, BH13 9.0-9.15, BH13 11.2-11.3, BH13 11.3-11.4, BH13 11.9-12.07, BH13 11.9-12.07 - CUTTINGS, BH13 12.95-14.3 - CUTTINGS, QC 42, QC 43	**28-AUG-2008**	**04-SEP-2008**	24-FEB-2009	✓	**05-SEP-2008**	25-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH13 1.0-1.6, BH13 1.6-2.3, BH13 4.9-5.3, BH13 7.3-7.4, BH13 7.7-8.05, BH13 8.05-8.3, BH13 8.3-8.6, BH13 9.0-9.15, BH13 11.2-11.3, BH13 11.3-11.4, BH13 11.9-12.07, BH13 11.9-12.07 - CUTTINGS, BH13 12.95-14.3 - CUTTINGS, QC 42, QC 43	**28-AUG-2008**	**02-SEP-2008**	---	----	**02-SEP-2008**	25-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
BH13 1.0-1.6, BH13 1.6-2.3, QC 42, QC 43	**28-AUG-2008**	**03-SEP-2008**	11-SEP-2008	✓	**05-SEP-2008**	13-OCT-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH13 1.0-1.6, BH13 1.6-2.3, QC 42, QC 43	**28-AUG-2008**	**03-SEP-2008**	11-SEP-2008	✓	**05-SEP-2008**	13-OCT-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
QC 42, QC 43	**28-AUG-2008**	**04-SEP-2008**	11-SEP-2008	✓	**08-SEP-2008**	14-OCT-2008	✓
Soil Glass Jar - Unpreserved							
BH13 1.0-1.6, BH13 1.6-2.3, BH13 4.9-5.3, BH13 7.3-7.4, BH13 7.7-8.05, BH13 8.05-8.3, BH13 8.3-8.6, BH13 9.0-9.15, BH13 11.2-11.3, BH13 11.3-11.4, BH13 11.9-12.07, BH13 11.9-12.07 - CUTTINGS, BH13 12.95-14.3 - CUTTINGS	**28-AUG-2008**	**04-SEP-2008**	11-SEP-2008	✓	**09-SEP-2008**	14-OCT-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH13 1.0-1.6, BH13 1.6-2.3, QC 42, QC 43	**28-AUG-2008**	**03-SEP-2008**	11-SEP-2008	✓	**09-SEP-2008**	13-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC 44	**28-AUG-2008**	**10-SEP-2008**	24-FEB-2009	✓	**10-SEP-2008**	24-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC 44	**28-AUG-2008**	**----**	----	----	**10-SEP-2008**	25-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC 44	**28-AUG-2008**	**----**	----	----	**02-SEP-2008**	25-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC 44	**28-AUG-2008**	**04-SEP-2008**	04-SEP-2008	✓	**05-SEP-2008**	14-OCT-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC 44	**28-AUG-2008**	**04-SEP-2008**	04-SEP-2008	✓	**05-SEP-2008**	14-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	4	40	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	3	26	**11.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	26	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	26	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	11	**9.1**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	26	**7.7**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Pesticides	EP068	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Pesticides	EP068	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Pesticides	EP068	1	10	**10.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0811787-008	BH13 9.0-9.15	**Manganese**	7439-96-5	45.5 %	0-20%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EG035T: Total Recoverable Mercury by FIMS	843933-002	----	**Mercury**	7439-97-6	79.4 %	79.5-129%	**Recovery less than lower control limit**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	849162-002	----	**Silver**	7440-22-4	79.2 %	120-123%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **SOLID**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	EB0811787-006	BH13 8.05-8.3	**Phenol-d6**	13127-88-3	117 %	24-113 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259

All results to be provided in MRED format
email address: julian_dobos@urscorp.com

TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard

COC SEQUENCE NUMBER: (1) 2 3 4 — please circle 1

FOR LABORATORY USE ONLY
Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: Christian	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 30.8.8 TIME: 8:00	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

SAMPLE DETAILS / CONTAINER TYPE & PRESERVATIVE

	LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) Tac	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1		BH 19 0.3-0.5	29/08/08	S	1	1										✓	✓	✓	✓	✓	✓	✓		✓					
2		BH 19 0.5-0.9	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
3		BH 19 1.3-1.43	"	"		1										✓	✓	✓	✓	✓	✓	✓		✓					
4		BH 19 3.95-4.4	"	"	2											✓	✓					✓		✓				✓	
5		QC 45	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
6		QC 46	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓					
7		QC 47	"	L			2	1	1								✓		✓	✓	✓	✓							
		TOTAL																											

Environmental Division
Brisbane
NK Work Order
EB0811799

Telephone : +61-7-3243 7222

URS Australia Pty. Ltd.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0811799**	Page	: 1 of 11
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.5200	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 30-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 7
Quote number	: EN/001/08	No. of samples analysed	: 7

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **It has been noted that the duplicate for sample BH19 0.3-0.5 has failed for Al & Mn. ALS is unable to repeat the analysis as the samples have been disposed.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB's: Insufficient sample QC 47 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Pesticides/PCB's: Sample BH19 1.3-1.43 has insufficient volume for analysis.**
- **Pesticides: Sample BH19 0.5-0.9 shows poor matrix spike recovery due to sample matrix interference. Confirmed by visual inspection.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC 47	----	----	----	----
				Client sampling date / time	29-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0811799-007	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0198**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.003**	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<1.0	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<1.0	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<1.0	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<1.0	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<1.0	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<1.0	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L		<1.0	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**93.2**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**89.4**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**85.6**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH19 0.3-0.5	BH19 0.5-0.9	BH19 1.3-1.43	BH19 3.95-4.4	QC 45
				Client sampling date / time: 29-AUG-2008 15:00	29-AUG-2008 15:00	29-AUG-2008 15:00	29-AUG-2008 15:00	29-AUG-2008 15:00
				EB0811799-001	EB0811799-002	EB0811799-003	EB0811799-004	EB0811799-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.3	8.2	7.5	8.4	7.3
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.13	<0.02	0.03	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	82	<10	19	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	9.05	0.72	<0.01	<0.01	0.82
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1810	144	<10	<10	164
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.90	0.23	<0.01	<0.01	0.26
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.03	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	19	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	16.2	19.1	17.3	17.4	17.8
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	6530	7480	1920	930	7710
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	8	6	<5	6	8
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	15	21	18	7	23
Copper	7440-50-8	5	mg/kg	11	10	6	<5	10
Iron	7439-89-6	50	mg/kg	13000	22100	10400	4420	28600
Lead	7439-92-1	5	mg/kg	<5	<5	<5	<5	<5
Manganese	7439-96-5	5	mg/kg	117	30	11	<5	43
Nickel	7440-02-0	2	mg/kg	5	2	<2	<2	2
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	12	<5	<5	<5	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.22	0.06	0.03	0.03	0.05

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH19 0.3-0.5	BH19 0.5-0.9	BH19 1.3-1.43	BH19 3.95-4.4	QC 45
				Client sampling date / time: 29-AUG-2008 15:00	29-AUG-2008 15:00	29-AUG-2008 15:00	29-AUG-2008 15:00	29-AUG-2008 15:00
				EB0811799-001	EB0811799-002	EB0811799-003	EB0811799-004	EB0811799-005
EP006: Total Inorganic Carbon (TIC)								
^ Total Inorganic Carbon	----	0.02	%	----	----	----	<0.02	----
EP007: Total Carbon (TC)								
Total Carbon	----	0.02	%	----	----	----	**0.03**	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	----	----	<0.10
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<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
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	<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
Chrysene	218-01-9	0.5	mg/kg	<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
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<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
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<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
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	----	<0.5
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	----	<0.5
EP066S: PCB Surrogate								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH19 0.3-0.5	BH19 0.5-0.9	BH19 1.3-1.43	BH19 3.95-4.4	QC 45
				Client sampling date / time: 29-AUG-2008 15:00	29-AUG-2008 15:00	29-AUG-2008 15:00	29-AUG-2008 15:00	29-AUG-2008 15:00
				EB0811799-001	EB0811799-002	EB0811799-003	EB0811799-004	EB0811799-005
EP066S: PCB Surrogate - Continued								
Decachlorobiphenyl	2051-24-3	0.1	%	**73.2**	**61.1**	----	----	**65.5**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**95.3**	**79.6**	----	----	**84.0**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**103**	**84.7**	----	----	**89.5**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**67.5**	**72.9**	**71.9**	----	**81.8**
2-Chlorophenol-D4	93951-73-6	0.1	%	**56.5**	**57.8**	**53.4**	----	**69.9**
2.4.6-Tribromophenol	118-79-6	0.1	%	**59.4**	**83.6**	**84.9**	----	**91.1**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**52.1**	**66.0**	**70.1**	----	**82.2**
Anthracene-d10	1719-06-8	0.1	%	**94.4**	**114**	**110**	----	**106**
4-Terphenyl-d14	1718-51-0	0.1	%	**102**	**102**	**98.0**	----	**94.2**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**90.5**	**92.6**	**117**	----	**117**

Analytical Results

Sub-Matrix: SOLID			Client sample ID	QC 46	----	----	----	----
			Client sampling date / time	29-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB0811799-006	----	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**7.1**	----	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**0.45**	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**89**	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**0.14**	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**15.2**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**5840**	----	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	**9**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**22**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**6**	----	----	----	----
Iron	7439-89-6	50	mg/kg	**29500**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**5**	----	----	----	----
Manganese	7439-96-5	5	mg/kg	**45**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.05**	----	----	----	----

Analytical Results

Sub-Matrix: SOLID				Client sample ID	QC 46	----	----	----	----
				Client sampling date / time	29-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0811799-006	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	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	----	----	----	----
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	----	----	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**72.9**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**87.8**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									

Analytical Results

Sub-Matrix: SOLID				Client sample ID	QC 46	----	----	----	----
				Client sampling date / time	29-AUG-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0811799-006	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate - Continued									
DEF	78-48-8	0.1	%		**94.9**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**81.3**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**67.5**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**102**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**64.5**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**115**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**99.3**	----	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**95.7**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110

Sub-Matrix: **SOLID**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0811799**	Page	: 1 of 12
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.5200	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 30-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Order number	: ----		
		No. of samples received	: 7
Quote number	: EN/001/08	No. of samples analysed	: 7

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 754203)									
EB0811799-001	BH19 0.3-0.5	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.3	9.3	0.0	0% - 20%
EB0812007-005	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: pH KCl (23A)	----	0.1	pH Unit	Anonymous	Anonymous	Anonymous	Anonymous
EA033-B: Potential Acidity (QC Lot: 754203)									
EB0811799-001	BH19 0.3-0.5	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.13	0.14	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	82	85	2.9	No Limit
EB0812007-005	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
EA033-C: Acid Neutralising Capacity (QC Lot: 754203)									
EB0811799-001	BH19 0.3-0.5	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	9.05	8.65	4.5	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.90	2.77	4.5	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1810	1730	4.5	0% - 20%
EA055: Moisture Content (QC Lot: 747693)									
EB0811725-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0811799-006	QC 46	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	15.2	15.3	0.8	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 748272)									
EB0811799-001	BH19 0.3-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	15	14	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	4	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	8	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	11	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	117	155	# 28.2	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	12	8	37.8	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	6530	4970	# 27.2	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	13000	12000	8.0	0% - 20%
EB0811863-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 748272) - continued									
EB0811863-005	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 748273)									
EB0811799-001	BH19 0.3-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0811863-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 746058)									
EB0811799-001	BH19 0.3-0.5	EP005: Total Organic Carbon	----	0.02	%	0.22	0.21	4.6	0% - 50%
EP007: Total Carbon (TC) (QC Lot: 746059)									
EB0811799-004	BH19 3.95-4.4	EP007: Total Carbon	----	0.02	%	0.03	0.03	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 748090)									
EB0811799-001	BH19 0.3-0.5	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EB0811920-006	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QC Lot: 748089)									
EB0811799-001	BH19 0.3-0.5	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EB0811920-006	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 748089) - continued									
EB0811920-006	Anonymous	EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 747980)									
EB0811799-001	BH19 0.3-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0811863-006	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QC Lot: 747256)									
EB0811787-014	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0811799-006	QC 46	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 752966)									
EB0811706-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812038-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 752967)									
EB0812038-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812093-007	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 754452)									
EB0811799-007	QC 47	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0002	87.3	No Limit
EB0812093-008	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 746826)									
EB0811799-007	QC 47	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0	No Limit
EB0811822-009	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 754203)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 754203)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 754203)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 748272)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	111	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	102	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	106	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	103	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	103	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	106	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	104	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 748273)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	109	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 746058)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP007: Total Carbon (TC) (QCLot: 746059)								
EP007: Total Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 748090)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	74.4	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 748089)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 748089) - continued								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	95.4	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	106	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	104	60.8	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	98.4	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	94.4	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	108	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	100	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	95.1	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	96.4	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	99.2	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747980)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	80.0	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	79.2	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	94.6	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	80.6	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	96.7	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	86.9	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	95.3	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	92.9	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	80.5	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	89.2	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	84.7	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	89.9	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	97.9	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	83.8	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	84.4	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	87.0	52	128
EP090: Organotin Compounds (QCLot: 747256)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	116	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 752966)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	86.9	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	83.0	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	86.8	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	94.6	80.9	125

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 752966) - continued								
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	90.9	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	90.2	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	92.5	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	104	81	127
EG020T: Total Metals by ICP-MS (QCLot: 752967)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 72.8	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 754452)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	101	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 746826)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 748014)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	69.6	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 748013)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	89.6	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	89.2	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	90.6	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	90.6	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	91.2	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	81.5	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	97.8	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	91.9	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	87.2	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	94.7	47.3	137

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 748272)							
EB0811799-002	BH19 0.5-0.9	EG005T: Arsenic	7440-38-2	50 mg/kg	109	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	104	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	104	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	105	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	104	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	113	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	106	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	106	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 748273)							
EB0811799-002	BH19 0.5-0.9	EG035T: Mercury	7439-97-6	5.0 mg/kg	120	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 748090)							
EB0811799-002	BH19 0.5-0.9	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	84.3	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 748089)							
EB0811799-002	BH19 0.5-0.9	EP068: gamma-BHC	58-89-9	0.25 mg/kg	80.2	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	79.0	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	81.2	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	# 67.6	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 747980)							
EB0811799-002	BH19 0.5-0.9	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	115	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	106	70	130
EP090: Organotin Compounds (QCLot: 747256)							
EB0811787-015	Anonymous	EP090: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 752966)							
EB0811747-013	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG035T: Total Recoverable Mercury by FIMS (QCLot: 754452)							
EB0811799-007	QC 47	EG035T: Mercury	7439-97-6	0.0100 mg/L	123	70	130

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0811799**	Page	: 1 of 10
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.5200	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 30-AUG-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Order number	: ----		
		No. of samples received	: 7
Quote number	: EN/001/08	No. of samples analysed	: 7

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
Pulp Bag							
BH19 3.95-4.4	**29-AUG-2008**	**30-AUG-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH19 0.3-0.5, BH19 0.5-0.9, BH19 1.3-1.43, QC 45, QC 46	**29-AUG-2008**	**30-AUG-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
EA033-B: Potential Acidity							
Pulp Bag							
BH19 3.95-4.4	**29-AUG-2008**	**30-AUG-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH19 0.3-0.5, BH19 0.5-0.9, BH19 1.3-1.43, QC 45, QC 46	**29-AUG-2008**	**30-AUG-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
EA033-C: Acid Neutralising Capacity							
Pulp Bag							
BH19 3.95-4.4	**29-AUG-2008**	**30-AUG-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH19 0.3-0.5, BH19 0.5-0.9, BH19 1.3-1.43, QC 45, QC 46	**29-AUG-2008**	**30-AUG-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
EA033-D: Retained Acidity							
Pulp Bag							
BH19 3.95-4.4	**29-AUG-2008**	**30-AUG-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH19 0.3-0.5, BH19 0.5-0.9, BH19 1.3-1.43, QC 45, QC 46	**29-AUG-2008**	**30-AUG-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting							
Pulp Bag							
BH19 3.95-4.4	**29-AUG-2008**	**30-AUG-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH19 0.3-0.5, BH19 0.5-0.9, BH19 1.3-1.43, QC 45, QC 46	**29-AUG-2008**	**30-AUG-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
EA055: Moisture Content							
Snap Lock Bag							
BH19 1.3-1.43	**29-AUG-2008**	**----**	----	----	**04-SEP-2008**	05-SEP-2008	✓
Soil Glass Jar - Unpreserved							
BH19 0.3-0.5, BH19 0.5-0.9, BH19 3.95-4.4, QC 45, QC 46	**29-AUG-2008**	**----**	----	----	**04-SEP-2008**	05-SEP-2008	✓
EG005T: Total Metals by ICP-AES							
Pulp Bag							
BH19 1.3-1.43	**29-AUG-2008**	**04-SEP-2008**	25-FEB-2009	✓	**04-SEP-2008**	25-FEB-2009	✓
Soil Glass Jar - Unpreserved							
BH19 0.3-0.5, BH19 0.5-0.9, BH19 3.95-4.4, QC 45, QC 46	**29-AUG-2008**	**04-SEP-2008**	25-FEB-2009	✓	**04-SEP-2008**	25-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Pulp Bag							
BH19 1.3-1.43	**29-AUG-2008**	**04-SEP-2008**	25-FEB-2009	✓	**09-SEP-2008**	26-SEP-2008	✓
Soil Glass Jar - Unpreserved							
BH19 0.3-0.5, BH19 0.5-0.9, BH19 3.95-4.4, QC 45, QC 46	**29-AUG-2008**	**04-SEP-2008**	25-FEB-2009	✓	**09-SEP-2008**	26-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH19 0.3-0.5, BH19 0.5-0.9, BH19 1.3-1.43, BH19 3.95-4.4, QC 45, QC 46	**29-AUG-2008**	**02-SEP-2008**	---	----	**02-SEP-2008**	26-SEP-2008	✓
EP007: Total Carbon (TC)							
Pulp Bag							
BH19 3.95-4.4	**29-AUG-2008**	**02-SEP-2008**	---	----	**02-SEP-2008**	25-FEB-2009	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
BH19 0.3-0.5, BH19 0.5-0.9, QC 45, QC 46	**29-AUG-2008**	**04-SEP-2008**	12-SEP-2008	✓	**09-SEP-2008**	14-OCT-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH19 0.3-0.5, BH19 0.5-0.9, QC 45, QC 46	**29-AUG-2008**	**04-SEP-2008**	12-SEP-2008	✓	**09-SEP-2008**	14-OCT-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Snap Lock Bag							
BH19 1.3-1.43	**29-AUG-2008**	**04-SEP-2008**	12-SEP-2008	✓	**08-SEP-2008**	14-OCT-2008	✓
Soil Glass Jar - Unpreserved							
BH19 0.3-0.5, BH19 0.5-0.9, QC 45, QC 46	**29-AUG-2008**	**04-SEP-2008**	12-SEP-2008	✓	**08-SEP-2008**	14-OCT-2008	✓
EP090: Organotin Compounds							
Snap Lock Bag							
BH19 1.3-1.43	**29-AUG-2008**	**03-SEP-2008**	27-DEC-2008	✓	**09-SEP-2008**	13-OCT-2008	✓
Soil Glass Jar - Unpreserved							
BH19 0.3-0.5, BH19 0.5-0.9, QC 45, QC 46	**29-AUG-2008**	**03-SEP-2008**	12-SEP-2008	✓	**09-SEP-2008**	13-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC 47	**29-AUG-2008**	**10-SEP-2008**	25-FEB-2009	✓	**10-SEP-2008**	25-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC 47	**29-AUG-2008**	**----**	----	----	**11-SEP-2008**	26-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC 47	**29-AUG-2008**	**----**	----	----	**03-SEP-2008**	26-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC 47	**29-AUG-2008**	**04-SEP-2008**	05-SEP-2008	✓	**07-SEP-2008**	14-OCT-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC 47	**29-AUG-2008**	**04-SEP-2008**	05-SEP-2008	✓	**07-SEP-2008**	14-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Carbon	EP007	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	11	**9.1**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	**5.9**	**5.0**	✓	ALS QCS3 requirement

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Metals by ICP-AES	EG005T	1	17	**5.9**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Pesticides	EP068	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Pesticides	EP068	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Total Inorganic Carbon	EP006	SOIL	In-house. Determined as the difference between Total Carbon and Organic Carbon.
Total Carbon	EP007	SOIL	In-house. Dried and pulverised sample is combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved Carbon (as CO2) is measured by infra-red detector
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0811799-001	BH19 0.3-0.5	**Aluminium**	7429-90-5	27.2 %	0-20%	**RPD exceeds LOR based limits**
EG005T: Total Metals by ICP-AES	EB0811799-001	BH19 0.3-0.5	**Manganese**	7439-96-5	28.2 %	0-20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	EB0811799-002	BH19 0.5-0.9	**4.4`-DDT**	50-29-3	67.6 %	70-130%	**Recovery less than lower data quality objective**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	850073-002	----	**Silver**	7440-22-4	72.8 %	120-123%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY Custody Seal ? Y N NA Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: (1) 2 3 4 please circle 1
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: Rex 3/9/10	RELINQUISHED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS		DATE: TIME: 1.10	DATE: TIME:
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:		

COMMENTS:	Please see overleaf for specific analytes	(1) Caution - Samples may contain hazardous substances	ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE										ANALYSIS REQUIRED															
				Solid		Liquid																							
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromium Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
	BH 19 14.9-15.14	01/09/08	S		1										✓	✓					✓		✓					✓	
	BH 19 16.5-16.95	"	"	2	1										✓	✓					✓		✓					✓	
	BH 19 18.4-18.83	"	"	2											✓	✓					✓		✓					✓	
	QC 49	"	L			2	1	1								✓		✓	✓	✓	✓								
	TOTAL																												

Environmental Division
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Work Order
EB0811949

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0811949**	Page	: 1 of 7
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 03-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 4
Quote number	: EN/001/08	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **ANC not required because pH KCl less than 6.5**
- **EG005T (Total Metals) : Sample EB0811978-016 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.**
- **LCS recovery for EG020T (Total Metals) fall outside Dynamic Control Limits. They are however within ALS Static Control Limits and hence deemed acceptable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides: Insufficient sample for QC49 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: **LIQUID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC49	----	----	----	----
				Client sampling date / time: 01-SEP-2008 15:00	----	----	----	----
				EB0811949-004	----	----	----	----
EG020T: Total Metals by ICP-MS								
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.003**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.5	µg/L	<0.9	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.9	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.9	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.9	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.9	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.9	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.9	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**105**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**83.8**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**86.9**	----	----	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH19 14.9-15.14	BH19 16.5-16.95	BH19 18.4-18.83	----	----
				Client sampling date / time: 01-SEP-2008 15:00	01-SEP-2008 15:00	01-SEP-2008 15:00	----	----
				EB0811949-001	EB0811949-002	EB0811949-003	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**5.6**	**5.5**	**5.7**	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**15.2**	**19.1**	**15.7**	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**1020**	**1760**	**1380**	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	----	----
Arsenic	7440-38-2	5	mg/kg	**5**	<5	**26**	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	**4**	**10**	**3**	----	----
Copper	7440-50-8	5	mg/kg	<5	**26**	**6**	----	----
Iron	7439-89-6	50	mg/kg	**3190**	**37600**	**4080**	----	----
Lead	7439-92-1	5	mg/kg	<5	<5	<5	----	----
Manganese	7439-96-5	5	mg/kg	<5	**22**	**6**	----	----
Nickel	7440-02-0	2	mg/kg	<2	<2	<2	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	<2	----	----
Zinc	7440-66-6	5	mg/kg	<5	**12**	<5	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.04**	**0.02**	**0.02**	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH19 14.9-15.14	BH19 16.5-16.95	BH19 18.4-18.83	----	----
				Client sampling date / time	01-SEP-2008 15:00	01-SEP-2008 15:00	01-SEP-2008 15:00	----	----
Compound	CAS Number	LOR	Unit		EB0811949-001	EB0811949-002	EB0811949-003	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<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	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**89.2**	**97.9**	**83.4**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**91.6**	**96.4**	**85.4**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**89.9**	**90.9**	**82.5**	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**94.8**	**92.0**	**88.8**	----	----
Anthracene-d10	1719-06-8	0.1	%		**92.6**	**100**	**93.2**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**104**	**106**	**95.5**	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137

ALS Laboratory Group Pty Ltd
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pH 02 4968 9433
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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 03-Sep-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811949	BH19 14.9-1 5.14	001	1%	47%	34%	18%
EB0811949	BH19 16.5-1 6.95	002	0%	11%	60%	29%
EB0811949	BH19 18.4-1 8.83	003	0%	15%	49%	36%

Remarks :
Test Procedure : AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 11-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 3-Sep-2008

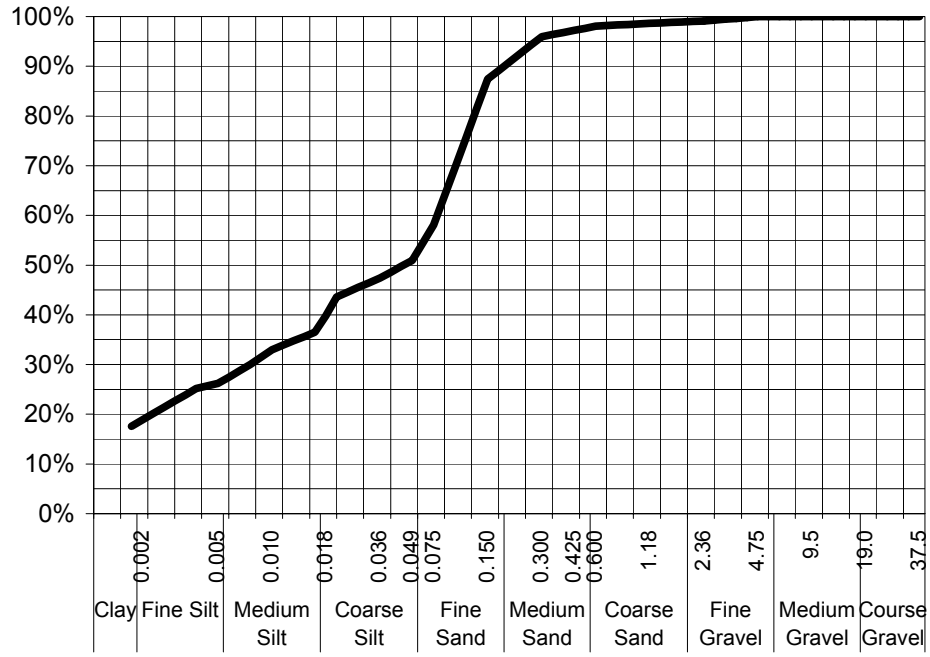
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0811949-001 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH19 14.9-1
5.14

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	99%
0.600	98%
0.425	97%
0.300	96%
0.150	87%
0.075	58%
Particle Size (microns)	
36	47%
18	40%
10	33%
5	26%
4	25%

Samples analysed as received.

Sample Comments:

Analysed: 4-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Sandy & silt

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

COMPANY: URS Australia Pty Ltd (Qld)

ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

PROJECT: 42626228.52

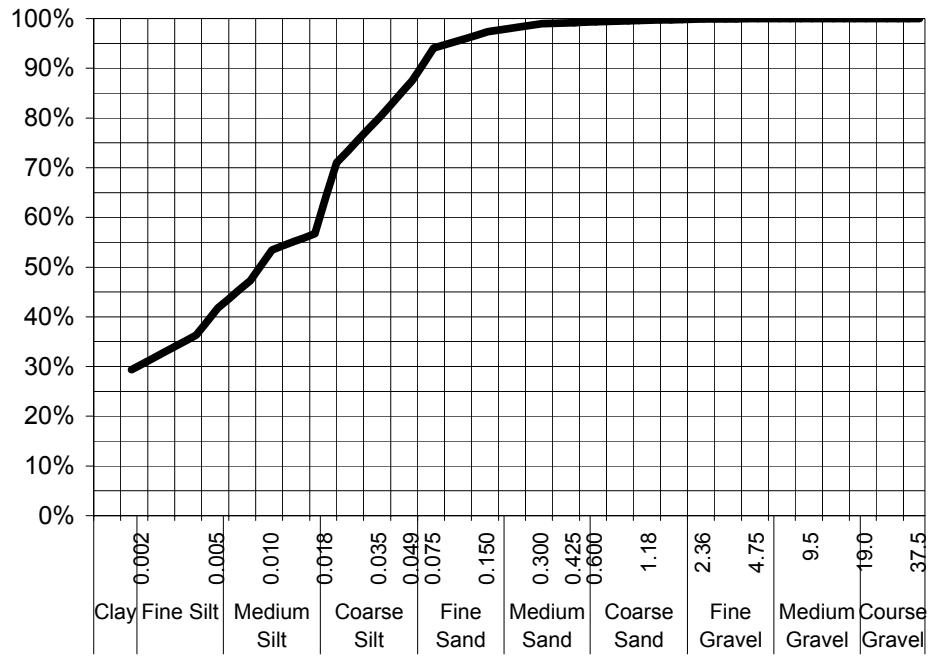
DATE REPORTED: 11-Sep-2008

DATE RECEIVED: 3-Sep-2008

REPORT NO: EB0811949-002 / PSD

SAMPLE ID: BH19 16.5-1
6.95

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	97%
0.075	94%
Particle Size (microns)	
35	80%
18	64%
10	53%
5	42%
4	36%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Ochre clay & silt

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 4-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

COMPANY: URS Australia Pty Ltd (Qld)

ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

PROJECT: 42626228.52

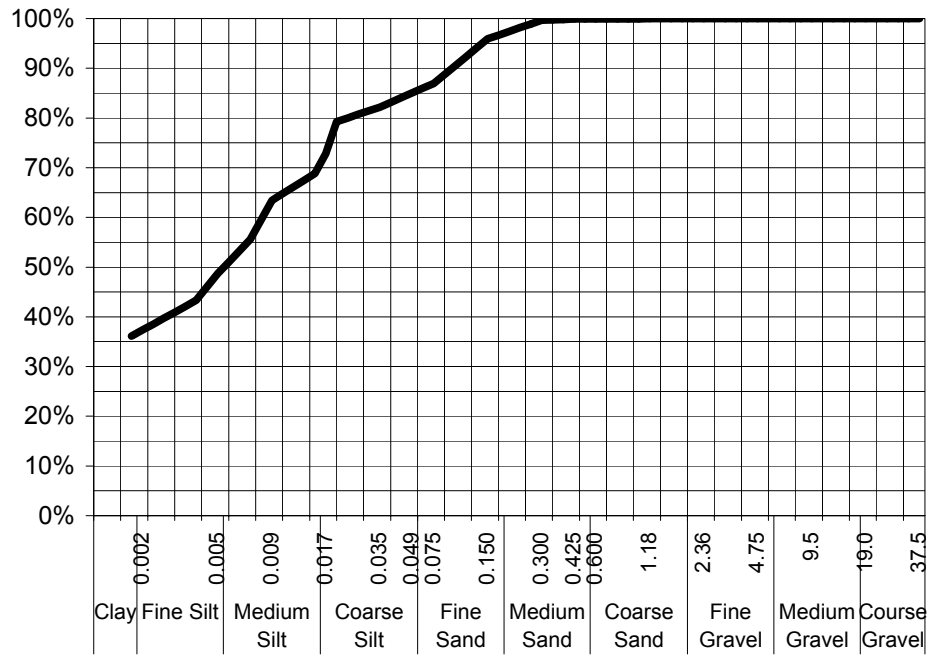
DATE REPORTED: 11-Sep-2008

DATE RECEIVED: 3-Sep-2008

REPORT NO: EB0811949-003 / PSD

SAMPLE ID: BH19 18.4-1
8.83

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	96%
0.075	87%
Particle Size (microns)	
35	82%
17	73%
9	63%
5	49%
3	43%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Grey plastic clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 4-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	03-Sep-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0811949	BH19 14.9-1 5.14	001	1%	47%	34%	18%
EB0811949	BH19 16.5-1 6.95	002	0%	11%	60%	29%
EB0811949	BH19 18.4-1 8.83	003	0%	15%	49%	36%

Remarks :

Test Procedure : AS1289.3.6.3

Prepared by : Dianne Blane Checked by PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0811949**	Page	: 1 of 10
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 03-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Order number	: ----		
		No. of samples received	: 4
Quote number	: EN/001/08	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Virginia Minerals - PREP
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 751325)									
EB0811787-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: pH KCl (23A)	----	0.1	pH Unit	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-011	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: pH KCl (23A)	----	0.1	pH Unit	Anonymous	Anonymous	Anonymous	Anonymous
EA033-B: Potential Acidity (QC Lot: 751325)									
EB0811787-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
EB0811787-011	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
EA055: Moisture Content (QC Lot: 749462)									
EB0811918-014	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0811919-015	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 749151)									
EB0811949-001	BH19 14.9-15.14	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	1020	1320	# 25.8	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	3190	3220	1.0	0% - 20%
EB0811978-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 749151) - continued									
EB0811978-005	Anonymous	EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 749152)									
EB0811949-001	BH19 14.9-15.14	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0811978-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 748099)									
EB0811949-001	BH19 14.9-15.14	EP005: Total Organic Carbon	----	0.02	%	0.04	0.03	28.6	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 751519)									
EB0811949-001	BH19 14.9-15.14	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0812153-004	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 751519) - continued									
EB0812153-004	Anonymous	EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 752038)									
EB0811673-012	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812016-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 752039)									
EB0811673-012	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 754029)									
EB0811949-004	QC49	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EB0812098-009	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 750244)									
EB0811949-004	QC49	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0	No Limit
EB0812092-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 751325)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 751325)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 749151)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	108	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	100	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	106	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	105	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	102	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	103	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	100	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 749152)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	92.7	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 748099)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 751519)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	86.3	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	95.6	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	83.5	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	88.0	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	82.8	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	91.3	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	93.4	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	92.0	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	93.3	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	81.9	57	114

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 751519) - continued								
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	76.1	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	87.3	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	89.5	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	100	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	103	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	93.9	52	128

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 752038)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	92.0	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	85.1	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	91.0	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	97.1	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	96.4	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	90.6	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	96.8	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	104	81	127
EG020T: Total Metals by ICP-MS (QCLot: 752039)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 79.2	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 754029)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	104	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 750244)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 748156)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	81.2	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 748155)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	106	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	100	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	104	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	106	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	106	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	96.3	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	115	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	110	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	83.0	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	112	47.3	137

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 749151)							
EB0811949-002	BH19 16.5-16.95	EG005T: Arsenic	7440-38-2	50 mg/kg	104	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	103	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	103	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	104	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	102	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	95.0	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	104	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	101	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 749152)							
EB0811949-002	BH19 16.5-16.95	EG035T: Mercury	7439-97-6	5.0 mg/kg	114	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 751519)							
EB0811949-002	BH19 16.5-16.95	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	93.4	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	105	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 752038)							
EB0811787-016	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 754029)							
EB0811949-004	QC49	EG035T: Mercury	7439-97-6	0.0100 mg/L	87.2	70	130

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0811949**	Page	: 1 of 9
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 03-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 19-DEC-2008
Order number	: ----		
		No. of samples received	: 4
Quote number	: EN/001/08	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Snap Lock Bag - frozen								
BH19 14.9-15.14,	BH19 16.5-16.95	**01-SEP-2008**	**03-SEP-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
Soil Glass Jar - Frozen on receipt								
BH19 18.4-18.83		**01-SEP-2008**	**03-SEP-2008**	02-SEP-2008	×	**11-SEP-2008**	10-DEC-2008	✓
EA033-B: Potential Acidity								
Snap Lock Bag - frozen								
BH19 14.9-15.14,	BH19 16.5-16.95	**01-SEP-2008**	**03-SEP-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
Soil Glass Jar - Frozen on receipt								
BH19 18.4-18.83		**01-SEP-2008**	**03-SEP-2008**	02-SEP-2008	×	**11-SEP-2008**	10-DEC-2008	✓
EA033-C: Acid Neutralising Capacity								
Snap Lock Bag - frozen								
BH19 14.9-15.14,	BH19 16.5-16.95	**01-SEP-2008**	**03-SEP-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
Soil Glass Jar - Frozen on receipt								
BH19 18.4-18.83		**01-SEP-2008**	**03-SEP-2008**	02-SEP-2008	×	**11-SEP-2008**	10-DEC-2008	✓
EA033-D: Retained Acidity								
Snap Lock Bag - frozen								
BH19 14.9-15.14,	BH19 16.5-16.95	**01-SEP-2008**	**03-SEP-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
Soil Glass Jar - Frozen on receipt								
BH19 18.4-18.83		**01-SEP-2008**	**03-SEP-2008**	02-SEP-2008	×	**11-SEP-2008**	10-DEC-2008	✓
EA033-E: Acid Base Accounting								
Snap Lock Bag - frozen								
BH19 14.9-15.14,	BH19 16.5-16.95	**01-SEP-2008**	**03-SEP-2008**	---	----	**11-SEP-2008**	10-DEC-2008	✓
Soil Glass Jar - Frozen on receipt								
BH19 18.4-18.83		**01-SEP-2008**	**03-SEP-2008**	02-SEP-2008	×	**11-SEP-2008**	10-DEC-2008	✓
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH19 14.9-15.14, BH19 18.4-18.83	BH19 16.5-16.95,	**01-SEP-2008**	**----**	----	----	**05-SEP-2008**	08-SEP-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH19 14.9-15.14, BH19 16.5-16.95, BH19 18.4-18.83	**01-SEP-2008**	**05-SEP-2008**	28-FEB-2009	✓	**05-SEP-2008**	28-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH19 14.9-15.14, BH19 16.5-16.95, BH19 18.4-18.83	**01-SEP-2008**	**05-SEP-2008**	28-FEB-2009	✓	**09-SEP-2008**	29-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH19 14.9-15.14, BH19 16.5-16.95, BH19 18.4-18.83	**01-SEP-2008**	**05-SEP-2008**	---	----	**05-SEP-2008**	29-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH19 14.9-15.14, BH19 16.5-16.95, BH19 18.4-18.83	**01-SEP-2008**	**09-SEP-2008**	15-SEP-2008	✓	**11-SEP-2008**	19-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC49	**01-SEP-2008**	**10-SEP-2008**	28-FEB-2009	✓	**10-SEP-2008**	28-FEB-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC49	**01-SEP-2008**	**----**	----	----	**11-SEP-2008**	29-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC49	**01-SEP-2008**	**----**	----	----	**08-SEP-2008**	29-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC49	**01-SEP-2008**	**06-SEP-2008**	08-SEP-2008	✓	**07-SEP-2008**	16-OCT-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC49	**01-SEP-2008**	**06-SEP-2008**	08-SEP-2008	✓	**07-SEP-2008**	16-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Pesticides	EP068	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Pesticides	EP068	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Analytical Methods	Method	Matrix	Method Descriptions
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0811949-001	BH19 14.9-15.14	**Aluminium**	7429-90-5	25.8 %	0-20%	**RPD exceeds LOR based limits**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	849162-002	----	**Silver**	7440-22-4	79.2 %	120-123%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)	*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA033-A: Actual Acidity						
Soil Glass Jar - Frozen on receipt						
BH19 18.4-18.83	03-SEP-2008	02-SEP-2008	**1**	----	----	----
EA033-B: Potential Acidity						
Soil Glass Jar - Frozen on receipt						
BH19 18.4-18.83	03-SEP-2008	02-SEP-2008	**1**	----	----	----
EA033-C: Acid Neutralising Capacity						
Soil Glass Jar - Frozen on receipt						
BH19 18.4-18.83	03-SEP-2008	02-SEP-2008	**1**	----	----	----
EA033-D: Retained Acidity						
Soil Glass Jar - Frozen on receipt						
BH19 18.4-18.83	03-SEP-2008	02-SEP-2008	**1**	----	----	----
EA033-E: Acid Base Accounting						

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA033-E: Acid Base Accounting - Analysis Holding Time Compliance						
Soil Glass Jar - Frozen on receipt						
BH19 18.4-18.83	03-SEP-2008	02-SEP-2008	**1**	----	----	----

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

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Brisbane
Work Order
EB0812007

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URS CHAIN OF CUSTODY

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ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: (1) 2 3 4 — please circle 2
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		

Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: Christian V.	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 3.9.8 TIME: 20:20	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE																										
				Solid		Liquid																								
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromium Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
1	BH 19 20.2 - 20.35	02/09/08	S	1											✓	✓					✓		✓					✓	
2	BH 19 20.34 - 20.4	"	"	1											✓	✓					✓		✓					✓	
3	BH 19 20.4 - 20.6	"	"	1											✓	✓					✓		✓					✓	
4	BH 19 22.05 - 22.25	"	"	1											✓	✓					✓		✓					✓	
5	BH 19 21.8 - 22.05	"	"	1											✓	✓					✓		✓					✓	
6	BH 19 24.8 - 24.95	"	"	1											✓	✓					✓		✓					✓	
7	BH 19 24.95 - 25.1	"	"	1											✓	✓					✓		✓					✓	
8	BH 19 25.1 - 25.25	"	"	1											✓	✓					✓		✓					✓	
9	BH 19 26.2 - 26.65	"	"	1											✓	✓					✓		✓					✓	
10	BH 19 27.7 - 28.15	"	"	1	1										✓	✓					✓		✓					✓	
TOTAL																														

URS Australia Pty. Ltd.

URS CHAIN OF CUSTODY

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ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	Custody Seal ? Y N NA Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: √ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: 1 (2) 3 4 — please circle 2
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME:	DATE: TIME:	DATE: 3.9.8 20:20 Christian V.

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE																										
				Solid		Liquid																								
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
11	QC 50	02/09/08	L			2	1	1								✓		✓	✓	✓	✓								
12	QC 51	"	S	1	1										✓	✓					✓		✓					✓	
13	QC 52	"	S	1	1										✓	✓					✓		✓					✓	
TOTAL																													

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0812007**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 03-SEP-2008	Issue Date	: 04-SEP-2008 14:24
Client Requested Due Date	: 10-SEP-2008	Scheduled Reporting Date	: **15-SEP-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 7.0 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 13
Sercurity Seal	: Intact.	No. of samples analysed	: 13

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-02 8 Metals (incl. Digestion)
EB0812007-001	02-SEP-2008 15:00	BH 19 20.2-20.35	✓	✓	✓	✓	✓
EB0812007-002	02-SEP-2008 15:00	BH 19 20.34-20.4	✓	✓	✓	✓	✓
EB0812007-003	02-SEP-2008 15:00	BH 19 20.4-20.6	✓	✓	✓	✓	✓
EB0812007-004	02-SEP-2008 15:00	BH 19 22.05-22.25	✓	✓	✓	✓	✓
EB0812007-005	02-SEP-2008 15:00	BH 19 21.8-22.05	✓	✓	✓	✓	✓
EB0812007-006	02-SEP-2008 15:00	BH 19 24.8-24.95	✓	✓	✓	✓	✓
EB0812007-007	02-SEP-2008 15:00	BH 19 24.95-25.1	✓	✓	✓	✓	✓
EB0812007-008	02-SEP-2008 15:00	BH 19 25.1-25.25	✓	✓	✓	✓	✓
EB0812007-009	02-SEP-2008 15:00	BH 19 26.2-26.65	✓	✓	✓	✓	✓
EB0812007-010	02-SEP-2008 15:00	BH 19 27.7-28.15	✓	✓	✓	✓	✓
EB0812007-012	02-SEP-2008 15:00	QC 51	✓	✓	✓	✓	✓
EB0812007-013	02-SEP-2008 15:00	QC 52	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0812007-011	02-SEP-2008 15:00	QC 50	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0812007**	Page	: 1 of 11
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 03-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 13
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EG005T (Total Metals) : Sample EB0812007-001 (BH 19 20.2-20.35) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **PAH: Samples BH 19 20.2-20.35, BH 19 20.34-20.4 and BH 19 20.4-20.6 could not be analysed as insufficient sample was provided.**
- **Pesticides: Insufficient sample QC 50 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: **LIQUID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC 50	----	----	----	----
				Client sampling date / time: 02-SEP-2008 15:00	----	----	----	----
				EB0812007-011	----	----	----	----
EG020T: Total Metals by ICP-MS								
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.003**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.5	µg/L	<0.9	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.9	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.9	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.9	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.9	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.9	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.9	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.9	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**98.4**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**89.9**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**92.4**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH 19 20.2-20.35	BH 19 20.34-20.4	BH 19 20.4-20.6	BH 19 22.05-22.25	BH 19 21.8-22.05
				Client sampling date / time: 02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00
				EB0812007-001	EB0812007-002	EB0812007-003	EB0812007-004	EB0812007-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	7.7	7.0	7.7	7.1	6.3
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.10	0.10	0.12	0.05	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	20	20	25	<10	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.03	0.03	0.04	0.02	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	16.6	13.5	15.3	15.2	17.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	680	----	----	1840	1790
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	21	4	2	9	7
Copper	7440-50-8	5	mg/kg	26	<5	<5	6	<5
Iron	7439-89-6	50	mg/kg	14300	----	----	3970	1740
Lead	7439-92-1	5	mg/kg	<5	<5	<5	<5	<5
Manganese	7439-96-5	5	mg/kg	92	----	----	18	7
Nickel	7440-02-0	2	mg/kg	14	<2	<2	3	<2
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	9	<5	<5	8	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.02	0.02	0.02	0.02	0.02

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	BH 19 20.2-20.35	BH 19 20.34-20.4	BH 19 20.4-20.6	BH 19 22.05-22.25	BH 19 21.8-22.05
				Client sampling date / time	02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00
					EB0812007-001	EB0812007-002	EB0812007-003	EB0812007-004	EB0812007-005
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
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		----	----	----	**87.6**	**87.3**
2-Chlorophenol-D4	93951-73-6	0.1	%		----	----	----	**84.3**	**85.3**
2.4.6-Tribromophenol	118-79-6	0.1	%		----	----	----	**68.1**	**66.9**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		----	----	----	**90.2**	**89.9**
Anthracene-d10	1719-06-8	0.1	%		----	----	----	**68.4**	**68.0**
4-Terphenyl-d14	1718-51-0	0.1	%		----	----	----	**111**	**100**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH 19 24.8-24.95	BH 19 24.95-25.1	BH 19 25.1-25.25	BH 19 26.2-26.65	BH 19 27.7-28.15
				Client sampling date / time: 02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00
				EB0812007-006	EB0812007-007	EB0812007-008	EB0812007-009	EB0812007-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.7	6.6	6.8	6.8	7.0
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.10	0.10	0.10	0.05	0.10
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	20	20	20	<10	20
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.03	0.03	0.03	0.02	0.03
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	16.4	15.1	11.8	13.3	16.3
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	1510	----	800	1510	1550
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	4	4	4	5	4
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	<5
Iron	7439-89-6	50	mg/kg	1040	----	1610	1120	1140
Lead	7439-92-1	5	mg/kg	<5	<5	<5	<5	<5
Manganese	7439-96-5	5	mg/kg	<5	----	<5	<5	<5
Nickel	7440-02-0	2	mg/kg	<2	<2	<2	2	<2
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	5	<5	<5	6	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.02	0.02	<0.02	0.02	0.02

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH 19 24.8-24.95	BH 19 24.95-25.1	BH 19 25.1-25.25	BH 19 26.2-26.65	BH 19 27.7-28.15
				Client sampling date / time: 02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00	02-SEP-2008 15:00
				EB0812007-006	EB0812007-007	EB0812007-008	EB0812007-009	EB0812007-010
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**88.4**	**88.4**	**86.0**	**86.7**	**88.4**
2-Chlorophenol-D4	93951-73-6	0.1	%	**87.6**	**87.9**	**87.2**	**85.1**	**87.9**
2.4.6-Tribromophenol	118-79-6	0.1	%	**68.8**	**68.8**	**64.3**	**67.3**	**68.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**85.2**	**88.4**	**84.3**	**92.0**	**87.8**
Anthracene-d10	1719-06-8	0.1	%	**70.8**	**70.1**	**64.2**	**66.9**	**70.4**
4-Terphenyl-d14	1718-51-0	0.1	%	**102**	**103**	**95.0**	**99.8**	**104**

Analytical Results

Sub-Matrix: SOLID			Client sample ID	QC 51	QC 52	----	----	----
			Client sampling date / time	02-SEP-2008 15:00	02-SEP-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit	EB0812007-012	EB0812007-013	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**7.0**	**7.0**	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**0.05**	**0.15**	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	**30**	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**0.02**	**0.05**	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	----	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**15.0**	**16.8**	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**1820**	**1410**	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	----	----	----
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**5**	**4**	----	----	----
Copper	7440-50-8	5	mg/kg	<5	<5	----	----	----
Iron	7439-89-6	50	mg/kg	**1970**	**1080**	----	----	----
Lead	7439-92-1	5	mg/kg	**6**	<5	----	----	----
Manganese	7439-96-5	5	mg/kg	<5	<5	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	<2	----	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	----	----
Zinc	7440-66-6	5	mg/kg	<5	<5	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.02**	**0.05**	----	----	----

Analytical Results

Sub-Matrix: SOLID				Client sample ID	QC 51	QC 52	----	----	----
				Client sampling date / time	02-SEP-2008 15:00	02-SEP-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		EB0812007-012	EB0812007-013	----	----	----
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	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**89.8**	**92.2**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**88.6**	**88.2**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**70.6**	**75.2**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**87.7**	**88.8**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**70.7**	**74.1**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**114**	**106**	----	----	----

Surrogate Control Limits

Sub-Matrix: LIQUID		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110

Sub-Matrix: SOLID		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0812007**	Page	: 1 of 10
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 03-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 13
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Virginia Minerals - PREP
Jessica Janson	Supervisor - Acid Sulphate Soils	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 754203)									
EB0811799-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: pH KCl (23A)	----	0.1	pH Unit	Anonymous	Anonymous	Anonymous	Anonymous
EB0812007-005	BH 19 21.8-22.05	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.3	5.9	6.6	0% - 20%
EA033-B: Potential Acidity (QC Lot: 754203)									
EB0811799-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
EB0812007-005	BH 19 21.8-22.05	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 754203)									
EB0811799-001	Anonymous	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
EA055: Moisture Content (QC Lot: 749463)									
EB0812003-007	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0812007-004	BH 19 22.05-22.25	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	15.2	15.9	4.1	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 749166)									
EB0812007-001	BH 19 20.2-20.35	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	21	<2	# 166	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	14	<2	150	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	26	<5	134	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	9	<5	55.7	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	680	730	6.9	0% - 50%
EB0812007-009	BH 19 26.2-26.65	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	4	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	<2	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 749166) - continued									
EB0812007-009	BH 19 26.2-26.65	EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	6	6	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	1510	1730	13.9	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	1120	1310	15.9	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 749167)									
EB0812007-001	BH 19 20.2-20.35	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0812007-009	BH 19 26.2-26.65	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 749639)									
EB0812007-001	BH 19 20.2-20.35	EP005: Total Organic Carbon	----	0.02	%	0.02	0.02	0.0	No Limit
EB0812007-012	QC 51	EP005: Total Organic Carbon	----	0.02	%	0.02	0.02	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 753448)									
EB0812007-010	BH 19 27.7-28.15	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0812007-012	QC 51	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<1.6	106	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 753448) - continued									
EB0812007-012	QC 51	EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.9	117	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<1.6	106	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<1.6	106	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 752966)									
EB0811706-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812038-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 752967)									
EB0812038-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812093-007	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 754452)									
EB0811799-007	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812093-008	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 750244)									
EB0811949-004	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812092-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 754203)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 754203)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 754203)								
EA033: Acid Neutralising Capacity (19A1)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A1)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A1)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 749166)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	108	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	103	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	107	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	104	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	103	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	106	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	104	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 749167)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	103	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 749639)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 753448)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	95.9	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	95.6	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	96.9	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	97.2	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	99.7	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	97.6	65	110

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 753448) - continued								
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	103	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	99.8	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	96.8	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	95.1	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	103	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	103	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	116	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	106	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	110	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	102	52	128

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 752966)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	86.9	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	83.0	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	86.8	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	94.6	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	90.9	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	90.2	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	92.5	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	104	81	127
EG020T: Total Metals by ICP-MS (QCLot: 752967)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	# 72.8	120	123
EG035T: Total Recoverable Mercury by FIMS (QCLot: 754452)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	101	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 750244)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 750203)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	73.5	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 750202)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	104	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	111	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	113	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	113	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	113	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	104	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	118	54.3	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 750202) - continued								
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	116	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	128	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	111	47.3	137

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 749166)							
EB0812007-002	BH 19 20.34-20.4	EG005T: Arsenic	7440-38-2	50 mg/kg	102	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	101	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	100	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	103	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	101	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	101	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	103	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	101	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 749167)							
EB0812007-002	BH 19 20.34-20.4	EG035T: Mercury	7439-97-6	5.0 mg/kg	101	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 753448)							
EB0812007-013	QC 52	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	106	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	126	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 752966)							
EB0811747-013	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 754452)							
EB0811799-007	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QCLot: 750202)							
EB0812047-001	Anonymous	EP068: gamma-BHC	58-89-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0812007**	Page	: 1 of 10
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
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Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 03-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 13
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Pulp Bag								
BH 19 20.2-20.35,	BH 19 20.34-20.4,	**02-SEP-2008**	**02-SEP-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
BH 19 20.4-20.6,	BH 19 22.05-22.25,							
BH 19 21.8-22.05,	BH 19 24.8-24.95,							
BH 19 24.95-25.1,	BH 19 25.1-25.25,							
BH 19 26.2-26.65								
Snap Lock Bag - frozen								
BH 19 27.7-28.15,	QC 51,	**02-SEP-2008**	**02-SEP-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
QC 52								
EA033-B: Potential Acidity								
Pulp Bag								
BH 19 20.2-20.35,	BH 19 20.34-20.4,	**02-SEP-2008**	**02-SEP-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
BH 19 20.4-20.6,	BH 19 22.05-22.25,							
BH 19 21.8-22.05,	BH 19 24.8-24.95,							
BH 19 24.95-25.1,	BH 19 25.1-25.25,							
BH 19 26.2-26.65								
Snap Lock Bag - frozen								
BH 19 27.7-28.15,	QC 51,	**02-SEP-2008**	**02-SEP-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
QC 52								
EA033-C: Acid Neutralising Capacity								
Pulp Bag								
BH 19 20.2-20.35,	BH 19 20.34-20.4,	**02-SEP-2008**	**02-SEP-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
BH 19 20.4-20.6,	BH 19 22.05-22.25,							
BH 19 21.8-22.05,	BH 19 24.8-24.95,							
BH 19 24.95-25.1,	BH 19 25.1-25.25,							
BH 19 26.2-26.65								
Snap Lock Bag - frozen								
BH 19 27.7-28.15,	QC 51,	**02-SEP-2008**	**02-SEP-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
QC 52								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity								
Pulp Bag								
BH 19 20.2-20.35,	BH 19 20.34-20.4,	**02-SEP-2008**	**02-SEP-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
BH 19 20.4-20.6,	BH 19 22.05-22.25,							
BH 19 21.8-22.05,	BH 19 24.8-24.95,							
BH 19 24.95-25.1,	BH 19 25.1-25.25,							
BH 19 26.2-26.65								
Snap Lock Bag - frozen								
BH 19 27.7-28.15,	QC 51,	**02-SEP-2008**	**02-SEP-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
QC 52								
EA033-E: Acid Base Accounting								
Pulp Bag								
BH 19 20.2-20.35,	BH 19 20.34-20.4,	**02-SEP-2008**	**02-SEP-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
BH 19 20.4-20.6,	BH 19 22.05-22.25,							
BH 19 21.8-22.05,	BH 19 24.8-24.95,							
BH 19 24.95-25.1,	BH 19 25.1-25.25,							
BH 19 26.2-26.65								
Snap Lock Bag - frozen								
BH 19 27.7-28.15,	QC 51,	**02-SEP-2008**	**02-SEP-2008**	---	----	**15-SEP-2008**	14-DEC-2008	✓
QC 52								
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH 19 20.2-20.35,	BH 19 20.34-20.4,	**02-SEP-2008**	**----**	----	----	**05-SEP-2008**	09-SEP-2008	✓
BH 19 20.4-20.6,	BH 19 22.05-22.25,							
BH 19 21.8-22.05,	BH 19 24.8-24.95,							
BH 19 24.95-25.1,	BH 19 25.1-25.25,							
BH 19 26.2-26.65,	BH 19 27.7-28.15,							
QC 51,	QC 52							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
BH 19 20.2-20.35,	BH 19 20.34-20.4,	**02-SEP-2008**	**05-SEP-2008**	01-MAR-2009	✓	**05-SEP-2008**	01-MAR-2009	✓
BH 19 20.4-20.6,	BH 19 22.05-22.25,							
BH 19 21.8-22.05,	BH 19 24.8-24.95,							
BH 19 24.95-25.1,	BH 19 25.1-25.25,							
BH 19 26.2-26.65,	BH 19 27.7-28.15,							
QC 51,	QC 52							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH 19 20.2-20.35, BH 19 20.34-20.4, BH 19 20.4-20.6, BH 19 22.05-22.25, BH 19 21.8-22.05, BH 19 24.8-24.95, BH 19 24.95-25.1, BH 19 25.1-25.25, BH 19 26.2-26.65, BH 19 27.7-28.15, QC 51, QC 52	**02-SEP-2008**	**05-SEP-2008**	01-MAR-2009	✓	**15-SEP-2008**	30-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH 19 20.2-20.35, BH 19 20.34-20.4, BH 19 20.4-20.6, BH 19 22.05-22.25, BH 19 21.8-22.05, BH 19 24.8-24.95, BH 19 24.95-25.1, BH 19 25.1-25.25, BH 19 26.2-26.65, BH 19 27.7-28.15, QC 51, QC 52	**02-SEP-2008**	**09-SEP-2008**	---	----	**11-SEP-2008**	30-SEP-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH 19 22.05-22.25, BH 19 21.8-22.05, BH 19 24.8-24.95, BH 19 24.95-25.1, BH 19 25.1-25.25, BH 19 26.2-26.65, BH 19 27.7-28.15, QC 51, QC 52	**02-SEP-2008**	**17-SEP-2008**	16-SEP-2008	×	**17-SEP-2008**	27-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC 50	**02-SEP-2008**	**10-SEP-2008**	01-MAR-2009	✓	**10-SEP-2008**	01-MAR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC 50	**02-SEP-2008**	**----**	----	----	**11-SEP-2008**	30-SEP-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC 50	**02-SEP-2008**	**----**	----	----	**08-SEP-2008**	30-SEP-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC 50	**02-SEP-2008**	**08-SEP-2008**	09-SEP-2008	✓	**09-SEP-2008**	18-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC 50	**02-SEP-2008**	**08-SEP-2008**	09-SEP-2008	✓	**09-SEP-2008**	18-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	9	**22.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	9	**11.1**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	14	**7.1**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Pesticides	EP068	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Pesticides	EP068	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Pesticides	EP068	1	2	**50.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Analytical Methods	Method	Matrix	Method Descriptions
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0812007-001	BH 19 20.2-20.35	**Chromium**	7440-47-3	166 %	0-50%	**RPD exceeds LOR based limits**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG020T: Total Metals by ICP-MS	850073-002	----	**Silver**	7440-22-4	72.8 %	120-123%	**Recovery less than lower control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH 19 22.05-22.25,	BH 19 21.8-22.05,	17-SEP-2008	16-SEP-2008	**1**	----	----	----
BH 19 24.8-24.95,	BH 19 24.95-25.1,						
BH 19 25.1-25.25,	BH 19 26.2-26.65,						
BH 19 27.7-28.15,	QC 51,						
QC 52							

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0812313

Telephone : +61-7-3243 7222

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: (1) 2 3 4 (please circle) 2
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		
URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	
URS PM:	Rob Ully	SITE :	GLNG SANTOS		
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	

FOR LABORATORY USE ONLY

Custody Seal ? Y N NA

Free ice / frozen icebricks present upon receipt? Y N

Random Sample Temperature on Receipt °C

RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE: TIME:	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE																										
				Solid		Liquid																								
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
1	BH19 30.9-31.0	03/09/08	S	1										ON HOLD															
2	BH19 33.5-33.58	"	S	1										ON HOLD															
3	BH19B 35.15-35.225	07/09/08	S	1										ON HOLD															
4	QC53	"	L			2	1	1								✓		✓	✓	✓	✓							✓	
5	BH20 0-0.2	03/09/08	S	1	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
6	BH20 1.1-1.4	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
7	BH20 1.4-1.8	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
8	BH20 1.8-2.0	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
9	BH20 2.35-2.55	"	"	2	1									✓	✓	✓					✓		✓					✓	
10	BH20 2.6-2.7	"	"	1										✓	✓	✓					✓		✓					✓	
11	BH20 3.0-3.5	"	"	2	1									✓	✓	✓					✓		✓					✓	
12	BH20 4.65-4.95	"	"	2	1									✓	✓	✓					✓		✓					✓	
	TOTAL													8	8	9	4	5	5	5	9		9					5	

URS CHAIN OF CUSTODY

ADDRESS: URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY
PHONE NO: (07) 3243 2111	PHONE NO: (07) 32437222	TURNAROUND DETAILS ✓ Standard - 5 days Non standard	COC SEQUENCE NUMBER 1 (2) 3 4 please circle 2
FAX NO: (07) 3243 2199	FAX NO: (07) 32437259		

Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: Bruce	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 9/9/08 TIME: 13:05	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

SAMPLE DETAILS / CONTAINER TYPE & PRESERVATIVE

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
13	BH20 5.0-5.25	08/09/08	S	2	1									✓	✓	✓					✓		✓					✓
14	BH20 5.5-5.70	"	"	1										✓	✓	✓					✓		✓					✓
15	QC54	"	S	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
16	QC55	"	S	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
17	QC56	"	L				1	1								✓		✓	✓	✓	✓							✓
18	BH20 8.6-8.78	"	S	1										✓	✓	✓					✓		✓					✓
TOTAL														4	4	5	2	3	3	3	5		4					3

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0812313**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 4
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 09-SEP-2008	Issue Date	: 12-SEP-2008 10:26
Client Requested Due Date	: 16-SEP-2008	Scheduled Reporting Date	: **24-SEP-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 6.2 C, 4.2 C - Ice present
No. of coolers/boxes	: 1 LARGE , 1 MEDIUM	No. of samples received	: 18
Sercurity Seal	: Intact.	No. of samples analysed	: 15

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

Method / Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
EP005 : Total Organic Carbon		
QC56	- Amber Glass Bottle - Unpreserved	- Amber TOC Vial- Sulphuric Acid

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EP005 (solids) Total Organic Carbon (TOC) solis	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA037 ASS Field Screening Analysis	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only
EB0812313-001	03-SEP-2008 15:00	BH19 30.9-31.0	✓							
EB0812313-002	03-SEP-2008 15:00	BH19 33.5-33.58	✓							
EB0812313-003	07-SEP-2008 15:00	BH19B 35.15-35.22S	✓							
EB0812313-005	08-SEP-2008 15:00	BH20 0-0.2		✓	✓	✓	✓	✓	✓	✓
EB0812313-006	08-SEP-2008 15:00	BH20 1.1-1.4		✓	✓	✓	✓	✓	✓	✓
EB0812313-007	08-SEP-2008 15:00	BH20 1.4-1.8		✓	✓	✓	✓	✓	✓	✓
EB0812313-008	08-SEP-2008 15:00	BH20 1.8-2.0		✓	✓	✓	✓	✓	✓	✓
EB0812313-009	08-SEP-2008 15:00	BH20 2.35-2.55		✓	✓	✓	✓			✓
EB0812313-010	08-SEP-2008 15:00	BH20 2.6-2.7		✓	✓	✓	✓			✓
EB0812313-011	08-SEP-2008 15:00	BH20 3.0-3.5		✓	✓	✓	✓			✓
EB0812313-012	08-SEP-2008 15:00	BH20 4.65-4.95		✓	✓	✓	✓			✓
EB0812313-013	08-SEP-2008 15:00	BH20 5.0-5.25		✓	✓	✓	✓			✓
EB0812313-014	08-SEP-2008 15:00	BH20 5.5-5.70		✓	✓	✓	✓			✓
EB0812313-015	08-SEP-2008 15:00	QC54		✓	✓	✓	✓	✓	✓	✓
EB0812313-016	08-SEP-2008 15:00	QC55		✓	✓	✓	✓	✓	✓	✓
EB0812313-018	08-SEP-2008 15:00	BH20 8.6-8.78		✓	✓	✓	✓			✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP090 (solids) Organotins	SOIL - S-02 8 Metals (incl. Digestion)
EB0812313-005	08-SEP-2008 15:00	BH20 0-0.2	✓	✓
EB0812313-006	08-SEP-2008 15:00	BH20 1.1-1.4	✓	✓
EB0812313-007	08-SEP-2008 15:00	BH20 1.4-1.8	✓	✓
EB0812313-008	08-SEP-2008 15:00	BH20 1.8-2.0	✓	✓
EB0812313-009	08-SEP-2008 15:00	BH20 2.35-2.55		✓

			SOIL - EP090 (solids) Organotins	SOIL - S-02 8 Metals (incl. Digestion)
EB0812313-010	08-SEP-2008 15:00	BH20 2.6-2.7		✓
EB0812313-011	08-SEP-2008 15:00	BH20 3.0-3.5		✓
EB0812313-012	08-SEP-2008 15:00	BH20 4.65-4.95		✓
EB0812313-013	08-SEP-2008 15:00	BH20 5.0-5.25		✓
EB0812313-014	08-SEP-2008 15:00	BH20 5.5-5.70		✓
EB0812313-015	08-SEP-2008 15:00	QC54	✓	✓
EB0812313-016	08-SEP-2008 15:00	QC55	✓	✓
EB0812313-018	08-SEP-2008 15:00	BH20 8.6-8.78		✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0812313-004	07-SEP-2008 15:00	QC53	✓	✓	✓	✓	✓	✓	✓	✓
EB0812313-017	08-SEP-2008 15:00	QC56	✓	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0812313**	Page	: 1 of 14
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 09-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 18
Quote number	: EN/001/08	No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides: Insufficient water sample has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Pesticides: Poor matrix spike recovery due to sample matrix interference. Confirmed by re-extraction and re-analysis.**
- **pH FOX Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Vigorous; 4 - Very Vigorous**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **Samples were frozen upon receipt and remained frozen until analysis was performed. Therefore, the integrity of the samples has been maintained and holding time breaches are not applicable.**
- **TBT: Insufficient water sample was provided for analysis.**
- **TBT: Samples show high failing surrogates due to a laboratory error. There was insufficient sample to re-extract and re-analyse.**

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC53	QC56	----	----	----
				Client sampling date / time	07-SEP-2008 15:00	08-SEP-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		EB0812313-004	EB0812313-017	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.002**	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	<1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<2	<2	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<1.2	<0.8	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<1.2	<0.8	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<1.2	<0.8	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<1.2	<0.8	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<1.2	<0.8	----	----	----
Endrin	72-20-8	0.5	µg/L		<1.2	<0.8	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<1.2	<0.8	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<1.2	<0.8	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	<2	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<1.2	<0.8	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L		<1.2	<0.8	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC53	QC56	----	----	----
				Client sampling date / time	07-SEP-2008 15:00	08-SEP-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		EB0812313-004	EB0812313-017	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**105**	**106**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**109**	**106**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**103**	**106**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**35.3**	**36.0**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**72.1**	**77.5**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**73.8**	**80.1**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**65.3**	**65.9**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**64.0**	**59.6**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**60.4**	**58.4**	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH20 0-0.2	BH20 1.1-1.4	BH20 1.4-1.8	BH20 1.8-2.0	BH20 2.35-2.55
				Client sampling date / time: 08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00
				EB0812313-005	EB0812313-006	EB0812313-007	EB0812313-008	EB0812313-009
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.0	8.8	7.2	7.7	5.2
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	10
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.12	0.46	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	75	290	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	19.6	5.86	0.32	0.44	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3910	1170	64	89	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	6.27	1.88	0.10	0.14	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.8	9.3	9.1	7.8	6.6
pH (Fox)	----	0.1	pH Unit	5.9	5.7	5.6	5.3	4.7
Reaction Rate	----	1	-	1	1	1	1	1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	21.6	26.7	10.1	5.2	12.5
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	6220	11700	6970	4370	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	14	16	18	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	28	23	10	19
Copper	7440-50-8	5	mg/kg	9	16	28	13	14
Iron	7439-89-6	50	mg/kg	21900	27800	31500	6610	----
Lead	7439-92-1	5	mg/kg	6	10	11	6	10
Manganese	7439-96-5	5	mg/kg	146	155	19	6	----
Nickel	7440-02-0	2	mg/kg	8	16	2	<2	2
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	21	37	15	8	8

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH20 0-0.2	BH20 1.1-1.4	BH20 1.4-1.8	BH20 1.8-2.0	BH20 2.35-2.55
				Client sampling date / time: 08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00
				EB0812313-005	EB0812313-006	EB0812313-007	EB0812313-008	EB0812313-009
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.34**	**0.63**	**0.19**	**0.29**	**0.58**
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<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	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	<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	----
Endrin	72-20-8	0.05	mg/kg	<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	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<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	----
Endrin ketone	53494-70-5	0.05	mg/kg	<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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	----
EP066S: PCB Surrogate								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH20 0-0.2	BH20 1.1-1.4	BH20 1.4-1.8	BH20 1.8-2.0	BH20 2.35-2.55
				Client sampling date / time: 08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00
				EB0812313-005	EB0812313-006	EB0812313-007	EB0812313-008	EB0812313-009
EP066S: PCB Surrogate - Continued								
Decachlorobiphenyl	2051-24-3	0.1	%	**59.2**	**69.1**	**67.9**	**65.4**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**59.2**	**79.8**	**68.5**	**64.9**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**65.4**	**103**	**75.6**	**71.0**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**85.0**	**88.0**	**93.6**	**89.3**	**82.0**
2-Chlorophenol-D4	93951-73-6	0.1	%	**89.6**	**91.8**	**97.2**	**92.8**	**78.7**
2.4.6-Tribromophenol	118-79-6	0.1	%	**102**	**100**	**102**	**76.6**	**80.6**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**102**	**102**	**101**	**99.5**	**96.0**
Anthracene-d10	1719-06-8	0.1	%	**86.3**	**94.1**	**99.2**	**96.2**	**95.4**
4-Terphenyl-d14	1718-51-0	0.1	%	**104**	**108**	**108**	**103**	**95.9**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**116**	**97.5**	**92.6**	**106**	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH20 2.6-2.7	BH20 3.0-3.5	BH20 4.65-4.95	BH20 5.0-5.25	BH20 5.5-5.70
				Client sampling date / time: 08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00
				EB0812313-010	EB0812313-011	EB0812313-012	EB0812313-013	EB0812313-014
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.3	5.3	6.2	5.3	9.0
Titratable Actual Acidity (23F)	----	2	mole H+ / t	10	10	5	36	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	0.06	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	1.22	0.14
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	763	90
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	----	0.20
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	----	39
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	----	0.06
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	1.28	0.10
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	799	63
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	60	5
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.0	6.3	7.1	6.8	6.3
pH (Fox)	----	0.1	pH Unit	4.4	4.7	4.5	2.4	2.5
Reaction Rate	----	1	-	1	1	1	1	2
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	15.4	10.4	13.1	30.9	8.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	5550	6090	3620	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	11	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	12	12	14	10	5
Copper	7440-50-8	5	mg/kg	7	13	40	19	<5
Iron	7439-89-6	50	mg/kg	----	3200	1500	27500	----
Lead	7439-92-1	5	mg/kg	9	8	11	8	<5
Manganese	7439-96-5	5	mg/kg	----	7	10	55	----
Nickel	7440-02-0	2	mg/kg	<2	2	4	46	13
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	8	12	62	49	38

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH20 2.6-2.7	BH20 3.0-3.5	BH20 4.65-4.95	BH20 5.0-5.25	BH20 5.5-5.70
				Client sampling date / time: 08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00
				EB0812313-010	EB0812313-011	EB0812313-012	EB0812313-013	EB0812313-014
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.27**	**0.20**	**2.44**	**16.7**	**0.10**
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**86.3**	**88.4**	**86.9**	**85.8**	**89.8**
2-Chlorophenol-D4	93951-73-6	0.1	%	**81.7**	**89.3**	**87.5**	**86.7**	**97.2**
2.4.6-Tribromophenol	118-79-6	0.1	%	**77.3**	**75.5**	**79.5**	**85.5**	**83.0**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**96.8**	**96.4**	**96.4**	**98.6**	**101**
Anthracene-d10	1719-06-8	0.1	%	**95.0**	**94.8**	**95.2**	**96.4**	**111**
4-Terphenyl-d14	1718-51-0	0.1	%	**96.6**	**100**	**97.2**	**100**	**110**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC54	QC55	BH20 8.6-8.78	----	----
				Client sampling date / time: 08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	----	----
				EB0812313-015	EB0812313-016	EB0812313-018	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**8.9**	**8.8**	**6.9**	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	**0.45**	**0.46**	<0.02	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**283**	**290**	<10	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**10.3**	**11.1**	**0.44**	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**2060**	**2210**	**89**	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**3.30**	**3.55**	**0.14**	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.9**	**8.6**	**7.2**	----	----
pH (Fox)	----	0.1	pH Unit	**5.4**	**6.0**	**5.0**	----	----
Reaction Rate	----	1	-	**1**	**1**	**1**	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**29.3**	**38.6**	**20.6**	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**8470**	**10200**	**6290**	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	----	----
Arsenic	7440-38-2	5	mg/kg	**23**	**24**	**5**	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	**28**	**27**	**5**	----	----
Copper	7440-50-8	5	mg/kg	**14**	**15**	**12**	----	----
Iron	7439-89-6	50	mg/kg	**33200**	**30900**	**18900**	----	----
Lead	7439-92-1	5	mg/kg	**10**	**10**	<5	----	----
Manganese	7439-96-5	5	mg/kg	**158**	**183**	**26**	----	----
Nickel	7440-02-0	2	mg/kg	**13**	**14**	**11**	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	<2	----	----
Zinc	7440-66-6	5	mg/kg	**28**	**31**	**31**	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	QC54	QC55	BH20 8.6-8.78	----	----
				Client sampling date / time	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	----	----
					EB0812313-015	EB0812313-016	EB0812313-018	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**0.55**	**0.53**	**0.05**	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		<0.10	<0.10	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----
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	----	----	----
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	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<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	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	----	----	----
EP066S: PCB Surrogate									

Analytical Results

Sub-Matrix: SOLID				Client sample ID	QC54	QC55	BH20 8.6-8.78	----	----
				Client sampling date / time	08-SEP-2008 15:00	08-SEP-2008 15:00	08-SEP-2008 15:00	----	----
Compound	CAS Number	LOR	Unit		EB0812313-015	EB0812313-016	EB0812313-018	----	----
EP066S: PCB Surrogate - Continued									
Decachlorobiphenyl	2051-24-3	0.1	%		67.3	64.1	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		69.6	68.3	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		75.9	77.0	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		90.7	88.1	91.2	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		91.7	95.2	94.2	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		77.9	81.5	79.3	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		100	101	101	----	----
Anthracene-d10	1719-06-8	0.1	%		95.8	102	87.0	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		102	111	98.4	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		164	307	----	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0812313**	Page	: 1 of 12
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
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Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 09-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 18
Quote number	: EN/001/08	No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 763607)									
EB0812313-005	BH20 0-0.2	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.0	9.0	0.0	0% - 20%
EB0812313-015	QC54	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.9	8.9	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 763607)									
EB0812313-005	BH20 0-0.2	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.12	0.12	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	75	72	3.3	No Limit
EB0812313-015	QC54	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.45	0.44	3.5	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	283	273	3.5	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 763608)									
EB0812313-005	BH20 0-0.2	EA037: pH (F)	----	0.1	pH Unit	8.8	8.9	1.1	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.9	6.0	1.7	0% - 20%
EB0812313-015	QC54	EA037: pH (F)	----	0.1	pH Unit	8.9	8.8	1.1	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.4	5.3	1.9	0% - 20%
EA055: Moisture Content (QC Lot: 757057)									
EB0812313-008	BH20 1.8-2.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	5.2	6.4	20.4	No Limit
EB0812313-015	QC54	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	29.3	28.0	4.6	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 757101)									
EB0812313-005	BH20 0-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	19	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	8	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	14	15	10.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	9	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	7	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	146	136	7.7	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	21	21	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	6220	5790	7.2	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	21900	24100	9.6	0% - 20%
EB0812313-014	BH20 5.5-5.70	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 757101) - continued									
EB0812313-014	BH20 5.5-5.70	EG005T: Nickel	7440-02-0	2	mg/kg	13	10	28.7	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	12	10	11.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	38	38	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	4720	3870	19.7	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 757102)									
EB0812313-005	BH20 0-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0812313-014	BH20 5.5-5.70	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 767479)									
EB0812313-005	BH20 0-0.2	EP005: Total Organic Carbon	----	0.02	%	0.34	0.34	0.0	0% - 50%
EB0812313-015	QC54	EP005: Total Organic Carbon	----	0.02	%	0.55	0.51	7.5	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 757078)									
EB0812313-005	BH20 0-0.2	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 757077)									
EB0812313-005	BH20 0-0.2	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 758695)									
EB0812313-005	BH20 0-0.2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 758695) - continued									
EB0812313-005	BH20 0-0.2	EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0812313-015	QC54	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 757128)									
EB0812201-001	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 761645)									
EB0812313-004	QC53	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EB0812560-008	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 761645) - continued									
EB0812560-008	Anonymous	EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 761646)									
EB0812313-004	QC53	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 763002)									
EB0812313-004	QC53	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EB0812560-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 755552)									
EB0812180-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812180-010	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 763607)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 763607)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 763607)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 757101)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	113	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	101	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	116	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	109	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	110	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	117	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	109	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 757102)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	102	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 767479)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	101	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 757078)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	93.5	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 757077)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	79.6	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	81.2	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	80.1	60.8	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 757077) - continued								
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	74.3	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	72.5	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	78.5	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	83.5	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	71.0	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	64.1	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	77.3	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 758695)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	106	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	106	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	106	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	109	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	107	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	94.4	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	107	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	103	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	98.4	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	95.7	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	109	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	108	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	# 121	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	106	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	108	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	102	52	128
EP090: Organotin Compounds (QCLot: 757128)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	----	----	----	----
				----	25 µgSn/kg	91.8	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 761645)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	97.0	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	96.1	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	99.3	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	101	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	99.5	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	98.7	84.4	113

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 761645) - continued								
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	99.1	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	106	81	127
EG020T: Total Metals by ICP-MS (QCLot: 761646)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	83.7	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 763002)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	101	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 755552)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	104	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 755955)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	66.2	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 755954)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	81.3	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	86.4	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	87.2	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	88.0	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	87.7	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	78.1	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	102	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	85.8	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	66.2	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	88.6	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 755956)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	87.4	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	76.8	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	74.9	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	78.0	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	70.5	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	51.6	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	55.9	51	117
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 755956) - continued								
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	55.0	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	53.4	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	49.2	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	90.1	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	77.4	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	97.5	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	101	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	100	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	97.2	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 757101)							
EB0812313-006	BH20 1.1-1.4	EG005T: Arsenic	7440-38-2	50 mg/kg	99.2	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	95.5	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	112	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	109	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	105	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	111	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	111	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	103	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 757102)							
EB0812313-006	BH20 1.1-1.4	EG035T: Mercury	7439-97-6	5.0 mg/kg	98.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 757078)							
EB0812313-006	BH20 1.1-1.4	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	73.5	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 757077)							
EB0812313-006	BH20 1.1-1.4	EP068: gamma-BHC	58-89-9	0.25 mg/kg	80.4	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	79.8	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	70.2	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	# 31.2	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 758695)							
EB0812313-006	BH20 1.1-1.4	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	113	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	121	70	130
EP090: Organotin Compounds (QCLot: 757128)							
EB0812201-002	Anonymous	EP090: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 761645)							
EB0812313-017	QC56	EG020A-T: Arsenic	7440-38-2	1.000 mg/L	103	70	130
		EG020A-T: Cadmium	7440-43-9	0.500 mg/L	99.4	70	130
		EG020A-T: Chromium	7440-47-3	1.000 mg/L	95.1	70	130
		EG020A-T: Copper	7440-50-8	1.000 mg/L	104	70	130
		EG020A-T: Lead	7439-92-1	1.000 mg/L	99.2	70	130
		EG020A-T: Nickel	7440-02-0	1.000 mg/L	102	70	130
		EG020A-T: Zinc	7440-66-6	1.000 mg/L	104	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG035T: Total Recoverable Mercury by FIMS (QCLot: 763002)							
EB0812313-004	QC53	EG035T: Mercury	7439-97-6	0.0100 mg/L	108	70	130

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0812313**	Page	: 1 of 13
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 09-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 18
Quote number	: EN/001/08	No. of samples analysed	: 15

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Pulp Bag								
BH20 2.6-2.7,	BH20 5.5-5.70,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
BH20 8.6-8.78								
Snap Lock Bag - frozen								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
BH20 2.35-2.55,	BH20 3.0-3.5,							
BH20 4.65-4.95,	BH20 5.0-5.25,							
QC54,	QC55							
EA033-B: Potential Acidity								
Pulp Bag								
BH20 2.6-2.7,	BH20 5.5-5.70,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
BH20 8.6-8.78								
Snap Lock Bag - frozen								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
BH20 2.35-2.55,	BH20 3.0-3.5,							
BH20 4.65-4.95,	BH20 5.0-5.25,							
QC54,	QC55							
EA033-C: Acid Neutralising Capacity								
Pulp Bag								
BH20 2.6-2.7,	BH20 5.5-5.70,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
BH20 8.6-8.78								
Snap Lock Bag - frozen								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
BH20 2.35-2.55,	BH20 3.0-3.5,							
BH20 4.65-4.95,	BH20 5.0-5.25,							
QC54,	QC55							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity								
Pulp Bag								
BH20 2.6-2.7,	BH20 5.5-5.70,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
BH20 8.6-8.78								
Snap Lock Bag - frozen								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
BH20 2.35-2.55,	BH20 3.0-3.5,							
BH20 4.65-4.95,	BH20 5.0-5.25,							
QC54,	QC55							
EA033-E: Acid Base Accounting								
Pulp Bag								
BH20 2.6-2.7,	BH20 5.5-5.70,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
BH20 8.6-8.78								
Snap Lock Bag - frozen								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
BH20 2.35-2.55,	BH20 3.0-3.5,							
BH20 4.65-4.95,	BH20 5.0-5.25,							
QC54,	QC55							
EA037: Ass Field Screening Analysis								
Snap Lock Bag								
BH20 2.6-2.7,	BH20 5.5-5.70,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	09-SEP-2008	×
BH20 8.6-8.78								
Snap Lock Bag - frozen								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**24-SEP-2008**	---	----	**24-SEP-2008**	07-MAR-2009	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
BH20 2.35-2.55,	BH20 3.0-3.5,							
BH20 4.65-4.95,	BH20 5.0-5.25,							
QC54,	QC55							
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**----**	----	----	**15-SEP-2008**	15-SEP-2008	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
BH20 2.35-2.55,	BH20 2.6-2.7,							
BH20 3.0-3.5,	BH20 4.65-4.95,							
BH20 5.0-5.25,	BH20 5.5-5.70,							
QC54,	QC55,							
BH20 8.6-8.78								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**15-SEP-2008**	07-MAR-2009	✓	**16-SEP-2008**	07-MAR-2009	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
BH20 2.35-2.55,	BH20 2.6-2.7,							
BH20 3.0-3.5,	BH20 4.65-4.95,							
BH20 5.0-5.25,	BH20 5.5-5.70,							
QC54,	QC55,							
BH20 8.6-8.78								
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**15-SEP-2008**	07-MAR-2009	✓	**17-SEP-2008**	06-OCT-2008	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
BH20 2.35-2.55,	BH20 2.6-2.7,							
BH20 3.0-3.5,	BH20 4.65-4.95,							
BH20 5.0-5.25,	BH20 5.5-5.70,							
QC54,	QC55,							
BH20 8.6-8.78								
EP005: Total Organic Carbon (TOC)								
Pulp Bag								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**25-SEP-2008**	---	----	**25-SEP-2008**	06-OCT-2008	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
BH20 2.35-2.55,	BH20 2.6-2.7,							
BH20 3.0-3.5,	BH20 4.65-4.95,							
BH20 5.0-5.25,	BH20 5.5-5.70,							
QC54,	QC55,							
BH20 8.6-8.78								
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**15-SEP-2008**	22-SEP-2008	✓	**17-SEP-2008**	25-OCT-2008	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
QC54,	QC55							
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved								
BH20 0-0.2,	BH20 1.1-1.4,	**08-SEP-2008**	**15-SEP-2008**	22-SEP-2008	✓	**17-SEP-2008**	25-OCT-2008	✓
BH20 1.4-1.8,	BH20 1.8-2.0,							
QC54,	QC55							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH20 0-0.2, BH20 1.1-1.4, BH20 1.4-1.8, BH20 1.8-2.0, BH20 2.35-2.55, BH20 2.6-2.7, BH20 3.0-3.5, BH20 4.65-4.95, BH20 5.0-5.25, BH20 5.5-5.70, QC54, QC55, BH20 8.6-8.78	**08-SEP-2008**	**16-SEP-2008**	22-SEP-2008	✓	**18-SEP-2008**	26-OCT-2008	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH20 0-0.2, BH20 1.1-1.4, BH20 1.4-1.8, BH20 1.8-2.0, QC54, QC55	**08-SEP-2008**	**15-SEP-2008**	22-SEP-2008	✓	**23-SEP-2008**	25-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC53	**07-SEP-2008**	**18-SEP-2008**	06-MAR-2009	✓	**18-SEP-2008**	06-MAR-2009	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC56	**08-SEP-2008**	**18-SEP-2008**	07-MAR-2009	✓	**18-SEP-2008**	07-MAR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC53	**07-SEP-2008**	**----**	----	----	**19-SEP-2008**	05-OCT-2008	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC56	**08-SEP-2008**	**----**	----	----	**19-SEP-2008**	06-OCT-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber Glass Bottle - Unpreserved							
QC56	**08-SEP-2008**	**----**	----	----	**12-SEP-2008**	10-SEP-2008	✘
Amber TOC Vial - Sulphuric Acid							
QC53	**07-SEP-2008**	**----**	----	----	**12-SEP-2008**	05-OCT-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC53	**07-SEP-2008**	**12-SEP-2008**	14-SEP-2008	✓	**17-SEP-2008**	22-OCT-2008	✓
Amber Glass Bottle - Unpreserved							
QC56	**08-SEP-2008**	**12-SEP-2008**	15-SEP-2008	✓	**17-SEP-2008**	22-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved QC53	**07-SEP-2008**	**12-SEP-2008**	14-SEP-2008	✓	**17-SEP-2008**	22-OCT-2008	✓
Amber Glass Bottle - Unpreserved QC56	**08-SEP-2008**	**12-SEP-2008**	15-SEP-2008	✓	**17-SEP-2008**	22-OCT-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved QC53	**07-SEP-2008**	**12-SEP-2008**	14-SEP-2008	✓	**16-SEP-2008**	22-OCT-2008	✓
Amber Glass Bottle - Unpreserved QC56	**08-SEP-2008**	**12-SEP-2008**	15-SEP-2008	✓	**16-SEP-2008**	22-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chromium Suite for Acid Sulphate Soils	EA033	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	7	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	7	**14.3**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Organotin Compounds (Soluble)	EP090S	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Organotin Sample Preparation	ORG34	WATER	In-house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	856573-002	----	**Benzo(a)pyrene**	50-32-8	121 %	55-116%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	EB0812313-006	BH20 1.1-1.4	**4.4`-DDT**	50-29-3	31.2 %	70-130%	**Recovery less than lower data quality objective**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA037: Ass Field Screening Analysis						
Snap Lock Bag						
BH20 2.6-2.7, BH20 5.5-5.70, BH20 8.6-8.78	----	----	----	24-SEP-2008	09-SEP-2008	**15**

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP005: Total Organic Carbon (TOC)						
Amber Glass Bottle - Unpreserved						
QC56	----	----	----	12-SEP-2008	10-SEP-2008	**2**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0812358

Telephone : +61-7-3243 7222

URS CHAIN OF CUSTODY

ADDRESS: URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY
PHONE NO: (07) 3243 2111	PHONE NO: (07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: 1 2 3 4 (please circle 1)
FAX NO: (07) 3243 2199	FAX NO: (07) 32437259		Custody Seal ? Y N NA
			Free ice / frozen icebricks present upon receipt? Y N
			Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: Rex	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 10/9/08 TIME: 14:25	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH20 10.7-11.0	09/09/08	S	1										✓	✓	✓					✓		✓					✓
2	BH20 12.1-12.55	"	"	1	1									✓	✓	✓					✓		✓					✓
3	QC57	"	L				1	1						[illegible]	[illegible]	✓		✓	✓	✓	✓		[illegible]					✓
4	QC58	"	S	1	1									✓	✓	✓					✓		✓					✓
5	QC59	"	S	1	1									✓	✓	✓					✓		✓					✓
6	BH20 12.5-13.0	"	S	1	1									✓	✓	✓					✓		✓					✓
7.	Extra sample BH20 13.0-13.2	"	S	1	1																							
TOTAL																												

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0812358**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS ADDRESS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: brisbane@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 07 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 10-SEP-2008	Issue Date	: 12-SEP-2008 10:40
Client Requested Due Date	: 17-SEP-2008	Scheduled Reporting Date	: **24-SEP-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 8.1 C - Ice bricks present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 7
Sercurity Seal	: Intact.	No. of samples analysed	: 7

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.**
- **Sample(s) have been received within recommended holding times.**
- **As per email confirmation extra sample BH20 13.0-13.2 will be analyse as per sample BH20 12.5-13.0.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

Method / Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
EP005 : Total Organic Carbon		
QC57	- Amber Glass Bottle - Unpreserved	- Amber TOC Vial- Sulphuric Acid

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP005 (solids) Total Organic Carbon (TOC) solis	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA037 ASS Field Screening Analysis	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-02 8 Metals (incl. Digestion)
EB0812358-001	09-SEP-2008 15:00	BH20 10.7-11.0	✓	✓	✓	✓	✓	✓
EB0812358-002	09-SEP-2008 15:00	BH20 12.1-12.53	✓	✓	✓	✓	✓	✓
EB0812358-004	09-SEP-2008 15:00	QC58	✓	✓	✓	✓	✓	✓
EB0812358-005	09-SEP-2008 15:00	QC59	✓	✓	✓	✓	✓	✓
EB0812358-006	09-SEP-2008 15:00	BH20 12.5-13.0	✓	✓	✓	✓	✓	✓
EB0812358-007	09-SEP-2008 15:00	BH20 13.0-13.2	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0812358-003	09-SEP-2008 15:00	QC57	✓	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0812358**	Page	: 1 of 10
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 10-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 7
Quote number	: EN/001/08	No. of samples analysed	: 7

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides: Insufficient sample has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **pH FOX Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Vigorous; 4 - Very Vigorous**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **TBT: Insufficient sample was provided for analysis.**

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC57	----	----	----	----
				Client sampling date / time	09-SEP-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0812358-003	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0001**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<1.0	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<1.0	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<1.0	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<1.0	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<1.0	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<1.0	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<1.0	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L		<1.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC57	----	----	----	----
				Client sampling date / time	09-SEP-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB0812358-003	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	**99.0**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%	**102**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%	**97.6**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%	**31.6**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**70.2**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**71.8**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%	**69.8**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**64.4**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**58.4**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH20 10.7-11.0	BH20 12.1-12.53	QC58	QC59	BH20 12.5-13.0
Client sampling date / time				09-SEP-2008 15:00	09-SEP-2008 15:00	09-SEP-2008 15:00	09-SEP-2008 15:00	09-SEP-2008 15:00
				EB0812358-001	EB0812358-002	EB0812358-004	EB0812358-005	EB0812358-006
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.5	5.8	6.2	6.1	6.3
Titratable Actual Acidity (23F)	----	2	mole H+ / t	5	2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	6.6	6.4	7.0	6.7	6.6
pH (Fox)	----	0.1	pH Unit	4.8	4.9	5.0	5.0	5.1
Reaction Rate	----	1	-	1	1	1	1	1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	20.1	20.8	19.1	15.7	19.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	10100	13800	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	6	<5	9	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	10	15	10	6	6
Copper	7440-50-8	5	mg/kg	23	31	39	7	<5
Iron	7439-89-6	50	mg/kg	31200	38000	----	----	----
Lead	7439-92-1	5	mg/kg	5	5	6	<5	<5
Manganese	7439-96-5	5	mg/kg	95	123	----	----	----
Nickel	7440-02-0	2	mg/kg	20	34	51	12	8
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	49	80	88	31	29
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	0.05	0.05	0.03	0.04	0.04
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH20 10.7-11.0	BH20 12.1-12.53	QC58	QC59	BH20 12.5-13.0
				Client sampling date / time: 09-SEP-2008 15:00	09-SEP-2008 15:00	09-SEP-2008 15:00	09-SEP-2008 15:00	09-SEP-2008 15:00
				EB0812358-001	EB0812358-002	EB0812358-004	EB0812358-005	EB0812358-006
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**87.7**	**92.5**	**90.0**	**92.5**	**90.8**
2-Chlorophenol-D4	93951-73-6	0.1	%	**94.4**	**100**	**93.6**	**92.1**	**92.2**
2.4.6-Tribromophenol	118-79-6	0.1	%	**74.6**	**78.4**	**79.0**	**72.9**	**74.2**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**98.0**	**103**	**91.7**	**91.9**	**89.9**
Anthracene-d10	1719-06-8	0.1	%	**87.5**	**94.8**	**71.3**	**72.2**	**70.4**
4-Terphenyl-d14	1718-51-0	0.1	%	**96.2**	**102**	**110**	**114**	**103**

Analytical Results

Sub-Matrix: SOLID			Client sample ID	BH20 13.0-13.2	----	----	----	----
			Client sampling date / time	09-SEP-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB0812358-007	----	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**6.5**	----	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**0.25**	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**49**	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**0.08**	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**6.7**	----	----	----	----
pH (Fox)	----	0.1	pH Unit	**5.2**	----	----	----	----
Reaction Rate	----	1	-	**1**	----	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**16.2**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**6960**	----	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**6**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**6**	----	----	----	----
Iron	7439-89-6	50	mg/kg	**12600**	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Manganese	7439-96-5	5	mg/kg	**42**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**9**	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**28**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH20 13.0-13.2	----	----	----	----
				Client sampling date / time: 09-SEP-2008 15:00	----	----	----	----
				EB0812358-007	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.04**	----	----	----	----
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	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**94.5**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**96.8**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**78.3**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**94.5**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**73.8**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**117**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 10-Sep-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0812358	BH20 10.7-11.0	001	1%	10%	32%	57%
EB0812358	BH20 12.1-1 2.53	002	0%	4%	46%	50%
EB0812358	QC58	004	0%	5%	50%	45%
EB0812358	QC59	005	1%	10%	34%	55%
EB0812358	BH20 12.5-13.0	006	0%	4%	47%	49%
EB0812358	BH20 13.0-13.2	007	27%	14%	39%	20%

Remarks :

Test Procedure : AS1289.3.6.3

Prepared by : Dianne Blane

Checked by PK

Certificate of Analysis

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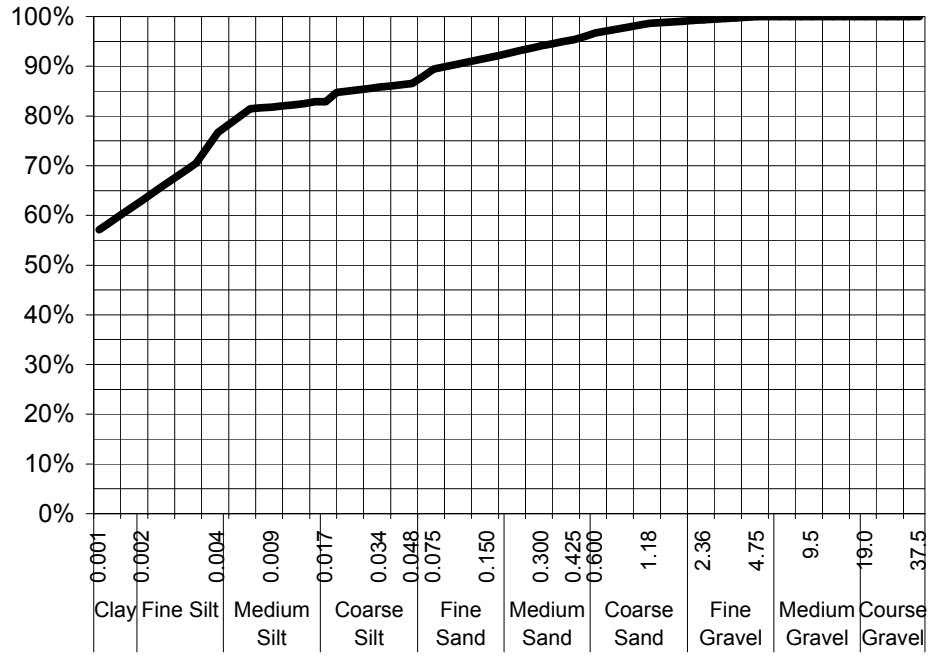
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	22-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	10-Sep-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0812358-001 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH20 10.7-11.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	99%
0.600	97%
0.425	95%
0.300	94%
0.150	92%
0.075	89%
Particle Size (microns)	
34	86%
17	83%
9	82%
4	77%
3	71%
1	57%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	17-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay paste & grit	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

COMPANY: URS Australia Pty Ltd (Qld)

ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

PROJECT: 42626228.52

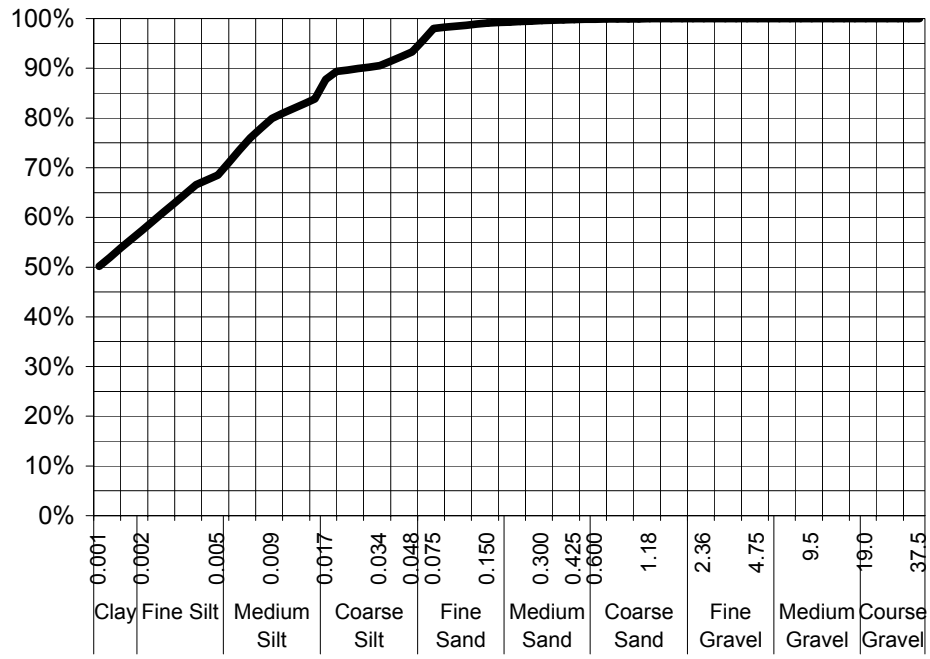
DATE REPORTED: 22-Sep-2008

DATE RECEIVED: 10-Sep-2008

REPORT NO: EB0812358-002 / PSD

SAMPLE ID: BH20 12.1-1
2.53

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%
Particle Size (microns)	
34	91%
17	88%
9	80%
5	69%
3	67%
1	50%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Clay paste & grit

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 17-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

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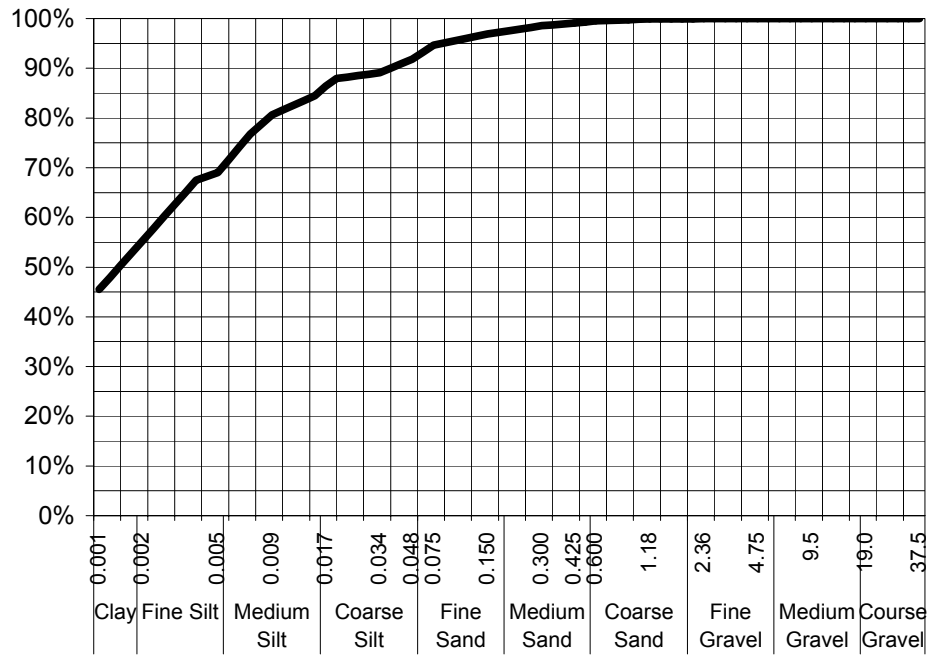
CLIENT:	Rob Ully	**DATE REPORTED:**	22-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	10-Sep-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0812358-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC58

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	99%
0.300	99%
0.150	97%
0.075	95%
Particle Size (microns)	
34	89%
17	86%
9	81%
5	69%
3	67%
1	45%

Samples analysed as received.

Sample Comments:		**Analysed:**	17-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Clay paste & grit	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 22-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 10-Sep-2008

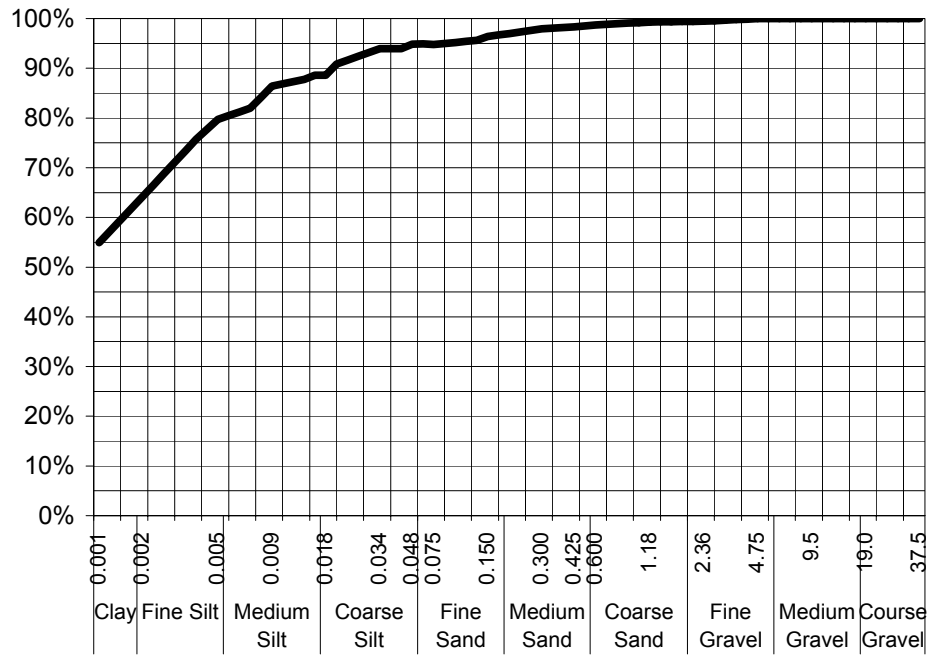
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0812358-005 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC59

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	99%
0.600	99%
0.425	98%
0.300	98%
0.150	96%
0.075	95%
Particle Size (microns)	
34	94%
18	89%
9	86%
5	80%
3	76%
1	55%

Samples analysed as received.

Sample Comments:

Analysed: 17-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Red clay & grit

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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CLIENT: Rob Ully

DATE REPORTED: 22-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 10-Sep-2008

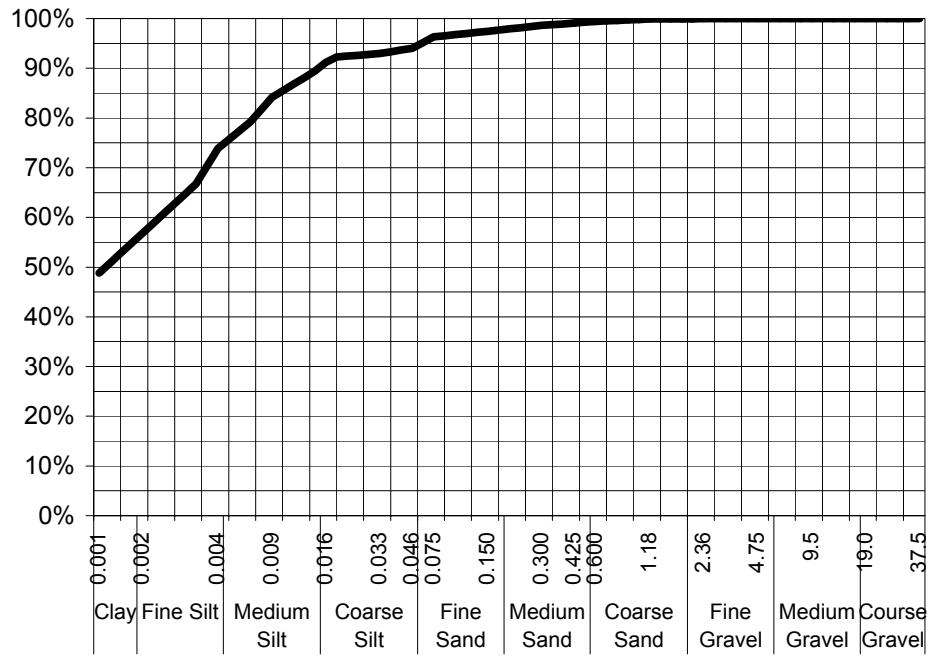
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0812358-006 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH20 12.5-13.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	97%
0.075	96%
Particle Size (microns)	
33	93%
16	91%
9	84%
4	74%
3	67%
1	49%

Samples analysed as received.

Sample Comments:

Analysed: 17-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay paste & grit

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 22-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 10-Sep-2008

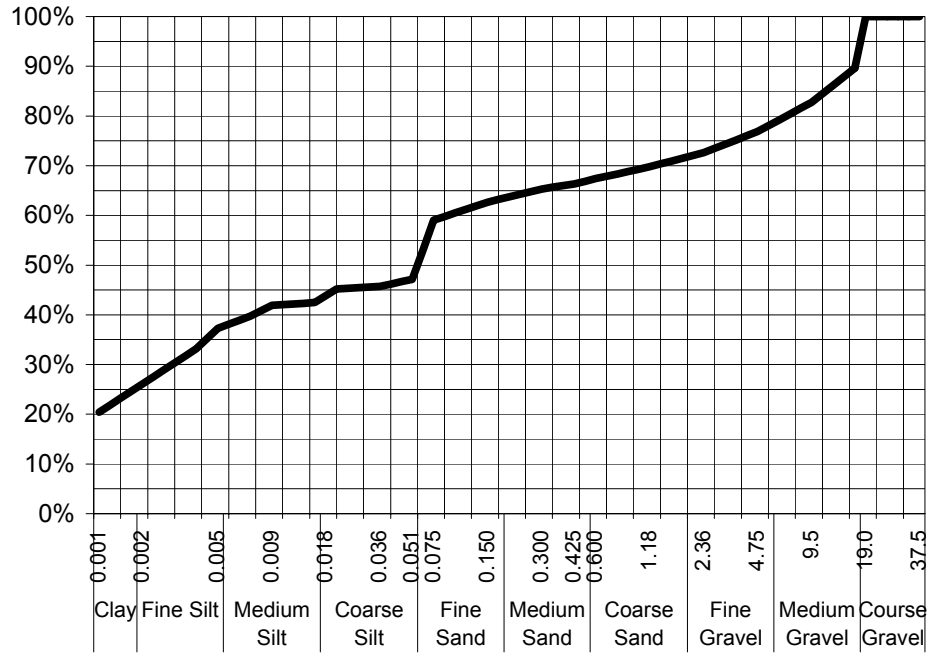
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0812358-007 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH20 13.0-13.2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	83%
4.75	77%
2.36	73%
1.18	70%
0.600	67%
0.425	66%
0.300	65%
0.150	63%
0.075	59%
Particle Size (microns)	
36	46%
18	44%
9	42%
5	37%
3	33%
1	20%

Samples analysed as received.

Sample Comments: The mass of sample supplied does not meet that required by AS 1289.1.1.

Analysed: 17-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay, silt & sand

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	10-Sep-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0812358	BH20 10.7-11.0	001	1%	10%	32%	57%
EB0812358	BH20 12.1-1 2.53	002	0%	4%	46%	50%
EB0812358	BH20 12.5-13.0	006	0%	4%	47%	49%
EB0812358	QC58	004	0%	5%	50%	45%
EB0812358	QC59	005	1%	10%	34%	55%
EB0812358	BH20 13.0-13.2	007	27%	14%	39%	20%

Remarks :			
Test Procedure :	AS1289.3.6.3		
Prepared by :	Dianne Blane	Checked by	PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0812358**	Page	: 1 of 9
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 10-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 7
Quote number	: EN/001/08	No. of samples analysed	: 7

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 763611)									
EB0812358-001	BH20 10.7-11.0	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	5	2	66.7	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	5.5	5.6	1.8	0% - 20%
EA033-B: Potential Acidity (QC Lot: 763611)									
EB0812358-001	BH20 10.7-11.0	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA037: Ass Field Screening Analysis (QC Lot: 763612)									
EB0812358-001	BH20 10.7-11.0	EA037: pH (F)	----	0.1	pH Unit	6.6	6.5	1.5	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.8	4.6	4.2	0% - 20%
EA055: Moisture Content (QC Lot: 757202)									
EB0812358-005	QC59	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	15.7	17.0	8.0	0% - 50%
EB0812415-018	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 757101)									
EB0812313-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0812313-014	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 757101) - continued									
EB0812313-014	Anonymous	EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 757102)									
EB0812313-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0812313-014	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 757538)									
EB0812358-001	BH20 10.7-11.0	EP005: Total Organic Carbon	----	0.02	%	0.05	0.04	22.2	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 758695)									
EB0812313-005	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0812313-015	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 761645)									
EB0812313-004	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812560-008	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 761646)									
EB0812313-004	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 763002)									
EB0812313-004	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812560-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 755553)									
EB0812358-003	QC57	EP005: Total Organic Carbon	----	1	mg/L	<1	<1	0.0	No Limit

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 763611)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 763611)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 763611)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 757101)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	113	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	101	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	116	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	109	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	110	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	117	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	109	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 757102)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	102	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 757538)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	101	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 758695)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	106	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	106	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	106	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	109	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	107	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	94.4	65	110

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 758695) - continued								
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	107	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	103	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	98.4	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	95.7	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	109	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	108	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	# 121	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	106	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	108	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	102	52	128

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 761645)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	97.0	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	96.1	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	99.3	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	101	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	99.5	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	98.7	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	99.1	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	106	81	127
EG020T: Total Metals by ICP-MS (QCLot: 761646)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	83.7	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 763002)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	101	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 755553)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	104	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 755955)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	66.2	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 755954)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	81.3	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	86.4	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	87.2	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	88.0	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	87.7	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	78.1	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	102	54.3	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Recovery Limits (%)
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 755954) - continued								
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	85.8	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	66.2	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	88.6	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 755956)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	87.4	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	76.8	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	74.9	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	78.0	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	70.5	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	51.6	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	55.9	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	55.0	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	53.4	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	49.2	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	90.1	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	77.4	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	97.5	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	101	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	100	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	97.2	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 757101)							
EB0812313-006	Anonymous	EG005T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 757102)							
EB0812313-006	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 758695)							
EB0812313-006	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 761645)							
EB0812313-017	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 763002)							
EB0812313-004	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0812358**	Page	: 1 of 9
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 10-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 7
Quote number	: EN/001/08	No. of samples analysed	: 7

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
Pulp Bag BH20 10.7-11.0	**09-SEP-2008**	**10-SEP-2008**	10-SEP-2008	✓	**24-SEP-2008**	23-DEC-2008	✓
Snap Lock Bag - frozen BH20 12.1-12.53, QC58, QC59, BH20 12.5-13.0, BH20 13.0-13.2	**09-SEP-2008**	**10-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
EA033-B: Potential Acidity							
Pulp Bag BH20 10.7-11.0	**09-SEP-2008**	**10-SEP-2008**	10-SEP-2008	✓	**24-SEP-2008**	23-DEC-2008	✓
Snap Lock Bag - frozen BH20 12.1-12.53, QC58, QC59, BH20 12.5-13.0, BH20 13.0-13.2	**09-SEP-2008**	**10-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
EA033-C: Acid Neutralising Capacity							
Pulp Bag BH20 10.7-11.0	**09-SEP-2008**	**10-SEP-2008**	10-SEP-2008	✓	**24-SEP-2008**	23-DEC-2008	✓
Snap Lock Bag - frozen BH20 12.1-12.53, QC58, QC59, BH20 12.5-13.0, BH20 13.0-13.2	**09-SEP-2008**	**10-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
EA033-D: Retained Acidity							
Pulp Bag BH20 10.7-11.0	**09-SEP-2008**	**10-SEP-2008**	10-SEP-2008	✓	**24-SEP-2008**	23-DEC-2008	✓
Snap Lock Bag - frozen BH20 12.1-12.53, QC58, QC59, BH20 12.5-13.0, BH20 13.0-13.2	**09-SEP-2008**	**10-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting							
Pulp Bag							
BH20 10.7-11.0	**09-SEP-2008**	**10-SEP-2008**	10-SEP-2008	✓	**24-SEP-2008**	23-DEC-2008	✓
Snap Lock Bag - frozen							
BH20 12.1-12.53, QC58, QC59, BH20 12.5-13.0, BH20 13.0-13.2	**09-SEP-2008**	**10-SEP-2008**	---	----	**24-SEP-2008**	23-DEC-2008	✓
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen							
BH20 12.1-12.53, QC58, QC59, BH20 12.5-13.0, BH20 13.0-13.2	**09-SEP-2008**	**10-SEP-2008**	---	----	**24-SEP-2008**	08-MAR-2009	✓
Soil Glass Jar - Unpreserved							
BH20 10.7-11.0	**09-SEP-2008**	**10-SEP-2008**	10-SEP-2008	✓	**24-SEP-2008**	10-SEP-2008	×
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH20 10.7-11.0, BH20 12.1-12.53, QC58, QC59, BH20 12.5-13.0, BH20 13.0-13.2	**09-SEP-2008**	**----**	----	----	**15-SEP-2008**	16-SEP-2008	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH20 10.7-11.0, BH20 12.1-12.53, QC58, QC59, BH20 12.5-13.0, BH20 13.0-13.2	**09-SEP-2008**	**15-SEP-2008**	08-MAR-2009	✓	**16-SEP-2008**	08-MAR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH20 10.7-11.0, BH20 12.1-12.53, QC58, QC59, BH20 12.5-13.0, BH20 13.0-13.2	**09-SEP-2008**	**15-SEP-2008**	08-MAR-2009	✓	**17-SEP-2008**	07-OCT-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH20 10.7-11.0, BH20 12.1-12.53, QC58, QC59, BH20 12.5-13.0, BH20 13.0-13.2	**09-SEP-2008**	**16-SEP-2008**	---	----	**16-SEP-2008**	07-OCT-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH20 10.7-11.0, BH20 12.1-12.53, QC58, QC59, BH20 12.5-13.0, BH20 13.0-13.2	**09-SEP-2008**	**16-SEP-2008**	23-SEP-2008	✓	**18-SEP-2008**	26-OCT-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC57	**09-SEP-2008**	**18-SEP-2008**	08-MAR-2009	✓	**18-SEP-2008**	08-MAR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC57	**09-SEP-2008**	**----**	----	----	**19-SEP-2008**	07-OCT-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber Glass Bottle - Unpreserved							
QC57	**09-SEP-2008**	**----**	----	----	**12-SEP-2008**	11-SEP-2008	×
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC57	**09-SEP-2008**	**12-SEP-2008**	16-SEP-2008	✓	**17-SEP-2008**	22-OCT-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC57	**09-SEP-2008**	**12-SEP-2008**	16-SEP-2008	✓	**17-SEP-2008**	22-OCT-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC57	**09-SEP-2008**	**12-SEP-2008**	16-SEP-2008	✓	**16-SEP-2008**	22-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	1	6	16.7	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chromium Suite for Acid Sulphate Soils	EA033	1	6	16.7	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	6	16.7	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	6	16.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	6	16.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	6	16.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.0	5.0	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	19	5.3	5.0	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	33.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	5	20.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	20.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	5	20.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)

Analytical Methods	Method	Matrix	Method Descriptions
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Organotin Compounds (Soluble)	EP090S	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Organotin Sample Preparation	ORG34	WATER	In-house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	856573-002	----	**Benzo(a)pyrene**	50-32-8	121 %	55-116%	**Recovery greater than upper control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA037: Ass Field Screening Analysis						
Soil Glass Jar - Unpreserved						
BH20 10.7-11.0	----	----	----	24-SEP-2008	10-SEP-2008	**14**

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP005: Total Organic Carbon (TOC)						
Amber Glass Bottle - Unpreserved						
QC57	----	----	----	12-SEP-2008	11-SEP-2008	**1**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

URS CHAIN OF CUSTODY

Environmental Division
Brisbane
Work Order
EB0812603

Telephone : +61-7-3243 7222

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY Custody Seal ? Y N NA Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C
PHONE NO:	(07) 3243 2111	PHONE NO: (07) 32437222	TURNAROUND DETAILS: ☑ Standard - 5 days ☐ Non standard	COC SEQUENCE NUMBER: 1 2 3 4 (please circle) (i)
FAX NO:	(07) 3243 2199	FAX NO: (07) 32437259		
URS PROJECT NO:	42626228.52000	PO NO:	RELINQUISHED BY:	RECEIVED BY: Rex 12/9/10 17:30
URS PM:	Rob Ully	SITE: GLNG SANTOS		RELINQUISHED BY:
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM: Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME: RECEIVED BY: DATE:
COMMENTS:	Please see overleaf for specific analytes		(1) Caution - Samples may contain hazardous substances	

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE										ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES																	
				Solid		Liquid																									
	LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fol}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
1		BH20 15.0-15.15	10/07/08	S	1										ON	HOLD														
2		BH20 15.16-15.38	"	S	1										ON	HOLD														
3		BH20 17.70 15.15	"	S	2	1									ON	HOLD														
4		QC60	"	L				1	1								✓		✓	✓	✓	✓							✓	
5		BH20 20.0 20.31	"	S	2	1									ON	HOLD														
6		BH20 21.4 21.66	11/07/08	S	1	1									ON	HOLD														
7		BH20 23.6 23.77	"	S	1										ON	HOLD														
8		QC61	"	L				1	1								✓		✓	✓	✓	✓							✓	
		TOTAL																												

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0812603**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS ADDRESS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: brisbane@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 07 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 12-SEP-2008	Issue Date	: 15-SEP-2008 17:44
Client Requested Due Date	: 22-SEP-2008	Scheduled Reporting Date	: **23-SEP-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 7.7 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 8
Sercurity Seal	: Intact.	No. of samples analysed	: 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

Method / Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
EG020A-T : Total Metals by ICP-MS - Suite A		
QC60	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Unfiltered
EG020B-T : Total Metals by ICP-MS - Suite B		
QC60	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Unfiltered
EG035T : Total Mercury by FIMS		
QC60	- Clear Plastic Bottle - Natural	- Clear Plastic Bottle - Nitric Acid; Unfiltered

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested
EB0812603-001	10-SEP-2008 15:00	BH20 15.0-15.15	✓
EB0812603-002	10-SEP-2008 15:00	BH20 15.16-15.38	✓
EB0812603-003	10-SEP-2008 15:00	BH20 17.70-18.15	✓
EB0812603-005	10-SEP-2008 15:00	BH20 20.0-20.31	✓
EB0812603-006	11-SEP-2008 15:00	BH20 21.4-21.66	✓
EB0812603-007	11-SEP-2008 15:00	BH20 23.6-23.77	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - W-02T 8 metals (Total)
EB0812603-004	10-SEP-2008 15:00	QC60	✓	✓	✓	✓	✓	✓	✓
EB0812603-008	11-SEP-2008 15:00	QC61	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0812603**	Page	: 1 of 5
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 12-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-SEP-2008
Site	: GLNG SANTOS		
		No. of samples received	: 8
Quote number	: EN/001/08	No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been preformed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Persticides: Insufficient sample has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**

Analytical Results

Sub-Matrix: **LIQUID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC60	QC61	----	----	----
				Client sampling date / time: 10-SEP-2008 15:00	11-SEP-2008 15:00	----	----	----
				EB0812603-004	EB0812603-008	----	----	----
EG020T: Total Metals by ICP-MS								
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	**1**	<1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<2	<2	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.5	µg/L	<1.2	<1.1	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<1.2	<1.1	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<1.2	<1.1	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<1.2	<1.1	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<1.2	<1.1	----	----	----
Endrin	72-20-8	0.5	µg/L	<1.2	<1.1	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<1.2	<1.1	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<1.2	<1.1	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2	<2	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<1.2	<1.1	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<1.2	<1.1	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----

Analytical Results

Sub-Matrix: **LIQUID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC60	QC61	----	----	----
				Client sampling date / time: 10-SEP-2008 15:00	11-SEP-2008 15:00	----	----	----
				EB0812603-004	EB0812603-008	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**102**	**100**	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**128**	**127**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**130**	**129**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**37.7**	**33.5**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**81.0**	**78.2**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**86.2**	**79.2**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**94.5**	**80.8**	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**80.6**	**75.5**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**103**	**93.2**	----	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0812603**	Page	: 1 of 6
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 12-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-SEP-2008
Order number	: ----		
		No. of samples received	: 8
Quote number	: EN/001/08	No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been preformed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 761154)									
EB0812565-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812567-006	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 761155)									
EB0812565-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812567-006	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 763476)									
EB0812567-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812603-004	QC60	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 759593)									
EB0812601-002	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0812653-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 761154)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	88.6	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	88.8	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	92.0	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	97.4	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	87.9	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	87.6	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	90.1	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	99.3	81	127
EG020T: Total Metals by ICP-MS (QCLot: 761155)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	72.3	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 763476)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	99.8	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 759593)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	105	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 758871)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	93.4	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 758867)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	94.1	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	91.6	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	90.5	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	86.9	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	85.6	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	86.4	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	91.5	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	85.9	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	75.5	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	93.4	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 758870)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	75.8	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	75.5	51	113
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 758870) - continued								
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	83.9	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	79.8	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	74.2	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	78.5	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	80.6	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	81.0	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	80.4	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	73.7	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	77.2	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	85.8	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	83.2	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	78.0	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	76.7	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	79.4	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 761154)							
EB0812565-002	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 763476)							
EB0812567-001	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0812603**	Page	: 1 of 5
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 12-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-SEP-2008
Order number	: ----		
		No. of samples received	: 8
Quote number	: EN/001/08	No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Natural							
QC60	**10-SEP-2008**	**18-SEP-2008**	09-MAR-2009	✓	**18-SEP-2008**	09-MAR-2009	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC61	**11-SEP-2008**	**18-SEP-2008**	10-MAR-2009	✓	**18-SEP-2008**	10-MAR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Natural							
QC60	**10-SEP-2008**	**----**	----	----	**22-SEP-2008**	08-OCT-2008	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC61	**11-SEP-2008**	**----**	----	----	**22-SEP-2008**	09-OCT-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC60	**10-SEP-2008**	**----**	----	----	**17-SEP-2008**	08-OCT-2008	✓
Amber TOC Vial - Sulphuric Acid							
QC61	**11-SEP-2008**	**----**	----	----	**17-SEP-2008**	09-OCT-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC60	**10-SEP-2008**	**17-SEP-2008**	17-SEP-2008	✓	**19-SEP-2008**	27-OCT-2008	✓
Amber Glass Bottle - Unpreserved							
QC61	**11-SEP-2008**	**17-SEP-2008**	18-SEP-2008	✓	**19-SEP-2008**	27-OCT-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC60	**10-SEP-2008**	**17-SEP-2008**	17-SEP-2008	✓	**19-SEP-2008**	27-OCT-2008	✓
Amber Glass Bottle - Unpreserved							
QC61	**11-SEP-2008**	**17-SEP-2008**	18-SEP-2008	✓	**19-SEP-2008**	27-OCT-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC60	**10-SEP-2008**	**17-SEP-2008**	17-SEP-2008	✓	**19-SEP-2008**	27-OCT-2008	✓
Amber Glass Bottle - Unpreserved							
QC61	**11-SEP-2008**	**17-SEP-2008**	18-SEP-2008	✓	**19-SEP-2008**	27-OCT-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **LIQUID**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP068T: Organophosphorus Pesticide Surrogate	EB0812603-004	QC60	**DEF**	78-48-8	130 %	10-110 %	**Recovery greater than upper data quality objective**
EP068T: Organophosphorus Pesticide Surrogate	EB0812603-008	QC61	**DEF**	78-48-8	129 %	10-110 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0813051

Telephone : +61-7-3243 7222

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS ✓ Standard - 5 days Non standard	COC SEQUENCE NUMBER 1 2 3 4 please circle 2
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		
URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	
URS PM:	Rob Ully	SITE :	GLNG SANTOS		
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	

FOR LABORATORY USE ONLY

Custody Seal ?	(Y)	N	NA
Free ice / frozen icebricks present upon receipt?	(Y)	N	
Random Sample Temperature on Receipt	8.5 °C		

RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
David Kenny		
DATE: 24/09/08 TIME: 13:40	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE																										
				Solid		Liquid																								
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromium Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
1	BH21 1.5-1.6	20/09/08	S	1	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					✓		
2	BH21 1.65-1.90	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓							
3	BH21 2.0-2.4	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓							
4	BH21 2.5-2.7	"	"	2	2									✓	✓	✓	✓	✓	✓	✓	✓		✓							
5	BH21 2.95-3.2	"	"	1	1									✓	✓	✓					✓		✓					✓		
6	BH21 4.0-4.45	"	"	1	1									✓	✓	✓					✓		✓					✓		
7	BH21 5.0-6.05	"	"	2	1									✓	✓	✓					✓		✓					✓		
8	QC62	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓							
9	QC63	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓							
10	QC64	"	"	1	1									✓	✓	✓					✓		✓					✓		
11	QC65	"	"	1	1									✓	~	✓					✓		✓					✓		
12	QC66	"	L				1	1								✓		✓	✓	✓	✓							✓		
TOTAL														11	11	12	6	7	7	7	12		11					6		

URS CHAIN OF CUSTODY

ADDRESS: URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY
PHONE NO: (07) 3243 2111	PHONE NO: (07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: 1 (2) 3 4 — please circle 2
FAX NO: (07) 3243 2199	FAX NO: (07) 32437259		

Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME:	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
13	BH21 7.0-7.45	21/09/08	S	1	1									✓	✓	✓					✓		✓					✓
14	BH21 7.8-8.2	"	"	2	1									✓	✓	✓					✓		✓					✓
15	BH21 8.5-8.9	"	"	2	1									✓	✓	✓					✓		✓					✓
16	BH21 9.6-10.0	"	"	2	1									✓	✓	✓					✓		✓					✓
17	BH21 10.5-10.7	"	"	2										✓	✓	✓					✓		✓					✓
18	BH21 10.7-11.1	"	"	1	1									✓	✓	✓					✓		✓					✓
19	BH21 11.6-11.9	"	"	1	1									✓	✓	✓					✓		✓					✓
20	QC 67	"	"	1	1									✓	✓	✓					✓		✓					✓
21	QC 68	"	"	1	1									✓	✓	✓					✓		✓					✓
22	QC 69	"	L				1	1								✓		✓	✓	✓	✓							✓
TOTAL														9	9	10		1	1	1	10		9					10

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0813051**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 4
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 22-SEP-2008	Issue Date	: 24-SEP-2008 15:42
Client Requested Due Date	: 29-SEP-2008	Scheduled Reporting Date	: **30-SEP-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 10.9 C 8.5 C - Ice present
No. of coolers/boxes	: 2 MEDIUM	No. of samples received	: 22
Sercurity Seal	: Intact.	No. of samples analysed	: 22

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Please be advised that the Metals and Organics analysis results will be available by 30/9/8 and the remainder analysis results will be available by 7/10/8**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA037 ASS Field Screening Analysis	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins
EB0813051-001	20-SEP-2008 15:00	BH21 1.5-1.6	✓	✓	✓	✓	✓	✓	✓	✓
EB0813051-002	20-SEP-2008 15:00	BH21 1.65-1.90	✓	✓	✓	✓	✓	✓	✓	✓
EB0813051-003	20-SEP-2008 15:00	BH21 2.0-2.9	✓	✓	✓	✓	✓	✓	✓	✓
EB0813051-004	20-SEP-2008 15:00	BH21 2.5-2.9	✓	✓	✓	✓	✓	✓	✓	✓
EB0813051-005	20-SEP-2008 15:00	BH21 2.95-3.2	✓	✓	✓	✓			✓	
EB0813051-006	20-SEP-2008 15:00	BH21 4.0-4.45	✓	✓	✓	✓			✓	
EB0813051-007	20-SEP-2008 15:00	BH21 5.6-6.05	✓	✓	✓	✓			✓	
EB0813051-008	20-SEP-2008 15:00	QC62	✓	✓	✓	✓	✓	✓	✓	✓
EB0813051-009	20-SEP-2008 15:00	QC63	✓	✓	✓	✓	✓	✓	✓	✓
EB0813051-010	20-SEP-2008 15:00	QC64	✓	✓	✓	✓			✓	
EB0813051-011	20-SEP-2008 15:00	QC65	✓	✓	✓	✓			✓	
EB0813051-013	21-SEP-2008 15:00	BH21 7.0-7.45	✓	✓	✓	✓			✓	
EB0813051-014	21-SEP-2008 15:00	BH21 7.8-8.2	✓	✓	✓	✓			✓	
EB0813051-015	21-SEP-2008 15:00	BH21 8.5-8.9	✓	✓	✓	✓			✓	
EB0813051-016	21-SEP-2008 15:00	BH21 9.6-10.0	✓	✓	✓	✓			✓	
EB0813051-017	21-SEP-2008 15:00	BH21 10.5-10.7	✓	✓	✓	✓			✓	
EB0813051-018	21-SEP-2008 15:00	BH21 10.7-11.1	✓	✓	✓	✓			✓	
EB0813051-019	21-SEP-2008 15:00	BH21 11.6-11.9	✓	✓	✓	✓			✓	
EB0813051-020	21-SEP-2008 15:00	QC67	✓	✓	✓	✓			✓	
EB0813051-021	21-SEP-2008 15:00	QC68	✓	✓	✓	✓			✓	

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - S-02 8 Metals (incl. Digestion)
EB0813051-001	20-SEP-2008 15:00	BH21 1.5-1.6	✓
EB0813051-002	20-SEP-2008 15:00	BH21 1.65-1.90	✓
EB0813051-003	20-SEP-2008 15:00	BH21 2.0-2.9	✓
EB0813051-004	20-SEP-2008 15:00	BH21 2.5-2.9	✓

			SOIL - S-02 8 Metals (incl. Digestion)
EB0813051-005	20-SEP-2008 15:00	BH21 2.95-3.2	✓
EB0813051-006	20-SEP-2008 15:00	BH21 4.0-4.45	✓
EB0813051-007	20-SEP-2008 15:00	BH21 5.6-6.05	✓
EB0813051-008	20-SEP-2008 15:00	QC62	✓
EB0813051-009	20-SEP-2008 15:00	QC63	✓
EB0813051-010	20-SEP-2008 15:00	QC64	✓
EB0813051-011	20-SEP-2008 15:00	QC65	✓
EB0813051-013	21-SEP-2008 15:00	BH21 7.0-7.45	✓
EB0813051-014	21-SEP-2008 15:00	BH21 7.8-8.2	✓
EB0813051-015	21-SEP-2008 15:00	BH21 8.5-8.9	✓
EB0813051-016	21-SEP-2008 15:00	BH21 9.6-10.0	✓
EB0813051-017	21-SEP-2008 15:00	BH21 10.5-10.7	✓
EB0813051-018	21-SEP-2008 15:00	BH21 10.7-11.1	✓
EB0813051-019	21-SEP-2008 15:00	BH21 11.6-11.9	✓
EB0813051-020	21-SEP-2008 15:00	QC67	✓
EB0813051-021	21-SEP-2008 15:00	QC68	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0813051-012	20-SEP-2008 15:00	QC66	✓	✓	✓	✓	✓	✓	✓	✓
EB0813051-022	21-SEP-2008 15:00	QC69	✓	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0813051**	Page	: 1 of 16
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 22-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 22
Quote number	: EN/001/08	No. of samples analysed	: 22

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EA037 (ASS Field Screening Analysis): Samples were frozen upon receipt and remained frozen until analysis was performed. Therefore, the integrity of the samples has been maintained and holding time breaches are not applicable.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC66 and QC69 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **pH FOX Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Vigorous; 4 - Very Vigorous**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **TBT: High failing LCS recovery accepted as all associated analyte results are less than LOR.**
- **TBT: Samples QC66 and QC69 not analysed due to insufficient sample volume.**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH21 1.5-1.6	BH21 1.65-1.90	BH21 2.0-2.9	BH21 2.5-2.9	BH21 2.95-3.2
				Client sampling date / time: 20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00
				EB0813051-001	EB0813051-002	EB0813051-003	EB0813051-004	EB0813051-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.2	8.8	7.1	6.0	6.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.10	0.04	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	60	27	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	19.0	1.32	1.26	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3790	264	251	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	6.08	0.42	0.40	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.8	9.4	9.4	7.6	7.8
pH (Fox)	----	0.1	pH Unit	4.3	5.5	5.5	5.0	5.0
Reaction Rate	----	1	-	1	1	1	1	1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	25.4	24.6	21.9	17.6	15.8
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	3740	7480	7050	----	4220
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	10	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	8	9	9	8	6
Copper	7440-50-8	5	mg/kg	7	13	278	18	8
Iron	7439-89-6	50	mg/kg	8390	6150	4410	----	2850
Lead	7439-92-1	5	mg/kg	<5	6	9	8	7
Manganese	7439-96-5	5	mg/kg	303	19	10	----	8
Nickel	7440-02-0	2	mg/kg	5	2	4	3	<2
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	12	8	10	13	6

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH21 1.5-1.6	BH21 1.65-1.90	BH21 2.0-2.9	BH21 2.5-2.9	BH21 2.95-3.2
				Client sampling date / time: 20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00
				EB0813051-001	EB0813051-002	EB0813051-003	EB0813051-004	EB0813051-005
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.42**	**0.39**	**0.29**	**0.13**	**0.16**
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Total Chlordane (sum)	----	0.05	mg/kg	<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	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	<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	----
Endrin	72-20-8	0.05	mg/kg	<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	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<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	----
Endrin ketone	53494-70-5	0.05	mg/kg	<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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	----
EP066S: PCB Surrogate								

Analytical Results

Sub-Matrix: SOIL				Client sample ID	BH21 1.5-1.6	BH21 1.65-1.90	BH21 2.0-2.9	BH21 2.5-2.9	BH21 2.95-3.2
				Client sampling date / time	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00
Compound	CAS Number	LOR	Unit		EB0813051-001	EB0813051-002	EB0813051-003	EB0813051-004	EB0813051-005
EP066S: PCB Surrogate - Continued									
Decachlorobiphenyl	2051-24-3	0.1	%		80.9	82.0	87.9	83.1	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		64.0	56.4	62.4	66.8	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		81.5	74.6	77.8	80.3	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		69.0	87.2	84.6	88.0	81.1
2-Chlorophenol-D4	93951-73-6	0.1	%		66.3	75.2	82.8	84.2	79.0
2.4.6-Tribromophenol	118-79-6	0.1	%		73.8	83.5	79.2	86.3	93.4
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		84.4	58.2	91.8	85.4	91.8
Anthracene-d10	1719-06-8	0.1	%		103	75.6	73.7	68.8	73.9
4-Terphenyl-d14	1718-51-0	0.1	%		89.7	109	106	104	111
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		123	135	199	131	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH21 4.0-4.45	BH21 5.6-6.05	QC62	QC63	QC64
				Client sampling date / time: 20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00
				EB0813051-006	EB0813051-007	EB0813051-008	EB0813051-009	EB0813051-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.2	6.2	8.0	8.3	6.2
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	1.36	1.41	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	272	283	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	0.44	0.45	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	7.3	7.3	8.1	8.2	7.6
pH (Fox)	----	0.1	pH Unit	5.0	5.2	5.8	5.7	5.2
Reaction Rate	----	1	-	1	1	1	1	1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	17.7	17.7	21.8	20.4	16.6
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	5720	6030	6940	7100	5090
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	6	9	9	9	10
Copper	7440-50-8	5	mg/kg	8	14	28	15	10
Iron	7439-89-6	50	mg/kg	6040	11300	7610	9760	8360
Lead	7439-92-1	5	mg/kg	8	8	14	8	9
Manganese	7439-96-5	5	mg/kg	26	40	18	25	29
Nickel	7440-02-0	2	mg/kg	2	3	4	4	4
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	6	8	11	12	10

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	BH21 4.0-4.45	BH21 5.6-6.05	QC62	QC63	QC64
				Client sampling date / time	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00
					EB0813051-006	EB0813051-007	EB0813051-008	EB0813051-009	EB0813051-010
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**0.13**	**0.20**	**0.36**	**0.33**	**0.12**
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		----	----	<0.10	<0.10	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		----	----	<0.05	<0.05	----
Total Chlordane (sum)	----	0.05	mg/kg		----	----	<0.05	<0.05	----
trans-Chlordane	5103-74-2	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	----
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	----
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	----
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
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		----	----	<0.5	<0.5	----
EP066S: PCB Surrogate									

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH21 4.0-4.45	BH21 5.6-6.05	QC62	QC63	QC64
				Client sampling date / time: 20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00	20-SEP-2008 15:00
				EB0813051-006	EB0813051-007	EB0813051-008	EB0813051-009	EB0813051-010
EP066S: PCB Surrogate - Continued								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	**86.2**	**93.2**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	**68.0**	**67.4**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	----	**83.4**	**83.2**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**87.1**	**87.4**	**87.2**	**87.7**	**87.2**
2-Chlorophenol-D4	93951-73-6	0.1	%	**81.0**	**98.4**	**93.6**	**90.6**	**90.7**
2.4.6-Tribromophenol	118-79-6	0.1	%	**94.9**	**86.0**	**81.3**	**94.1**	**102**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**94.4**	**105**	**101**	**106**	**88.1**
Anthracene-d10	1719-06-8	0.1	%	**82.8**	**75.4**	**76.7**	**82.4**	**85.6**
4-Terphenyl-d14	1718-51-0	0.1	%	**127**	**118**	**114**	**109**	**124**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	----	**76.9**	**108**	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: QC65	BH21 7.0-7.45	BH21 7.8-8.2	BH21 8.5-8.9	BH21 9.6-10.0
				Client sampling date / time: 20-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00
				EB0813051-011	EB0813051-013	EB0813051-014	EB0813051-015	EB0813051-016
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.1	6.0	6.5	6.5	6.3
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	0.58	0.84	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	115	168	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	0.18	0.27	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	7.4	7.3	7.4	7.5	7.9
pH (Fox)	----	0.1	pH Unit	5.1	5.0	5.2	5.0	5.1
Reaction Rate	----	1	-	1	1	1	1	1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	17.2	19.2	16.1	14.4	17.8
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	5540	6130	----	3500	4140
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	7	11	12	<5	16
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	10	13	8	6	7
Copper	7440-50-8	5	mg/kg	11	13	19	6	10
Iron	7439-89-6	50	mg/kg	12600	14700	----	4410	20300
Lead	7439-92-1	5	mg/kg	11	12	14	<5	7
Manganese	7439-96-5	5	mg/kg	47	63	----	2200	727
Nickel	7440-02-0	2	mg/kg	4	6	14	12	10
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	13	14	29	14	25

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: QC65	BH21 7.0-7.45	BH21 7.8-8.2	BH21 8.5-8.9	BH21 9.6-10.0
				Client sampling date / time: 20-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00
				EB0813051-011	EB0813051-013	EB0813051-014	EB0813051-015	EB0813051-016
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.13**	**0.16**	**0.11**	**0.05**	**0.03**
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**82.8**	**95.6**	**91.8**	**91.2**	**99.5**
2-Chlorophenol-D4	93951-73-6	0.1	%	**81.5**	**98.3**	**92.0**	**89.3**	**101**
2.4.6-Tribromophenol	118-79-6	0.1	%	**93.2**	**90.0**	**84.5**	**78.6**	**87.9**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**98.2**	**88.6**	**100**	**90.9**	**98.6**
Anthracene-d10	1719-06-8	0.1	%	**73.7**	**65.2**	**87.8**	**63.8**	**69.3**
4-Terphenyl-d14	1718-51-0	0.1	%	**107**	**89.0**	**86.8**	**90.6**	**97.8**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH21 10.5-10.7	BH21 10.7-11.1	BH21 11.6-11.9	QC67	QC68
				Client sampling date / time: 21-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00
				EB0813051-017	EB0813051-018	EB0813051-019	EB0813051-020	EB0813051-021
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.4	6.5	6.6	6.6	6.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	0.37	0.89	2.15	1.31
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	73	178	429	262
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	0.12	0.28	0.69	0.42
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	7.7	7.8	7.9	8.3	8.1
pH (Fox)	----	0.1	pH Unit	5.1	5.1	5.4	7.2	4.9
Reaction Rate	----	1	-	4	1	1	3	1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	17.6	16.7	23.2	15.3	17.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	----	5690	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	7	35	<5	<5	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	10	13	10	9	9
Copper	7440-50-8	5	mg/kg	8	31	<5	<5	10
Iron	7439-89-6	50	mg/kg	----	----	4260	----	----
Lead	7439-92-1	5	mg/kg	8	13	8	9	9
Manganese	7439-96-5	5	mg/kg	----	----	100	----	----
Nickel	7440-02-0	2	mg/kg	6	18	2	3	6
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	18	31	12	12	19

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH21 10.5-10.7	BH21 10.7-11.1	BH21 11.6-11.9	QC67	QC68
				Client sampling date / time: 21-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00	21-SEP-2008 15:00
				EB0813051-017	EB0813051-018	EB0813051-019	EB0813051-020	EB0813051-021
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.05**	**0.04**	**0.15**	**0.09**	**0.07**
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**83.8**	**98.3**	**90.8**	**95.0**	**81.6**
2-Chlorophenol-D4	93951-73-6	0.1	%	**91.1**	**99.3**	**93.7**	**96.9**	**80.0**
2.4.6-Tribromophenol	118-79-6	0.1	%	**95.2**	**94.8**	**83.7**	**108**	**79.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**86.9**	**100**	**102**	**101**	**89.6**
Anthracene-d10	1719-06-8	0.1	%	**88.7**	**74.8**	**92.3**	**72.8**	**84.6**
4-Terphenyl-d14	1718-51-0	0.1	%	**85.8**	**102**	**85.4**	**103**	**82.6**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: QC66	QC69	----	----	----
				Client sampling date / time: 20-SEP-2008 15:00	21-SEP-2008 15:00	----	----	----
				EB0813051-012	EB0813051-022	----	----	----
EG020T: Total Metals by ICP-MS								
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0005**	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	<1	<1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<2	<2	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.5	µg/L	<1.0	<1.0	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<1.0	<1.0	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<1.0	<1.0	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<1.0	<1.0	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<1.0	<1.0	----	----	----
Endrin	72-20-8	0.5	µg/L	<1.0	<1.0	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<1.0	<1.0	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<1.0	<1.0	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2	<2	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<1.0	<1.0	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<1.0	<1.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	QC66	QC69	----	----	----
				Client sampling date / time	20-SEP-2008 15:00	21-SEP-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		EB0813051-012	EB0813051-022	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**101**	**112**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**80.9**	**90.2**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**110**	**121**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**33.4**	**35.3**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**77.5**	**83.1**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**85.2**	**96.2**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**84.8**	**88.4**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**90.0**	**97.2**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**109**	**120**	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

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TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 22-Sep-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0813051	BH21 1.5-1.6	001	17%	65%	5%	13%
EB0813051	BH21 1.65-1.90	002	0%	9%	32%	59%
EB0813051	BH21 2.0-2.9	003	0%	9%	35%	56%
EB0813051	BH21 2.5-2.9	004	0%	5%	43%	52%
EB0813051	BH21 2.95-3.2	005	0%	5%	50%	45%
EB0813051	BH21 4.0-4.45	006	0%	3%	43%	54%
EB0813051	BH21 5.6-6.05	007	0%	1%	49%	50%
EB0813051	QC62	008	2%	8%	33%	57%
EB0813051	QC63	009	0%	7%	34%	59%
EB0813051	QC64	010	0%	5%	48%	47%
EB0813051	QC65	011	0%	6%	48%	46%
EB0813051	BH21 7.0-7.45	013	0%	6%	46%	48%
EB0813051	BH21 7.8-8.2	014	1%	26%	42%	31%
EB0813051	BH21 8.5-8.9	015	2%	56%	15%	27%
EB0813051	BH21 9.6-10.0	016	1%	52%	15%	32%
EB0813051	BH21 10.5-10.7	017	1%	33%	30%	36%
EB0813051	BH21 10.7-11.1	018	0%	32%	29%	39%
EB0813051	BH21 11.6-11.9	019	0%	4%	37%	59%
EB0813051	QC67	020	0%	39%	22%	39%
EB0813051	QC68	021	0%	36%	25%	39%

Remarks :

Test Procedure : AS1289.3.6.3

Prepared by : Dianne Blane

Checked by PK

Certificate of Analysis

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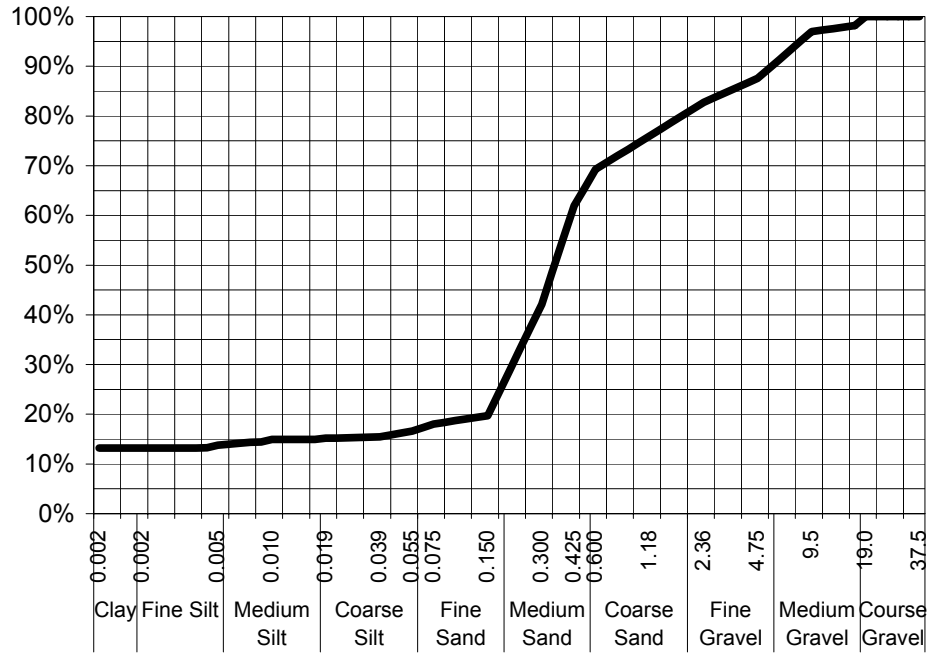
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	30-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	22-Sep-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813051-001 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH21 1.5-1.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	97%
4.75	88%
2.36	83%
1.18	76%
0.600	69%
0.425	62%
0.300	42%
0.150	20%
0.075	18%
Particle Size (microns)	
39	15%
19	15%
10	15%
5	14%
4	13%
2	13%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	25-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Grey silt & shell	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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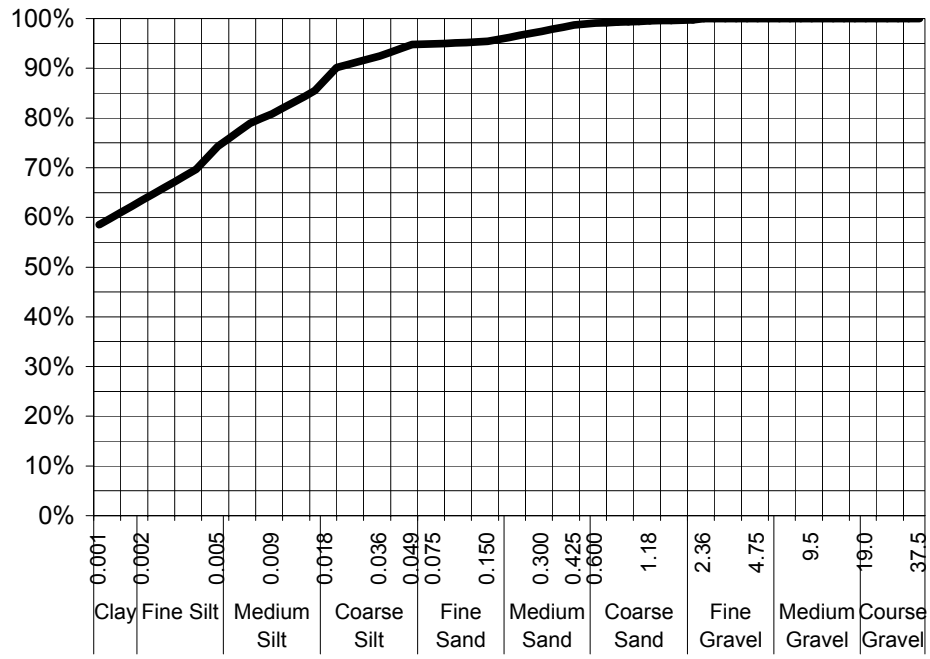
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	30-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	22-Sep-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813051-002 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH21 1.65-1.90

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	97%
0.150	95%
0.075	95%
Particle Size (microns)	
36	92%
18	88%
9	81%
5	74%
3	70%
1	59%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Dark clay & grit

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 25-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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CLIENT: Rob Ully

DATE REPORTED: 30-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 22-Sep-2008

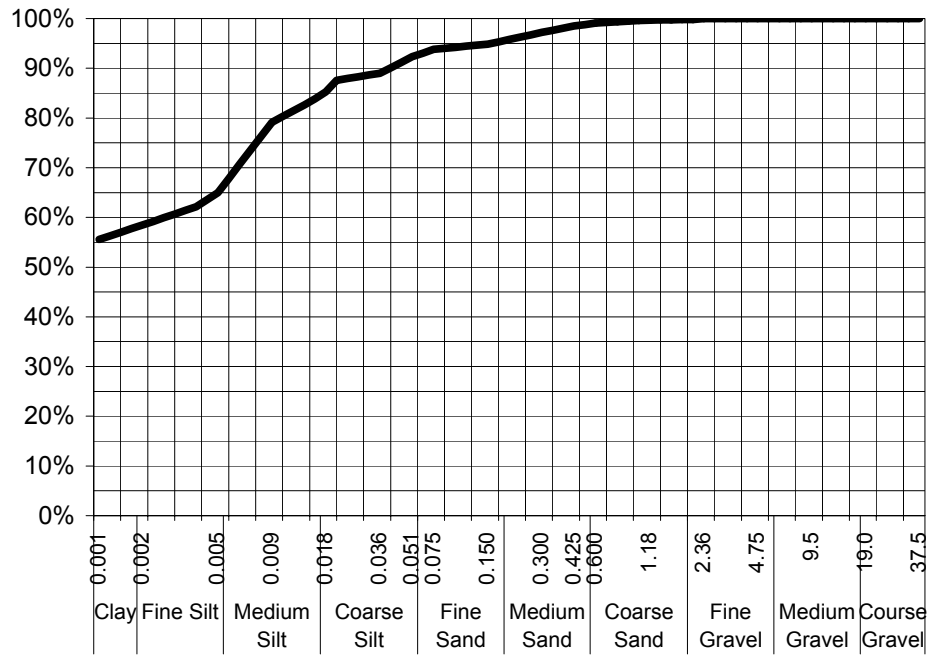
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813051-003 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH21 2.0-2.9

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	97%
0.150	95%
0.075	94%
Particle Size (microns)	
36	89%
18	85%
9	79%
5	65%
3	62%
1	56%

Samples analysed as received.

Sample Comments:

Analysed: 25-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Dark clay & grit

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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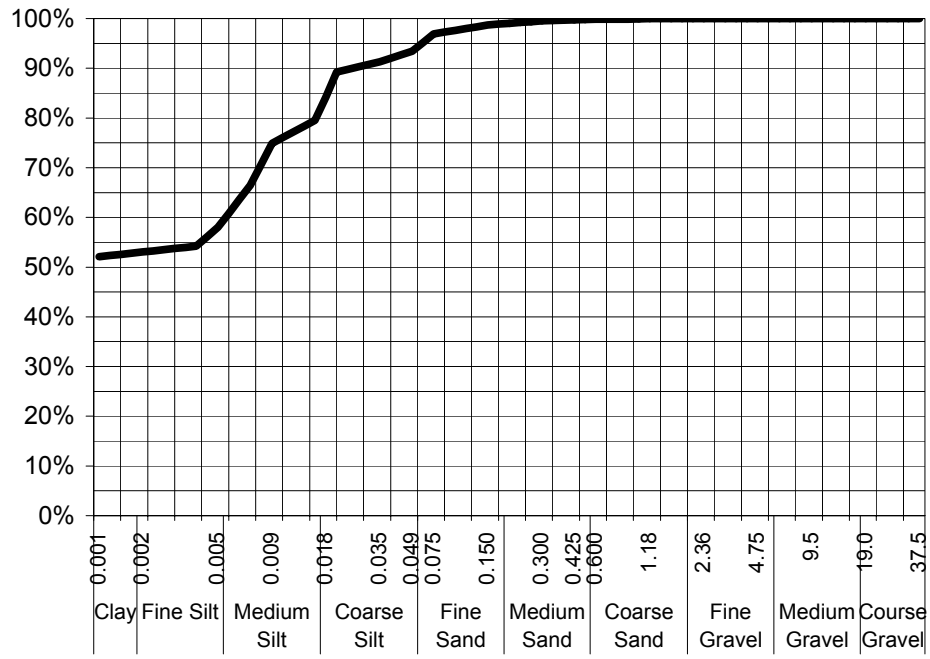
CLIENT:	Rob Ully	**DATE REPORTED:**	30-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	22-Sep-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813051-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH21 2.5-2.9

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	97%
Particle Size (microns)	
35	91%
18	84%
9	75%
5	58%
3	54%
1	52%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Grey/red clay & grit

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 25-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

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CLIENT: Rob Ully

COMPANY: URS Australia Pty Ltd (Qld)

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PROJECT: 42626228.52

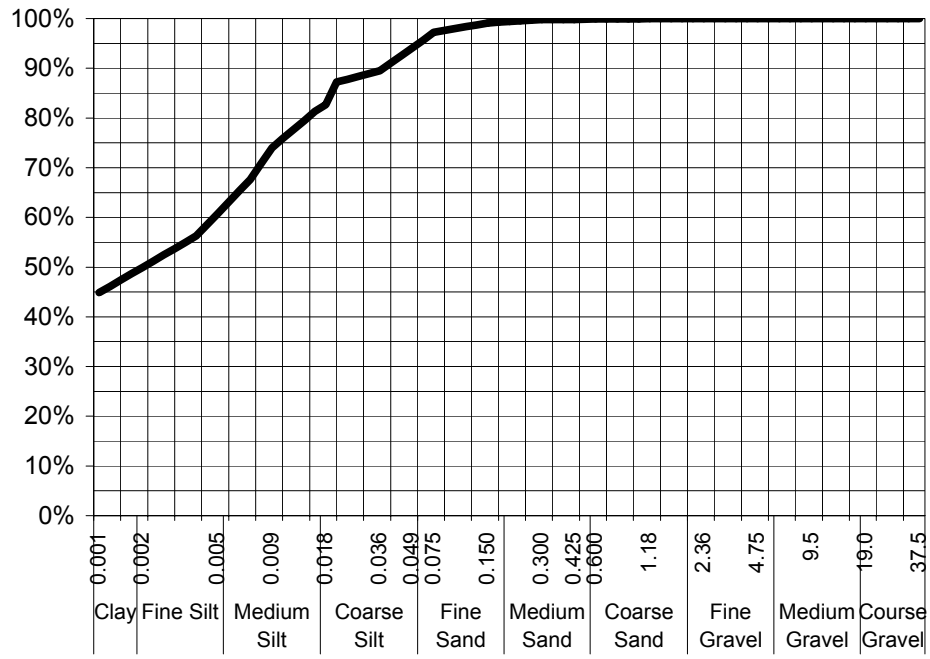
DATE REPORTED: 30-Sep-2008

DATE RECEIVED: 22-Sep-2008

REPORT NO: EB0813051-005 / PSD

SAMPLE ID: BH21 2.95-3.2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	97%
Particle Size (microns)	
36	89%
18	83%
9	74%
5	61%
3	56%
1	45%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Brown plastic clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 25-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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CLIENT: Rob Ully

DATE REPORTED: 30-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

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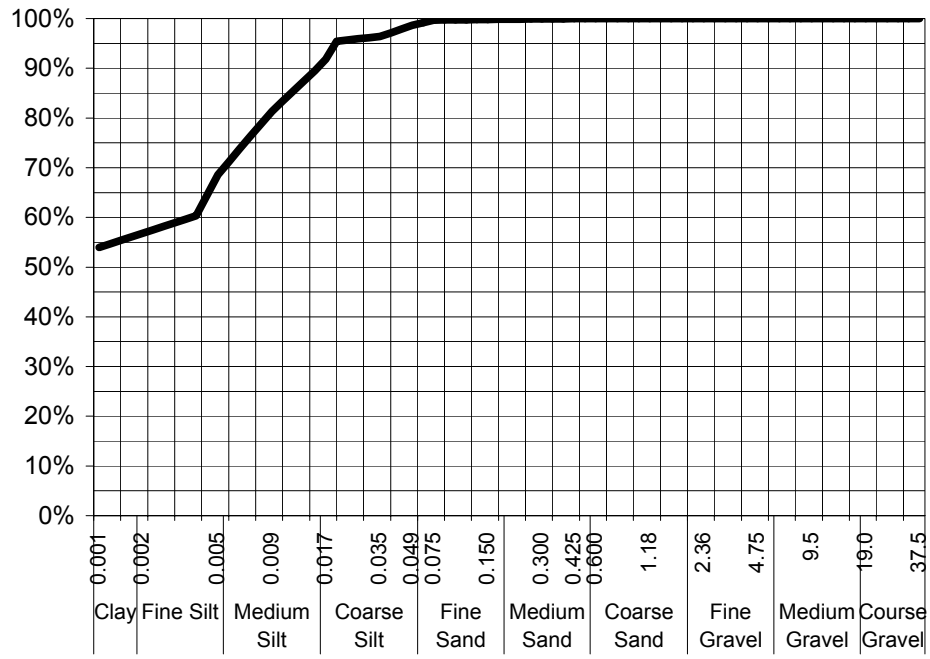
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813051-006 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH21 4.0-4.45

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	100%
0.075	100%
Particle Size (microns)	
35	96%
17	92%
9	81%
5	69%
3	60%
1	54%

Samples analysed as received.

Sample Comments:

Analysed: 25-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Brown plastic clay

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 30-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 22-Sep-2008

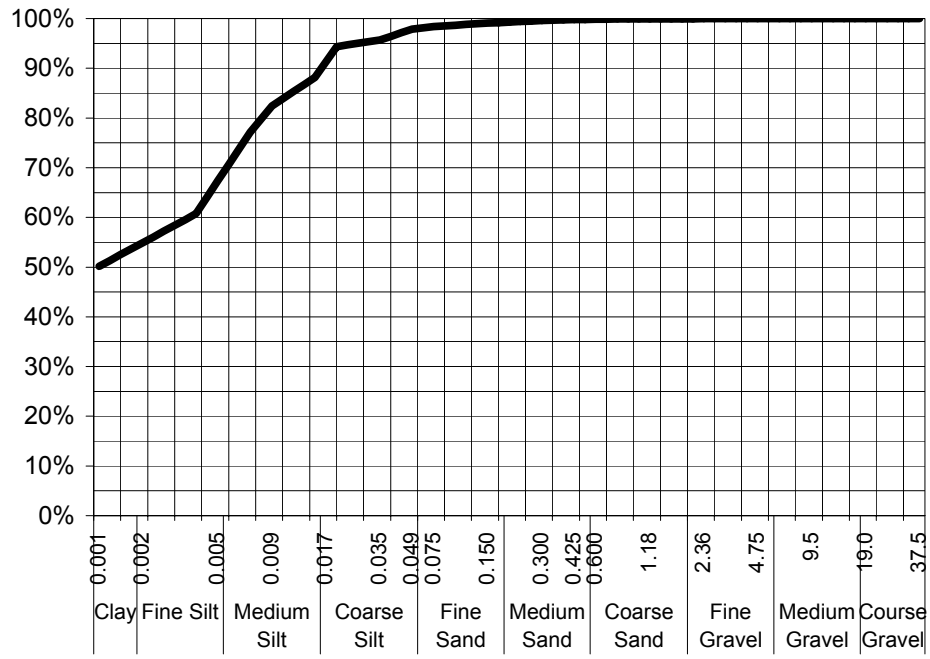
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813051-007 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH21 5.6-6.05

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%
Particle Size (microns)	
35	96%
17	91%
9	82%
5	67%
3	61%
1	50%

Samples analysed as received.

Sample Comments:

Analysed: 25-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Brown plastic clay

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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CLIENT: Rob Ully

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COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 22-Sep-2008

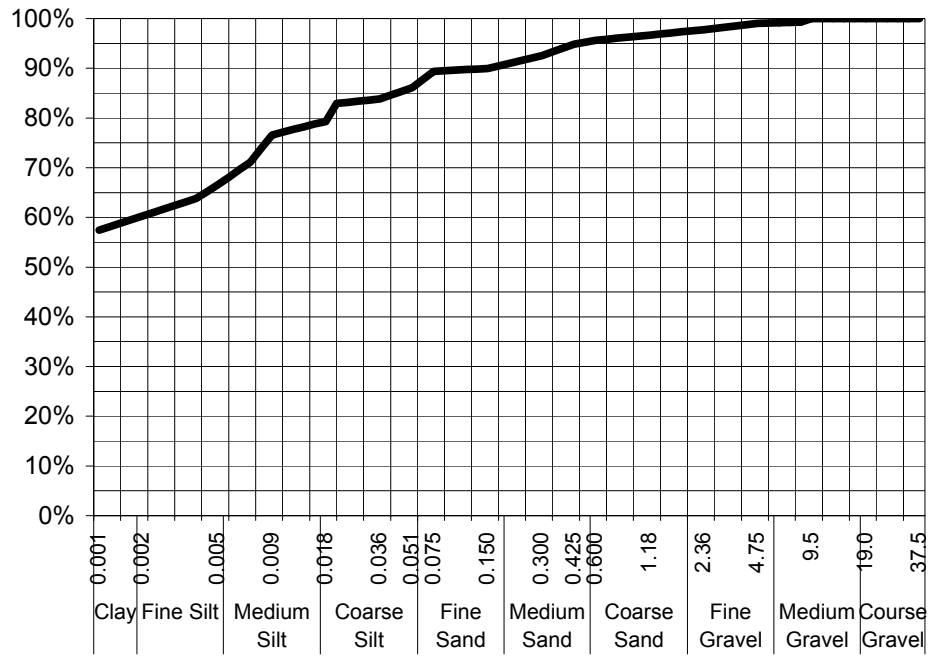
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813051-008 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC62

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	98%
1.18	97%
0.600	96%
0.425	95%
0.300	93%
0.150	90%
0.075	89%
Particle Size (microns)	
36	84%
18	79%
9	77%
5	67%
3	64%
1	57%

Samples analysed as received.

Sample Comments:

Analysed: 25-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay & grit

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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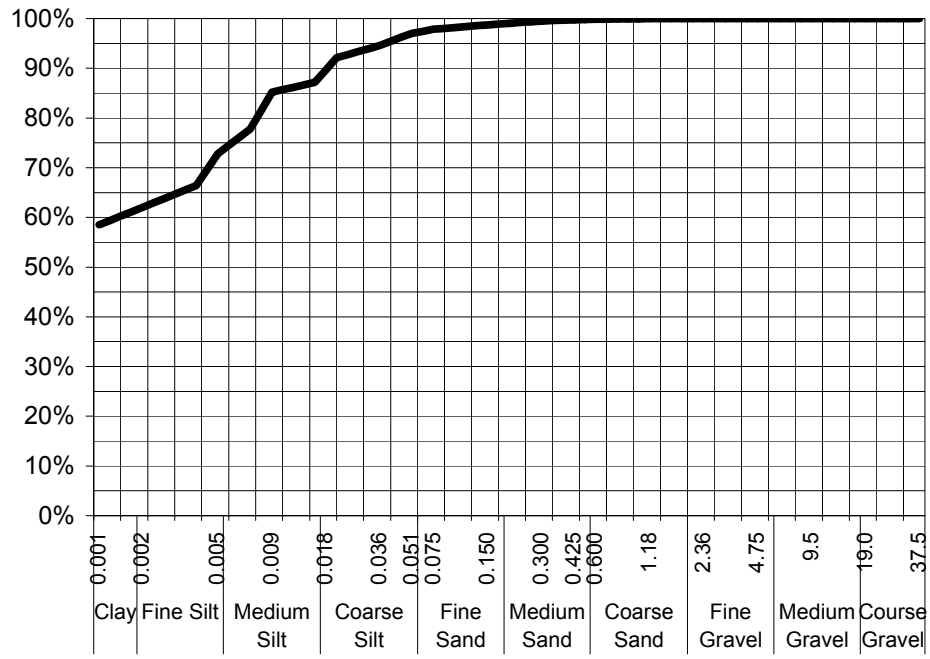
CLIENT:	Rob Ully	**DATE REPORTED:**	30-Sep-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	22-Sep-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813051-009 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC63

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%
Particle Size (microns)	
36	95%
18	90%
9	85%
5	73%
3	66%
1	59%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Brown plastic clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 25-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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PROJECT: 42626228.52

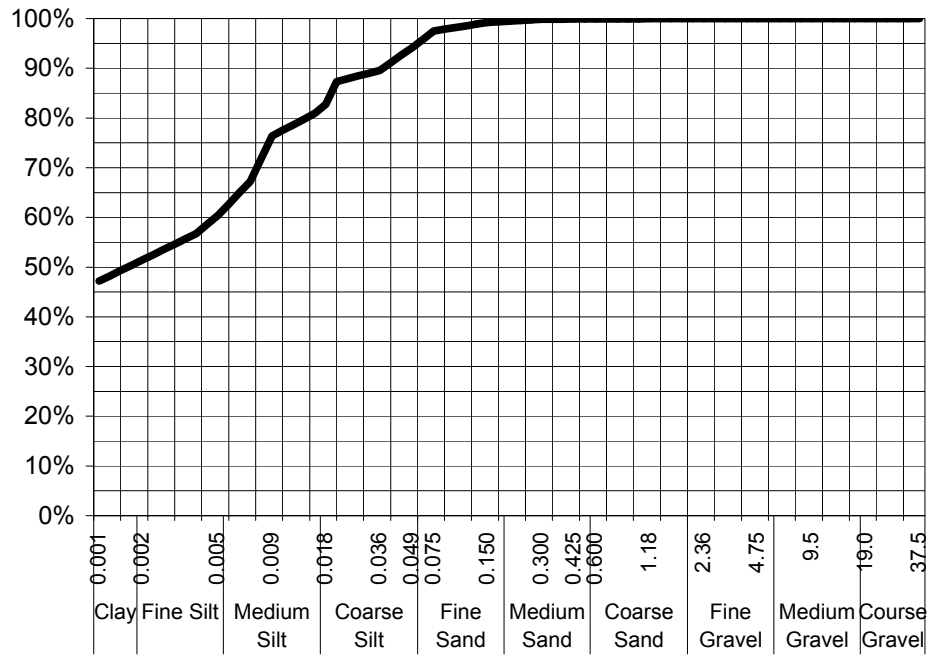
DATE REPORTED: 30-Sep-2008

DATE RECEIVED: 22-Sep-2008

REPORT NO: EB0813051-010 / PSD

SAMPLE ID: QC64

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%
Particle Size (microns)	
36	90%
18	83%
9	76%
5	60%
3	57%
1	47%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Brown plastic clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 25-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

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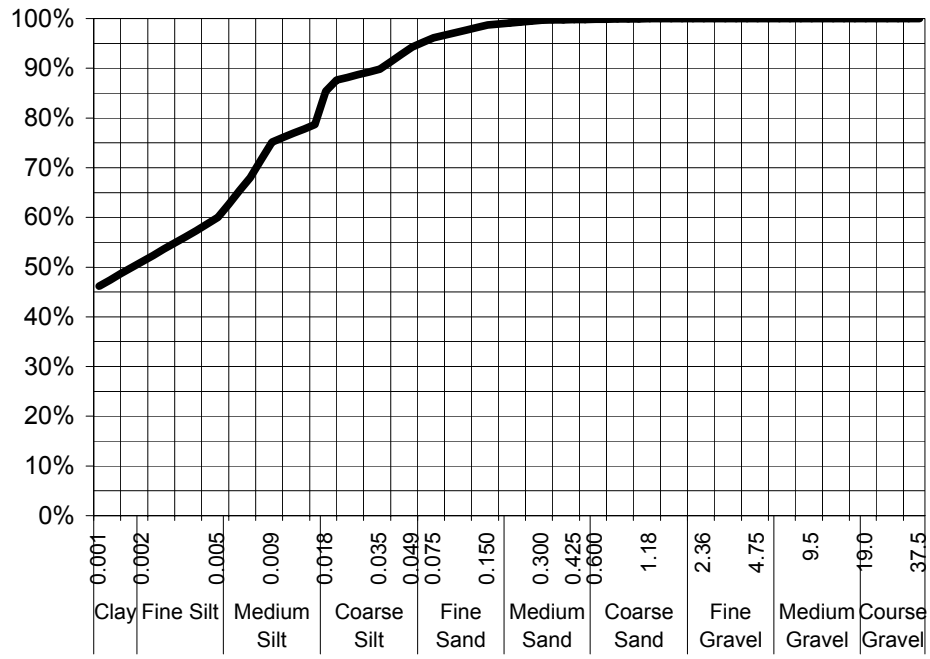
REPORT NO: EB0813051-011 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC65

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	96%
Particle Size (microns)	
35	90%
18	85%
9	75%
5	60%
3	57%
1	46%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Brown plastic clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 25-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

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DATE RECEIVED: 22-Sep-2008

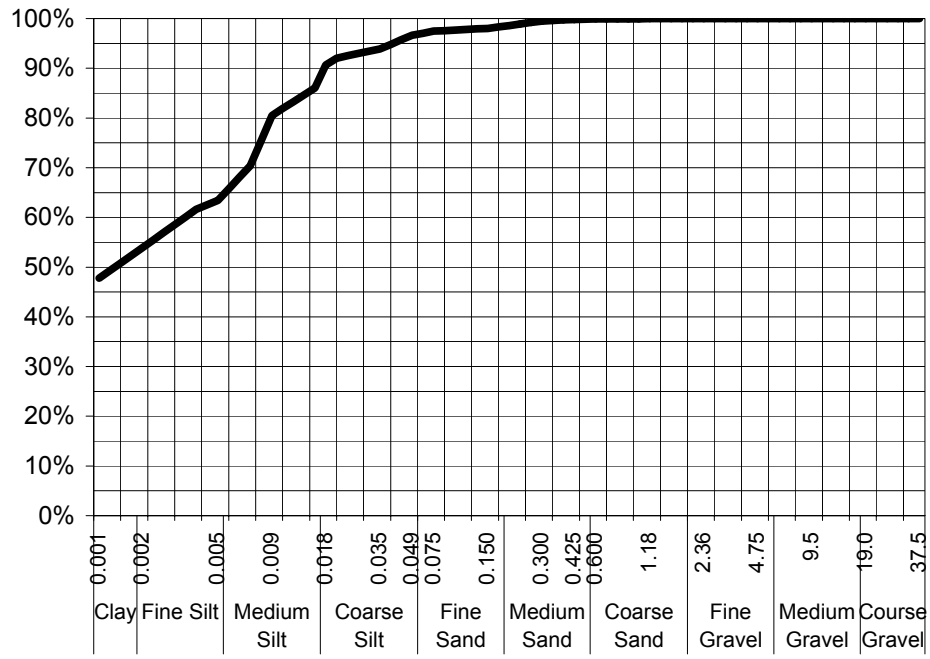
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813051-013 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH21 7.0-7.45

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	98%
0.075	97%
Particle Size (microns)	
35	94%
18	91%
9	81%
5	63%
3	62%
1	48%

Samples analysed as received.

Sample Comments:

Analysed: 25-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Brown plastic clay

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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ADDRESS: GPO Box 302
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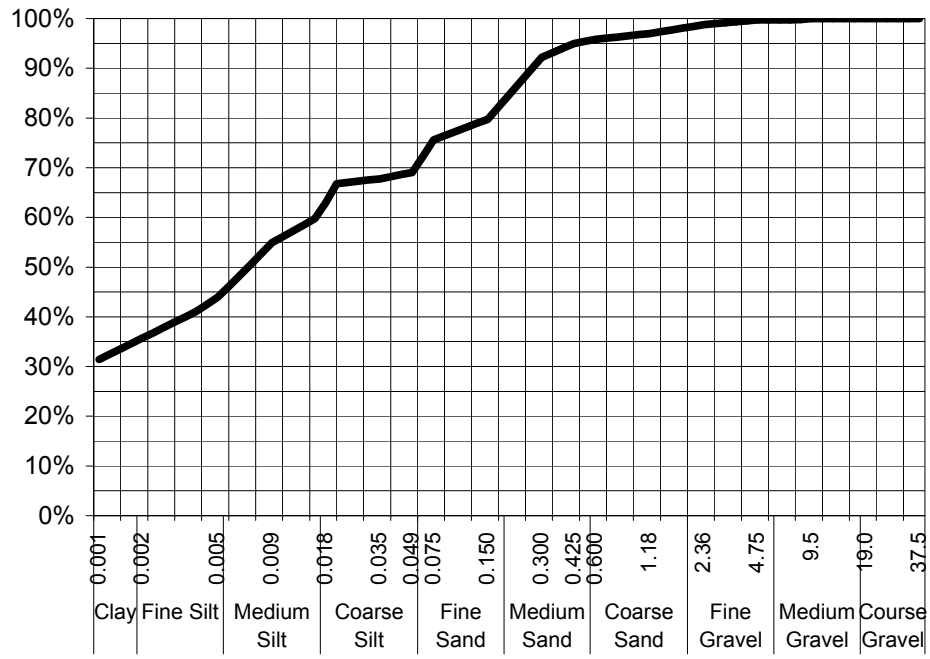
REPORT NO: EB0813051-014 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH21 7.8-8.2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	97%
0.600	96%
0.425	95%
0.300	92%
0.150	80%
0.075	76%
Particle Size (microns)	
35	68%
18	63%
9	55%
5	44%
3	41%
1	31%

Samples analysed as received.

Sample Comments:

Analysed: 25-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey clay & grit

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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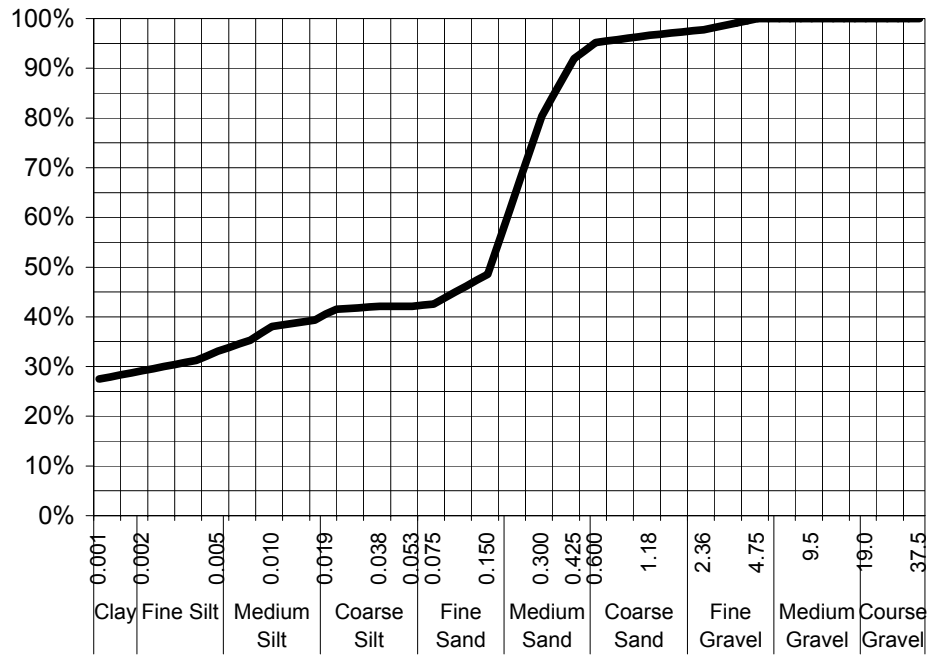
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813051-015 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH21 8.5-8.9

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	97%
0.600	95%
0.425	92%
0.300	80%
0.150	49%
0.075	43%
Particle Size (microns)	
38	42%
19	41%
10	38%
5	33%
3	31%
1	27%

Samples analysed as received.

Sample Comments:

Analysed: 25-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey/brown clay & sand

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 22-Sep-2008

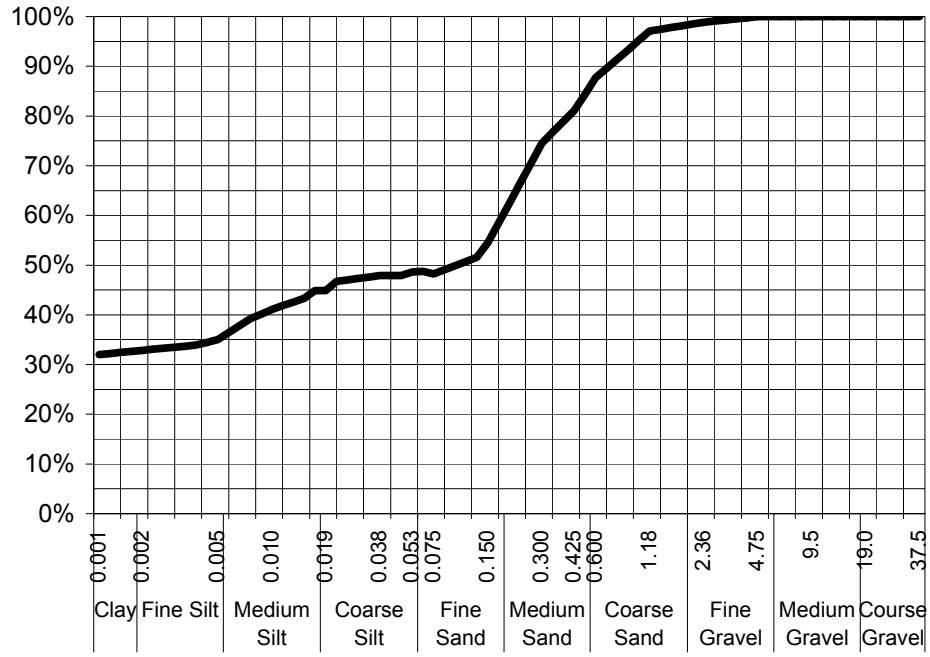
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813051-016 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH21 9.6-10.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	97%
0.600	88%
0.425	81%
0.300	74%
0.150	54%
0.075	48%
Particle Size (microns)	
38	48%
19	45%
10	41%
5	35%
4	34%
1	32%

Samples analysed as received.

Sample Comments:

Analysed: 25-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey/brown clay & sand

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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DATE REPORTED: 30-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 22-Sep-2008

ADDRESS: GPO Box 302
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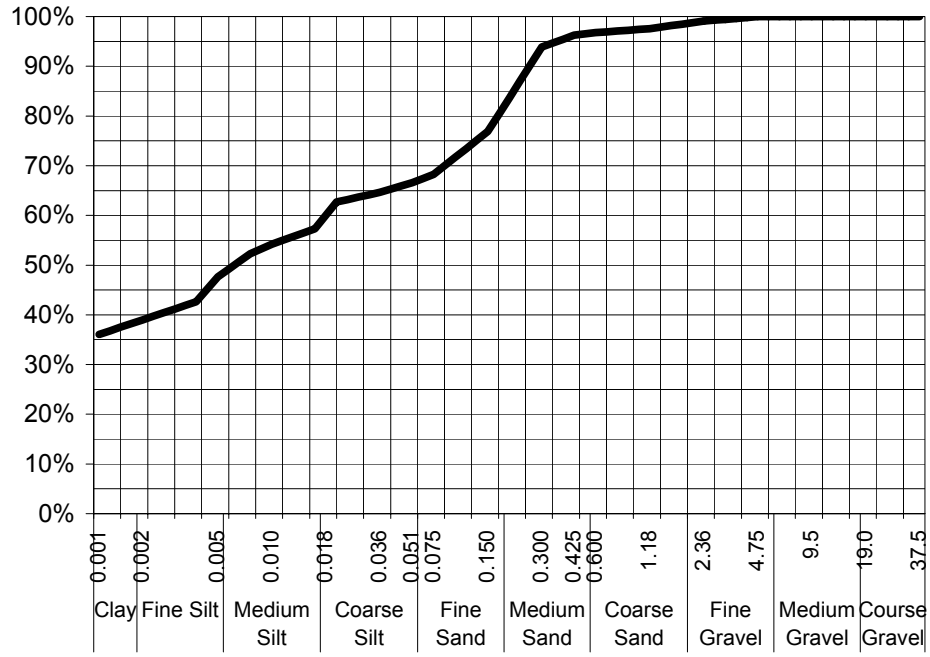
REPORT NO: EB0813051-017 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH21 10.5-10.7

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	98%
0.600	97%
0.425	96%
0.300	94%
0.150	77%
0.075	68%
Particle Size (microns)	
36	65%
18	60%
10	54%
5	48%
3	43%
1	36%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Grey/brown clay & sand

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 25-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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DATE REPORTED: 30-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 22-Sep-2008

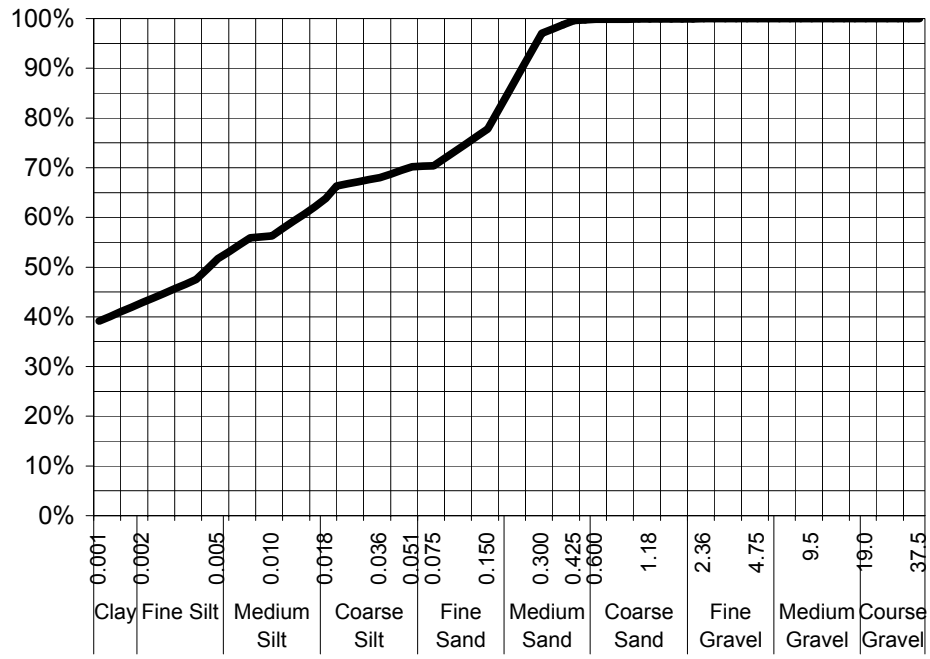
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813051-018 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH21 10.7-11.1

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	97%
0.150	78%
0.075	70%
Particle Size (microns)	
36	68%
18	64%
10	56%
5	52%
3	48%
1	39%

Samples analysed as received.

Sample Comments:

Analysed: 25-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey/brown clay & sand

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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CLIENT: Rob Ully

DATE REPORTED: 30-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 22-Sep-2008

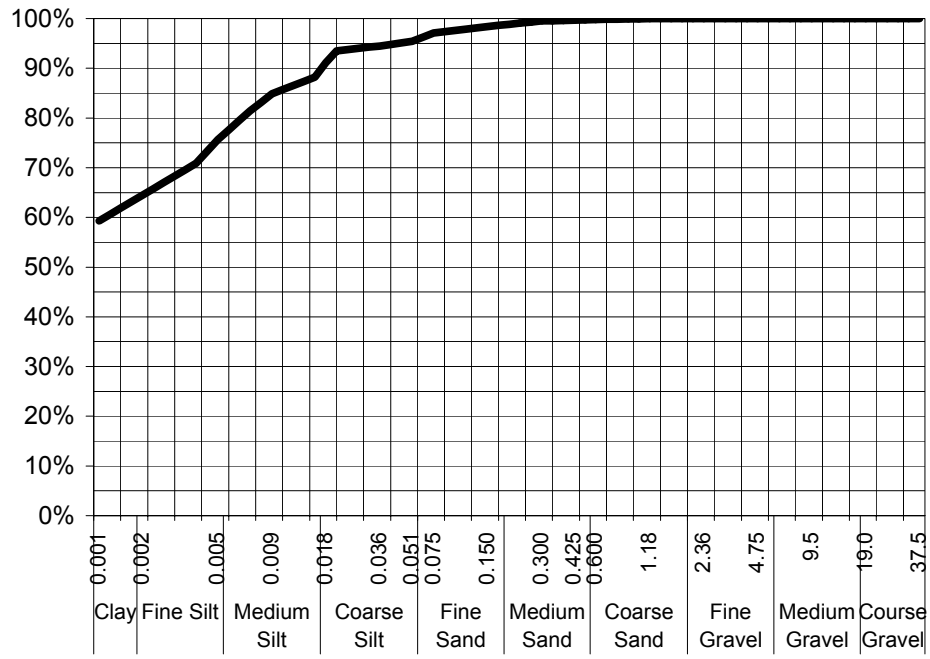
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813051-019 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH21 11.6-11.9

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	98%
0.075	97%
Particle Size (microns)	
36	94%
18	91%
9	85%
5	76%
3	71%
1	59%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Grey plastic clay

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 25-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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CLIENT: Rob Ully

DATE REPORTED: 30-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 22-Sep-2008

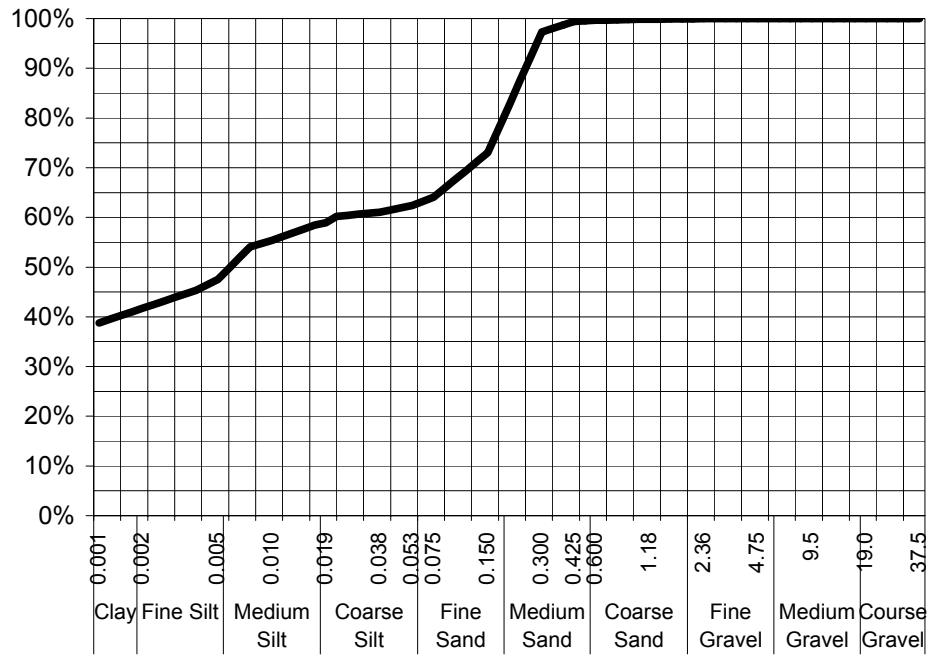
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813051-020 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC67

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	99%
0.300	97%
0.150	73%
0.075	64%
Particle Size (microns)	
38	61%
19	59%
10	55%
5	48%
3	45%
1	39%

Samples analysed as received.

Sample Comments:

Analysed: 25-Sep-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Grey/brown clay & sand

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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Authorised Signatory

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DATE REPORTED: 30-Sep-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 22-Sep-2008

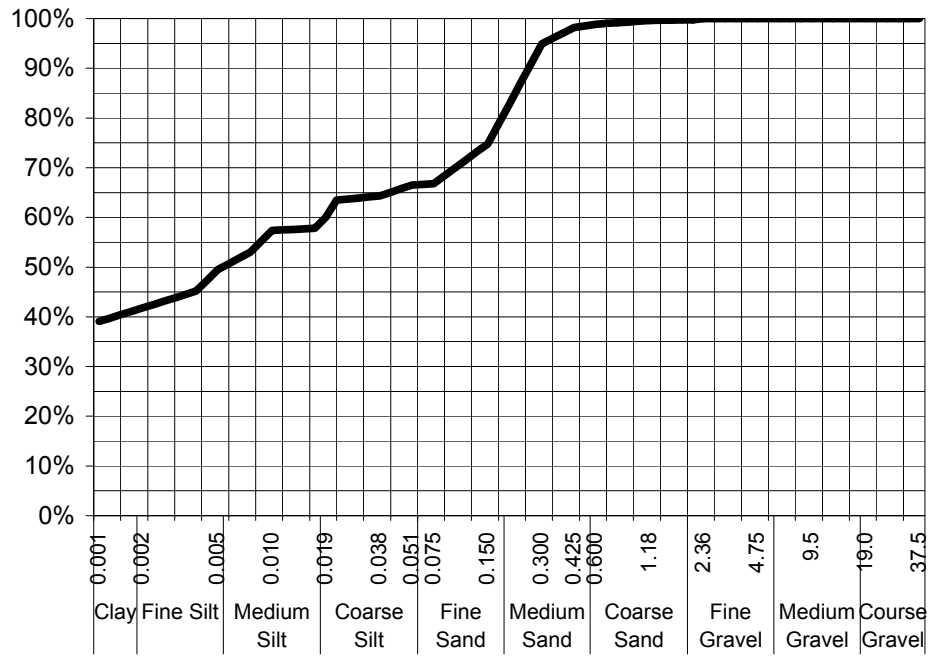
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813051-021 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC68

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	98%
0.300	95%
0.150	75%
0.075	67%
Particle Size (microns)	
38	64%
19	60%
10	57%
5	50%
3	45%
1	39%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Brown clay & sand

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 25-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

ALS Laboratory Group Pty Ltd
5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 22-Sep-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0813051	BH21 1.5-1.6	001	17%	65%	5%	13%
EB0813051	BH21 1.65-1.90	002	0%	9%	32%	59%
EB0813051	BH21 2.0-2.9	003	0%	9%	35%	56%
EB0813051	BH21 2.5-2.9	004	0%	5%	43%	52%
EB0813051	BH21 2.95-3.2	005	0%	5%	50%	45%
EB0813051	BH21 4.0-4.45	006	0%	3%	43%	54%
EB0813051	BH21 5.6-6.05	007	0%	1%	49%	50%
EB0813051	QC62	008	2%	8%	33%	57%
EB0813051	QC63	009	0%	7%	34%	59%
EB0813051	QC64	010	0%	5%	48%	47%
EB0813051	QC65	011	0%	6%	48%	46%
EB0813051	BH21 7.0-7.45	013	0%	6%	46%	48%
EB0813051	BH21 7.8-8.2	014	1%	26%	42%	31%
EB0813051	BH21 8.5-8.9	015	2%	56%	15%	27%
EB0813051	BH21 9.6-10.0	016	1%	52%	15%	32%
EB0813051	BH21 10.5-10.7	017	1%	33%	30%	36%
EB0813051	BH21 10.7-11.1	018	0%	32%	29%	39%
EB0813051	BH21 11.6-11.9	019	0%	4%	37%	59%
EB0813051	QC67	020	0%	39%	22%	39%
EB0813051	QC68	021	0%	36%	25%	39%

Remarks :
Test Procedure : AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0813051**	Page	: 1 of 13
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 22-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 22
Quote number	: EN/001/08	No. of samples analysed	: 22

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 767415)									
EB0813051-001	BH21 1.5-1.6	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.2	9.2	0.0	0% - 20%
EB0813051-011	QC65	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.1	6.1	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 767415)									
EB0813051-001	BH21 1.5-1.6	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.10	0.10	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	60	63	3.9	No Limit
EB0813051-011	QC65	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 767415)									
EB0813051-001	BH21 1.5-1.6	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	19.0	19.1	0.6	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	6.08	6.11	0.6	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	3790	3810	0.6	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 767416)									
EB0813051-001	BH21 1.5-1.6	EA037: pH (F)	----	0.1	pH Unit	8.8	8.9	1.1	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.3	5.1	17.0	0% - 20%
EB0813051-011	QC65	EA037: pH (F)	----	0.1	pH Unit	7.4	7.7	4.0	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.1	5.1	0.0	0% - 20%
EA055: Moisture Content (QC Lot: 767743)									
EB0813051-004	BH21 2.5-2.9	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.6	18.8	6.7	0% - 50%
EB0813051-011	QC65	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.2	17.0	1.5	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 766632)									
EB0813051-001	BH21 1.5-1.6	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	8	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	5	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	9	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	7	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 766632) - continued									
EB0813051-001	BH21 1.5-1.6	EG005T: Manganese	7439-96-5	5	mg/kg	303	141	# 72.8	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	12	12	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	3740	3680	1.6	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	8390	8310	0.9	0% - 20%
EB0813051-011	QC65	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	10	12	20.3	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	5	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	10	33.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	11	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	12	9.3	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	47	64	32.3	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	13	14	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	5540	5740	3.7	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	12600	15700	# 21.4	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 766634)									
EB0813051-001	BH21 1.5-1.6	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0813051-011	QC65	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 767618)									
EB0813051-001	BH21 1.5-1.6	EP005: Total Organic Carbon	----	0.02	%	0.42	0.48	13.3	0% - 20%
EB0813051-011	QC65	EP005: Total Organic Carbon	----	0.02	%	0.13	0.15	14.3	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 768444)									
EB0813051-001	BH21 1.5-1.6	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 768443)									
EB0813051-001	BH21 1.5-1.6	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 766578)									
EB0813051-001	BH21 1.5-1.6	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 766578) - continued									
EB0813051-001	BH21 1.5-1.6	EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0813051-011	QC65	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 766708)									
EB0813051-001	BH21 1.5-1.6	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 766536)									
EB0813028-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 766536) - continued									
EB0813028-001	Anonymous	EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0813028-010	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 766537)									
EB0813028-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0813028-010	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 767460)									
EB0813046-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0813101-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 767018)									
EB0813017-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QC Lot: 767521)									
EB0813055-009	Anonymous	EP068: gamma-BHC	58-89-9	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.5	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 767415)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 767415)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 767415)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 766632)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	109	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	103	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	103	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	101	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	102	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	107	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	101	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 766634)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	82.7	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 767618)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 768444)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	73.2	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 768443)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	96.5	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	86.3	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	86.9	60.8	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 768443) - continued								
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	94.7	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	89.2	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	82.7	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	112	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	87.8	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	# 42.5	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	87.8	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 766578)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	94.0	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	94.2	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	----	5.0 mg/kg	100	65	114
				<0.5	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	----	5.0 mg/kg	104	65	111
				<0.5	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	----	5.0 mg/kg	95.6	60	112
				<0.5	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	----	5.0 mg/kg	95.4	65	110
				<0.5	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	93.7	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	----	5.0 mg/kg	93.6	64	111
				<0.5	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	----	5.0 mg/kg	88.5	61	115
				<0.5	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	----	5.0 mg/kg	86.7	57	114
				<0.5	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	5.0 mg/kg	98.2	46	124
				<0.5	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	98.4	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	5.0 mg/kg	108	55	116
				<0.5	----	----	----	----
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	92.3	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	5.0 mg/kg	96.7	54	129
				<0.5	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 766578) - continued								
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	---- <0.5	5.0 mg/kg ----	84.8 ----	52 ----	128 ----
EP090: Organotin Compounds (QCLot: 766708)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	33.2	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 766536)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	95.5	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	92.6	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	95.1	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	109	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	98.2	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	99.6	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	94.0	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	105	81	127
EG020T: Total Metals by ICP-MS (QCLot: 766537)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	88.7	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 767460)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	103	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 767018)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	103	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 767520)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	84.4	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 767521)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	113	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	94.2	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	95.5	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	112	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	109	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	88.4	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	# 134	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	107	54.3	126
EP068: 4.4`-DDT	50-29-3	2 2.0	µg/L µg/L	<2 ----	---- 5 µg/L	---- 56.1	---- 40	---- 130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	102	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 767522)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 767522) - continued								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	99.7	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	107	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	110	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	111	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	# 112	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	104	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	112	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	112	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	110	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	95.2	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	105	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	101	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	104	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	101	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	99.8	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	98.0	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 766632)							
EB0813051-002	BH21 1.65-1.90	EG005T: Arsenic	7440-38-2	50 mg/kg	93.0	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	93.8	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	99.7	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	98.1	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	92.7	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	128	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	102	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	97.4	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 766634)							
EB0813051-002	BH21 1.65-1.90	EG035T: Mercury	7439-97-6	5.0 mg/kg	105	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 768444)							
EB0813051-002	BH21 1.65-1.90	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	74.1	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 768443)							
EB0813051-002	BH21 1.65-1.90	EP068: gamma-BHC	58-89-9	0.25 mg/kg	86.5	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	84.6	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	91.5	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	71.1	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 766578)							
EB0813051-002	BH21 1.65-1.90	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	105	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	121	70	130
EP090: Organotin Compounds (QCLot: 766708)							
EB0813051-002	BH21 1.65-1.90	EP090: Tributyltin	56573-85-4	25 µgSn/kg	64.9	20	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 766536)							
EB0813028-002	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 767460)							
EB0813046-002	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QCLot: 767521)							
EB0813055-010	Anonymous	EP068: gamma-BHC	58-89-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0813051**	Page	: 1 of 15
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 22-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 22
Quote number	: EN/001/08	No. of samples analysed	: 22

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
Pulp Bag							
BH21 10.5-10.7	**21-SEP-2008**	**22-SEP-2008**	22-SEP-2008	✓	**29-SEP-2008**	28-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, BH21 2.95-3.2, BH21 4.0-4.45, BH21 5.6-6.05, QC62, QC63, QC64, QC65	**20-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	28-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH21 7.0-7.45, BH21 7.8-8.2, BH21 8.5-8.9, BH21 9.6-10.0, BH21 10.7-11.1, BH21 11.6-11.9, QC67, QC68	**21-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	28-DEC-2008	✓
EA033-B: Potential Acidity							
Pulp Bag							
BH21 10.5-10.7	**21-SEP-2008**	**22-SEP-2008**	22-SEP-2008	✓	**29-SEP-2008**	28-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, BH21 2.95-3.2, BH21 4.0-4.45, BH21 5.6-6.05, QC62, QC63, QC64, QC65	**20-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	28-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH21 7.0-7.45, BH21 7.8-8.2, BH21 8.5-8.9, BH21 9.6-10.0, BH21 10.7-11.1, BH21 11.6-11.9, QC67, QC68	**21-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	28-DEC-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity							
Pulp Bag							
BH21 10.5-10.7	**21-SEP-2008**	**22-SEP-2008**	22-SEP-2008	✓	**29-SEP-2008**	28-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, BH21 2.95-3.2, BH21 4.0-4.45, BH21 5.6-6.05, QC62, QC63, QC64, QC65	**20-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	28-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH21 7.0-7.45, BH21 7.8-8.2, BH21 8.5-8.9, BH21 9.6-10.0, BH21 10.7-11.1, BH21 11.6-11.9, QC67, QC68	**21-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	28-DEC-2008	✓
EA033-D: Retained Acidity							
Pulp Bag							
BH21 10.5-10.7	**21-SEP-2008**	**22-SEP-2008**	22-SEP-2008	✓	**29-SEP-2008**	28-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, BH21 2.95-3.2, BH21 4.0-4.45, BH21 5.6-6.05, QC62, QC63, QC64, QC65	**20-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	28-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH21 7.0-7.45, BH21 7.8-8.2, BH21 8.5-8.9, BH21 9.6-10.0, BH21 10.7-11.1, BH21 11.6-11.9, QC67, QC68	**21-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	28-DEC-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-E: Acid Base Accounting							
Pulp Bag							
BH21 10.5-10.7	**21-SEP-2008**	**22-SEP-2008**	22-SEP-2008	✓	**29-SEP-2008**	28-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, BH21 2.95-3.2, BH21 4.0-4.45, BH21 5.6-6.05, QC62, QC63, QC64, QC65	**20-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	28-DEC-2008	✓
Snap Lock Bag - frozen on receipt at ALS							
BH21 7.0-7.45, BH21 7.8-8.2, BH21 8.5-8.9, BH21 9.6-10.0, BH21 10.7-11.1, BH21 11.6-11.9, QC67, QC68	**21-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	28-DEC-2008	✓
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen on receipt at ALS							
BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, BH21 2.95-3.2, BH21 4.0-4.45, BH21 5.6-6.05, QC62, QC63, QC64, QC65	**20-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	19-MAR-2009	✓
Snap Lock Bag - frozen on receipt at ALS							
BH21 7.0-7.45, BH21 7.8-8.2, BH21 8.5-8.9, BH21 9.6-10.0, BH21 10.7-11.1, BH21 11.6-11.9, QC67, QC68	**21-SEP-2008**	**22-SEP-2008**	---	----	**29-SEP-2008**	20-MAR-2009	✓
Soil Glass Jar - Unpreserved							
BH21 10.5-10.7	**21-SEP-2008**	**22-SEP-2008**	22-SEP-2008	✓	**29-SEP-2008**	22-SEP-2008	×

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, BH21 2.95-3.2, BH21 4.0-4.45, BH21 5.6-6.05, QC62, QC63, QC64, QC65	**20-SEP-2008**	**----**	----	----	**25-SEP-2008**	27-SEP-2008	✓
Soil Glass Jar - Unpreserved							
BH21 7.0-7.45, BH21 7.8-8.2, BH21 8.5-8.9, BH21 9.6-10.0, BH21 10.5-10.7, BH21 10.7-11.1, BH21 11.6-11.9, QC67, QC68	**21-SEP-2008**	**----**	----	----	**25-SEP-2008**	28-SEP-2008	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, BH21 2.95-3.2, BH21 4.0-4.45, BH21 5.6-6.05, QC62, QC63, QC64, QC65	**20-SEP-2008**	**25-SEP-2008**	19-MAR-2009	✓	**25-SEP-2008**	19-MAR-2009	✓
Soil Glass Jar - Unpreserved							
BH21 7.0-7.45, BH21 7.8-8.2, BH21 8.5-8.9, BH21 9.6-10.0, BH21 10.5-10.7, BH21 10.7-11.1, BH21 11.6-11.9, QC67, QC68	**21-SEP-2008**	**25-SEP-2008**	20-MAR-2009	✓	**25-SEP-2008**	20-MAR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, BH21 2.95-3.2, BH21 4.0-4.45, BH21 5.6-6.05, QC62, QC63, QC64, QC65	**20-SEP-2008**	**25-SEP-2008**	19-MAR-2009	✓	**26-SEP-2008**	18-OCT-2008	✓
Soil Glass Jar - Unpreserved							
BH21 7.0-7.45, BH21 7.8-8.2, BH21 8.5-8.9, BH21 9.6-10.0, BH21 10.5-10.7, BH21 10.7-11.1, BH21 11.6-11.9, QC67, QC68	**21-SEP-2008**	**25-SEP-2008**	20-MAR-2009	✓	**26-SEP-2008**	19-OCT-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP005: Total Organic Carbon (TOC)							
Pulp Bag BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, BH21 2.95-3.2, BH21 4.0-4.45, BH21 5.6-6.05, QC62, QC63, QC64, QC65	**20-SEP-2008**	**26-SEP-2008**	---	----	**26-SEP-2008**	18-OCT-2008	✓
Pulp Bag BH21 7.0-7.45, BH21 7.8-8.2, BH21 8.5-8.9, BH21 9.6-10.0, BH21 10.5-10.7, BH21 10.7-11.1, BH21 11.6-11.9, QC67, QC68	**21-SEP-2008**	**26-SEP-2008**	---	----	**26-SEP-2008**	19-OCT-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, QC62, QC63	**20-SEP-2008**	**26-SEP-2008**	04-OCT-2008	✓	**29-SEP-2008**	05-NOV-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, QC62, QC63	**20-SEP-2008**	**26-SEP-2008**	04-OCT-2008	✓	**29-SEP-2008**	05-NOV-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, BH21 2.95-3.2, BH21 4.0-4.45, BH21 5.6-6.05, QC62, QC63, QC64, QC65	**20-SEP-2008**	**24-SEP-2008**	04-OCT-2008	✓	**29-SEP-2008**	03-NOV-2008	✓
Soil Glass Jar - Unpreserved BH21 7.0-7.45, BH21 7.8-8.2, BH21 8.5-8.9, BH21 9.6-10.0, BH21 10.5-10.7, BH21 10.7-11.1, BH21 11.6-11.9, QC67, QC68	**21-SEP-2008**	**24-SEP-2008**	05-OCT-2008	✓	**29-SEP-2008**	03-NOV-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH21 1.5-1.6, BH21 1.65-1.90, BH21 2.0-2.9, BH21 2.5-2.9, QC62, QC63	**20-SEP-2008**	**25-SEP-2008**	04-OCT-2008	✓	**30-SEP-2008**	04-NOV-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC66	**20-SEP-2008**	**24-SEP-2008**	19-MAR-2009	✓	**24-SEP-2008**	19-MAR-2009	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC69	**21-SEP-2008**	**24-SEP-2008**	20-MAR-2009	✓	**24-SEP-2008**	20-MAR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC66	**20-SEP-2008**	**----**	----	----	**25-SEP-2008**	18-OCT-2008	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC69	**21-SEP-2008**	**----**	----	----	**25-SEP-2008**	19-OCT-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC66	**20-SEP-2008**	**----**	----	----	**25-SEP-2008**	18-OCT-2008	✓
Amber TOC Vial - Sulphuric Acid							
QC69	**21-SEP-2008**	**----**	----	----	**25-SEP-2008**	19-OCT-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC66	**20-SEP-2008**	**25-SEP-2008**	27-SEP-2008	✓	**29-SEP-2008**	04-NOV-2008	✓
Amber Glass Bottle - Unpreserved							
QC69	**21-SEP-2008**	**25-SEP-2008**	28-SEP-2008	✓	**29-SEP-2008**	04-NOV-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC66	**20-SEP-2008**	**25-SEP-2008**	27-SEP-2008	✓	**29-SEP-2008**	04-NOV-2008	✓
Amber Glass Bottle - Unpreserved							
QC69	**21-SEP-2008**	**25-SEP-2008**	28-SEP-2008	✓	**29-SEP-2008**	04-NOV-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC66	**20-SEP-2008**	**25-SEP-2008**	27-SEP-2008	✓	**29-SEP-2008**	04-NOV-2008	✓
Amber Glass Bottle - Unpreserved							
QC69	**21-SEP-2008**	**25-SEP-2008**	28-SEP-2008	✓	**29-SEP-2008**	04-NOV-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP090: Organotin Compounds (Soluble)							
Amber Glass Bottle - Unpreserved							
QC66	**20-SEP-2008**	**30-SEP-2008**	19-NOV-2008	✓	**01-OCT-2008**	09-NOV-2008	✓
Amber Glass Bottle - Unpreserved							
QC69	**21-SEP-2008**	**30-SEP-2008**	20-NOV-2008	✓	**01-OCT-2008**	09-NOV-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chromium Suite for Acid Sulphate Soils	EA033	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Organotin Compounds (Soluble)	EP090S	1	12	**8.3**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Compounds (Soluble)	EP090S	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organotin Compounds (Soluble)	EP090S	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Compounds (Soluble)	EP090S	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement
Pesticides	EP068	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	17	**5.9**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	14	**7.1**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Organotin Compounds (Soluble)	EP090S	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Organotin Sample Preparation	ORG34	WATER	In-house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	EB0813051-011	QC65	**Iron**	7439-89-6	21.4 %	0-20%	**RPD exceeds LOR based limits**
EG005T: Total Metals by ICP-AES	EB0813051-001	BH21 1.5-1.6	**Manganese**	7439-96-5	72.8 %	0-20%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	868512-002	----	**4.4`-DDT**	50-29-3	42.5 %	52.6-129%	**Recovery less than lower control limit**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	867330-009	----	**4.4`-DDD**	72-54-8	134 %	54.3-129%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	867330-013	----	**Phenanthrene**	85-01-8	112 %	54-110%	**Recovery greater than upper control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP068T: Organophosphorus Pesticide Surrogate	EB0813051-022	QC69	**DEF**	78-48-8	121 %	10-110 %	**Recovery greater than upper data quality objective**
EP068T: Organophosphorus Pesticide Surrogate	EB0813051-012	QC66	**DEF**	78-48-8	110 %	10-110 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)	*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA037: Ass Field Screening Analysis						

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA037: Ass Field Screening Analysis - Analysis Holding Time Compliance						
Soil Glass Jar - Unpreserved						
BH21 10.5-10.7	----	----	----	29-SEP-2008	22-SEP-2008	**7**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Organotin Compounds (Soluble)	1	12	8.3	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

URS CHAIN OF CUSTODY

FOR LABORATORY USE ONLY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: (1) 2 3 4 (please circle)
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		

Custody Seal ? Y N NA
Free ice / frozen icebricks present upon receipt? Y N
Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228,52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: Bruce L. of ALS	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 24/9/08 TIME: 12.50	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE																								
				Solid		Liquid																						
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH21 14.0 - 14.4	23/09/08	S	1										✓	✓	✓					✓		✓					✓
2	BH21 15.45 - 15.80	"	S	1			✗	1						✓	✓	✓					✓		✓					✓
3	QC70	"	L				1	1								✓		✓	✓	✓	✓							✓
4	BH21 17.9 - 18.31	23/09/08	S	1										ON HOLD														
5	BH21 18.3 - 18.7	"	S	1	1									ON HOLD														
6	QC71	"	L				1	1								✓		✓	✓	✓	✓							✓
TOTAL																												

Environmental Division
Brisbane
Work Order
EB0813167

Telephone : +61-7-3243 7222

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0813167**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 24-SEP-2008	Issue Date	: 25-SEP-2008 12:56
Client Requested Due Date	: 01-OCT-2008	Scheduled Reporting Date	: **03-OCT-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.3 C - Ice present
No. of coolers/boxes	: 1 LARGE	No. of samples received	: 6
Sercurity Seal	: Intact.	No. of samples analysed	: 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

Method / Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
EP005 : Total Organic Carbon		
QC70	- Amber Glass Bottle - Unpreserved	- Amber TOC Vial- Sulphuric Acid
QC71	- Amber Glass Bottle - Unpreserved	- Amber TOC Vial- Sulphuric Acid

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA037 ASS Field Screening Analysis	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-02 8 Metals (incl. Digestion)
EB0813167-001	22-SEP-2008 15:00	BH21_14.0-14.4		✓	✓	✓	✓	✓	✓
EB0813167-002	22-SEP-2008 15:00	BH21_15.43-15.80		✓	✓	✓	✓	✓	✓
EB0813167-004	23-SEP-2008 15:00	BH21_17.9-18.31	✓						
EB0813167-005	23-SEP-2008 15:00	BH21_18.3-18.7	✓						

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0813167-003	22-SEP-2008 15:00	QC70	✓	✓	✓	✓	✓	✓	✓	✓
EB0813167-006	23-SEP-2008 15:00	QC71	✓	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com
- Trigger - Subcontract Report	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com
- Trigger - Subcontract Report	Email	rob_ully@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0813167**	Page	: 1 of 8
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 24-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 6
Quote number	: EN/001/08	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Kim McCabe	Senior Inorganic Chemist	Inorganics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EG005T (Total Metals): Sample EB0813148-011 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.**
- **EG005T (Total Metals): Samples EB0813148-004 & 012 show poor matrix spike recovery due to matrix interference. Confirmed by visual inspection.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Insufficient sample for QC70 and QC71 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Pesticides/PCB: Surrogate recoveries are not determined for sample QC71 due to laboratory error. Insufficient sample for re-extraction and re-analysis.**
- **pH FOX Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Vigorous; 4 - Very Vigorous**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **TBT: Samples QC70 and QC71 were not analysed due to insufficient sample volume.**

Analytical Results

Sub-Matrix: SOIL			Client sample ID	BH21_14.0-14.4	BH21_15.43-15.80	----	----	----
			Client sampling date / time	22-SEP-2008 15:00	22-SEP-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit	EB0813167-001	EB0813167-002	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**8.5**	**8.8**	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	**0.23**	**0.10**	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**143**	**60**	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**0.88**	**0.88**	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**175**	**175**	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**0.28**	**0.28**	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	**0.04**	<0.02	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	**26**	<10	----	----	----
Liming Rate	----	1	kg CaCO3/t	**2**	<1	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**5.3**	**6.0**	----	----	----
pH (Fox)	----	0.1	pH Unit	**4.9**	**4.7**	----	----	----
Reaction Rate	----	1	-	**1**	**1**	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**18.2**	**19.8**	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**1260**	**3400**	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	----	----	----
Arsenic	7440-38-2	5	mg/kg	**16**	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**5**	**6**	----	----	----
Copper	7440-50-8	5	mg/kg	**10**	**5**	----	----	----
Iron	7439-89-6	50	mg/kg	**10100**	**2140**	----	----	----
Lead	7439-92-1	5	mg/kg	**9**	<5	----	----	----
Manganese	7439-96-5	5	mg/kg	**68**	**13**	----	----	----
Nickel	7440-02-0	2	mg/kg	**5**	<2	----	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	----	----
Zinc	7440-66-6	5	mg/kg	**9**	<5	----	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	BH21_14.0-14.4	BH21_15.43-15.80	----	----	----
				Client sampling date / time	22-SEP-2008 15:00	22-SEP-2008 15:00	----	----	----
					EB0813167-001	EB0813167-002	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**0.38**	**0.21**	----	----	----
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	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**64.4**	**65.7**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**62.5**	**69.6**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**73.7**	**71.6**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**73.0**	**75.5**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**86.2**	**99.1**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**78.0**	**80.5**	----	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	QC70	QC71	----	----	----
				Client sampling date / time	22-SEP-2008 15:00	23-SEP-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		EB0813167-003	EB0813167-006	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	**0.0001**	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	<1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<2	<2	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<1.0	<1.0	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<1.0	<1.0	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<1.0	<1.0	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<1.0	<1.0	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<1.0	<1.0	----	----	----
Endrin	72-20-8	0.5	µg/L		<1.0	<1.0	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<1.0	<1.0	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<1.0	<1.0	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	<2	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<1.0	<1.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	----	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	QC70	QC71	----	----	----
				Client sampling date / time	22-SEP-2008 15:00	23-SEP-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		EB0813167-003	EB0813167-006	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**113**	**Not Determined**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**93.9**	**Not Determined**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**119**	**Not Determined**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**28.5**	**25.3**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**75.3**	**60.3**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**108**	**90.6**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**93.6**	**83.5**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**80.0**	**76.3**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**106**	**102**	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

ALS Laboratory Group Pty Ltd
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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	24-Sep-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0813167	BH21_14.0-14.4	001	0%	44%	24%	32%
EB0813167	BH21_15.43-1 5.80	002	16%	31%	28%	25%

Remarks :

Test Procedure : AS1289.3.6.3

Prepared by : Dianne Blane Checked by PK

Certificate of Analysis

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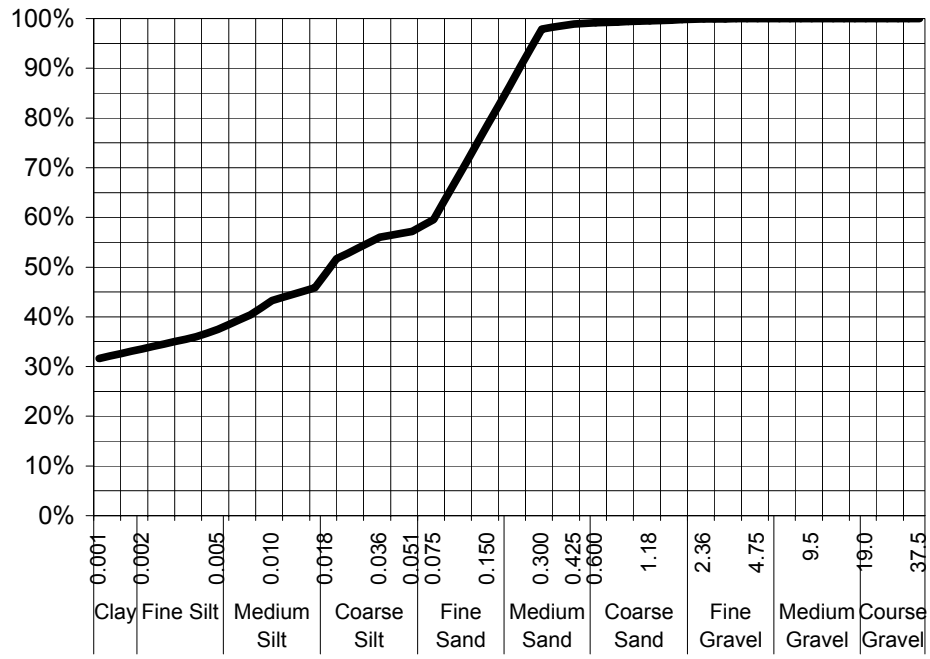
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	2-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	24-Sep-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813167-001 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH21_14.0-14.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	98%
0.150	79%
0.075	60%
Particle Size (microns)	
36	56%
18	49%
10	43%
5	37%
3	36%
1	32%

Samples analysed as received.

Sample Comments:		**Analysed:**	29-Sep-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Grey/brown clay & grit	**Dispersion Method**	Mortar & Pestle
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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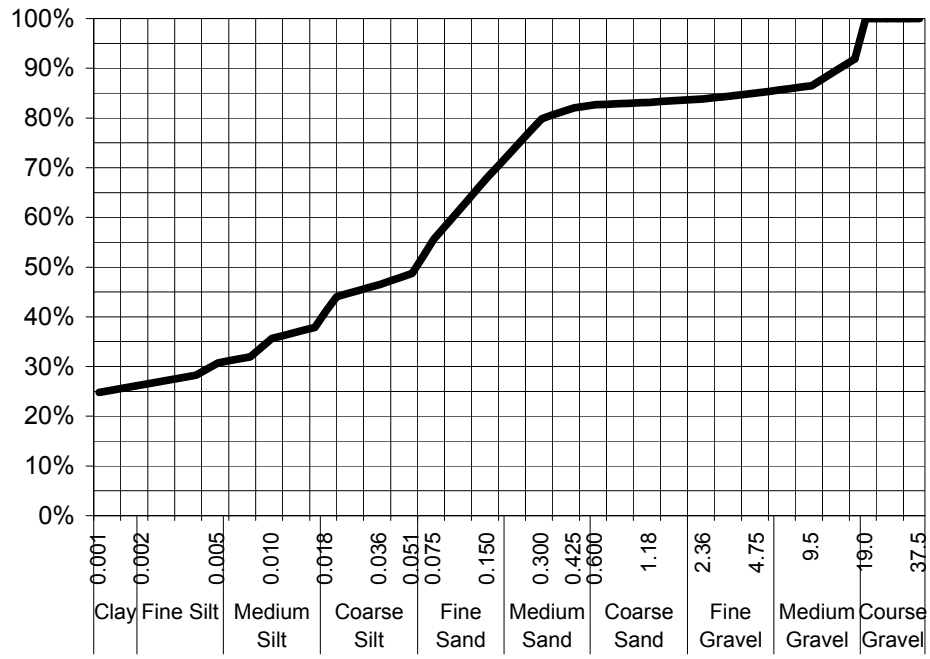
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	2-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	24-Sep-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813167-002 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH21_15.43-1 5.80

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	87%
4.75	85%
2.36	84%
1.18	83%
0.600	83%
0.425	82%
0.300	80%
0.150	68%
0.075	56%
Particle Size (microns)	
36	47%
18	41%
10	36%
5	31%
3	28%
1	25%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Grey clay, sand & gravel

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 29-Sep-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	24-Sep-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0813167	BH21_14.0-14.4	001	0%	44%	24%	32%
EB0813167	BH21_15.43-1 5.80	002	16%	31%	28%	25%

Remarks :

Test Procedure : AS1289.3.6.3

Prepared by : Dianne Blane Checked by PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0813167**	Page	: 1 of 9
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 24-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 6
Quote number	: EN/001/08	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Kim McCabe	Senior Inorganic Chemist	Inorganics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 774582)									
EB0813167-001	BH21_14.0-14.4	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.5	8.5	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 774582)									
EB0813167-001	BH21_14.0-14.4	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.23	0.23	0.0	0% - 50%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	143	143	0.0	0% - 50%
EA033-C: Acid Neutralising Capacity (QC Lot: 774582)									
EB0813167-001	BH21_14.0-14.4	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.88	0.98	11.8	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.28	0.32	11.8	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	175	197	11.8	0% - 50%
EA037: Ass Field Screening Analysis (QC Lot: 774583)									
EB0813167-001	BH21_14.0-14.4	EA037: pH (F)	----	0.1	pH Unit	5.3	5.5	3.7	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	4.9	4.8	2.1	0% - 20%
EA055: Moisture Content (QC Lot: 769840)									
EB0813178-007	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0813221-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 769694)									
EB0813148-011	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0813148-021	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 769694) - continued									
EB0813148-021	Anonymous	EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 769693)									
EB0813148-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0813148-011	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 769695)									
EB0813148-021	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 767627)									
EB0813167-001	BH21_14.0-14.4	EP005: Total Organic Carbon	----	0.02	%	0.38	0.37	2.7	0% - 50%
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 770074)									
EB0813167-001	BH21_14.0-14.4	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 768990)									
EB0813167-003	QC70	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 768990) - continued									
EB0813208-008	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 768991)									
EB0813167-003	QC70	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EB0813208-008	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 772274)									
EB0813143-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0813208-007	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 768299)									
EB0813158-006	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0813209-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 774582)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 774582)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 774582)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 769694)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	115	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	109	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	107	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	108	90.2	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	107	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	113	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	108	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 769693)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	90.0	79.5	129
EG035T: Total Recoverable Mercury by FIMS (QCLot: 769695)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	91.7	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 767627)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 770074)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	101	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	109	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	96.7	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	99.2	65	111

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 770074) - continued								
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	94.4	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	95.8	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	106	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	103	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	95.0	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	94.2	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	87.7	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	96.0	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	94.2	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	93.2	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	92.4	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	92.0	52	128

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 768990)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	96.6	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	96.4	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	95.6	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	105	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	94.8	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	96.3	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	91.3	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	103	81	127
EG020T: Total Metals by ICP-MS (QCLot: 768991)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	86.9	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 772274)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	100	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 768299)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 767783)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	98.2	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 767782)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	97.3	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	81.4	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	83.1	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	88.0	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	85.1	54.8	125

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Recovery Limits (%)
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 767782) - continued								
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	77.9	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	94.6	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	84.8	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	71.8	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	83.0	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 767784)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	76.0	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	79.0	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	71.5	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	74.4	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	80.5	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	77.7	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	84.2	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	84.2	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	86.4	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	75.0	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	75.7	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	75.2	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	66.7	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	60.5	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	63.6	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	57.9	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 769694)							
EB0813148-012	Anonymous	EG005T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 769693)							
EB0813148-004	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 769695)							
EB0813148-012	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 770074)							
EB0813167-002	BH21_15.43-15.80	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	82.7	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	86.4	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 768990)							
EB0813165-003	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 772274)							
EB0813143-001	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 767784)							
EB0813209-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0813167**	Page	: 1 of 10
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR ROB ULLY	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: rob_ully@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 24-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 6
Quote number	: EN/001/08	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Pulp Bag								
BH21_14.0-14.4,	BH21_15.43-15.80	**22-SEP-2008**	**24-SEP-2008**	23-SEP-2008	×	**07-OCT-2008**	05-JAN-2009	✓
EA033-B: Potential Acidity								
Pulp Bag								
BH21_14.0-14.4,	BH21_15.43-15.80	**22-SEP-2008**	**24-SEP-2008**	23-SEP-2008	×	**07-OCT-2008**	05-JAN-2009	✓
EA033-C: Acid Neutralising Capacity								
Pulp Bag								
BH21_14.0-14.4,	BH21_15.43-15.80	**22-SEP-2008**	**24-SEP-2008**	23-SEP-2008	×	**07-OCT-2008**	05-JAN-2009	✓
EA033-D: Retained Acidity								
Pulp Bag								
BH21_14.0-14.4,	BH21_15.43-15.80	**22-SEP-2008**	**24-SEP-2008**	23-SEP-2008	×	**07-OCT-2008**	05-JAN-2009	✓
EA033-E: Acid Base Accounting								
Pulp Bag								
BH21_14.0-14.4,	BH21_15.43-15.80	**22-SEP-2008**	**24-SEP-2008**	23-SEP-2008	×	**07-OCT-2008**	05-JAN-2009	✓
EA037: Ass Field Screening Analysis								
Soil Glass Jar - Unpreserved								
BH21_14.0-14.4,	BH21_15.43-15.80	**22-SEP-2008**	**24-SEP-2008**	23-SEP-2008	×	**07-OCT-2008**	23-SEP-2008	×
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH21_14.0-14.4,	BH21_15.43-15.80	**22-SEP-2008**	**----**	----	----	**29-SEP-2008**	29-SEP-2008	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
BH21_14.0-14.4,	BH21_15.43-15.80	**22-SEP-2008**	**29-SEP-2008**	21-MAR-2009	✓	**29-SEP-2008**	21-MAR-2009	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
BH21_14.0-14.4,	BH21_15.43-15.80	**22-SEP-2008**	**29-SEP-2008**	21-MAR-2009	✓	**30-SEP-2008**	20-OCT-2008	✓
EP005: Total Organic Carbon (TOC)								
Pulp Bag								
BH21_14.0-14.4,	BH21_15.43-15.80	**22-SEP-2008**	**26-SEP-2008**	---	----	**26-SEP-2008**	20-OCT-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH21_14.0-14.4, BH21_15.43-15.80	**22-SEP-2008**	**29-SEP-2008**	06-OCT-2008	✓	**30-SEP-2008**	08-NOV-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC70	**22-SEP-2008**	**26-SEP-2008**	21-MAR-2009	✓	**26-SEP-2008**	21-MAR-2009	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC71	**23-SEP-2008**	**26-SEP-2008**	22-MAR-2009	✓	**26-SEP-2008**	22-MAR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC70	**22-SEP-2008**	**----**	----	----	**01-OCT-2008**	20-OCT-2008	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC71	**23-SEP-2008**	**----**	----	----	**01-OCT-2008**	21-OCT-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber Glass Bottle - Unpreserved							
QC70	**22-SEP-2008**	**----**	----	----	**26-SEP-2008**	24-SEP-2008	×
Amber Glass Bottle - Unpreserved							
QC71	**23-SEP-2008**	**----**	----	----	**26-SEP-2008**	25-SEP-2008	×
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC70	**22-SEP-2008**	**26-SEP-2008**	29-SEP-2008	✓	**30-SEP-2008**	05-NOV-2008	✓
Amber Glass Bottle - Unpreserved							
QC71	**23-SEP-2008**	**26-SEP-2008**	30-SEP-2008	✓	**30-SEP-2008**	05-NOV-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC70	**22-SEP-2008**	**26-SEP-2008**	29-SEP-2008	✓	**30-SEP-2008**	05-NOV-2008	✓
Amber Glass Bottle - Unpreserved							
QC71	**23-SEP-2008**	**26-SEP-2008**	30-SEP-2008	✓	**30-SEP-2008**	05-NOV-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC70	**22-SEP-2008**	**26-SEP-2008**	29-SEP-2008	✓	**30-SEP-2008**	05-NOV-2008	✓
Amber Glass Bottle - Unpreserved							
QC71	**23-SEP-2008**	**26-SEP-2008**	30-SEP-2008	✓	**30-SEP-2008**	05-NOV-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP090: Organotin Compounds (Soluble)							
Amber Glass Bottle - Unpreserved QC70	**22-SEP-2008**	**30-SEP-2008**	21-NOV-2008	✓	**01-OCT-2008**	09-NOV-2008	✓
Amber Glass Bottle - Unpreserved QC71	**23-SEP-2008**	**30-SEP-2008**	22-NOV-2008	✓	**01-OCT-2008**	09-NOV-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	1	2	50.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chromium Suite for Acid Sulphate Soils	EA033	1	2	50.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	2	50.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	27	11.1	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	2	50.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	2	50.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	27	7.4	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	2	50.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	2	50.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	2	50.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	27	7.4	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	2	50.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	2	50.0	5.0	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	27	7.4	5.0	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Organotin Compounds (Soluble)	EP090S	1	12	8.3	10.0	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Compounds (Soluble)	EP090S	1	12	8.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	13	7.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organotin Compounds (Soluble)	EP090S	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Compounds (Soluble)	EP090S	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)

Analytical Methods	Method	Matrix	Method Descriptions
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Organotin Compounds (Soluble)	EP090S	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Organotin Sample Preparation	ORG34	WATER	In-house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP066S: PCB Surrogate	EB0813167-006	QC71	**Decachlorobiphenyl**	2051-24-3	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP068S: Organochlorine Pesticide Surrogate	EB0813167-006	QC71	**Dibromo-DDE**	21655-73-2	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP068T: Organophosphorus Pesticide Surrogate	EB0813167-003	QC70	**DEF**	78-48-8	119 %	10-110 %	**Recovery greater than upper data quality objective**
EP068T: Organophosphorus Pesticide Surrogate	EB0813167-006	QC71	**DEF**	78-48-8	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA033-A: Actual Acidity							
Pulp Bag							
BH21_14.0-14.4,	BH21_15.43-15.80	24-SEP-2008	23-SEP-2008	**1**	----	----	----
EA033-B: Potential Acidity							
Pulp Bag							
BH21_14.0-14.4,	BH21_15.43-15.80	24-SEP-2008	23-SEP-2008	**1**	----	----	----
EA033-C: Acid Neutralising Capacity							

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA033-C: Acid Neutralising Capacity - Analysis Holding Time Compliance						
Pulp Bag						
BH21_14.0-14.4, BH21_15.43-15.80	24-SEP-2008	23-SEP-2008	**1**	----	----	----
EA033-D: Retained Acidity						
Pulp Bag						
BH21_14.0-14.4, BH21_15.43-15.80	24-SEP-2008	23-SEP-2008	**1**	----	----	----
EA033-E: Acid Base Accounting						
Pulp Bag						
BH21_14.0-14.4, BH21_15.43-15.80	24-SEP-2008	23-SEP-2008	**1**	----	----	----
EA037: Ass Field Screening Analysis						
Soil Glass Jar - Unpreserved						
BH21_14.0-14.4, BH21_15.43-15.80	24-SEP-2008	23-SEP-2008	**1**	07-OCT-2008	23-SEP-2008	**14**

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP005: Total Organic Carbon (TOC)						
Amber Glass Bottle - Unpreserved						
QC70	----	----	----	26-SEP-2008	24-SEP-2008	**2**
Amber Glass Bottle - Unpreserved						
QC71	----	----	----	26-SEP-2008	25-SEP-2008	**1**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: **WATER**

Quality Control Sample Type / Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Organotin Compounds (Soluble)	1	12	8.3	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

CHAIN OF CUSTODY

Environmental Division
Brisbane
Work Order
EB0813420

Telephone : +61-7-3243 7222

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address:	julian_dobos@urscorp.com
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS	COC SEQUENCE NUMBER
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259	[ ] Standard - 5 days [ ] Non standard	(1) 2 3 4 please circle

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: N.KING	RELINQUISHED BY: / RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS			
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 29/9 TIME: 1815	DATE: TIME: / DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

FOR LABORATORY USE ONLY

Custody Seal ? (Y) N NA

Free ice / frozen icebricks present upon receipt? (Y) N

Random Sample Temperature on Receipt 2-3 °C

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR S

	LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH$_{Field}$ and pH$_{Fox}$	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionucide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
1		BH12B 2.4-3.4	28/09/08	S	2	1									✓	✓	✓					✓		✓					✓	
2		BH12B 3.5-4.4	"	S	2	1									✓	✓	✓					✓		✓					✓	
3		BH12B 5.3-5.7	"	S	2	1									✓	✓	✓					✓		✓					✓	
4		BH12B 5.9-6.3	"	S	2	1									✓	✓	✓					✓		✓					✓	
5		QC72	"	S	2	1									✓	✓	✓					✓		✓					✓	
6		QC73	"	S	2	1									✓	✓	✓					✓		✓					✓	
7		QC74	"	S	2	1									✓	✓	✓					✓		✓					✓	
8		QC75	"	S	2	1									✓	✓	✓					✓		✓					✓	
9		BH2SB 0.3-0.95	"	S	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
10		BH2SB 1.0-1.45	"	S	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
11		BH2SB 1.5-2.0	"	S	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
12		QC76	"	L				1	1								✓		✓	✓	✓	✓							✓	
		TOTAL																												

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0813420**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 29-SEP-2008	Issue Date	: 01-OCT-2008 08:59
Client Requested Due Date	: 07-OCT-2008	Scheduled Reporting Date	: **08-OCT-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 2.3 C, 3.3 C - Ice present
No. of coolers/boxes	: 2 MEDIUM	No. of samples received	: 12
Sercurity Seal	: Intact.	No. of samples analysed	: 12

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **Please be advised that the analysis results will be available by 8/10/08 except TBT & Sizing which will be available by 20/10/08.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA037 ASS Field Screening Analysis	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins
EB0813420-001	28-SEP-2008 15:00	BH28 2.4-3.4	✓	✓	✓	✓			✓	
EB0813420-002	28-SEP-2008 15:00	BH28 3.5-4.4	✓	✓	✓	✓			✓	
EB0813420-003	28-SEP-2008 15:00	BH28 5.3-5.7	✓	✓	✓	✓			✓	
EB0813420-004	28-SEP-2008 15:00	BH28 5.9-6.3	✓	✓	✓	✓			✓	
EB0813420-005	28-SEP-2008 15:00	QC72	✓	✓	✓	✓			✓	
EB0813420-006	28-SEP-2008 15:00	QC73	✓	✓	✓	✓			✓	
EB0813420-007	28-SEP-2008 15:00	QC74	✓	✓	✓	✓			✓	
EB0813420-008	28-SEP-2008 15:00	QC75	✓	✓	✓	✓			✓	
EB0813420-009	28-SEP-2008 15:00	BH25B 0.5-0.95	✓	✓	✓	✓	✓	✓	✓	✓
EB0813420-010	28-SEP-2008 15:00	BH25B 1.0-1.45	✓	✓	✓	✓	✓	✓	✓	✓
EB0813420-011	28-SEP-2008 15:00	BH25B 1.5-2.0	✓	✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - S-02 8 Metals (incl. Digestion)
EB0813420-001	28-SEP-2008 15:00	BH28 2.4-3.4	✓
EB0813420-002	28-SEP-2008 15:00	BH28 3.5-4.4	✓
EB0813420-003	28-SEP-2008 15:00	BH28 5.3-5.7	✓
EB0813420-004	28-SEP-2008 15:00	BH28 5.9-6.3	✓
EB0813420-005	28-SEP-2008 15:00	QC72	✓
EB0813420-006	28-SEP-2008 15:00	QC73	✓
EB0813420-007	28-SEP-2008 15:00	QC74	✓
EB0813420-008	28-SEP-2008 15:00	QC75	✓
EB0813420-009	28-SEP-2008 15:00	BH25B 0.5-0.95	✓
EB0813420-010	28-SEP-2008 15:00	BH25B 1.0-1.45	✓
EB0813420-011	28-SEP-2008 15:00	BH25B 1.5-2.0	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0813420-012	28-SEP-2008 15:00	QC76	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0813420**	Page	: 1 of 14
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 29-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 12
Quote number	: EN/001/08	No. of samples analysed	: 12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides: Insufficient sample for QC76 has been provided for standard analysis. Where applicable LOR values have been adjusted accordingly.**
- **Pesticides: Sample BH25B 1.0-1.45 shows poor matrix spike recovery due to sample matrix interference. Confirmed by visual inspection.**
- **pH FOX Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Vigorous; 4 - Very Vigorous**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH28 2.4-3.4	BH28 3.5-4.4	BH28 5.3-5.7	BH28 5.9-6.3	QC72
Client sampling date / time				28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00
				EB0813420-001	EB0813420-002	EB0813420-003	EB0813420-004	EB0813420-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.6	8.5	8.4	8.6	8.3
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.62	0.42	0.65	0.04	0.81
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	386	260	407	22	507
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	6.41	3.04	2.83	1.14	3.42
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1280	608	565	228	684
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.05	0.98	0.90	0.36	1.10
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.05	<0.02	0.08
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	30	<10	51
Liming Rate	----	1	kg CaCO3/t	<1	<1	2	<1	4
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.4	8.8	8.7	9.8	8.4
pH (Fox)	----	0.1	pH Unit	5.6	5.4	5.3	5.8	5.6
Reaction Rate	----	1	-	1	1	1	1	1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	45.3	42.2	41.2	19.9	47.4
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	16800	13300	14900	5610	18400
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	14	11	13	6	12
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	29	22	24	8	28
Copper	7440-50-8	5	mg/kg	25	27	29	16	36
Iron	7439-89-6	50	mg/kg	28700	26400	23400	6620	31200
Lead	7439-92-1	5	mg/kg	12	10	11	7	11
Manganese	7439-96-5	5	mg/kg	320	920	441	22	336
Nickel	7440-02-0	2	mg/kg	18	13	14	4	17
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	46	40	43	10	55

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH28 2.4-3.4	BH28 3.5-4.4	BH28 5.3-5.7	BH28 5.9-6.3	QC72
				Client sampling date / time: 28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00
				EB0813420-001	EB0813420-002	EB0813420-003	EB0813420-004	EB0813420-005
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**1.41**	**0.71**	**1.01**	**0.08**	**1.47**
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
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**72.6**	**72.4**	**69.2**	**70.0**	**76.0**
2-Chlorophenol-D4	93951-73-6	0.1	%	**92.2**	**87.6**	**89.8**	**82.2**	**87.1**
2.4.6-Tribromophenol	118-79-6	0.1	%	**111**	**85.8**	**97.6**	**85.6**	**97.4**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**105**	**93.8**	**96.8**	**86.3**	**87.5**
Anthracene-d10	1719-06-8	0.1	%	**105**	**105**	**102**	**94.2**	**113**
4-Terphenyl-d14	1718-51-0	0.1	%	**111**	**110**	**109**	**109**	**107**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: QC73	QC74	QC75	BH25B 0.5-0.95	BH25B 1.0-1.45
				Client sampling date / time: 28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00
				EB0813420-006	EB0813420-007	EB0813420-008	EB0813420-009	EB0813420-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.6	8.7	8.5	8.7	8.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.87	0.07	0.06	0.48	0.99
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	543	41	35	301	616
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	6.30	0.92	1.03	9.19	4.35
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1260	185	206	1840	869
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.02	0.30	0.33	2.94	1.39
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	0.06
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	36
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	3
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.5	9.7	9.4	9.0	8.4
pH (Fox)	----	0.1	pH Unit	5.6	6.1	6.0	5.8	5.4
Reaction Rate	----	1	-	1	1	1	1	1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	43.6	21.9	20.2	46.7	48.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	15200	7550	5860	17100	17500
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	12	6	<5	14	12
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	26	17	15	28	27
Copper	7440-50-8	5	mg/kg	25	55	31	29	36
Iron	7439-89-6	50	mg/kg	27800	31900	18600	30100	32600
Lead	7439-92-1	5	mg/kg	10	28	16	12	11
Manganese	7439-96-5	5	mg/kg	449	370	307	459	331
Nickel	7440-02-0	2	mg/kg	16	10	4	17	16
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	46	24	16	50	53

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: QC73	QC74	QC75	BH25B 0.5-0.95	BH25B 1.0-1.45
				Client sampling date / time: 28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00
				EB0813420-006	EB0813420-007	EB0813420-008	EB0813420-009	EB0813420-010
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**1.17**	**0.05**	**0.04**	**1.31**	**1.23**
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	----	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	<0.05
trans-Chlordane	5103-74-2	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
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
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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	----	----	<0.5	<0.5
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	**44.0**	**47.6**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: QC73	QC74	QC75	BH25B 0.5-0.95	BH25B 1.0-1.45
				Client sampling date / time: 28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00	28-SEP-2008 15:00
				EB0813420-006	EB0813420-007	EB0813420-008	EB0813420-009	EB0813420-010
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	**50.1**	**47.5**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	----	----	**73.7**	**66.4**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**66.2**	**63.5**	**66.8**	**77.0**	**81.7**
2-Chlorophenol-D4	93951-73-6	0.1	%	**83.7**	**84.5**	**85.5**	**96.6**	**99.4**
2.4.6-Tribromophenol	118-79-6	0.1	%	**92.6**	**91.4**	**93.6**	**99.7**	**93.1**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**94.7**	**93.5**	**96.0**	**104**	**102**
Anthracene-d10	1719-06-8	0.1	%	**93.3**	**98.1**	**106**	**99.7**	**129**
4-Terphenyl-d14	1718-51-0	0.1	%	**96.9**	**104**	**101**	**91.2**	**126**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	----	----	**35.3**	**44.0**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH25B 1.5-2.0	----	----	----	----
				Client sampling date / time: 28-SEP-2008 15:00	----	----	----	----
				EB0813420-011	----	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**8.6**	----	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	**0.70**	----	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**434**	----	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**5.00**	----	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**999**	----	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**1.60**	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	<1	----	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	**8.5**	----	----	----	----
pH (Fox)	----	0.1	pH Unit	**5.2**	----	----	----	----
Reaction Rate	----	1	-	**1**	----	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**43.8**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**12900**	----	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
Arsenic	7440-38-2	5	mg/kg	**12**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**22**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**24**	----	----	----	----
Iron	7439-89-6	50	mg/kg	**24700**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**10**	----	----	----	----
Manganese	7439-96-5	5	mg/kg	**420**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**13**	----	----	----	----
Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**39**	----	----	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH25B 1.5-2.0	----	----	----	----
				Client sampling date / time: 28-SEP-2008 15:00	----	----	----	----
				EB0813420-011	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.80**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	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	----	----	----	----
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	----	----	----	----
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**48.1**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL			Client sample ID	BH25B 1.5-2.0	----	----	----	----
			Client sampling date / time	28-SEP-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB0813420-011	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	51.1	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	81.4	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	77.1	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	97.8	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	97.6	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	99.8	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	124	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	120	----	----	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	45.2	----	----	----	----

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: QC76	----	----	----	----
				Client sampling date / time: 28-SEP-2008 15:00	----	----	----	----
				EB0813420-012	----	----	----	----
EG020T: Total Metals by ICP-MS								
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0016**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.012**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<2	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.5	µg/L	<1.0	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<1.0	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<1.0	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<1.0	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<1.0	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<1.0	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<1.0	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<1.0	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<1.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	QC76	----	----	----	----
				Client sampling date / time	28-SEP-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB0813420-012	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	**87.0**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%	**104**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%	**108**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%	**39.4**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**85.0**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**74.3**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%	**82.8**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**99.6**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**98.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

ALS Laboratory Group Pty Ltd
5 Rosegum Road
Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	29-Sep-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0813420	BH28 2.4-3.4	001	2%	15%	30%	53%
EB0813420	BH28 3.5-4.4	002	0%	3%	40%	57%
EB0813420	BH28 5.3-5.7	003	0%	15%	34%	51%
EB0813420	BH28 5.9-6.3	004	0%	9%	55%	36%
EB0813420	QC72	005	1%	8%	36%	55%
EB0813420	QC73	006	0%	10%	35%	55%
EB0813420	QC74	007	0%	13%	50%	37%
EB0813420	QC75	008	0%	23%	44%	33%
EB0813420	BH25B 0.5-0.95	009	2%	13%	34%	51%
EB0813420	BH25B 1.0-1.45	010	0%	18%	31%	51%
EB0813420	BH25B 1.5-2.0	011	1%	14%	30%	55%

Remarks :

Test Procedure : AS1289.3.6.3

Prepared by : Dianne Blane Checked by PK

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 8-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 29-Sep-2008

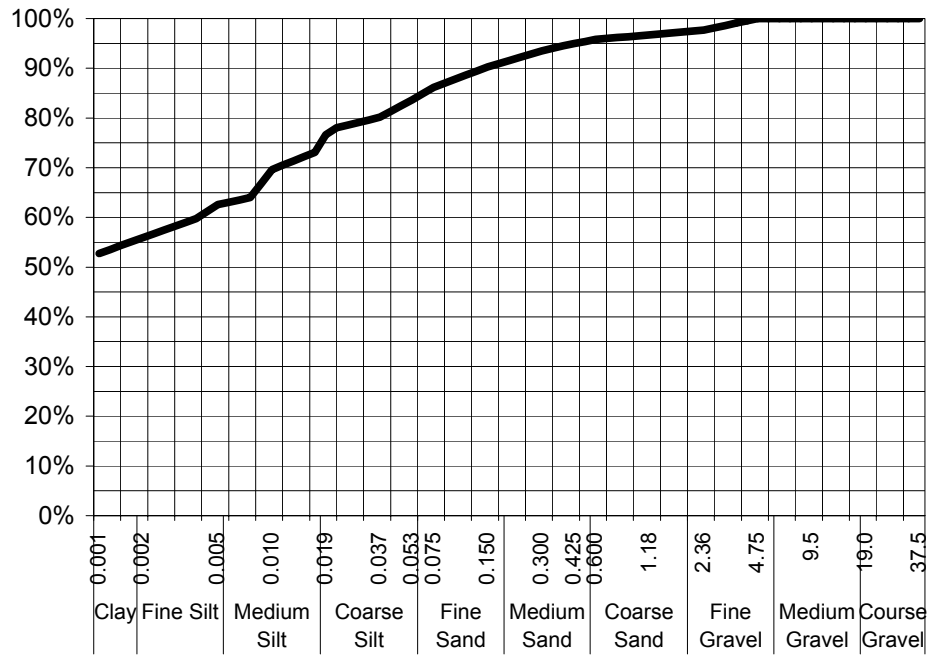
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813420-001 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH28 2.4-3.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	97%
0.600	96%
0.425	95%
0.300	94%
0.150	90%
0.075	86%
Particle Size (microns)	
37	80%
19	77%
10	70%
5	63%
4	60%
1	53%

Samples analysed as received.

Sample Comments:

Analysed: 2-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Dark clay, grit & shells

Dispersion Method Shaker

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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CLIENT: Rob Ully

DATE REPORTED: 8-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 29-Sep-2008

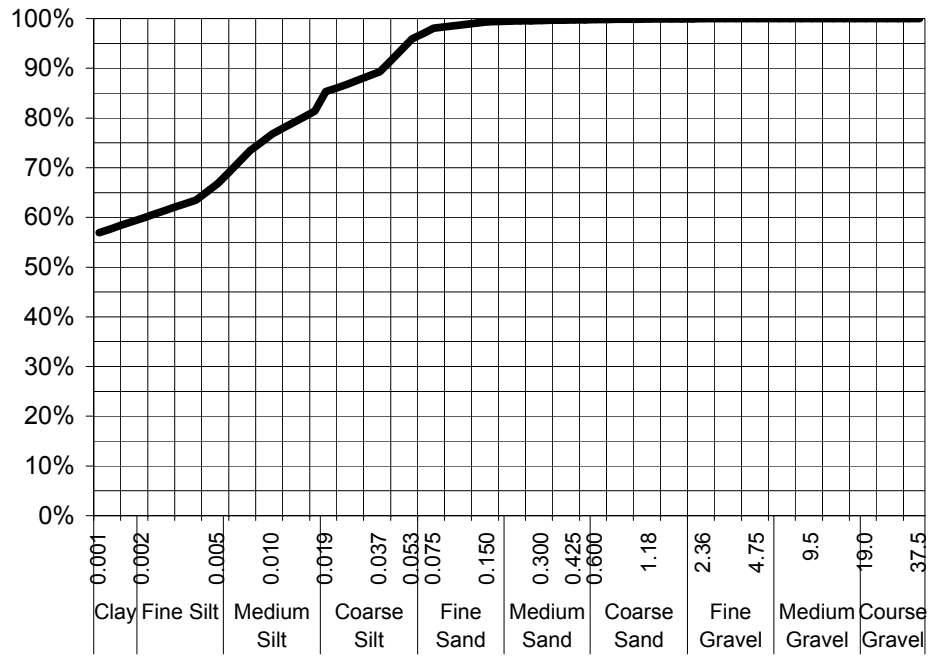
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813420-002 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH28 3.5-4.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%
Particle Size (microns)	
37	89%
19	85%
10	77%
5	67%
4	64%
1	57%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Dark clay, grit & shells

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 2-Oct-08

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Dianne Blane
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Authorised Signatory

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CLIENT: Rob Ully

DATE REPORTED: 8-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 29-Sep-2008

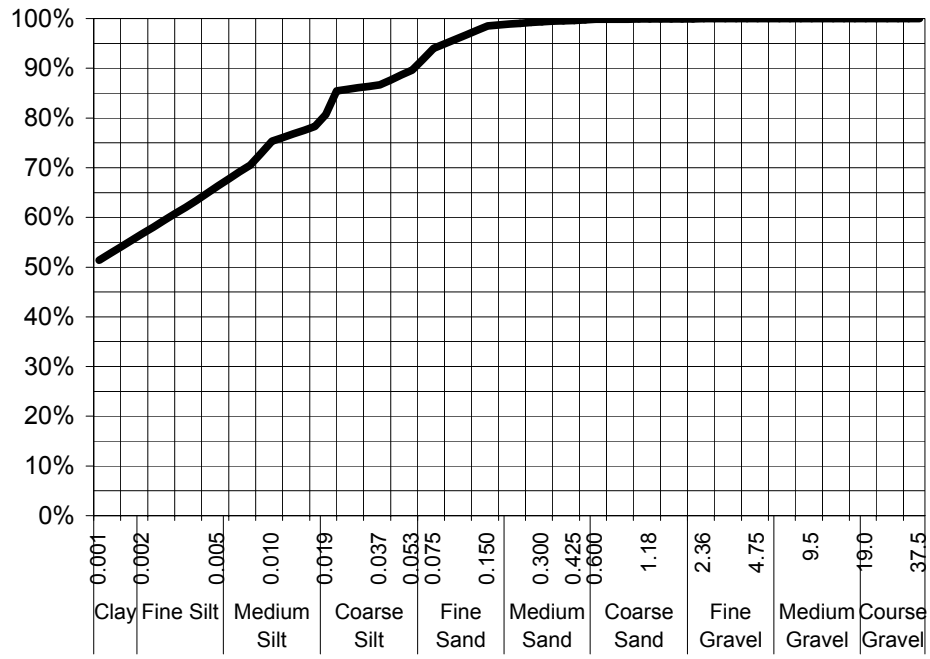
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813420-003 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH28 5.3-5.7

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	99%
0.075	94%
Particle Size (microns)	
37	87%
19	81%
10	75%
5	66%
3	63%
1	51%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Dark clay, grit & shells

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 2-Oct-08

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
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CLIENT: Rob Ully

DATE REPORTED: 8-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 29-Sep-2008

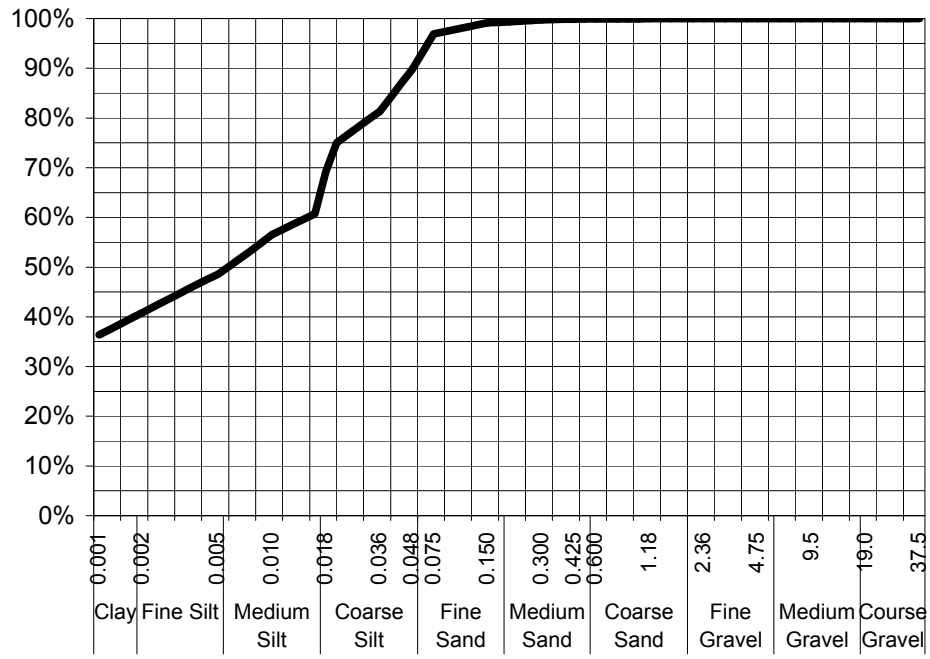
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813420-004 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH28 5.9-6.3

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	97%
Particle Size (microns)	
36	81%
18	69%
10	57%
5	49%
3	46%
1	36%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Dark clay & grit

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 2-Oct-08

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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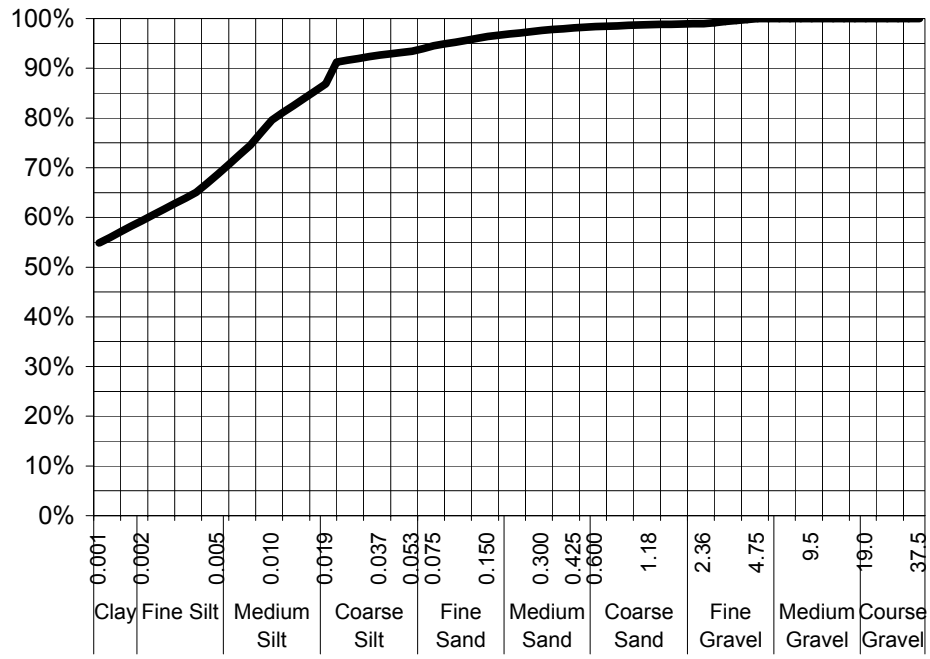
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	29-Sep-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813420-005 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC72

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	99%
0.600	98%
0.425	98%
0.300	98%
0.150	96%
0.075	95%
Particle Size (microns)	
37	93%
19	87%
10	80%
5	69%
4	65%
1	55%

Samples analysed as received.

Sample Comments:		**Analysed:**	2-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark clay, grit & shells	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 8-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 29-Sep-2008

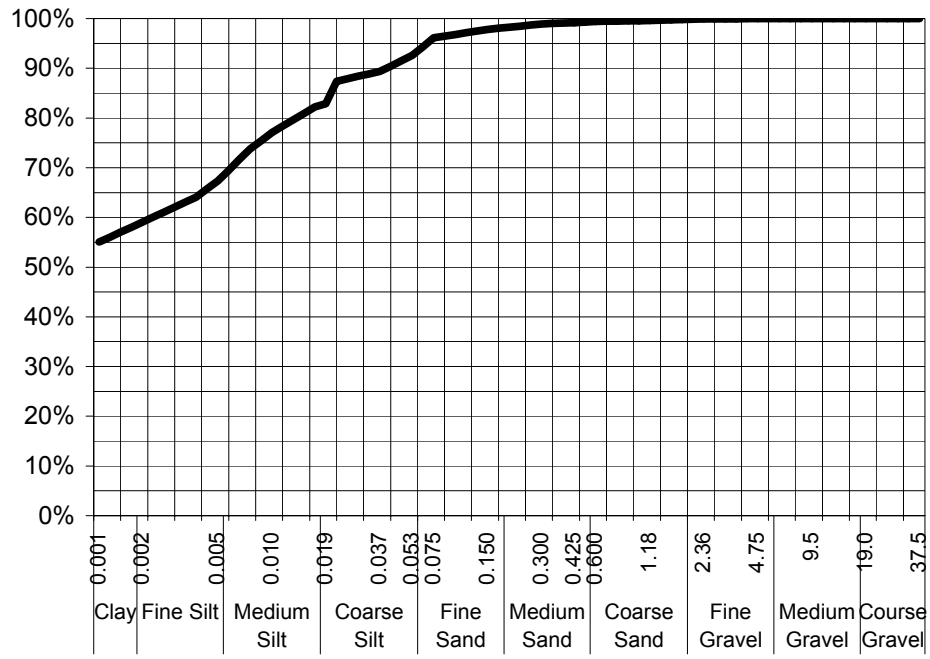
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813420-006 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC73

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	98%
0.075	96%
Particle Size (microns)	
37	89%
19	83%
10	77%
5	67%
4	64%
1	55%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Dark clay, grit & shells

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 2-Oct-08

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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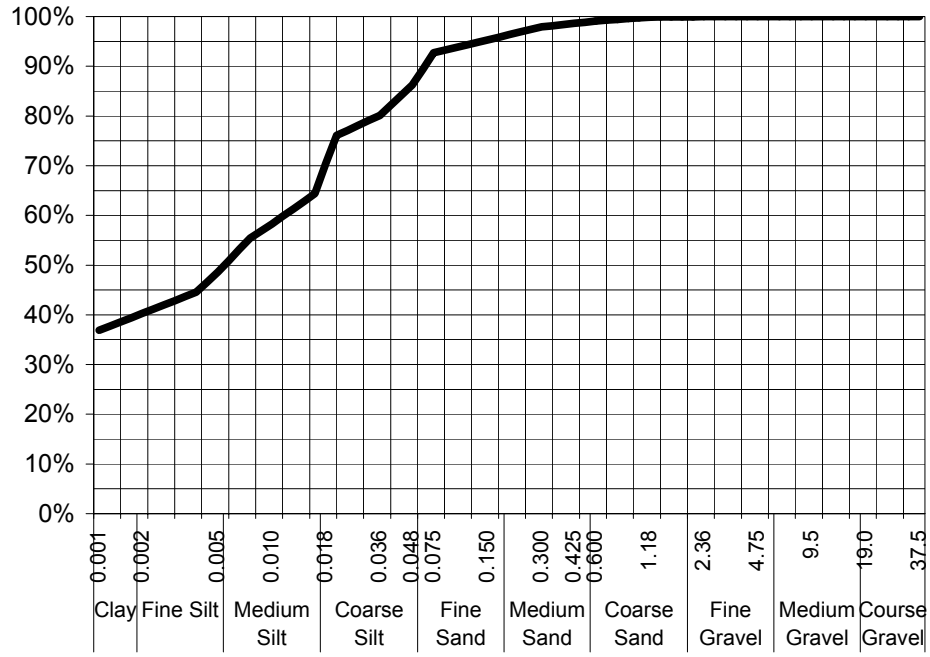
Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	8-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	29-Sep-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813420-007 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC74

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	98%
0.150	95%
0.075	93%
Particle Size (microns)	
36	80%
18	70%
10	58%
5	49%
3	45%
1	37%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Cream clay & grit

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 2-Oct-08

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 8-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 29-Sep-2008

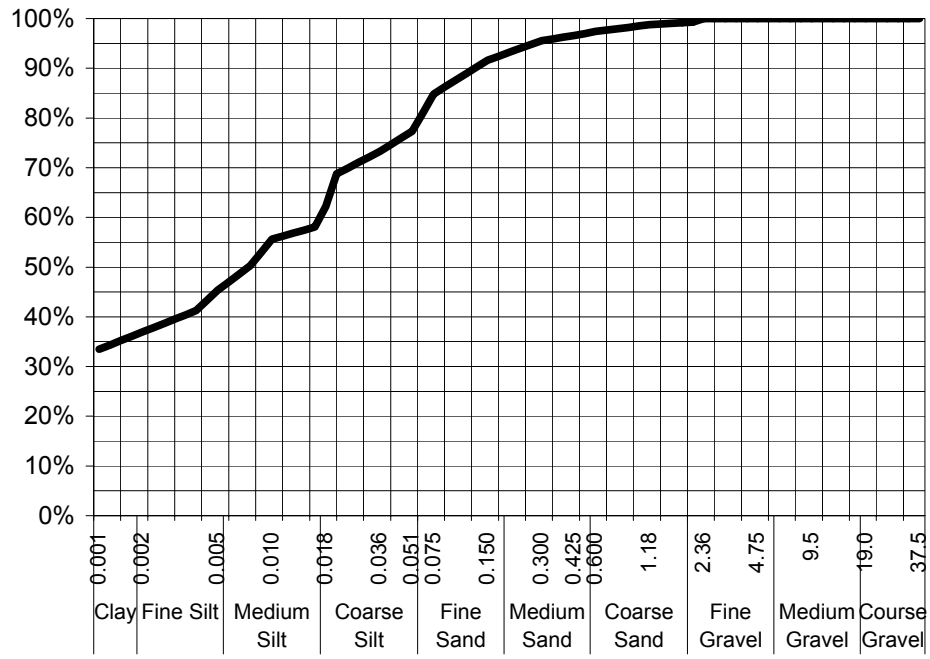
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813420-008 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC75

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	97%
0.425	97%
0.300	96%
0.150	92%
0.075	85%
Particle Size (microns)	
36	73%
18	62%
10	56%
5	45%
3	41%
1	33%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Cream clay & grit

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 2-Oct-08

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 8-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 29-Sep-2008

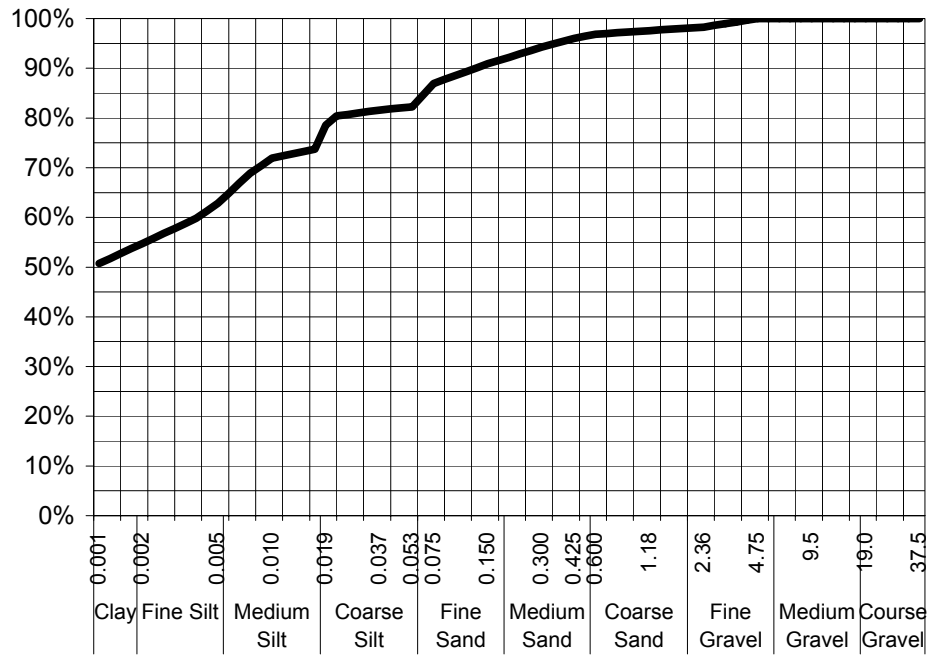
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813420-009 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH25B 0.5-0.95

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	98%
0.600	97%
0.425	96%
0.300	94%
0.150	91%
0.075	87%
Particle Size (microns)	
37	82%
19	79%
10	72%
5	63%
4	60%
1	51%

Samples analysed as received.

Sample Comments:

Analysed: 2-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Dark clay & grit

Dispersion Method Shaker

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 8-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 29-Sep-2008

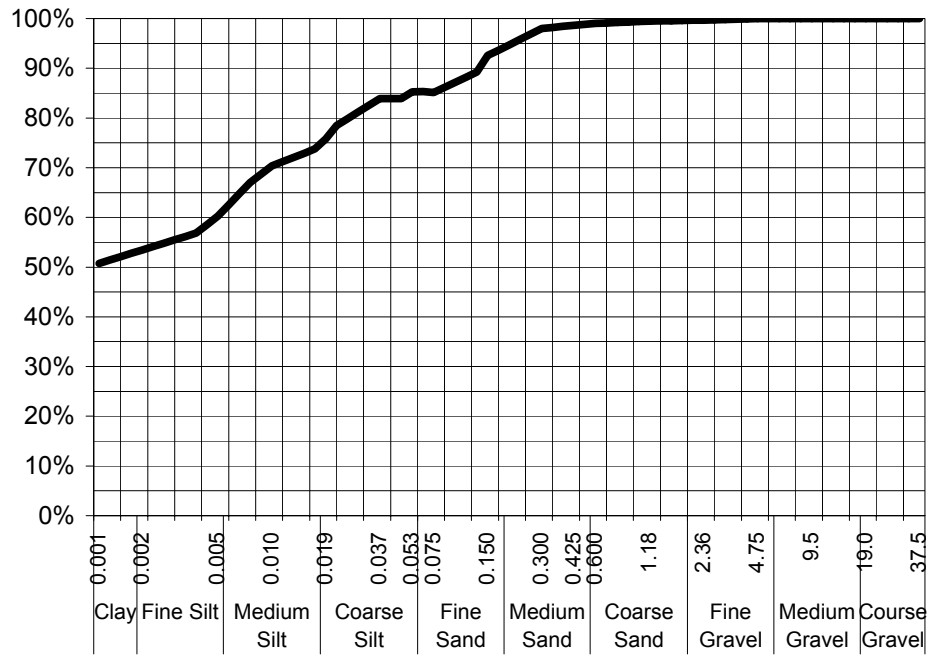
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813420-010 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH25B 1.0-1.45

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	99%
0.425	99%
0.300	98%
0.150	93%
0.075	85%
Particle Size (microns)	
37	84%
19	76%
10	70%
5	60%
4	57%
1	51%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Dark clay & grit

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 2-Oct-08

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 8-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 29-Sep-2008

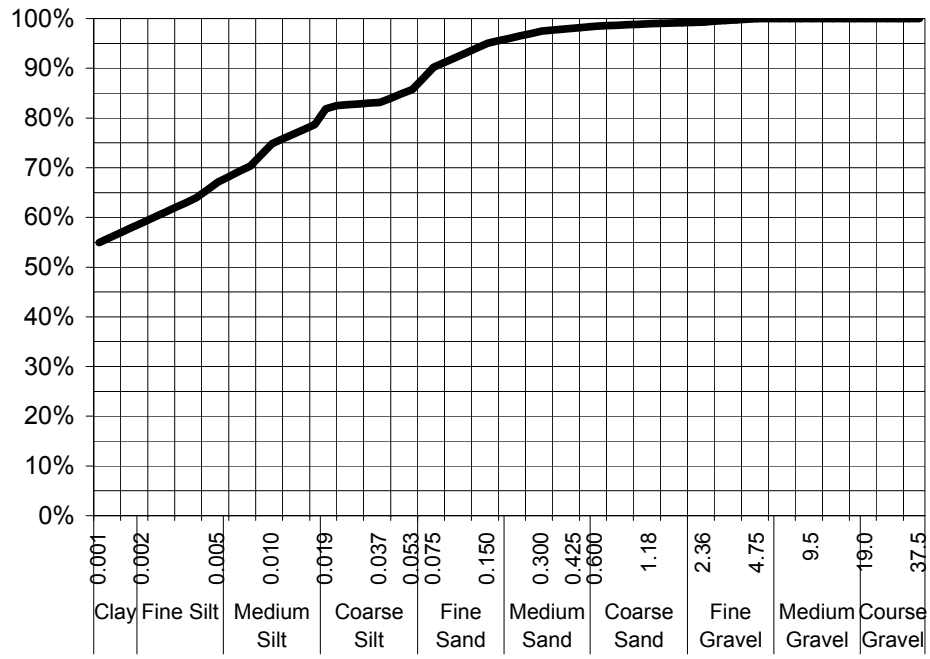
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813420-011 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH25B 1.5-2.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	99%
0.600	98%
0.425	98%
0.300	97%
0.150	95%
0.075	90%
Particle Size (microns)	
37	83%
19	82%
10	75%
5	67%
4	64%
1	55%

Samples analysed as received.

Sample Comments:

Analysed: 2-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Dark clay & grit

Dispersion Method Shaker

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 29-Sep-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0813420	BH28 2.4-3.4	001	2%	15%	30%	53%
EB0813420	BH28 3.5-4.4	002	0%	3%	40%	57%
EB0813420	BH28 5.3-5.7	003	0%	15%	34%	51%
EB0813420	BH28 5.9-6.3	004	0%	9%	55%	36%
EB0813420	QC72	005	1%	8%	36%	55%
EB0813420	QC73	006	0%	10%	35%	55%
EB0813420	QC74	007	0%	13%	50%	37%
EB0813420	QC75	008	0%	23%	44%	33%
EB0813420	BH25B 0.5-0.95	009	2%	13%	34%	51%
EB0813420	BH25B 1.0-1.45	010	0%	18%	31%	51%
EB0813420	BH25B 1.5-2.0	011	1%	14%	30%	55%

Remarks :
Test Procedure : AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0813420**	Page	: 1 of 14
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 29-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 12
Quote number	: EN/001/08	No. of samples analysed	: 12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA033-A: Actual Acidity (QC Lot: 773442)									
EB0813420-001	BH28 2.4-3.4	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.6	8.6	0.0	0% - 20%
EB0813420-011	BH25B 1.5-2.0	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.6	8.6	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 773442)									
EB0813420-001	BH28 2.4-3.4	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.62	0.61	0.0	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	386	381	1.2	0% - 20%
EB0813420-011	BH25B 1.5-2.0	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.70	0.60	15.2	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	434	373	15.2	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 773442)									
EB0813420-001	BH28 2.4-3.4	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	6.41	6.52	1.7	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.05	2.09	1.7	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1280	1300	1.7	0% - 20%
EB0813420-011	BH25B 1.5-2.0	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	5.00	5.00	0.0	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.60	1.60	0.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	999	999	0.0	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 773443)									
EB0813420-001	BH28 2.4-3.4	EA037: pH (F)	----	0.1	pH Unit	8.4	8.6	2.4	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.6	5.7	1.8	0% - 20%
EB0813420-011	BH25B 1.5-2.0	EA037: pH (F)	----	0.1	pH Unit	8.5	8.6	1.2	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.2	5.2	0.0	0% - 20%
EA055: Moisture Content (QC Lot: 773330)									
EB0813420-003	BH28 5.3-5.7	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	41.2	40.7	1.2	0% - 20%
EB0813420-010	BH25B 1.0-1.45	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	48.2	48.5	0.4	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 773299)									
EB0813420-001	BH28 2.4-3.4	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	29	28	0.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	18	17	6.1	No Limit

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0813420**	Page	: 1 of 11
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 29-SEP-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 12
Quote number	: EN/001/08	No. of samples analysed	: 12

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Snap Lock Bag - frozen								
BH28 2.4-3.4,	BH28 3.5-4.4,	**28-SEP-2008**	**29-SEP-2008**	---	----	**07-OCT-2008**	05-JAN-2009	✓
BH28 5.3-5.7,	BH28 5.9-6.3,							
QC72,	QC73,							
QC74,	QC75,							
BH25B 0.5-0.95,	BH25B 1.0-1.45,							
BH25B 1.5-2.0								
EA033-B: Potential Acidity								
Snap Lock Bag - frozen								
BH28 2.4-3.4,	BH28 3.5-4.4,	**28-SEP-2008**	**29-SEP-2008**	---	----	**07-OCT-2008**	05-JAN-2009	✓
BH28 5.3-5.7,	BH28 5.9-6.3,							
QC72,	QC73,							
QC74,	QC75,							
BH25B 0.5-0.95,	BH25B 1.0-1.45,							
BH25B 1.5-2.0								
EA033-C: Acid Neutralising Capacity								
Snap Lock Bag - frozen								
BH28 2.4-3.4,	BH28 3.5-4.4,	**28-SEP-2008**	**29-SEP-2008**	---	----	**07-OCT-2008**	05-JAN-2009	✓
BH28 5.3-5.7,	BH28 5.9-6.3,							
QC72,	QC73,							
QC74,	QC75,							
BH25B 0.5-0.95,	BH25B 1.0-1.45,							
BH25B 1.5-2.0								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity							
Snap Lock Bag - frozen							
BH28 2.4-3.4, BH28 3.5-4.4, BH28 5.3-5.7, BH28 5.9-6.3, QC72, QC73, QC74, QC75, BH25B 0.5-0.95, BH25B 1.0-1.45, BH25B 1.5-2.0	**28-SEP-2008**	**29-SEP-2008**	---	----	**07-OCT-2008**	05-JAN-2009	✓
EA033-E: Acid Base Accounting							
Snap Lock Bag - frozen							
BH28 2.4-3.4, BH28 3.5-4.4, BH28 5.3-5.7, BH28 5.9-6.3, QC72, QC73, QC74, QC75, BH25B 0.5-0.95, BH25B 1.0-1.45, BH25B 1.5-2.0	**28-SEP-2008**	**29-SEP-2008**	---	----	**07-OCT-2008**	05-JAN-2009	✓
EA037: Ass Field Screening Analysis							
Snap Lock Bag - frozen							
BH28 2.4-3.4, BH28 3.5-4.4, BH28 5.3-5.7, BH28 5.9-6.3, QC72, QC73, QC74, QC75, BH25B 0.5-0.95, BH25B 1.0-1.45, BH25B 1.5-2.0	**28-SEP-2008**	**29-SEP-2008**	---	----	**07-OCT-2008**	27-MAR-2009	✓
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH28 2.4-3.4, BH28 3.5-4.4, BH28 5.3-5.7, BH28 5.9-6.3, QC72, QC73, QC74, QC75, BH25B 0.5-0.95, BH25B 1.0-1.45, BH25B 1.5-2.0	**28-SEP-2008**	**----**	----	----	**02-OCT-2008**	05-OCT-2008	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH28 2.4-3.4, BH28 3.5-4.4, BH28 5.3-5.7, BH28 5.9-6.3, QC72, QC73, QC74, QC75, BH25B 0.5-0.95, BH25B 1.0-1.45, BH25B 1.5-2.0	**28-SEP-2008**	**02-OCT-2008**	27-MAR-2009	✓	**02-OCT-2008**	27-MAR-2009	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH28 2.4-3.4, BH28 3.5-4.4, BH28 5.3-5.7, BH28 5.9-6.3, QC72, QC73, QC74, QC75, BH25B 0.5-0.95, BH25B 1.0-1.45, BH25B 1.5-2.0	**28-SEP-2008**	**02-OCT-2008**	27-MAR-2009	✓	**03-OCT-2008**	26-OCT-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH28 2.4-3.4, BH28 3.5-4.4, BH28 5.3-5.7, BH28 5.9-6.3, QC72, QC73, QC74, QC75, BH25B 0.5-0.95, BH25B 1.0-1.45, BH25B 1.5-2.0	**28-SEP-2008**	**02-OCT-2008**	---	----	**02-OCT-2008**	26-OCT-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
BH25B 0.5-0.95, BH25B 1.0-1.45, BH25B 1.5-2.0	**28-SEP-2008**	**03-OCT-2008**	12-OCT-2008	✓	**06-OCT-2008**	12-NOV-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH25B 0.5-0.95, BH25B 1.0-1.45, BH25B 1.5-2.0	**28-SEP-2008**	**03-OCT-2008**	12-OCT-2008	✓	**06-OCT-2008**	12-NOV-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH28 2.4-3.4, BH28 3.5-4.4, BH28 5.3-5.7, BH28 5.9-6.3, QC72, QC73, QC74, QC75, BH25B 0.5-0.95, BH25B 1.0-1.45, BH25B 1.5-2.0	**28-SEP-2008**	**02-OCT-2008**	12-OCT-2008	✓	**06-OCT-2008**	11-NOV-2008	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH25B 0.5-0.95, BH25B 1.0-1.45, BH25B 1.5-2.0	**28-SEP-2008**	**03-OCT-2008**	12-OCT-2008	✓	**10-OCT-2008**	12-NOV-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC76	**28-SEP-2008**	**02-OCT-2008**	27-MAR-2009	✓	**02-OCT-2008**	27-MAR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC76	**28-SEP-2008**	**----**	----	----	**03-OCT-2008**	26-OCT-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber TOC Vial - Sulphuric Acid							
QC76	**28-SEP-2008**	**----**	----	----	**06-OCT-2008**	26-OCT-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC76	**28-SEP-2008**	**03-OCT-2008**	05-OCT-2008	✓	**07-OCT-2008**	12-NOV-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC76	**28-SEP-2008**	**03-OCT-2008**	05-OCT-2008	✓	**07-OCT-2008**	12-NOV-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC76	**28-SEP-2008**	**03-OCT-2008**	05-OCT-2008	✓	**06-OCT-2008**	12-NOV-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chromium Suite for Acid Sulphate Soils	EA033	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	26	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	11	**18.2**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	26	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	26	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	4	**25.0**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	26	**7.7**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	14	**7.1**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.3**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	**9.1**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB0813420-002	BH28 3.5-4.4	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP068A: Organochlorine Pesticides (OC)	EB0813420-010	BH25B 1.0-1.45	**gamma-BHC**	58-89-9	60.2 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0813420-010	BH25B 1.0-1.45	**Dieldrin**	60-57-1	52.3 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0813420-010	BH25B 1.0-1.45	**Endrin**	72-20-8	45.9 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0813420-010	BH25B 1.0-1.45	**4.4`-DDT**	50-29-3	34.4 %	70-130%	**Recovery less than lower data quality objective**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Total Organic Carbon	1	20	5.0	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 773299) - continued									
EB0813420-001	BH28 2.4-3.4	EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	14	14	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	25	23	8.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	11	8.9	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	320	282	12.6	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	46	45	4.1	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	16800	16000	4.4	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	28700	26800	6.8	0% - 20%
EB0813420-011	BH25B 1.5-2.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	22	22	0.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	13	13	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	13	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	29	16.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	10	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	420	354	17.2	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	39	40	4.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	12900	13600	5.5	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	24700	25400	3.2	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 773300)									
EB0813420-001	BH28 2.4-3.4	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0813420-011	BH25B 1.5-2.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 772429)									
EB0813420-001	BH28 2.4-3.4	EP005: Total Organic Carbon	----	0.02	%	1.41	1.41	0.0	0% - 20%
EB0813420-011	BH25B 1.5-2.0	EP005: Total Organic Carbon	----	0.02	%	0.80	0.77	3.8	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 773240)									
EB0813420-009	BH25B 0.5-0.95	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 773239)									
EB0813400-124	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 773239) - continued									
EB0813420-009	BH25B 0.5-0.95	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 773484)									
EB0813413-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0813413-016	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 773484) - continued									
EB0813413-016	Anonymous	EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 773488)									
EB0813439-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0813439-011	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QC Lot: 773335)									
EB0813413-012	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 772953)									
EB0813385-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0813437-006	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 772954)									
EB0813385-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0813437-006	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 774841)									
EB0813385-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0813437-003	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 775666)									
EB0813344-009	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 773442)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 773442)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 773442)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 773299)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	107	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	102	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	105	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	106	90.2	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	103	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	108	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	103	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 773300)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	98.0	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 772429)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 773240)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	95.9	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 773239)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	110	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	106	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	96.1	60.8	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	85.7	58.8	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Recovery Limits (%)
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 773239) - continued								
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	83.8	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	86.7	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	85.0	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	71.8	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	74.9	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	82.2	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 773484)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	95.6	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	106	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	82.7	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	83.9	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	73.8	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	90.9	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	87.6	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	85.7	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	78.2	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	79.9	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	73.4	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	73.5	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	75.2	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	72.1	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	70.0	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	73.9	52	128
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 773488)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	89.2	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	96.4	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	80.2	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	81.1	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	76.0	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	86.9	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	92.1	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	89.7	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	72.4	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	96.8	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	64.6	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	84.6	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	75.9	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	69.6	52	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 773488) - continued								
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	66.9	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	72.8	52	128
EP090: Organotin Compounds (QCLot: 773335)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	25 µgSn/kg	44.9	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 772953)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	94.6	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	93.5	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	94.9	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	107	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	92.1	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	93.1	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	89.9	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	102	81	127
EG020T: Total Metals by ICP-MS (QCLot: 772954)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	75.5	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 774841)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	97.1	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 775666)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	106	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 773364)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	92.1	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 773361)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	106	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	103	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	100	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	101	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	99.0	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	90.2	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	99.5	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	105	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	75.5	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	108	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 773363)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 773363) - continued								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	58.6	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	69.4	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	62.1	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	67.4	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	71.0	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	70.5	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	74.6	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	74.8	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	69.7	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	66.3	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	59.5	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	73.8	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	68.8	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	54.5	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	57.2	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	52.5	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 773299)							
EB0813420-002	BH28 3.5-4.4	EG005T: Arsenic	7440-38-2	50 mg/kg	101	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	103	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	105	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	114	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	102	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	110	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	108	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 773300)							
EB0813420-002	BH28 3.5-4.4	EG035T: Mercury	7439-97-6	5.0 mg/kg	102	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 773240)							
EB0813420-010	BH25B 1.0-1.45	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	89.0	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 773239)							
EB0813420-010	BH25B 1.0-1.45	EP068: gamma-BHC	58-89-9	0.25 mg/kg	# 60.2	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	# 52.3	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	# 45.9	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	# 34.4	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 773484)							
EB0813420-001	BH28 2.4-3.4	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	95.6	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	104	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 773488)							
EB0813420-011	BH25B 1.5-2.0	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	83.8	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	95.9	70	130
EP090: Organotin Compounds (QCLot: 773335)							
EB0813413-018	Anonymous	EP090: Tributyltin	56573-85-4	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 772953)							
EB0813385-002	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 772953) - continued							
EB0813385-002	Anonymous	EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 774841)							
EB0813385-001	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division
Brisbane
Work Order
EB0813733

Telephone : +61-7-3243 7222

URS CHAIN OF CUSTODY

ADDRESS: URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY
PHONE NO: (07) 3243 2111	PHONE NO: (07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: 1 2 3 4 (please circle 1)
FAX NO: (07) 3243 2199	FAX NO: (07) 32437259		Custody Seal ? Y N NA Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: B. LEE of ALS	RELINQUISHED BY:	RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS				
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: 6/10/08 TIME: 12:45	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH28B 15.5 16.0	29/09/08	S	2	1									ON HOLD														
2	BH27 0.4 - 0.8	04/10/08	"	3	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
3	BH27 0.85 - 1.1	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
4	BH27 1.6 - 1.8	"	"	1	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
5	BH27 2.0 - 2.3	"	"	3	1									✓	✓	✓					✓		✓					✓
6	BH27 2.5 - 3.0	"	"	3	1									✓	✓	✓					✓		✓					✓
7	BH27 3.7 - 4.35	"	"	1	1									✓	✓	✓					✓		✓					✓
8	QC77	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
9	QC78	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
10	QC79	"	L				2	1								✓		✓	✓	✓	✓							✓
TOTAL														8	8	9	5	6	6	6	9		8					4

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0813733**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS ADDRESS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: brisbane@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 07 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 06-OCT-2008	Issue Date	: 07-OCT-2008 14:22
Client Requested Due Date	: 13-OCT-2008	Scheduled Reporting Date	: **17-OCT-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 3.0 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 10
Sercurity Seal	: Intact.	No. of samples analysed	: 9

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

Method / Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
EP005 : Total Organic Carbon		
QC79	- Amber Glass Bottle - Unpreserved	- Amber TOC Vial- Sulphuric Acid

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EP005 (solids) Total Organic Carbon (TOC) solis	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA037 ASS Field Screening Analysis	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only
EB0813733-001	29-SEP-2008 15:00	BH28B 15.5-16.0	✓							
EB0813733-002	04-OCT-2008 15:00	BH27 0.4-0.8		✓	✓	✓	✓	✓	✓	✓
EB0813733-003	04-OCT-2008 15:00	BH27 0.85-1.1		✓	✓	✓	✓	✓	✓	✓
EB0813733-004	04-OCT-2008 15:00	BH27 1.6-1.8		✓	✓	✓	✓	✓	✓	✓
EB0813733-005	04-OCT-2008 15:00	BH27 2.0-2.3		✓	✓	✓	✓			✓
EB0813733-006	04-OCT-2008 15:00	BH27 2.5-3.0		✓	✓	✓	✓			✓
EB0813733-007	04-OCT-2008 15:00	BH27 3.7-4.35		✓	✓	✓	✓			✓
EB0813733-008	04-OCT-2008 15:00	QC77		✓	✓	✓	✓	✓	✓	✓
EB0813733-009	04-OCT-2008 15:00	QC78		✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP090 (solids) Organotins	SOIL - S-02 8 Metals (incl. Digestion)
EB0813733-002	04-OCT-2008 15:00	BH27 0.4-0.8	✓	✓
EB0813733-003	04-OCT-2008 15:00	BH27 0.85-1.1	✓	✓
EB0813733-004	04-OCT-2008 15:00	BH27 1.6-1.8	✓	✓
EB0813733-005	04-OCT-2008 15:00	BH27 2.0-2.3		✓
EB0813733-006	04-OCT-2008 15:00	BH27 2.5-3.0		✓
EB0813733-007	04-OCT-2008 15:00	BH27 3.7-4.35		✓
EB0813733-008	04-OCT-2008 15:00	QC77	✓	✓
EB0813733-009	04-OCT-2008 15:00	QC78	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0813733-010	04-OCT-2008 15:00	QC79	✓	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0813733**	Page	: 1 of 12
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 06-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 10
Quote number	: EN/001/08	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **Pesticides/PCB: Poor matrix spike recovery for sample BH27 0.85-1.1 due to sample matrix interference. Confirmed by re-extraction.**
- **pH FOX Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Vigorous; 4 - Very Vigorous**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **TBT: Sample QC79 was not analysed due to insufficient sample volume.**

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC79	----	----	----	----
				Client sampling date / time	04-OCT-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0813733-010	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		**0.001**	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		**1**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC79	----	----	----	----
				Client sampling date / time	04-OCT-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB0813733-010	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	**74.6**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%	**64.2**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%	**110**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%	**28.9**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**68.6**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**77.1**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%	**57.6**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**86.2**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**72.3**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH27 0.4-0.8	BH27 0.85-1.1	BH27 1.6-1.8	BH27 2.0-2.3	BH27 2.5-3.0
				Client sampling date / time: 04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00
				EB0813733-002	EB0813733-003	EB0813733-004	EB0813733-005	EB0813733-006
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.7	7.1	6.2	5.9	5.9
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.63	0.02	0.04	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	395	14	27	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	4.52	0.73	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	904	146	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.45	0.23	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.04	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	27	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	2	<1	<1
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.8	7.5	6.8	6.7	6.6
pH (Fox)	----	0.1	pH Unit	1.8	5.6	5.1	4.8	4.8
Reaction Rate	----	1	-	4	2	2	2	2
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	47.0	14.6	5.6	23.1	15.4
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	11100	Not Authorised	1760	4340	3440
Antimony	7440-36-0	5	mg/kg	<5	Not Authorised	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	26	Not Authorised	6	11	7
Cadmium	7440-43-9	1	mg/kg	<1	Not Authorised	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	23	Not Authorised	<2	3	<2
Copper	7440-50-8	5	mg/kg	16	Not Authorised	5	14	11
Iron	7439-89-6	50	mg/kg	44300	Not Authorised	8030	24800	16600
Lead	7439-92-1	5	mg/kg	10	Not Authorised	<5	6	6
Manganese	7439-96-5	5	mg/kg	396	Not Authorised	22	45	41
Nickel	7440-02-0	2	mg/kg	14	Not Authorised	<2	3	2
Silver	7440-22-4	2	mg/kg	<2	Not Authorised	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	59	Not Authorised	18	36	36

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH27 0.4-0.8	BH27 0.85-1.1	BH27 1.6-1.8	BH27 2.0-2.3	BH27 2.5-3.0
				Client sampling date / time: 04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00
				EB0813733-002	EB0813733-003	EB0813733-004	EB0813733-005	EB0813733-006
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.81**	**0.04**	<0.02	<0.02	<0.02
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	----	----
EP066S: PCB Surrogate								

Analytical Results

Sub-Matrix: SOLID				Client sample ID	BH27 0.4-0.8	BH27 0.85-1.1	BH27 1.6-1.8	BH27 2.0-2.3	BH27 2.5-3.0
				Client sampling date / time	04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00
Compound	CAS Number	LOR	Unit		EB0813733-002	EB0813733-003	EB0813733-004	EB0813733-005	EB0813733-006
EP066S: PCB Surrogate - Continued									
Decachlorobiphenyl	2051-24-3	0.1	%		57.1	57.4	56.2	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		61.2	61.9	57.2	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		89.0	89.8	82.6	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		96.3	78.5	81.3	97.8	94.0
2-Chlorophenol-D4	93951-73-6	0.1	%		95.1	75.3	66.0	80.9	90.0
2.4.6-Tribromophenol	118-79-6	0.1	%		79.9	67.4	91.0	99.6	88.3
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		83.7	67.2	72.8	88.0	83.9
Anthracene-d10	1719-06-8	0.1	%		87.0	76.7	106	112	91.9
4-Terphenyl-d14	1718-51-0	0.1	%		85.5	64.8	106	112	92.9
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		96.7	80.0	68.6	----	----

Analytical Results

Sub-Matrix: SOLID			Client sample ID	BH27 3.7-4.35	QC77	QC78	----	----
			Client sampling date / time	04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00	----	----
Compound	CAS Number	LOR	Unit	EB0813733-007	EB0813733-008	EB0813733-009	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	6.3	8.1	7.6	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	0.15	0.02	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	30	<10	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	0.05	<0.01	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.3	7.8	7.6	----	----
pH (Fox)	----	0.1	pH Unit	5.5	5.5	3.0	----	----
Reaction Rate	----	1	-	2	2	3	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	17.9	17.3	16.2	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	3300	7960	9770	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	----	----
Arsenic	7440-38-2	5	mg/kg	8	9	12	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	2	6	16	----	----
Copper	7440-50-8	5	mg/kg	15	26	39	----	----
Iron	7439-89-6	50	mg/kg	17200	26200	37100	----	----
Lead	7439-92-1	5	mg/kg	7	10	12	----	----
Manganese	7439-96-5	5	mg/kg	44	82	159	----	----
Nickel	7440-02-0	2	mg/kg	2	10	14	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	<2	----	----
Zinc	7440-66-6	5	mg/kg	34	49	25	----	----

Analytical Results

Sub-Matrix: SOLID				Client sample ID	BH27 3.7-4.35	QC77	QC78	----	----
				Client sampling date / time	04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00	----	----
Compound	CAS Number	LOR	Unit		EB0813733-007	EB0813733-008	EB0813733-009	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	**0.1**	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**0.03**	**0.05**	**0.06**	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		----	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		----	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	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	----	----
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	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<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	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		----	<0.5	<0.5	----	----
EP066S: PCB Surrogate									

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH27 3.7-4.35	QC77	QC78	----	----
				Client sampling date / time: 04-OCT-2008 15:00	04-OCT-2008 15:00	04-OCT-2008 15:00	----	----
				EB0813733-007	EB0813733-008	EB0813733-009	----	----
EP066S: PCB Surrogate - Continued								
Decachlorobiphenyl	2051-24-3	0.1	%	----	**54.7**	**68.5**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	**59.5**	**67.8**	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	**85.1**	**97.9**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**91.4**	**80.7**	**106**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**75.3**	**58.4**	**86.0**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**89.6**	**80.0**	**98.3**	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**85.5**	**49.7**	**81.0**	----	----
Anthracene-d10	1719-06-8	0.1	%	**98.0**	**87.6**	**111**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**97.9**	**82.0**	**111**	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	**111**	**48.2**	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

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TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52
Date Received : 06-Oct-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0813733	BH27 0.4-0.8	002	15%	19%	24%	42%
EB0813733	BH27 0.85-1.1	003	25%	16%	21%	38%
EB0813733	BH27 1.6-1.8	004	36%	13%	19%	32%
EB0813733	BH27 2.0-2.3	005	14%	26%	36%	24%
EB0813733	BH27 2.5-3.0	006	37%	19%	35%	9%
EB0813733	BH27 3.7-4.35	007	68%	13%	10%	9%
EB0813733	QC77	008	7%	13%	27%	53%
EB0813733	QC78	009	27%	13%	27%	33%

Remarks :

Test Procedure : AS1289.3.6.3
Prepared by : Dianne Blane
Checked by PK

Certificate of Analysis

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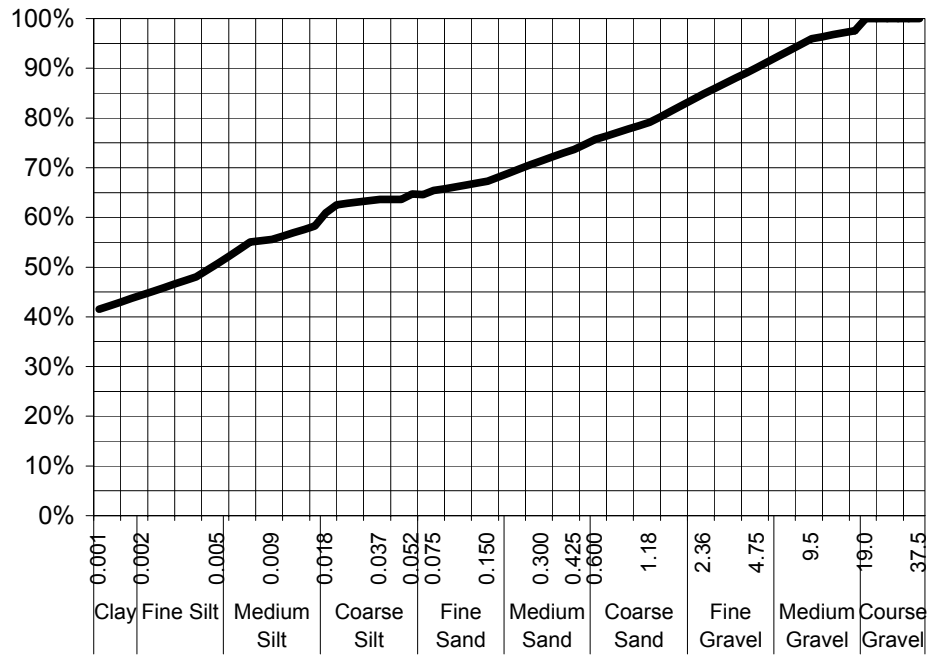
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	17-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813733-002 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH27 0.4-0.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	96%
4.75	90%
2.36	85%
1.18	79%
0.600	76%
0.425	74%
0.300	71%
0.150	67%
0.075	65%
Particle Size (microns)	
73	65%
37	64%
18	61%
9	56%
5	51%
3	48%
1	42%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	8-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark clay & grit	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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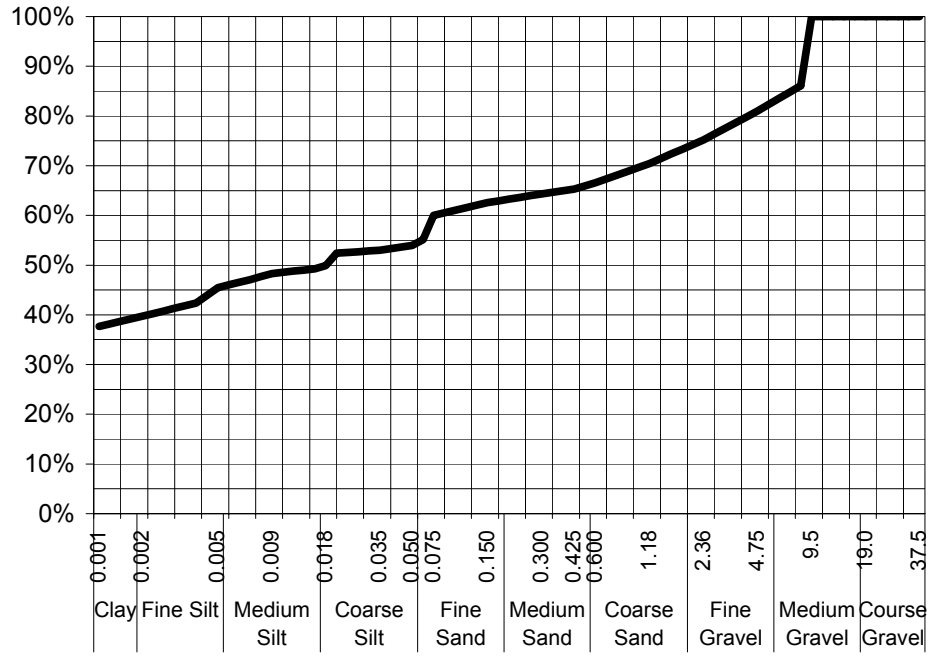
Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	17-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813733-003 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH27 0.85-1.1

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	81%
2.36	75%
1.18	70%
0.600	67%
0.425	65%
0.300	64%
0.150	63%
0.075	60%
Particle Size (microns)	
71	55%
35	53%
18	50%
9	48%
5	45%
3	42%
1	38%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	8-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Ochre clay, grit & gravel	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

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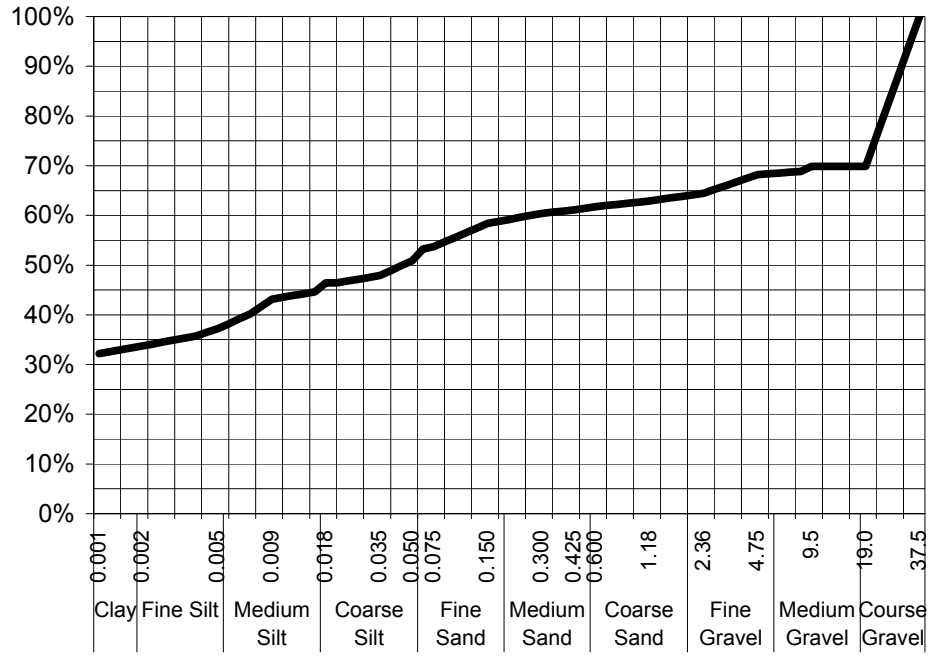
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	17-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813733-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH27 1.6-1.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
37.5	100%
19.0	70%
9.5	70%
4.75	68%
2.36	64%
1.18	63%
0.600	62%
0.425	61%
0.300	60%
0.150	58%
0.075	54%
Particle Size (microns)	
71	53%
35	48%
18	46%
9	43%
5	37%
3	36%
1	32%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	8-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Ochre clay, grit & gravel	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

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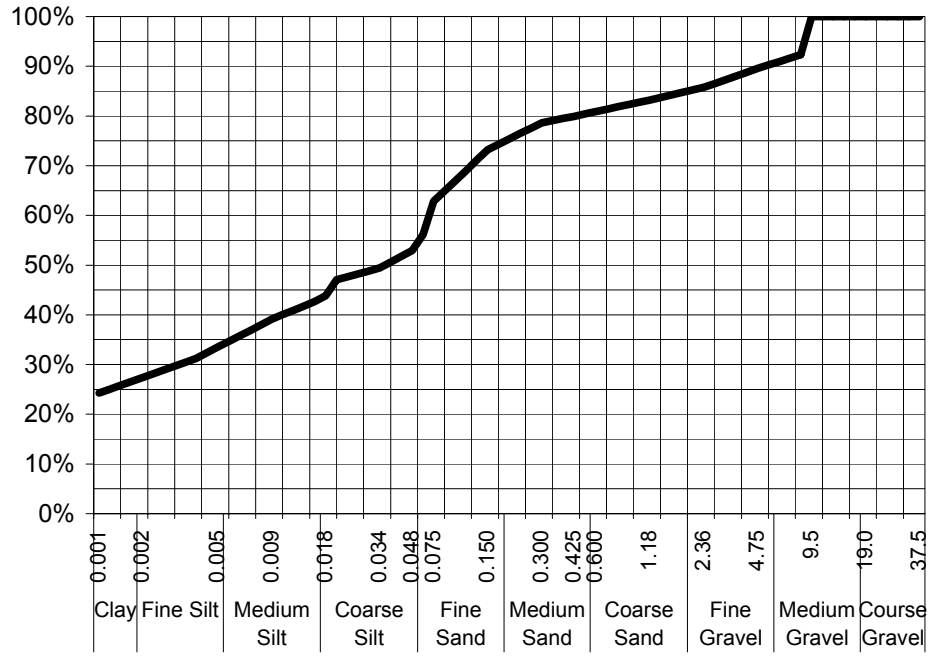
Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	17-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813733-005 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH27 2.0-2.3

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	90%
2.36	86%
1.18	83%
0.600	81%
0.425	80%
0.300	79%
0.150	73%
0.075	63%
Particle Size (microns)	
68	56%
34	49%
18	44%
9	39%
5	34%
3	31%
1	24%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	8-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Ochre clay & sand	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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Warabrook, NSW 2304
pH 02 4968 9433
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 17-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 6-Oct-2008

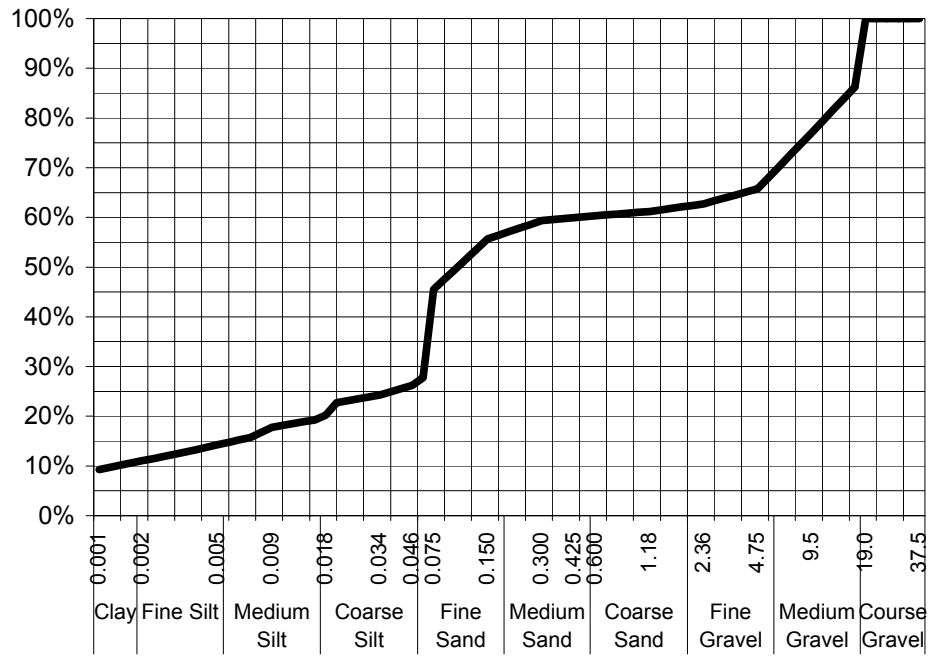
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0813733-006 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH27 2.5-3.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	77%
4.75	66%
2.36	63%
1.18	61%
0.600	60%
0.425	60%
0.300	59%
0.150	56%
0.075	46%
Particle Size (microns)	
65	28%
34	24%
18	20%
9	18%
5	14%
3	13%
1	9%

Samples analysed as received.

Sample Comments: The mass of sample supplied does not meet that required by AS 1289.1.1.

Analysed: 8-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Gravel & silt

Dispersion Method Shaker

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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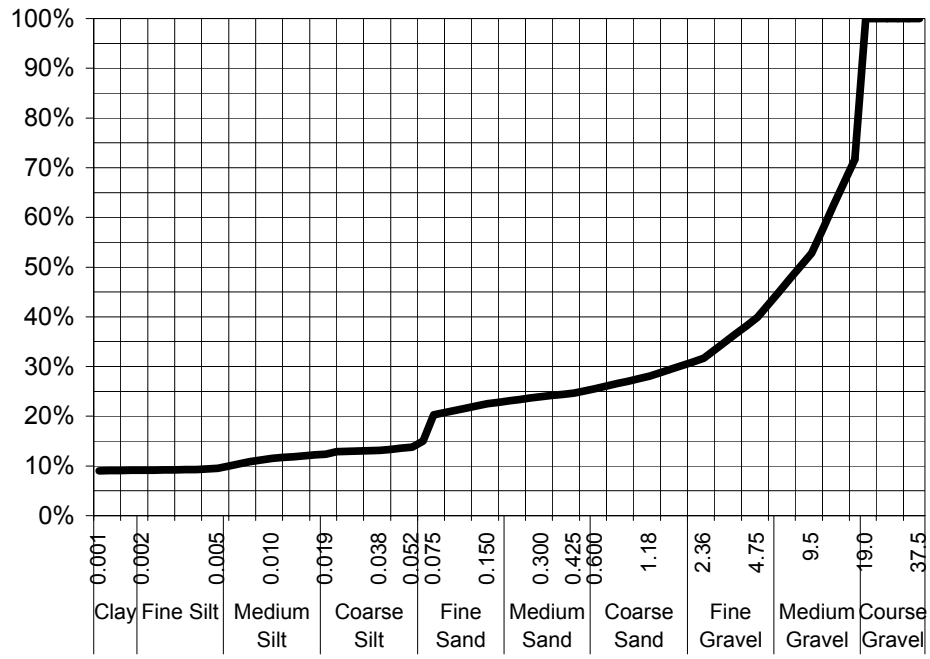
CLIENT:	Rob Ully	**DATE REPORTED:**	17-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813733-007 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH27 3.7-4.35

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	53%
4.75	40%
2.36	32%
1.18	28%
0.600	26%
0.425	25%
0.300	24%
0.150	23%
0.075	20%
Particle Size (microns)	
73	15%
38	13%
19	12%
10	12%
5	10%
3	9%
1	9%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	8-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Gravel & silt	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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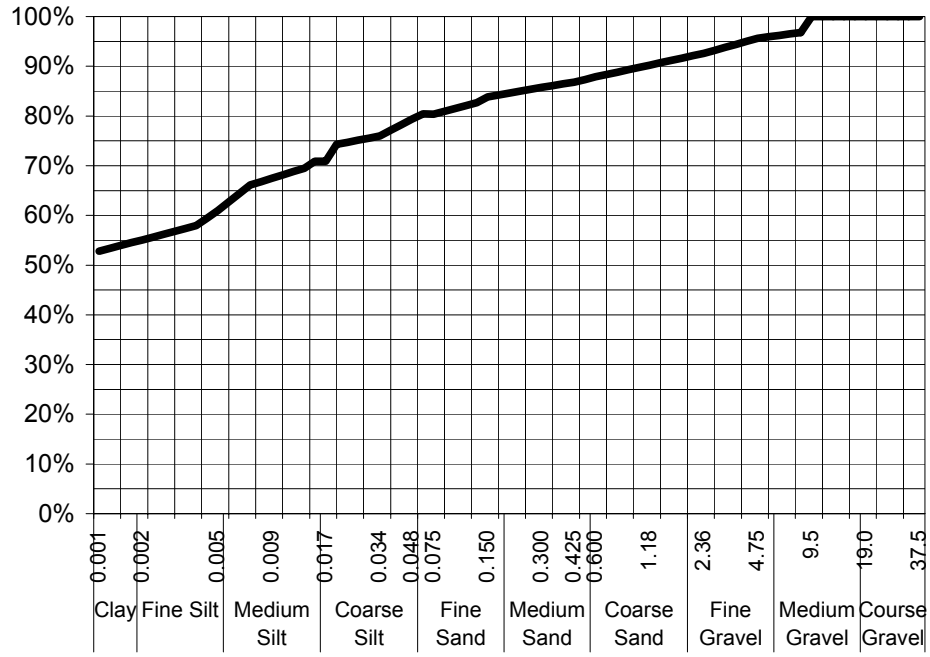
CLIENT:	Rob Ully	**DATE REPORTED:**	17-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813733-008 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC77

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	96%
2.36	93%
1.18	90%
0.600	88%
0.425	87%
0.300	86%
0.150	84%
0.075	80%
Particle Size (microns)	
68	80%
34	76%
17	71%
9	67%
5	61%
3	58%
1	53%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	8-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Ochre clay & grit	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
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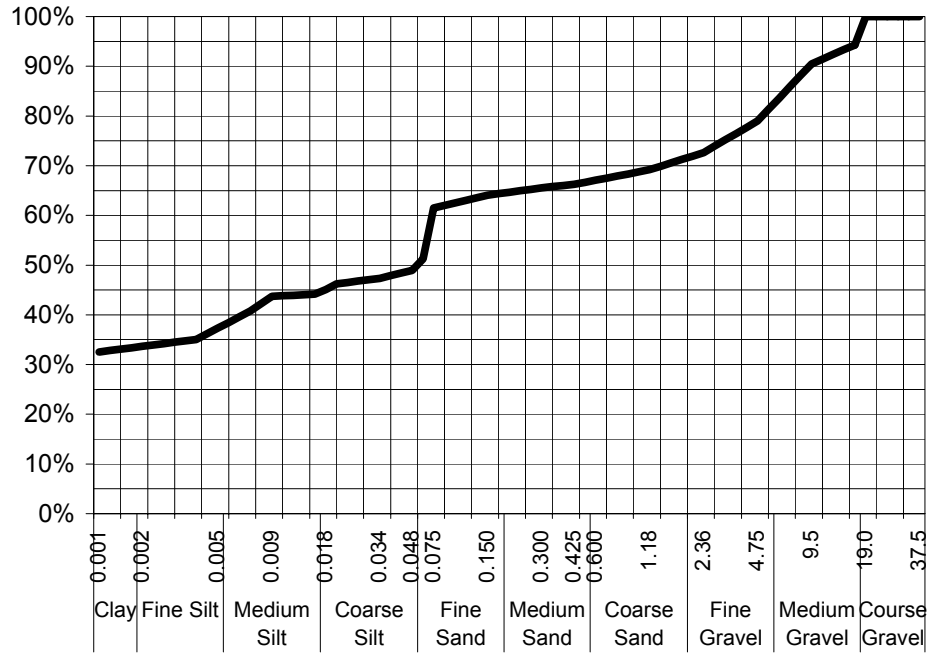
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	17-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	6-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0813733-009 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC78

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	90%
4.75	79%
2.36	73%
1.18	69%
0.600	67%
0.425	66%
0.300	66%
0.150	64%
0.075	61%
Particle Size (microns)	
68	51%
34	47%
18	45%
9	44%
5	37%
3	35%
1	33%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	8-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Ochre clay, grit & gravel	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
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Authorised Signatory

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Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	06-Oct-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0813733	BH27 0.4-0.8	002	15%	19%	24%	42%
EB0813733	BH27 0.85-1.1	003	25%	16%	21%	38%
EB0813733	BH27 1.6-1.8	004	36%	13%	19%	32%
EB0813733	BH27 2.0-2.3	005	14%	26%	36%	24%
EB0813733	BH27 2.5-3.0	006	37%	19%	35%	9%
EB0813733	BH27 3.7-4.35	007	68%	13%	10%	9%
EB0813733	QC77	008	7%	13%	27%	53%
EB0813733	QC78	009	27%	13%	27%	33%

Remarks :			
Test Procedure :	AS1289.3.6.3		
Prepared by :	Dianne Blane	Checked by	PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0813733**	Page	: 1 of 12
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 06-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 10
Quote number	: EN/001/08	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Minh Wills	Senior Analyst	Inorganics
Minh Wills	Senior Analyst	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 780327)									
EB0813733-002	BH27 0.4-0.8	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.7	8.7	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 780327)									
EB0813733-002	BH27 0.4-0.8	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.63	0.65	2.9	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	395	407	2.9	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 780327)									
EB0813733-002	BH27 0.4-0.8	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	4.52	4.52	0.0	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.45	1.45	0.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	904	904	0.0	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 780328)									
EB0813733-002	BH27 0.4-0.8	EA037: pH (F)	----	0.1	pH Unit	8.8	8.8	0.0	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	1.8	1.8	0.0	0% - 50%
EA055: Moisture Content (QC Lot: 779545)									
EB0813733-005	BH27 2.0-2.3	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	23.1	21.9	5.6	0% - 20%
EB0813767-003	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 780331)									
EB0813733-002	BH27 0.4-0.8	EG005T: Cadmium	7440-43-9	1	mg/kg	Not Authorised	# Not Authorised	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	Not Authorised	# Not Authorised	# 16.8	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	Not Authorised	# Not Authorised	# 12.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	Not Authorised	# Not Authorised	# 0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	Not Authorised	# Not Authorised	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	Not Authorised	# Not Authorised	# 6.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	Not Authorised	# Not Authorised	# 14.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	Not Authorised	# Not Authorised	16.6	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	Not Authorised	# Not Authorised	# 5.4	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	Not Authorised	# Not Authorised	# 9.2	0% - 50%
		EG005T: Aluminium	7429-90-5	50	mg/kg	Not Authorised	# Not Authorised	# 16.2	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	Not Authorised	# Not Authorised	5.3	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 780332)									
EB0813733-002	BH27 0.4-0.8	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 778378)									

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP005: Total Organic Carbon (TOC) (QC Lot: 778378) - continued									
EB0813733-002	BH27 0.4-0.8	EP005: Total Organic Carbon	----	0.02	%	0.81	0.81	0.0	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 777906)									
EB0813733-002	BH27 0.4-0.8	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 777907)									
EB0813733-002	BH27 0.4-0.8	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 780410)									
EB0813733-002	BH27 0.4-0.8	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 779403)									
EB0813733-002	BH27 0.4-0.8	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 778887)									
EB0813733-010	QC79	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 778887) - continued									
EB0813733-010	QC79	EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EB0813845-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 778888)									
EB0813733-010	QC79	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 783391)									
EB0813733-010	QC79	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EB0813879-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 778296)									
EB0813733-010	QC79	EP005: Total Organic Carbon	----	1	mg/L	1	7780	# 200	0% - 20%

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 780327)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 780327)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 780327)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 780331)								
EG005T: Aluminium	7429-90-5	50	mg/kg	Not Authorised	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	Not Authorised	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	Not Authorised	----	# Not Authorised	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	Not Authorised	----	# Not Authorised	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	Not Authorised	----	# Not Authorised	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	Not Authorised	----	# Not Authorised	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	Not Authorised	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	Not Authorised	----	# Not Authorised	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	Not Authorised	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	Not Authorised	----	# Not Authorised	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	Not Authorised	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	Not Authorised	----	# Not Authorised	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 780332)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	97.8	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 778378)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	99.5	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 777906)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	71.5	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 777907)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	82.0	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	81.4	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	81.9	60.8	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 777907) - continued								
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	82.9	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	80.2	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	65.1	47	133
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.25 mg/kg	83.9	58.5	114
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	94.1	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	82.0	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	57.2	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	84.8	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 780410)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	104	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	95.6	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	85.6	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	88.2	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	86.1	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	85.0	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	84.3	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	83.6	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	80.7	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	77.8	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	95.3	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	81.2	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	87.8	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	84.0	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	84.1	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	83.1	52	128
EP090: Organotin Compounds (QCLot: 779403)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	110	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 778887)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	105	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	102	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	98.9	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	111	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	102	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	105	84.4	113

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 778887) - continued								
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	106	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	119	81	127
EG020T: Total Metals by ICP-MS (QCLot: 778888)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	102	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 783391)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	97.3	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 778296)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	107	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 779416)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	83.4	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 779415)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	84.4	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	64.5	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	64.2	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	77.8	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	70.7	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	66.4	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	75.7	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	82.0	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	60.3	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	71.5	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 779417)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	54.2	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	63.6	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	53.2	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	58.8	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	56.6	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	54.1	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	59.6	51	117
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 779417) - continued								
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	58.7	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	58.6	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	54.7	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	64.4	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	55.7	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	65.2	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	60.3	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	60.4	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	61.0	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 780331)							
EB0813733-003	BH27 0.85-1.1	EG005T: Arsenic	7440-38-2	----	# Not Authorised	70	130
		EG005T: Cadmium	7440-43-9	----	# Not Authorised	70	130
		EG005T: Chromium	7440-47-3	----	# Not Authorised	70	130
		EG005T: Copper	7440-50-8	----	# Not Authorised	70	130
		EG005T: Lead	7439-92-1	----	# Not Authorised	70	130
		EG005T: Nickel	7440-02-0	----	# Not Authorised	70	130
		EG005T: Zinc	7440-66-6	----	# Not Authorised	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 780332)							
EB0813733-003	BH27 0.85-1.1	EG035T: Mercury	7439-97-6	5.0 mg/kg	105	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 777906)							
EB0813733-003	BH27 0.85-1.1	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	# 68.5	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 777907)							
EB0813733-003	BH27 0.85-1.1	EP068: gamma-BHC	58-89-9	0.25 mg/kg	70.2	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	71.5	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	# 48.6	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	# 43.1	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 780410)							
EB0813733-003	BH27 0.85-1.1	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	87.6	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	88.7	70	130
EP090: Organotin Compounds (QCLot: 779403)							
EB0813733-003	BH27 0.85-1.1	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	117	20	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 778887)							
EB0813759-001	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 783391)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG035T: Total Recoverable Mercury by FIMS (QCLot: 783391) - continued							
EB0813733-010	QC79	EG035T: Mercury	7439-97-6	0.0100 mg/L	111	70	130

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0813733**	Page	: 1 of 11
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 06-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 10
Quote number	: EN/001/08	No. of samples analysed	: 9

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
Pulp Bag BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, BH27 2.0-2.3, BH27 2.5-3.0, BH27 3.7-4.35, QC77, QC78	**04-OCT-2008**	**06-OCT-2008**	---	----	**13-OCT-2008**	04-JAN-2009	✓
EA033-B: Potential Acidity							
Pulp Bag BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, BH27 2.0-2.3, BH27 2.5-3.0, BH27 3.7-4.35, QC77, QC78	**04-OCT-2008**	**06-OCT-2008**	---	----	**13-OCT-2008**	04-JAN-2009	✓
EA033-C: Acid Neutralising Capacity							
Pulp Bag BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, BH27 2.0-2.3, BH27 2.5-3.0, BH27 3.7-4.35, QC77, QC78	**04-OCT-2008**	**06-OCT-2008**	---	----	**13-OCT-2008**	04-JAN-2009	✓
EA033-D: Retained Acidity							
Pulp Bag BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, BH27 2.0-2.3, BH27 2.5-3.0, BH27 3.7-4.35, QC77, QC78	**04-OCT-2008**	**06-OCT-2008**	---	----	**13-OCT-2008**	04-JAN-2009	✓
EA033-E: Acid Base Accounting							
Pulp Bag BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, BH27 2.0-2.3, BH27 2.5-3.0, BH27 3.7-4.35, QC77, QC78	**04-OCT-2008**	**06-OCT-2008**	---	----	**13-OCT-2008**	04-JAN-2009	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis							
Snap Lock Bag							
BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, BH27 2.0-2.3, BH27 2.5-3.0, BH27 3.7-4.35, QC77, QC78	**04-OCT-2008**	**06-OCT-2008**	---	----	**13-OCT-2008**	05-OCT-2008	×
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, BH27 2.0-2.3, BH27 2.5-3.0, BH27 3.7-4.35, QC77, QC78	**04-OCT-2008**	**----**	----	----	**09-OCT-2008**	11-OCT-2008	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH27 0.4-0.8, BH27 1.6-1.8, BH27 2.0-2.3, BH27 2.5-3.0, BH27 3.7-4.35, QC77, QC78	**04-OCT-2008**	**16-OCT-2008**	02-APR-2009	✓	**16-OCT-2008**	02-APR-2009	✓
Soil Glass Jar - Unpreserved							
BH27 0.85-1.1	**04-OCT-2008**	**Not Authorised**	Not Authorised	----	**Not Authorised**	Not Authorised	----
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, BH27 2.0-2.3, BH27 2.5-3.0, BH27 3.7-4.35, QC77, QC78	**04-OCT-2008**	**16-OCT-2008**	02-APR-2009	✓	**17-OCT-2008**	01-NOV-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, BH27 2.0-2.3, BH27 2.5-3.0, BH27 3.7-4.35, QC77, QC78	**04-OCT-2008**	**09-OCT-2008**	---	----	**09-OCT-2008**	01-NOV-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, QC77, QC78	**04-OCT-2008**	**09-OCT-2008**	18-OCT-2008	✓	**10-OCT-2008**	18-NOV-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, QC77, QC78	**04-OCT-2008**	**09-OCT-2008**	18-OCT-2008	✓	**10-OCT-2008**	18-NOV-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, BH27 2.0-2.3, BH27 2.5-3.0, BH27 3.7-4.35, QC77, QC78	**04-OCT-2008**	**10-OCT-2008**	18-OCT-2008	✓	**13-OCT-2008**	19-NOV-2008	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved							
BH27 0.4-0.8, BH27 0.85-1.1, BH27 1.6-1.8, QC77, QC78	**04-OCT-2008**	**09-OCT-2008**	18-OCT-2008	✓	**14-OCT-2008**	18-NOV-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC79	**04-OCT-2008**	**09-OCT-2008**	02-APR-2009	✓	**09-OCT-2008**	02-APR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC79	**04-OCT-2008**	**----**	----	----	**14-OCT-2008**	01-NOV-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber Glass Bottle - Unpreserved							
QC79	**04-OCT-2008**	**----**	----	----	**08-OCT-2008**	06-OCT-2008	×
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC79	**04-OCT-2008**	**09-OCT-2008**	11-OCT-2008	✓	**10-OCT-2008**	18-NOV-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC79	**04-OCT-2008**	**09-OCT-2008**	11-OCT-2008	✓	**10-OCT-2008**	18-NOV-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC79	**04-OCT-2008**	**09-OCT-2008**	11-OCT-2008	✓	**10-OCT-2008**	18-NOV-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chromium Suite for Acid Sulphate Soils	EA033	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	5	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	7	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	5	**20.0**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	7	**14.3**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	9	**11.1**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	2	**50.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	1	**100.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	14	**7.1**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP066: Polychlorinated Biphenyls (PCB)	EB0813733-003	BH27 0.85-1.1	**Total Polychlorinated biphenyls**	----	68.5 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0813733-003	BH27 0.85-1.1	**Endrin**	72-20-8	48.6 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0813733-003	BH27 0.85-1.1	**4.4`-DDT**	50-29-3	43.1 %	70-130%	**Recovery less than lower data quality objective**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP005: Total Organic Carbon (TOC)	EB0813733-010	QC79	**Total Organic Carbon**	----	200 %	0-20%	**RPD exceeds LOR based limits**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA037: Ass Field Screening Analysis							
Snap Lock Bag							
BH27 0.4-0.8,	BH27 0.85-1.1,	----	----	----	13-OCT-2008	05-OCT-2008	**8**
BH27 1.6-1.8,	BH27 2.0-2.3,						
BH27 2.5-3.0,	BH27 3.7-4.35,						
QC77,	QC78						

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP005: Total Organic Carbon (TOC)						
Amber Glass Bottle - Unpreserved						
QC79	----	----	----	08-OCT-2008	06-OCT-2008	**2**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

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Brisbane
Work Order
EB0814076

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URS CHAIN OF CUSTODY

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All results to be provided in MRED format
email address: julian_dobos@urscorp.com

TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard

COC SEQUENCE NUMBER: (1) 2 3 4 — please circle 2

FOR LABORATORY USE ONLY
Custody Seal ? Y N
Free ice / frozen icebricks present upon receipt? Y
Random Sample Temperature on Receipt °C

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	
URS PM:	Rob Ully	SITE :	GLNG SANTOS		
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	

RECEIVED BY: DATE: TIME:
R DATE: TIME:
DATE: 9/10/08 13:15
ng of ALS

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Solid: Soil Jar (G) Unpr.	Solid: ASS Soil Bag	Liquid: 40ml VOA Vial (G) HCL	Liquid: 500ml Amber (G) Unpr.	Liquid: 100ml (P) HNO3	Liquid: 250ml (G) H2SO4	Liquid: 100ml (P) Unpr.	Liquid: 100ml (P) HCL	Liquid: 40ml VOA Vial (G) 1/2 full (methane)	Liquid: 250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
1	BH29 0.2-0.5	08/10/08	S	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					[illegible]
2	BH29 0.5-0.7	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
3	BH29 0.7-1.0	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
4	BH29 1.0-1.5	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
5	BH29 1.6-2.0	"	"	3	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
6	BH29 2.2-2.7	"	"	1	1									✓	✓	✓					✓		✓					✓
7	BH29 4.1-4.4	"	"	2	1									✓	✓	✓					✓		✓					✓
8	BH29 7.2-7.45	"	"	1	1									✓	✓	✓					✓		✓					✓
9	QC80	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
10	QC81	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓					
11	QC82	"	"	1	1									✓	✓	✓					✓		✓					✓
12	QC83	"	"	1	1									✓	✓	✓					✓		✓					✓
TOTAL																												

URS CHAIN OF CUSTODY

FOR LABORATORY USE ONLY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	Custody Seal ? Y N NA Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: 1 (2) 3 4 (please circle) 2
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY: D. Kang of ALS
URS PM:	Rob Ully	SITE :	GLNG SANTOS			
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME:	DATE: TIME: / DATE: 9/10/08 13:15

COMMENTS:	Please see overleaf for specific analytes	(1) Caution - Samples may contain hazardous substances	ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE									ANALYSIS REQUIRED																
				Solid		Liquid																							
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) Includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
13	QC 84	08/10/08	L				2	1								✓		✓	✓	✓	✓							✓	
			TOTAL																										

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0814076**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS ADDRESS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: brisbane@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 07 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 09-OCT-2008	Issue Date	: 16-OCT-2008 11:25
Client Requested Due Date	: 20-OCT-2008	Scheduled Reporting Date	: **22-OCT-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 3.3 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 13
Sercurity Seal	: Intact.	No. of samples analysed	: 13

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.**
- **Sample(s) have been received within recommended holding times.**
- **PSD and TBT results may be delayed.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

Method / Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
EP005 : Total Organic Carbon		
QC84	- Amber Glass Bottle - Unpreserved	- Amber TOC Vial- Sulphuric Acid

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP005 (solids) Total Organic Carbon (TOC) solis	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA037 ASS Field Screening Analysis	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins
EB0814076-001	08-OCT-2008 15:00	BH29 0.2-0.5	✓	✓	✓	✓	✓	✓	✓	✓
EB0814076-002	08-OCT-2008 15:00	BH29 0.5-0.7	✓	✓	✓	✓	✓	✓	✓	✓
EB0814076-003	08-OCT-2008 15:00	BH29 0.7-1.0	✓	✓	✓	✓	✓	✓	✓	✓
EB0814076-004	08-OCT-2008 15:00	BH29 1.0-1.5	✓	✓	✓	✓	✓	✓	✓	✓
EB0814076-005	08-OCT-2008 15:00	BH29 1.6-2.0	✓	✓	✓	✓	✓	✓	✓	✓
EB0814076-006	08-OCT-2008 15:00	BH29 2.2-2.7	✓	✓	✓	✓			✓	
EB0814076-007	08-OCT-2008 15:00	BH29 4.1-4.4	✓	✓	✓	✓			✓	
EB0814076-008	08-OCT-2008 15:00	BH29 7.2-7.45	✓	✓	✓	✓			✓	
EB0814076-009	08-OCT-2008 15:00	QC80	✓	✓	✓	✓	✓	✓	✓	✓
EB0814076-010	08-OCT-2008 15:00	QC81	✓	✓	✓	✓	✓	✓	✓	✓
EB0814076-011	08-OCT-2008 15:00	QC82	✓	✓	✓	✓			✓	
EB0814076-012	08-OCT-2008 15:00	QC83	✓	✓	✓	✓			✓	

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - S-02 8 Metals (incl. Digestion)
EB0814076-001	08-OCT-2008 15:00	BH29 0.2-0.5	✓
EB0814076-002	08-OCT-2008 15:00	BH29 0.5-0.7	✓
EB0814076-003	08-OCT-2008 15:00	BH29 0.7-1.0	✓
EB0814076-004	08-OCT-2008 15:00	BH29 1.0-1.5	✓
EB0814076-005	08-OCT-2008 15:00	BH29 1.6-2.0	✓
EB0814076-006	08-OCT-2008 15:00	BH29 2.2-2.7	✓
EB0814076-007	08-OCT-2008 15:00	BH29 4.1-4.4	✓
EB0814076-008	08-OCT-2008 15:00	BH29 7.2-7.45	✓
EB0814076-009	08-OCT-2008 15:00	QC80	✓

			SOIL - S-02 8 Metals (incl. Digestion)
EB0814076-010	08-OCT-2008 15:00	QC81	✓
EB0814076-011	08-OCT-2008 15:00	QC82	✓
EB0814076-012	08-OCT-2008 15:00	QC83	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0814076-013	08-OCT-2008 15:00	QC84	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com
- Trigger - Subcontract Report	Email	julian_dobos@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com
- Trigger - Subcontract Report	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0814076**	Page	: 1 of 14
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 09-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 13
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **PAH/Phenols: Workorder EB0814076 was amended to include PAH/Phenols analysis for sample QC84 at client request. Analysis was performed on sample extract corresponding to pesticide analysis and thus contains no PAH/Phenols surrogates. All other QA/QC passes criteria.**
- **Pesticides/PCB: Sample BH29 0.2-0.5 showed poor matrix spike and surrogate recovery due to matrix interference. Confirmed by visual inspection. Insufficient sample for re-extraction and re-analysis.**
- **pH FOX Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Vigorous; 4 - Very Vigorous**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH29 0.2-0.5	BH29 0.5-0.7	BH29 0.7-1.0	BH29 1.0-1.5	BH29 1.6-2.0
				Client sampling date / time: 08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00
				EB0814076-001	EB0814076-002	EB0814076-003	EB0814076-004	EB0814076-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	9.0	8.8	8.3	7.0	7.1
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.20	0.43	1.33	1.60	1.47
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	127	269	830	996	918
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	4.96	5.60	1.90	1.19	1.21
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	990	1120	380	238	243
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.59	1.79	0.61	0.38	0.39
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	0.92	1.34	1.21
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	577	837	756
Liming Rate	----	1	kg CaCO3/t	<1	<1	43	63	57
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.8	8.9	8.7	8.3	8.1
pH (Fox)	----	0.1	pH Unit	6.0	1.4	1.3	1.1	1.2
Reaction Rate	----	1	-	1	3	3	3	3
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	33.1	39.8	48.6	44.6	43.4
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	6180	8870	13200	13600	12000
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	11	14	8	11	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	16	19	23	23	18
Copper	7440-50-8	5	mg/kg	8	14	34	37	36
Iron	7439-89-6	50	mg/kg	24300	27500	25600	28300	23200
Lead	7439-92-1	5	mg/kg	6	8	12	12	10
Manganese	7439-96-5	5	mg/kg	321	323	280	210	197
Nickel	7440-02-0	2	mg/kg	8	10	12	14	11
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	43	42	42	43	38

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH29 0.2-0.5	BH29 0.5-0.7	BH29 0.7-1.0	BH29 1.0-1.5	BH29 1.6-2.0
				Client sampling date / time: 08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00
				EB0814076-001	EB0814076-002	EB0814076-003	EB0814076-004	EB0814076-005
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.61**	**0.64**	**1.60**	**1.33**	**1.21**
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)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	----	----
Total Chlordane (sum)	----	0.05	mg/kg	<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
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
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
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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH29 0.2-0.5	BH29 0.5-0.7	BH29 0.7-1.0	BH29 1.0-1.5	BH29 1.6-2.0
				Client sampling date / time: 08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00
				EB0814076-001	EB0814076-002	EB0814076-003	EB0814076-004	EB0814076-005
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**Not Determined**	**28.2**	**20.6**	**17.8**	**10.6**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**Not Determined**	**33.7**	**16.9**	**13.2**	**17.0**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**7.4**	**63.0**	**20.2**	**19.2**	**30.5**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**78.5**	**89.1**	**85.4**	**86.3**	**84.0**
2-Chlorophenol-D4	93951-73-6	0.1	%	**83.2**	**90.4**	**90.6**	**93.0**	**88.3**
2.4.6-Tribromophenol	118-79-6	0.1	%	**108**	**106**	**54.0**	**58.1**	**51.3**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**88.9**	**84.7**	**101**	**87.5**	**95.4**
Anthracene-d10	1719-06-8	0.1	%	**95.3**	**92.2**	**104**	**88.2**	**106**
4-Terphenyl-d14	1718-51-0	0.1	%	**55.2**	**57.0**	**72.4**	**103**	**103**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**112**	**97.6**	**95.6**	**102**	**95.7**

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH29 2.2-2.7	BH29 4.1-4.4	BH29 7.2-7.45	QC80	QC81
				Client sampling date / time: 08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00
				EB0814076-006	EB0814076-007	EB0814076-008	EB0814076-009	EB0814076-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	7.6	7.6	7.4	7.3	6.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	1.57	0.03	0.02	1.24	1.83
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	980	19	14	775	1140
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.02	1.19	0.70	1.26	1.16
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	203	238	139	252	233
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.33	0.38	0.22	0.40	0.37
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	1.35	<0.02	<0.02	0.97	1.58
Net Acidity (acidity units)	----	10	mole H+ / t	844	<10	<10	606	987
Liming Rate	----	1	kg CaCO3/t	63	<1	<1	46	74
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.4	8.4	8.4	8.7	8.9
pH (Fox)	----	0.1	pH Unit	1.7	5.5	2.3	5.6	5.1
Reaction Rate	----	1	-	3	1	3	1	1
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	42.2	30.2	25.1	47.2	49.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	9880	8910	2290	12700	13400
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	6	<5	<5	12	12
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	13	12	<2	23	23
Copper	7440-50-8	5	mg/kg	76	78	<5	35	36
Iron	7439-89-6	50	mg/kg	20500	8330	1300	25200	29400
Lead	7439-92-1	5	mg/kg	10	12	<5	12	12
Manganese	7439-96-5	5	mg/kg	64	16	<5	256	339
Nickel	7440-02-0	2	mg/kg	7	3	<2	13	14
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	29	16	<5	40	43

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH29 2.2-2.7	BH29 4.1-4.4	BH29 7.2-7.45	QC80	QC81
				Client sampling date / time: 08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00
				EB0814076-006	EB0814076-007	EB0814076-008	EB0814076-009	EB0814076-010
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.47**	**0.31**	**0.03**	**1.59**	**1.89**
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	----	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	<0.05
Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	<0.05
trans-Chlordane	5103-74-2	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
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
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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	----	----	<0.5	<0.5
EP066S: PCB Surrogate								

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH29 2.2-2.7	BH29 4.1-4.4	BH29 7.2-7.45	QC80	QC81
				Client sampling date / time: 08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00	08-OCT-2008 15:00
				EB0814076-006	EB0814076-007	EB0814076-008	EB0814076-009	EB0814076-010
EP066S: PCB Surrogate - Continued								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	**33.0**	**36.3**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	**37.2**	**40.5**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	----	----	**65.1**	**73.1**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**100**	**89.3**	**86.6**	**95.5**	**85.8**
2-Chlorophenol-D4	93951-73-6	0.1	%	**102**	**95.1**	**88.9**	**101**	**91.9**
2.4.6-Tribromophenol	118-79-6	0.1	%	**61.6**	**58.6**	**58.9**	**62.6**	**56.0**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**104**	**82.8**	**89.9**	**107**	**99.2**
Anthracene-d10	1719-06-8	0.1	%	**94.3**	**102**	**101**	**92.6**	**102**
4-Terphenyl-d14	1718-51-0	0.1	%	**111**	**104**	**104**	**55.2**	**103**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	----	----	**71.5**	**60.9**

Analytical Results

Sub-Matrix: SOIL			Client sample ID	QC82	QC83	----	----	----
			Client sampling date / time	08-OCT-2008 15:00	08-OCT-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit	EB0814076-011	EB0814076-012	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.0	8.0	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	1.68	2.00	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	1050	1250	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	2.05	1.95	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	410	390	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.66	0.62	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	1.24	1.58	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	774	988	----	----	----
Liming Rate	----	1	kg CaCO3/t	58	74	----	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.3	8.1	----	----	----
pH (Fox)	----	0.1	pH Unit	1.2	1.3	----	----	----
Reaction Rate	----	1	-	3	1	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	33.6	34.9	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	8090	9880	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	----	----	----
Arsenic	7440-38-2	5	mg/kg	6	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	12	13	----	----	----
Copper	7440-50-8	5	mg/kg	70	55	----	----	----
Iron	7439-89-6	50	mg/kg	18400	19400	----	----	----
Lead	7439-92-1	5	mg/kg	9	8	----	----	----
Manganese	7439-96-5	5	mg/kg	67	50	----	----	----
Nickel	7440-02-0	2	mg/kg	6	6	----	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	----	----
Zinc	7440-66-6	5	mg/kg	24	20	----	----	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	QC82	QC83	----	----	----
				Client sampling date / time	08-OCT-2008 15:00	08-OCT-2008 15:00	----	----	----
					EB0814076-011	EB0814076-012	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**1.79**	**2.82**	----	----	----
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	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**90.7**	**95.0**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**92.3**	**99.5**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**55.2**	**70.4**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**98.8**	**97.0**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**92.9**	**98.5**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**96.8**	**100**	----	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	QC84	----	----	----	----
				Client sampling date / time	08-OCT-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0814076-013	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	QC84	----	----	----	----
				Client sampling date / time	08-OCT-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0814076-013	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b)fluoranthene	205-99-2	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**67.6**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**47.2**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**58.3**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**Not Determined**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**Not Determined**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**Not Determined**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**Not Determined**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**Not Determined**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**Not Determined**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

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Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	09-Oct-08
Project :	42626228.52	Sampled by :	Client

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0814076	BH29 0.2-0.5	001	1%	59%	19%	21%
EB0814076	BH29 0.5-0.7	002	3%	54%	19%	24%
EB0814076	BH29 0.7-1.0	003	2%	8%	39%	51%
EB0814076	BH29 1.0-1.5	004	0%	5%	41%	54%
EB0814076	BH29 1.6-2.0	005	0%	5%	33%	62%
EB0814076	BH29 2.2-2.7	006	2%	8%	36%	54%
EB0814076	BH29 4.1-4.4	007	0%	7%	38%	55%
EB0814076	BH29 7.2-7.45	008	0%	11%	38%	51%
EB0814076	QC80	009	0%	2%	38%	60%
EB0814076	QC81	010	0%	4%	37%	59%
EB0814076	QC82	011	0%	5%	34%	61%
EB0814076	QC83	012	0%	6%	31%	63%

Remarks :

Test Procedure :	AS1289.3.6.3	Report Date:	22-Oct-08
Prepared by :	Dianne Blane	Checked by	PK

Certificate of Analysis

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 22-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 9-Oct-2008

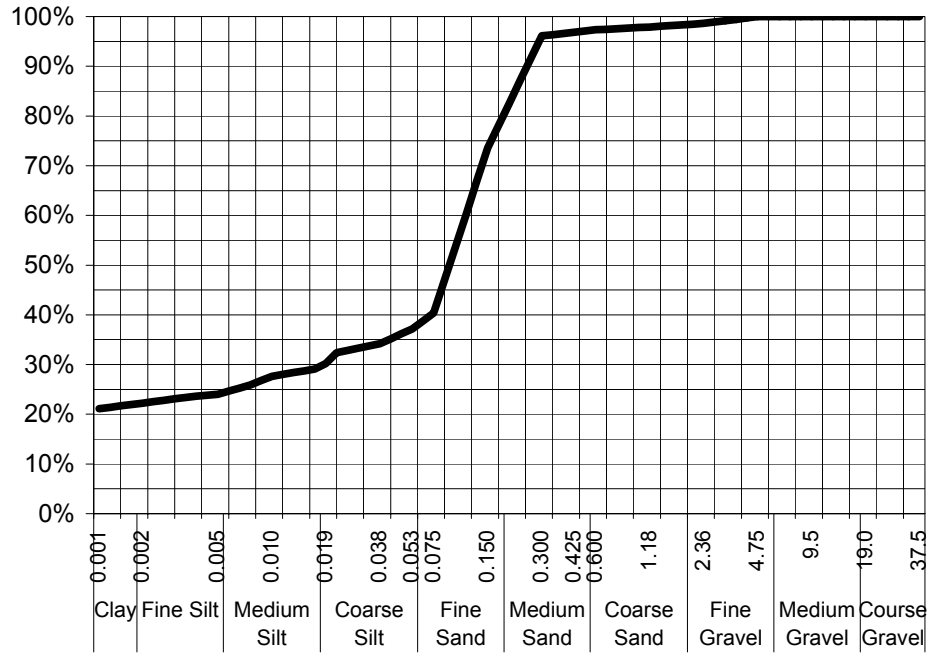
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0814076-001 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH29 0.2-0.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	98%
0.600	97%
0.425	97%
0.300	96%
0.150	74%
0.075	40%
Particle Size (microns)	
38	34%
19	30%
10	28%
5	24%
4	24%
1	21%

Samples analysed as received.

Sample Comments:

Analysed: 16-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Sand & silt

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

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CLIENT: Rob Ully

DATE REPORTED: 22-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 9-Oct-2008

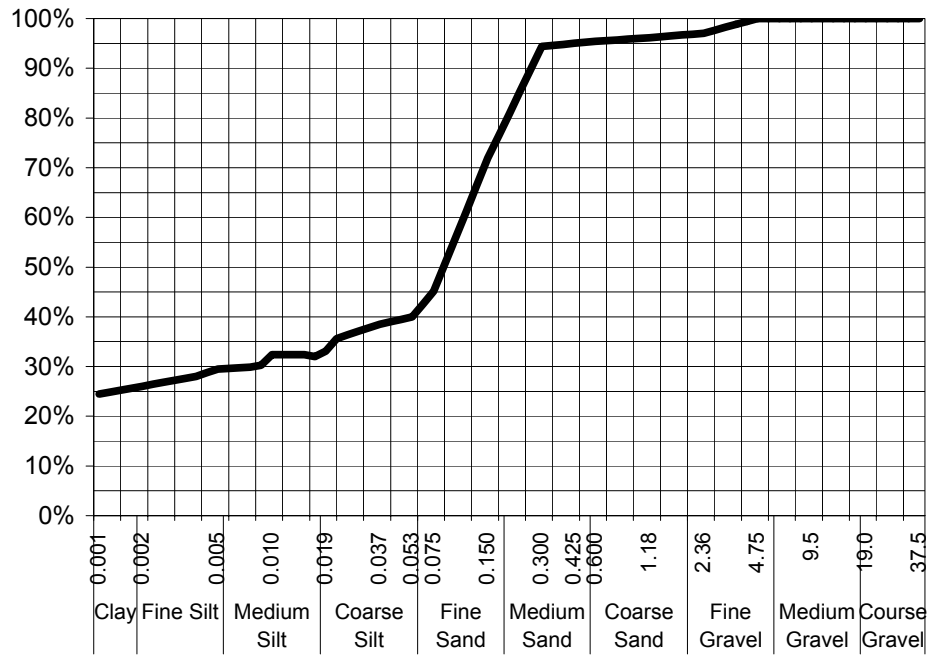
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0814076-002 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH29 0.5-0.7

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	97%
1.18	96%
0.600	95%
0.425	95%
0.300	94%
0.150	72%
0.075	45%
Particle Size (microns)	
37	39%
19	33%
10	32%
5	30%
4	28%
1	24%

Samples analysed as received.

Sample Comments:

Analysed: 16-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Sand & silt

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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Authorised Signatory

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DATE REPORTED: 22-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 9-Oct-2008

ADDRESS: GPO Box 302
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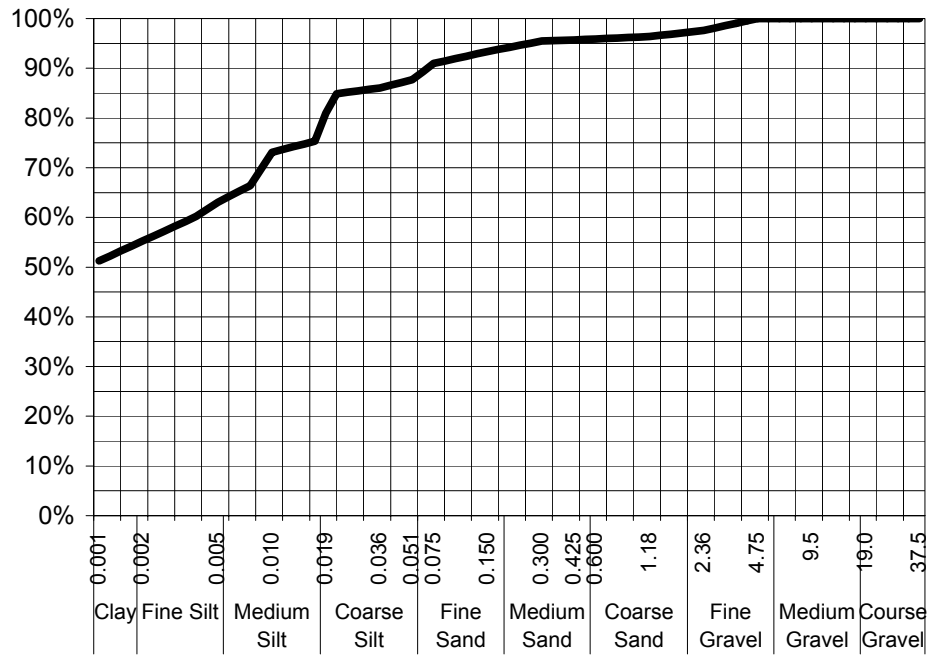
REPORT NO: EB0814076-003 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH29 0.7-1.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	96%
0.600	96%
0.425	96%
0.300	95%
0.150	93%
0.075	91%
Particle Size (microns)	
36	86%
19	81%
10	73%
5	63%
3	60%
1	51%

Samples analysed as received.

Sample Comments:

Analysed: 16-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay & silt

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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PROJECT: 42626228.52

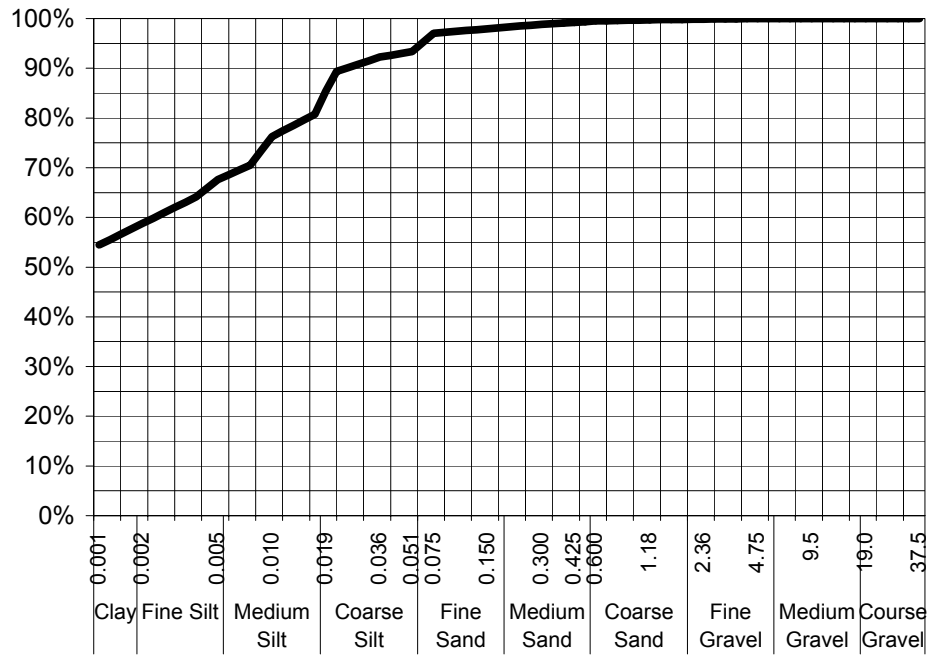
DATE REPORTED: 22-Oct-2008

DATE RECEIVED: 9-Oct-2008

REPORT NO: EB0814076-004 / PSD

SAMPLE ID: BH29 1.0-1.5

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	99%
0.300	99%
0.150	98%
0.075	97%
Particle Size (microns)	
36	92%
19	85%
10	76%
5	68%
3	64%
1	54%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Clay & silt

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 16-Oct-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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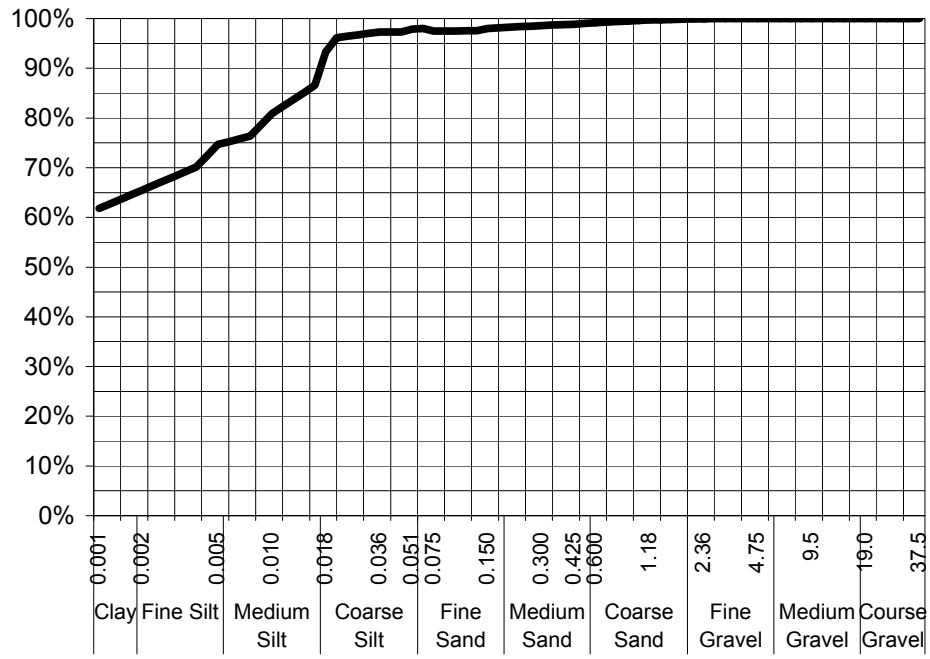
REPORT NO: EB0814076-005 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH29 1.6-2.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	98%
0.075	97%
Particle Size (microns)	
36	97%
18	93%
10	81%
5	75%
3	70%
1	62%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Clay & silt

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 16-Oct-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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ADDRESS: GPO Box 302
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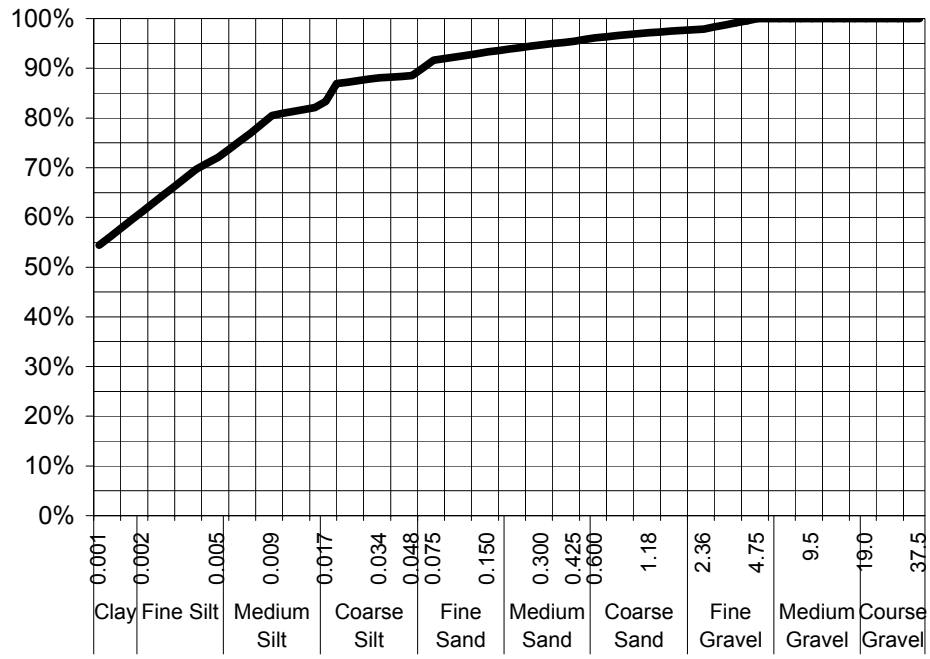
REPORT NO: EB0814076-006 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH29 2.2-2.7

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	97%
0.600	96%
0.425	95%
0.300	95%
0.150	93%
0.075	92%
Particle Size (microns)	
34	88%
17	83%
9	81%
5	72%
3	70%
1	54%

Samples analysed as received.

Sample Comments:

Analysed: 16-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay & silt

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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DATE REPORTED: 22-Oct-2008

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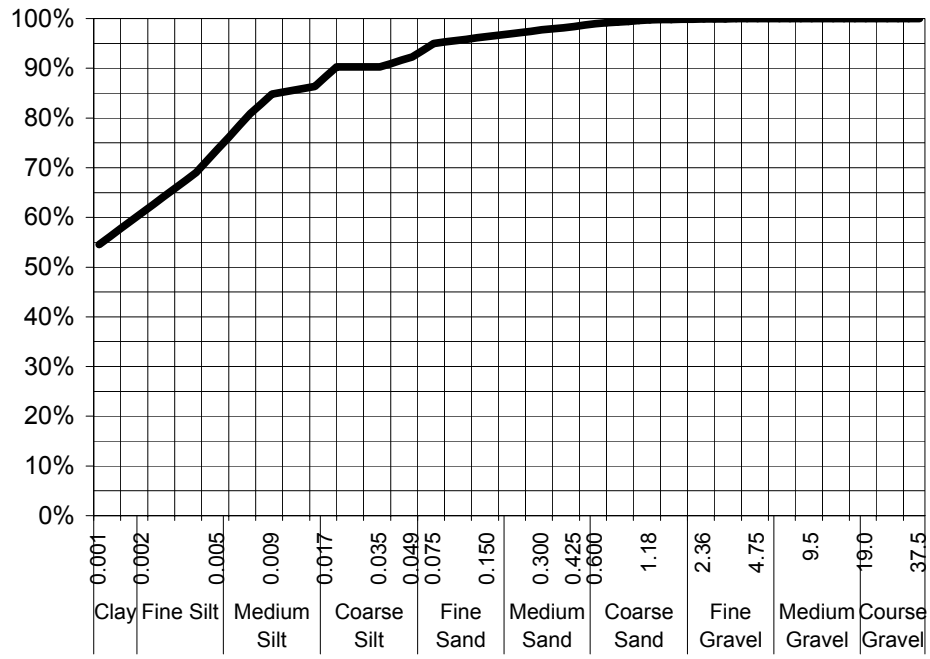
REPORT NO: EB0814076-007 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH29 4.1-4.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	98%
0.300	98%
0.150	96%
0.075	95%
Particle Size (microns)	
35	90%
17	88%
9	85%
5	74%
3	69%
1	55%

Samples analysed as received.

Sample Comments:

Analysed: 16-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay & silt

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

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DATE REPORTED: 22-Oct-2008

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DATE RECEIVED: 9-Oct-2008

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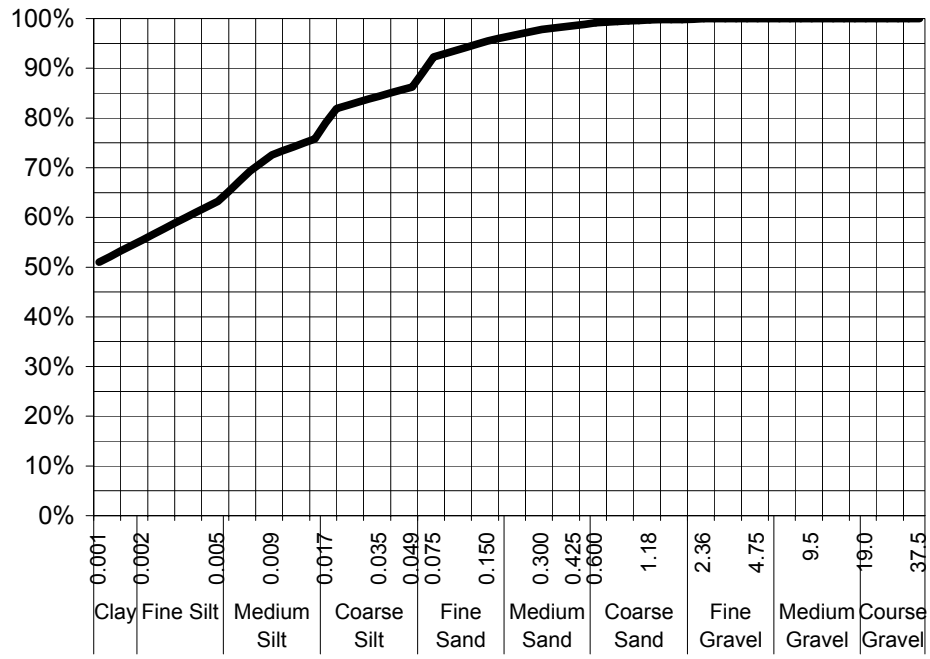
REPORT NO: EB0814076-008 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH29 7.2-7.45

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	98%
0.150	96%
0.075	92%
Particle Size (microns)	
35	84%
17	79%
9	73%
5	63%
3	61%
1	51%

Samples analysed as received.

Sample Comments:

Analysed: 16-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay & silt

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
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DATE REPORTED: 22-Oct-2008

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DATE RECEIVED: 9-Oct-2008

ADDRESS: GPO Box 302
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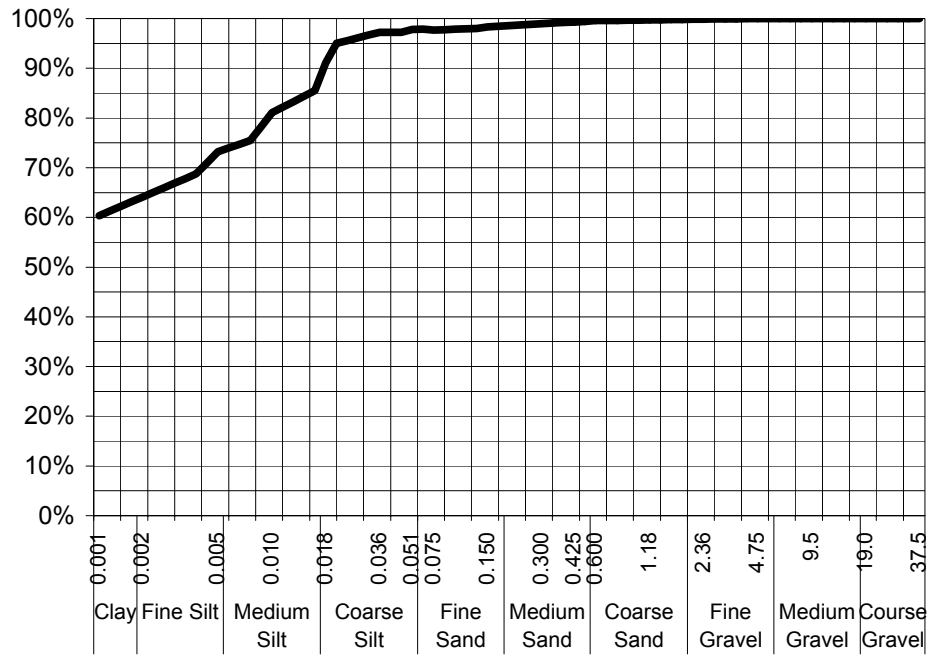
REPORT NO: EB0814076-009 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC80

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	99%
0.300	99%
0.150	98%
0.075	98%
Particle Size (microns)	
36	97%
18	91%
10	81%
5	73%
3	69%
1	60%

Samples analysed as received.

Sample Comments:

Analysed: 16-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay & silt

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
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Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 22-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 9-Oct-2008

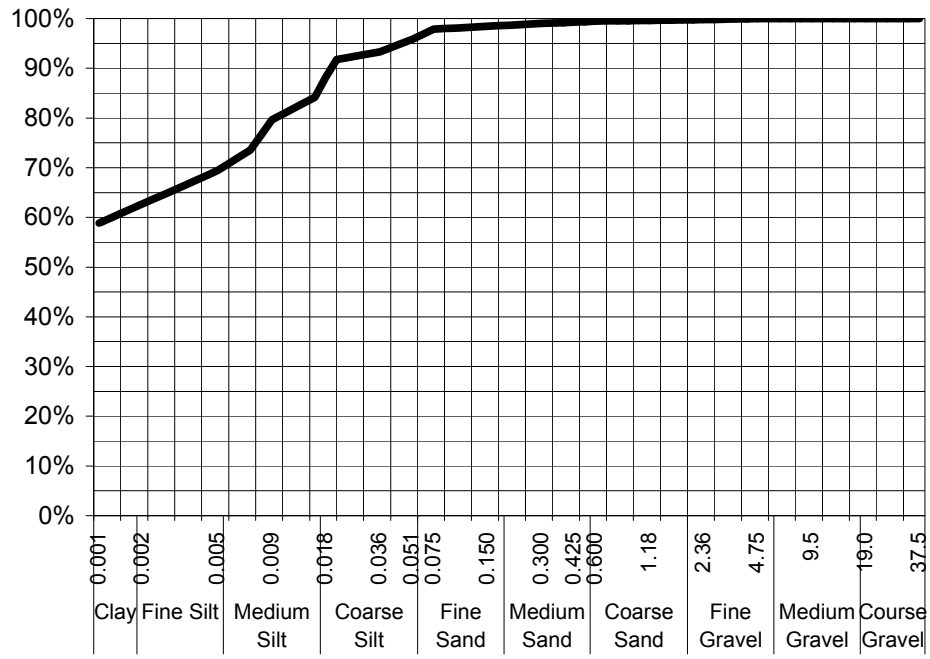
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0814076-010 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC81

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	98%
0.075	98%
Particle Size (microns)	
36	93%
18	88%
9	80%
5	69%
3	67%
1	59%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Clay & silt

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 16-Oct-08

Limit of Reporting: 1%

Dispersion Method Mortar & Pestle

Hydrometer Type ASTM E100

Dianne Blane
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COMPANY: URS Australia Pty Ltd (Qld)

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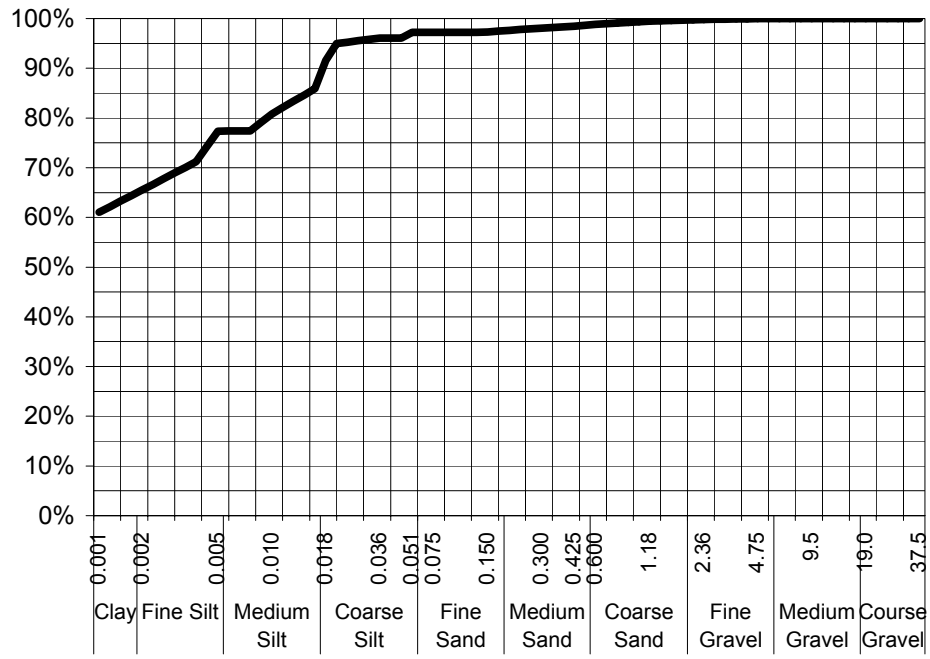
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0814076-011 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC82

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	98%
0.300	98%
0.150	97%
0.075	97%
Particle Size (microns)	
36	96%
18	92%
10	81%
5	77%
3	71%
1	61%

Samples analysed as received.

Sample Comments:

Analysed: 16-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay & silt

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

ALS Laboratory Group Pty Ltd
5 Rosegum Road
Warabrook, NSW 2304
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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 22-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 9-Oct-2008

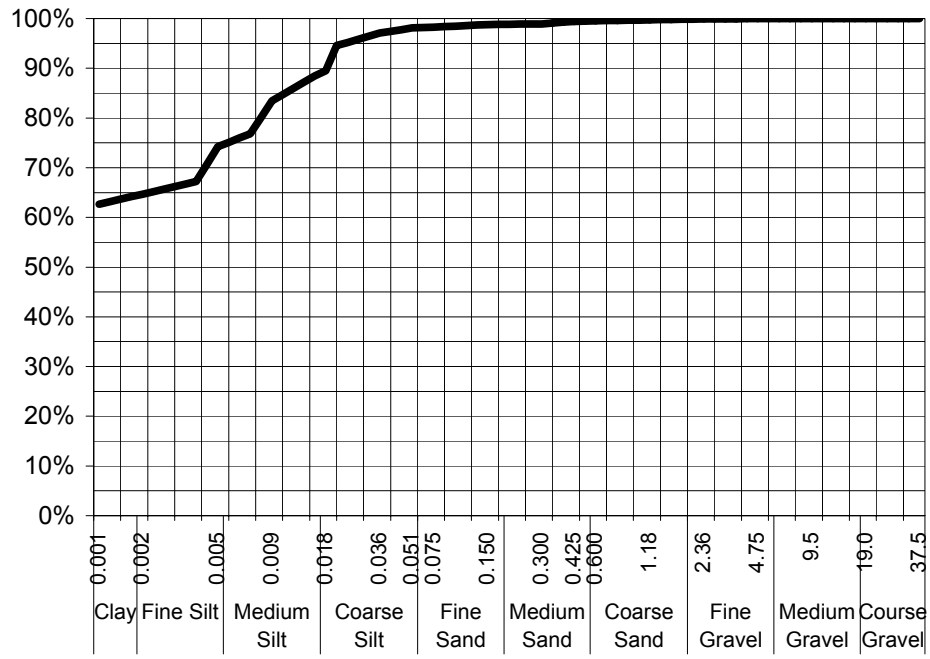
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0814076-012 / PSD

PROJECT: 42626228.52

SAMPLE ID: QC83

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	99%
0.300	99%
0.150	99%
0.075	98%
Particle Size (microns)	
36	97%
18	90%
9	83%
5	74%
3	67%
1	63%

Samples analysed as received.

Sample Comments:

Analysed: 16-Oct-08

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: Clay & silt

Dispersion Method Mortar & Pestle

Test Method: AS1289.3.6.3

Hydrometer Type ASTM E100

Soil Particle Density 2.65 Assumed

Dianne Blane
Senior Analyst
Authorised Signatory

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TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	09-Oct-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0814076	BH29 0.2-0.5	001	1%	59%	19%	21%
EB0814076	BH29 0.5-0.7	002	3%	54%	19%	24%
EB0814076	BH29 0.7-1.0	003	2%	8%	39%	51%
EB0814076	BH29 1.0-1.5	004	0%	5%	41%	54%
EB0814076	QC80	009	0%	2%	38%	60%
EB0814076	QC81	010	0%	4%	37%	59%
EB0814076	BH29 1.6-2.0	005	0%	5%	33%	62%
EB0814076	BH29 2.2-2.7	006	2%	8%	36%	54%
EB0814076	QC82	011	0%	5%	34%	61%
EB0814076	QC83	012	0%	6%	31%	63%
EB0814076	BH29 4.1-4.4	007	0%	7%	38%	55%
EB0814076	BH29 7.2-7.45	008	0%	11%	38%	51%

Remarks :			
Test Procedure :	AS1289.3.6.3	Report Date:	22-Oct-08
Prepared by :	Dianne Blane	Checked by	PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0814076**	Page	: 1 of 13
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 09-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 13
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 786072)									
EB0814076-001	BH29 0.2-0.5	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	9.0	9.0	0.0	0% - 20%
EB0814076-011	QC82	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.0	8.1	1.2	0% - 20%
EA033-B: Potential Acidity (QC Lot: 786072)									
EB0814076-001	BH29 0.2-0.5	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.20	0.22	7.1	0% - 50%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	127	137	7.1	0% - 50%
EB0814076-011	QC82	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	1.68	1.72	2.2	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	1050	1070	2.2	0% - 20%
EA033-C: Acid Neutralising Capacity (QC Lot: 786072)									
EB0814076-001	BH29 0.2-0.5	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	4.96	5.00	1.0	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.59	1.60	1.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	990	1000	1.0	0% - 20%
EB0814076-011	QC82	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	2.05	2.08	1.2	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.66	0.66	0.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	410	415	1.2	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 786073)									
EB0814076-001	BH29 0.2-0.5	EA037: pH (F)	----	0.1	pH Unit	8.8	8.8	0.0	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	6.0	6.0	0.0	0% - 20%
EB0814076-011	QC82	EA037: pH (F)	----	0.1	pH Unit	8.3	8.2	1.2	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	1.2	1.3	8.0	0% - 50%
EA055: Moisture Content (QC Lot: 786273)									
EB0814076-004	BH29 1.0-1.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	44.6	45.0	0.8	0% - 20%
EB0814076-011	QC82	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	33.6	32.5	3.5	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 786826)									
EB0814076-001	BH29 0.2-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	17	7.2	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	9	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 786826) - continued									
EB0814076-001	BH29 0.2-0.5	EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	11	12	13.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	9	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	6	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	321	344	6.8	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	43	47	7.4	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	6180	6790	9.3	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	24300	26200	7.3	0% - 20%
EB0814076-011	QC82	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	13	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	7	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	70	74	6.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	9	11	22.5	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	67	55	19.0	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	24	25	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	8090	9750	18.6	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	18400	20500	10.4	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 786827)									
EB0814076-001	BH29 0.2-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0814076-011	QC82	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 787579)									
EB0814076-001	BH29 0.2-0.5	EP005: Total Organic Carbon	----	0.02	%	0.61	0.54	12.2	0% - 20%
EB0814076-011	QC82	EP005: Total Organic Carbon	----	0.02	%	1.79	1.78	0.6	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 787230)									
EB0814076-002	BH29 0.5-0.7	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EB0814114-003	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QC Lot: 787229)									
EB0814076-002	BH29 0.5-0.7	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 787229) - continued									
EB0814076-002	BH29 0.5-0.7	EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EB0814114-003	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 787414)									
EB0814076-001	BH29 0.2-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0814076-011	QC82	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 787414) - continued									
EB0814076-011	QC82	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 786086)									
EB0814076-001	BH29 0.2-0.5	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit
EP0805652-006	Anonymous	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QC Lot: 789457)									
EB0814076-009	QC80	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 788883)									
EB0814076-013	QC84	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EB0814143-006	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 788884)									
EB0814076-013	QC84	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
EB0814143-006	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 786188)									
EB0814061-010	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0814238-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 787641)									
EB0814048-020	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0814087-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 786072)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 786072)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 786072)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 786826)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	101	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	96.3	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	100	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	102	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	100	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	101	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	99.9	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 786827)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	102	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 787579)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	100	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 787230)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	61.4	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 787229)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	78.6	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	67.2	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	66.0	60.8	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 787229) - continued								
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	78.0	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	68.1	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	68.7	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	76.3	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	78.4	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	62.9	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	68.8	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 787414)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	94.7	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	101	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	94.4	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	96.2	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	91.3	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	99.8	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	87.1	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	85.8	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	70.3	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	75.2	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	88.0	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	98.0	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	# 118	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	104	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	112	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	118	52	128
EP090: Organotin Compounds (QCLot: 786086)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	76.5	28	129
EP090: Organotin Compounds (QCLot: 789457)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	32.3	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 788883)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	106	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	99.0	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	107	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	111	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	106	80.9	115

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 788883) - continued								
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	105	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	106	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	107	81	127
EG020T: Total Metals by ICP-MS (QCLot: 788884)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	91.2	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 786188)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	102	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 787641)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	110	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 787996)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	59.7	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 787995)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	78.5	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	73.8	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	74.1	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	78.0	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	78.4	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	74.4	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	77.2	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	80.2	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	85.0	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	77.3	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 789032)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	70.3	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	77.0	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	66.3	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	69.0	55	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	66.5	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	69.0	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	70.5	51	117
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 789032) - continued								
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	70.4	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	70.6	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	63.0	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	80.4	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	62.7	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	74.1	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	75.9	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	82.7	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	73.0	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 786826)							
EB0814076-002	BH29 0.5-0.7	EG005T: Arsenic	7440-38-2	50 mg/kg	101	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	105	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	102	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	107	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	100	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	104	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	102	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 786827)							
EB0814076-002	BH29 0.5-0.7	EG035T: Mercury	7439-97-6	5.0 mg/kg	101	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 787230)							
EB0814076-001	BH29 0.2-0.5	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	# Not Determined	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 787229)							
EB0814076-001	BH29 0.2-0.5	EP068: gamma-BHC	58-89-9	0.25 mg/kg	# 25.4	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	# Not Determined	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	# 10.1	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	# Not Determined	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 787414)							
EB0814076-002	BH29 0.5-0.7	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	112	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	120	70	130
EP090: Organotin Compounds (QCLot: 786086)							
EB0814076-002	BH29 0.5-0.7	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	82.4	20	130
EP090: Organotin Compounds (QCLot: 789457)							
EB0814076-010	QC81	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	43.3	20	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 788883)							
EB0814114-014	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 788883) - continued							
EB0814114-014	Anonymous	EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 786188)							
EB0814061-010	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0814076**	Page	: 1 of 13
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 09-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 13
Quote number	: EN/001/08	No. of samples analysed	: 13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH29 0.2-0.5,	BH29 0.5-0.7,	**08-OCT-2008**	**09-OCT-2008**	06-APR-2009	✓	**21-OCT-2008**	18-JAN-2009	✓
BH29 0.7-1.0,	BH29 1.0-1.5,							
BH29 1.6-2.0,	BH29 2.2-2.7,							
BH29 4.1-4.4,	BH29 7.2-7.45,							
QC80,	QC81,							
QC82,	QC83							
EA033-B: Potential Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH29 0.2-0.5,	BH29 0.5-0.7,	**08-OCT-2008**	**09-OCT-2008**	06-APR-2009	✓	**21-OCT-2008**	18-JAN-2009	✓
BH29 0.7-1.0,	BH29 1.0-1.5,							
BH29 1.6-2.0,	BH29 2.2-2.7,							
BH29 4.1-4.4,	BH29 7.2-7.45,							
QC80,	QC81,							
QC82,	QC83							
EA033-C: Acid Neutralising Capacity								
Snap Lock Bag - frozen on receipt at ALS								
BH29 0.2-0.5,	BH29 0.5-0.7,	**08-OCT-2008**	**09-OCT-2008**	06-APR-2009	✓	**21-OCT-2008**	18-JAN-2009	✓
BH29 0.7-1.0,	BH29 1.0-1.5,							
BH29 1.6-2.0,	BH29 2.2-2.7,							
BH29 4.1-4.4,	BH29 7.2-7.45,							
QC80,	QC81,							
QC82,	QC83							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity								
Snap Lock Bag - frozen on receipt at ALS								
BH29 0.2-0.5,	BH29 0.5-0.7,	**08-OCT-2008**	**09-OCT-2008**	06-APR-2009	✓	**21-OCT-2008**	18-JAN-2009	✓
BH29 0.7-1.0,	BH29 1.0-1.5,							
BH29 1.6-2.0,	BH29 2.2-2.7,							
BH29 4.1-4.4,	BH29 7.2-7.45,							
QC80,	QC81,							
QC82,	QC83							
EA033-E: Acid Base Accounting								
Snap Lock Bag - frozen on receipt at ALS								
BH29 0.2-0.5,	BH29 0.5-0.7,	**08-OCT-2008**	**09-OCT-2008**	06-APR-2009	✓	**21-OCT-2008**	18-JAN-2009	✓
BH29 0.7-1.0,	BH29 1.0-1.5,							
BH29 1.6-2.0,	BH29 2.2-2.7,							
BH29 4.1-4.4,	BH29 7.2-7.45,							
QC80,	QC81,							
QC82,	QC83							
EA037: Ass Field Screening Analysis								
Snap Lock Bag - frozen on receipt at ALS								
BH29 0.2-0.5,	BH29 0.5-0.7,	**08-OCT-2008**	**09-OCT-2008**	06-APR-2009	✓	**21-OCT-2008**	06-APR-2009	✓
BH29 0.7-1.0,	BH29 1.0-1.5,							
BH29 1.6-2.0,	BH29 2.2-2.7,							
BH29 4.1-4.4,	BH29 7.2-7.45,							
QC80,	QC81,							
QC82,	QC83							
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
BH29 0.2-0.5,	BH29 0.5-0.7,	**08-OCT-2008**	**----**	----	----	**16-OCT-2008**	15-OCT-2008	×
BH29 0.7-1.0,	BH29 1.0-1.5,							
BH29 1.6-2.0,	BH29 2.2-2.7,							
BH29 4.1-4.4,	BH29 7.2-7.45,							
QC80,	QC81,							
QC82,	QC83							
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
BH29 0.2-0.5,	BH29 0.5-0.7,	**08-OCT-2008**	**16-OCT-2008**	06-APR-2009	✓	**17-OCT-2008**	06-APR-2009	✓
BH29 0.7-1.0,	BH29 1.0-1.5,							
BH29 1.6-2.0,	BH29 2.2-2.7,							
BH29 4.1-4.4,	BH29 7.2-7.45,							
QC80,	QC81,							
QC82,	QC83							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH29 0.2-0.5, BH29 0.5-0.7, BH29 0.7-1.0, BH29 1.0-1.5, BH29 1.6-2.0, BH29 2.2-2.7, BH29 4.1-4.4, BH29 7.2-7.45, QC80, QC81, QC82, QC83	**08-OCT-2008**	**16-OCT-2008**	06-APR-2009	✓	**20-OCT-2008**	05-NOV-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH29 0.2-0.5, BH29 0.5-0.7, BH29 0.7-1.0, BH29 1.0-1.5, BH29 1.6-2.0, BH29 2.2-2.7, BH29 4.1-4.4, BH29 7.2-7.45, QC80, QC81, QC82, QC83	**08-OCT-2008**	**---**	---	----	**21-OCT-2008**	05-NOV-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
BH29 0.2-0.5, BH29 0.5-0.7, BH29 0.7-1.0, BH29 1.0-1.5, BH29 1.6-2.0, BH29 QC80, QC81	**08-OCT-2008**	**17-OCT-2008**	22-OCT-2008	✓	**20-OCT-2008**	26-NOV-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH29 0.2-0.5, BH29 0.5-0.7, BH29 0.7-1.0, BH29 1.0-1.5, BH29 1.6-2.0, BH29 QC80, QC81	**08-OCT-2008**	**17-OCT-2008**	22-OCT-2008	✓	**20-OCT-2008**	26-NOV-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH29 0.2-0.5, BH29 0.5-0.7, BH29 0.7-1.0, BH29 1.0-1.5, BH29 1.6-2.0, BH29 2.2-2.7, BH29 4.1-4.4, BH29 7.2-7.45, QC80, QC81, QC82, QC83	**08-OCT-2008**	**18-OCT-2008**	22-OCT-2008	✓	**21-OCT-2008**	27-NOV-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP090: Organotin Compounds							
Sediment Glass Jar - Frozen (NODG)							
BH29 0.2-0.5, BH29 0.5-0.7, BH29 0.7-1.0, BH29 1.0-1.5, BH29 1.6-2.0	**08-OCT-2008**	**16-OCT-2008**	06-APR-2009	✓	**24-OCT-2008**	25-NOV-2008	✓
Sediment Glass Jar - Frozen (NODG)							
QC80, QC81	**08-OCT-2008**	**21-OCT-2008**	06-APR-2009	✓	**24-OCT-2008**	30-NOV-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC84	**08-OCT-2008**	**20-OCT-2008**	06-APR-2009	✓	**20-OCT-2008**	06-APR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC84	**08-OCT-2008**	**----**	----	----	**16-OCT-2008**	05-NOV-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber Glass Bottle - Unpreserved							
QC84	**08-OCT-2008**	**----**	----	----	**17-OCT-2008**	10-OCT-2008	×
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC84	**08-OCT-2008**	**16-OCT-2008**	15-OCT-2008	×	**20-OCT-2008**	26-NOV-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC84	**08-OCT-2008**	**16-OCT-2008**	15-OCT-2008	×	**20-OCT-2008**	26-NOV-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC84	**08-OCT-2008**	**20-OCT-2008**	15-OCT-2008	×	**22-OCT-2008**	29-NOV-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chromium Suite for Acid Sulphate Soils	EA033	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	3	20	**15.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	16	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	2	20	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	2	20	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	2	20	**10.0**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	14	**7.1**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	14	**7.1**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	891563-002	----	**Benzo(a)pyrene**	50-32-8	118 %	55-116%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB0814076-002	BH29 0.5-0.7	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP066: Polychlorinated Biphenyls (PCB)	EB0814076-001	BH29 0.2-0.5	**Total Polychlorinated biphenyls**	----	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP068A: Organochlorine Pesticides (OC)	EB0814076-001	BH29 0.2-0.5	**gamma-BHC**	58-89-9	25.4 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0814076-001	BH29 0.2-0.5	**Dieldrin**	60-57-1	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**
EP068A: Organochlorine Pesticides (OC)	EB0814076-001	BH29 0.2-0.5	**Endrin**	72-20-8	10.1 %	70-130%	**Recovery less than lower data quality objective**
EP068A: Organochlorine Pesticides (OC)	EB0814076-001	BH29 0.2-0.5	**4.4`-DDT**	50-29-3	Not Determined	----	**Matrix spike recovery not determined due to sample matrix interference.**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP066S: PCB Surrogate	EB0814076-001	BH29 0.2-0.5	**Decachlorobiphenyl**	2051-24-3	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP068S: Organochlorine Pesticide Surrogate	EB0814076-001	BH29 0.2-0.5	**Dibromo-DDE**	21655-73-2	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP068T: Organophosphorus Pesticide Surrogate	EB0814076-001	BH29 0.2-0.5	**DEF**	78-48-8	7.4 %	10-110 %	**Recovery less than lower data quality objective**

Sub-Matrix: **WATER**

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	EB0814076-013	QC84	**Phenol-d6**	13127-88-3	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814076-013	QC84	**2-Chlorophenol-D4**	93951-73-6	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814076-013	QC84	**2.4.6-Tribromophenol**	118-79-6	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP075(SIM)T: PAH Surrogates	EB0814076-013	QC84	**2-Fluorobiphenyl**	321-60-8	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP075(SIM)T: PAH Surrogates	EB0814076-013	QC84	**Anthracene-d10**	1719-06-8	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**
EP075(SIM)T: PAH Surrogates	EB0814076-013	QC84	**4-Terphenyl-d14**	1718-51-0	Not Determined	----	**Surrogate recovery not determined due to (target or non-target) matrix interferences**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method / **Container** / Client Sample ID(s)	*Extraction / Preparation*			*Analysis*		
	Date extracted	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA055: Moisture Content						
Soil Glass Jar - Unpreserved						
BH29 0.2-0.5, BH29 0.5-0.7, BH29 0.7-1.0, BH29 1.0-1.5, BH29 1.6-2.0, BH29 2.2-2.7, BH29 4.1-4.4, BH29 7.2-7.45, QC80, QC81, QC82, QC83	----	----	----	16-OCT-2008	15-OCT-2008	**1**

Matrix: **WATER**

Method / **Container** / Client Sample ID(s)	*Extraction / Preparation*			*Analysis*		
	Date extracted	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EP005: Total Organic Carbon (TOC)						
Amber Glass Bottle - Unpreserved						
QC84	----	----	----	17-OCT-2008	10-OCT-2008	**7**

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP066: Polychlorinated Biphenyls (PCB)						
Amber Glass Bottle - Unpreserved						
QC84	16-OCT-2008	15-OCT-2008	**1**	----	----	----
EP068A: Organochlorine Pesticides (OC)						
Amber Glass Bottle - Unpreserved						
QC84	16-OCT-2008	15-OCT-2008	**1**	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Amber Glass Bottle - Unpreserved						
QC84	20-OCT-2008	15-OCT-2008	**5**	----	----	----

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0814114

Telephone : +61-7-3243 7222

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259

All results to be provided in MRED format
email address: julian_dobos@urscorp.com

TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard

COC SEQUENCE NUMBER: (1) 2 3 4 — please circle 2

URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	
URS PM:	Rob Ully	SITE :	GLNG SANTOS		
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	

FOR LABORATORY USE ONLY

Custody Seal ? Y N NA

Free ice / frozen icebricks present upon receipt? Y N

Random Sample Temperature on Receipt °C

RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE: 9.10.8 TIME: 3:05	DATE: TIME:	DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE																								
				Solid		Liquid																						
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
1	BH30 0.6-0.9	09/10/08	S	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
2	BH30 1.0-1.45	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
3	BH30 1.3-2.0	"	"	3	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
4	BH30 2.1-3.0	"	"	3	1									✓	✓	✓					✓		✓					✓	
5	BH30 3.9-4.3	"	"	3	1									✓	✓	✓					✓		✓					✓	
6	BH30 5.2-5.8	"	"	2	1									✓	✓	✓					✓		✓					✓	
7	BH30 6.0-6.15	"	"	2	1									✓	✓	✓					✓		✓					✓	
8	BH30 8.3-8.75	"	"	1	1									✓	✓	✓					✓		✓					✓	
9	BH30 0.0-0.2	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
10	QC85	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
11	QC86	"	"	2	1									✓	✓	✓	✓	✓	✓	✓	✓		✓						
12	QC87	"	"	3	1									✓	✓	✓					✓		✓					✓	
TOTAL														12	12	12	6	6	6	6	12		12					6	

URS CHAIN OF CUSTODY

FOR LABORATORY USE ONLY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY: ALS	32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	Custody Seal? Y N NA Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: 1 (2) 3 4 — please circle 2
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259		
URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: / RELINQUISHED BY: / RECEIVED BY:
URS PM:	Rob Ully	SITE :	GLNG SANTOS		
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	DATE: TIME: / DATE: TIME: / DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE																								
				Solid		Liquid																						
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's
13	QC88	09/10/08	S	3	1									✓	✓	✓					✓		✓					✓
14	QC89	09/10/08	L				2	1								✓		✓	✓	✓	✓							✓
TOTAL														1	1	2		1	1	1	2		1					2

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0814114**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS ADDRESS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: brisbane@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 07 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 4
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 11-OCT-2008	Issue Date	: 16-OCT-2008 11:02
Client Requested Due Date	: 22-OCT-2008	Scheduled Reporting Date	: **21-OCT-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 6.6 C 6.8 C - Ice present
No. of coolers/boxes	: 2 MEDIUM	No. of samples received	: 14
Sercurity Seal	: Intact.	No. of samples analysed	: 14

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.**
- **Breaches in recommended extraction / analysis holding times may occur.**
- **The recommended holding time for Acid Sulphate analysis is 24 hours from the time of sampling.**
- **PSD and TBT results will follow when available.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

Method / Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
EA033 : Chromium Suite for Acid Sulphate Soils		
BH30 0.6-0.9	- Snap Lock Bag	- Snap Lock Bag - frozen
BH30 1.0-1.45	- Snap Lock Bag	- Snap Lock Bag - frozen
BH30 1.3-2.0	- Snap Lock Bag	- Snap Lock Bag - frozen
BH30 2.1-3.0	- Snap Lock Bag	- Snap Lock Bag - frozen
BH30 3.8-4.8	- Snap Lock Bag	- Snap Lock Bag - frozen
BH30 5.2-5.8	- Snap Lock Bag	- Snap Lock Bag - frozen
BH30 6.0-6.15	- Snap Lock Bag	- Snap Lock Bag - frozen
BH30 8.3-8.75	- Snap Lock Bag	- Snap Lock Bag - frozen
BH30 0.0-0.2	- Snap Lock Bag	- Snap Lock Bag - frozen
QC85	- Snap Lock Bag	- Snap Lock Bag - frozen
QC86	- Snap Lock Bag	- Snap Lock Bag - frozen
QC87	- Snap Lock Bag	- Snap Lock Bag - frozen
QC88	- Snap Lock Bag	- Snap Lock Bag - frozen
EP005 : Total Organic Carbon		
QC89	- Amber Glass Bottle - Unpreserved	- Amber TOC Vial- Sulphuric Acid

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EA037 ASS Field Screening Analysis	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins
EB0814114-001	09-OCT-2008 15:00	BH30 0.6-0.9	✓	✓	✓	✓	✓	✓	✓	✓
EB0814114-002	09-OCT-2008 15:00	BH30 1.0-1.45	✓	✓	✓	✓	✓	✓	✓	✓
EB0814114-003	09-OCT-2008 15:00	BH30 1.3-2.0	✓	✓	✓	✓	✓	✓	✓	✓
EB0814114-004	09-OCT-2008 15:00	BH30 2.1-3.0	✓	✓	✓	✓			✓	
EB0814114-005	09-OCT-2008 15:00	BH30 3.8-4.8	✓	✓	✓	✓			✓	
EB0814114-006	09-OCT-2008 15:00	BH30 5.2-5.8	✓	✓	✓	✓			✓	
EB0814114-007	09-OCT-2008 15:00	BH30 6.0-6.15	✓	✓	✓	✓			✓	
EB0814114-008	09-OCT-2008 15:00	BH30 8.3-8.75	✓	✓	✓	✓			✓	
EB0814114-009	09-OCT-2008 15:00	BH30 0.0-0.2	✓	✓	✓	✓	✓	✓	✓	✓
EB0814114-010	09-OCT-2008 15:00	QC85	✓	✓	✓	✓	✓	✓	✓	✓
EB0814114-011	09-OCT-2008 15:00	QC86	✓	✓	✓	✓	✓	✓	✓	✓
EB0814114-012	09-OCT-2008 15:00	QC87	✓	✓	✓	✓			✓	
EB0814114-013	09-OCT-2008 15:00	QC88	✓	✓	✓	✓			✓	

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - S-02 8 Metals (incl. Digestion)
EB0814114-001	09-OCT-2008 15:00	BH30 0.6-0.9	✓
EB0814114-002	09-OCT-2008 15:00	BH30 1.0-1.45	✓
EB0814114-003	09-OCT-2008 15:00	BH30 1.3-2.0	✓
EB0814114-004	09-OCT-2008 15:00	BH30 2.1-3.0	✓
EB0814114-005	09-OCT-2008 15:00	BH30 3.8-4.8	✓
EB0814114-006	09-OCT-2008 15:00	BH30 5.2-5.8	✓
EB0814114-007	09-OCT-2008 15:00	BH30 6.0-6.15	✓
EB0814114-008	09-OCT-2008 15:00	BH30 8.3-8.75	✓
EB0814114-009	09-OCT-2008 15:00	BH30 0.0-0.2	✓
EB0814114-010	09-OCT-2008 15:00	QC85	✓
EB0814114-011	09-OCT-2008 15:00	QC86	✓
EB0814114-012	09-OCT-2008 15:00	QC87	✓
EB0814114-013	09-OCT-2008 15:00	QC88	✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP075 SIM PAH only SIM - PAH only	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0814114-014	09-OCT-2008 15:00	QC89	✓	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com
- Trigger - Subcontract Report	Email	julian_dobos@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com
- Trigger - Subcontract Report	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0814114**	Page	: 1 of 15
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 11-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 14
Quote number	: EN/001/08	No. of samples analysed	: 14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **pH FOX Reaction Rate: 1 - Slight; 2 - Moderate; 3 - Vigorous; 4 - Very Vigorous**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**

Analytical Results

Sub-Matrix: LIQUID				Client sample ID	QC89	----	----	----	----
				Client sampling date / time	09-OCT-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB0814114-014	----	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.005**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	----	----	----	----
Total Chlordane (sum)	----	0.5	µg/L		<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: **LIQUID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC89	----	----	----	----
				Client sampling date / time: 09-OCT-2008 15:00	----	----	----	----
				EB0814114-014	**----**	**----**	**----**	**----**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**77.6**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**72.4**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**69.3**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**40.7**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	**87.8**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%	**87.6**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**73.0**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	**91.8**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	**85.5**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH30 0.6-0.9	BH30 1.0-1.45	BH30 1.3-2.0	BH30 2.1-3.0	BH30 3.8-4.8
				Client sampling date / time: 09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00
				EB0814114-001	EB0814114-002	EB0814114-003	EB0814114-004	EB0814114-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.8	8.2	7.9	7.8	7.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.33	1.01	1.12	0.94	0.44
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	205	628	700	588	276
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	6.57	1.69	1.64	2.54	2.69
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1310	338	329	507	537
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	2.10	0.54	0.53	0.81	0.86
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	0.64	0.77	0.40	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	402	481	249	<10
Liming Rate	----	1	kg CaCO3/t	<1	30	36	19	<1
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.6	8.5	9.1	8.2	8.2
pH (Fox)	----	0.1	pH Unit	5.2	2.3	2.1	1.8	2.1
Reaction Rate	----	1	-	2	2	4	2	2
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	39.9	43.1	44.2	40.8	40.4
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	7520	10900	10500	9740	9950
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	16	14	8	9	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	16	18	18	15	15
Copper	7440-50-8	5	mg/kg	15	30	30	34	36
Iron	7439-89-6	50	mg/kg	18800	19400	21300	19800	19800
Lead	7439-92-1	5	mg/kg	8	9	10	8	9
Manganese	7439-96-5	5	mg/kg	205	116	170	337	490
Nickel	7440-02-0	2	mg/kg	9	11	10	10	10
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	33	36	33	33	34

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	BH30 0.6-0.9	BH30 1.0-1.45	BH30 1.3-2.0	BH30 2.1-3.0	BH30 3.8-4.8
				Client sampling date / time	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00
					EB0814114-001	EB0814114-002	EB0814114-003	EB0814114-004	EB0814114-005
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**1.13**	**0.94**	**0.82**	**1.15**	**0.98**
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		<0.10	<0.10	<0.10	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<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
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
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	<0.5	----	----
EP066S: PCB Surrogate									

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH30 0.6-0.9	BH30 1.0-1.45	BH30 1.3-2.0	BH30 2.1-3.0	BH30 3.8-4.8
				Client sampling date / time: 09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00
				EB0814114-001	EB0814114-002	EB0814114-003	EB0814114-004	EB0814114-005
EP066S: PCB Surrogate - Continued								
Decachlorobiphenyl	2051-24-3	0.1	%	**34.4**	**29.6**	**31.3**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**39.7**	**32.4**	**36.5**	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**73.7**	**63.0**	**65.2**	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**88.6**	**91.9**	**91.6**	**93.3**	**92.0**
2-Chlorophenol-D4	93951-73-6	0.1	%	**92.0**	**92.7**	**93.6**	**97.4**	**96.0**
2.4.6-Tribromophenol	118-79-6	0.1	%	**72.9**	**72.3**	**65.8**	**69.8**	**69.1**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**100**	**82.2**	**82.6**	**89.9**	**97.5**
Anthracene-d10	1719-06-8	0.1	%	**97.0**	**73.5**	**81.5**	**73.7**	**84.7**
4-Terphenyl-d14	1718-51-0	0.1	%	**90.0**	**90.9**	**95.6**	**88.8**	**80.4**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**93.4**	**82.8**	**78.4**	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH30 5.2-5.8	BH30 6.0-6.15	BH30 8.3-8.75	BH30 0.0-0.2	QC85
				Client sampling date / time: 09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00
				EB0814114-006	EB0814114-007	EB0814114-008	EB0814114-009	EB0814114-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	7.6	7.8	7.6	8.8	8.5
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.92	1.59	<0.02	0.03	0.74
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	573	995	<10	17	462
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.40	1.69	0.90	5.77	1.99
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	279	338	180	1150	398
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.45	0.54	0.29	1.85	0.64
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.62	1.23	<0.02	<0.02	0.32
Net Acidity (acidity units)	----	10	mole H+ / t	387	769	<10	<10	197
Liming Rate	----	1	kg CaCO3/t	29	58	<1	<1	15
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.0	8.1	7.7	8.1	8.7
pH (Fox)	----	0.1	pH Unit	1.2	1.3	3.9	5.2	1.1
Reaction Rate	----	1	-	2	2	1	2	2
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	36.4	37.9	23.2	51.9	41.7
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	8870	9900	4920	8380	9830
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	8	11	18	17	12
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	11	10	24	18	16
Copper	7440-50-8	5	mg/kg	38	60	20	16	29
Iron	7439-89-6	50	mg/kg	27500	20800	27200	20800	17700
Lead	7439-92-1	5	mg/kg	7	10	11	8	9
Manganese	7439-96-5	5	mg/kg	255	148	583	289	148
Nickel	7440-02-0	2	mg/kg	10	13	20	10	10
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	31	33	27	38	33

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH30 5.2-5.8	BH30 6.0-6.15	BH30 8.3-8.75	BH30 0.0-0.2	QC85
				Client sampling date / time: 09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00
				EB0814114-006	EB0814114-007	EB0814114-008	EB0814114-009	EB0814114-010
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.96**	**2.99**	**0.03**	**1.28**	**0.85**
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	----	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	<0.05
Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	<0.05
trans-Chlordane	5103-74-2	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
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
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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	----	----	<0.5	<0.5
EP066S: PCB Surrogate								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH30 5.2-5.8	BH30 6.0-6.15	BH30 8.3-8.75	BH30 0.0-0.2	QC85
				Client sampling date / time: 09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00
				EB0814114-006	EB0814114-007	EB0814114-008	EB0814114-009	EB0814114-010
EP066S: PCB Surrogate - Continued								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	**29.0**	**29.2**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	**31.3**	**31.5**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	----	----	**66.8**	**61.4**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**88.0**	**85.5**	**91.8**	**87.8**	**86.9**
2-Chlorophenol-D4	93951-73-6	0.1	%	**93.5**	**86.9**	**91.3**	**87.1**	**91.7**
2.4.6-Tribromophenol	118-79-6	0.1	%	**67.9**	**69.5**	**59.6**	**67.7**	**61.6**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**100**	**91.2**	**108**	**114**	**106**
Anthracene-d10	1719-06-8	0.1	%	**88.9**	**83.7**	**77.2**	**68.9**	**98.4**
4-Terphenyl-d14	1718-51-0	0.1	%	**82.5**	**76.1**	**87.4**	**80.2**	**85.6**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	----	----	**95.3**	**94.5**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC86	QC87	QC88	----	----
				Client sampling date / time: 09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	----	----
				EB0814114-011	EB0814114-012	EB0814114-013	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.5	8.5	8.5	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	0.86	0.40	0.39	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	535	250	245	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	2.09	4.73	4.18	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	418	945	835	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.67	1.51	1.34	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	----	----
Net Acidity (sulfur units)	----	0.02	% S	0.41	<0.02	<0.02	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	256	<10	<10	----	----
Liming Rate	----	1	kg CaCO3/t	19	<1	<1	----	----
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.0	7.8	7.8	----	----
pH (Fox)	----	0.1	pH Unit	1.7	3.2	2.2	----	----
Reaction Rate	----	1	-	2	2	2	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	43.2	39.1	38.8	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	9620	9730	10100	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	----	----
Arsenic	7440-38-2	5	mg/kg	11	8	8	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	16	15	16	----	----
Copper	7440-50-8	5	mg/kg	29	78	44	----	----
Iron	7439-89-6	50	mg/kg	18900	24100	21200	----	----
Lead	7439-92-1	5	mg/kg	10	9	9	----	----
Manganese	7439-96-5	5	mg/kg	118	652	495	----	----
Nickel	7440-02-0	2	mg/kg	10	10	11	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	<2	----	----
Zinc	7440-66-6	5	mg/kg	32	39	36	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	QC86	QC87	QC88	----	----
				Client sampling date / time	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	----	----
					EB0814114-011	EB0814114-012	EB0814114-013	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	0.02	%		**0.75**	**0.88**	**0.88**	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	----
Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	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	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<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	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	----	----	----
EP066S: PCB Surrogate									

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID	QC86	QC87	QC88	----	----
				Client sampling date / time	09-OCT-2008 15:00	09-OCT-2008 15:00	09-OCT-2008 15:00	----	----
					EB0814114-011	EB0814114-012	EB0814114-013	----	----
EP066S: PCB Surrogate - Continued									
Decachlorobiphenyl	2051-24-3	0.1	%		**31.6**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**37.4**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**68.4**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**89.3**	**92.9**	**94.8**	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**92.7**	**96.5**	**97.5**	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**63.2**	**66.8**	**66.4**	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**113**	**116**	**123**	----	----
Anthracene-d10	1719-06-8	0.1	%		**81.0**	**84.6**	**76.6**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**91.6**	**82.8**	**93.9**	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.1	%		**78.6**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **LIQUID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141

Sub-Matrix: **SOLID**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

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TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	11-Oct-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0814114	BH30 0.6-0.9	001	1%	27%	40%	32%
EB0814114	BH30 1.0-1.45	002	0%	4%	42%	54%
EB0814114	BH30 1.3-2.0	003	0%	8%	32%	60%
EB0814114	BH30 2.1-3.0	004	0%	8%	31%	61%
EB0814114	BH30 3.8-4.8	005	0%	12%	36%	52%
EB0814114	BH30 5.2-5.8	006	0%	4%	38%	58%
EB0814114	BH30 6.0-6.15	007	2%	11%	36%	51%
EB0814114	BH30 8.3-8.75	008	7%	20%	38%	35%
EB0814114	BH30 0.0-0.2	009	1%	26%	37%	36%
EB0814114	QC85	010	0%	8%	38%	54%
EB0814114	QC86	011	0%	10%	38%	52%
EB0814114	QC87	012	0%	12%	33%	55%
EB0814114	QC88	013	0%	12%	38%	50%

Remarks :

Test Procedure :	AS1289.3.6.3	Report Date:	21-Oct-08
Prepared by :	Dianne Blane	Checked by	PK

Certificate of Analysis

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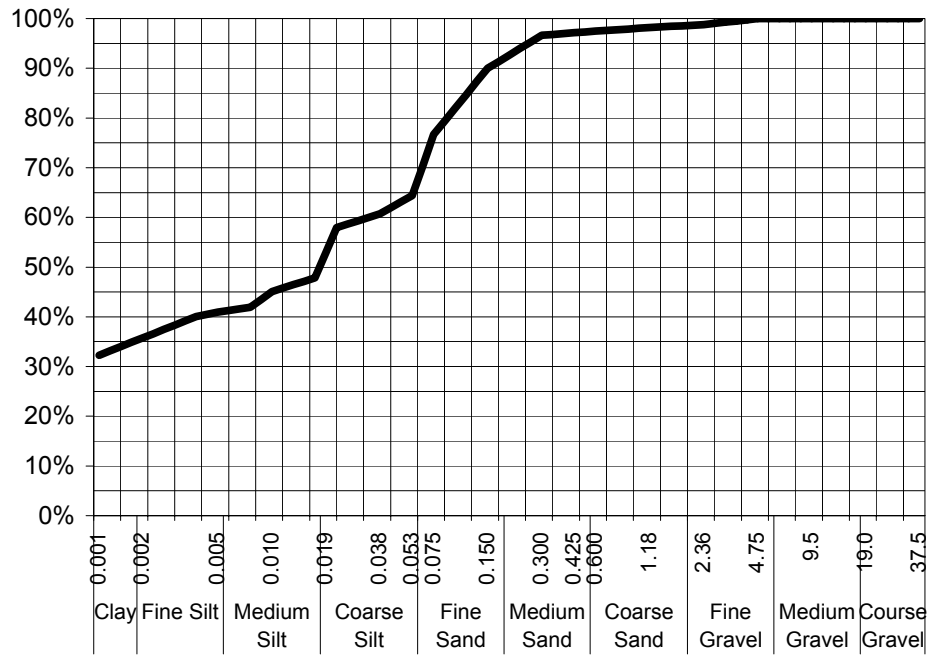
ALS Environmental

Newcastle, NSW

CLIENT:	Julian Dobos	**DATE REPORTED:**	21-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-001 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH30 0.6-0.9

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	98%
0.600	97%
0.425	97%
0.300	97%
0.150	90%
0.075	77%
Particle Size (microns)	
38	61%
19	53%
10	45%
5	41%
4	40%
1	32%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay & grit	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

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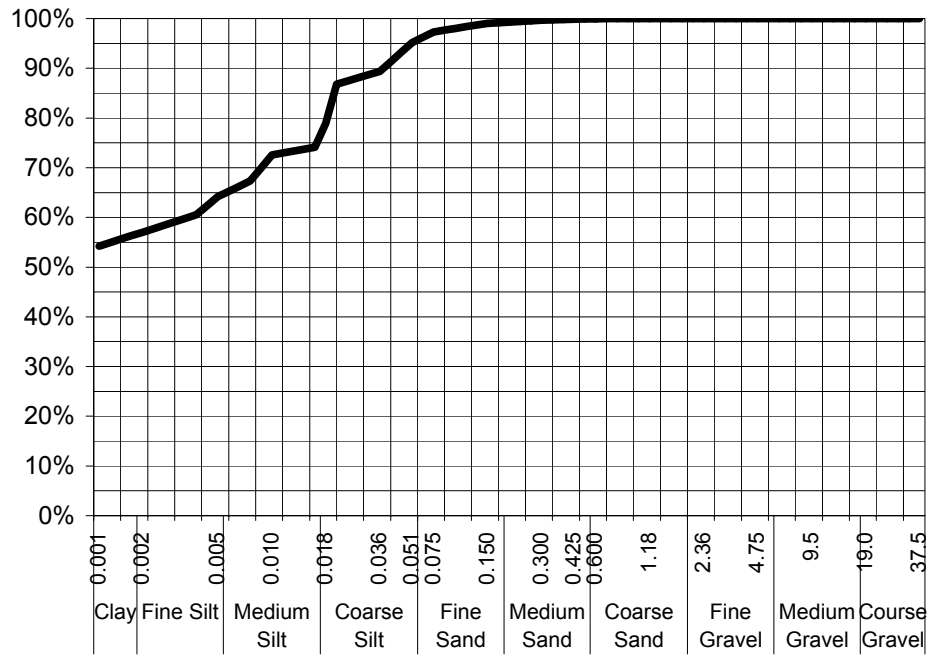
CLIENT:	Julian Dobos	**DATE REPORTED:**	21-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-002 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH30 1.0-1.45

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	97%
Particle Size (microns)	
36	89%
18	79%
10	73%
5	64%
3	61%
1	54%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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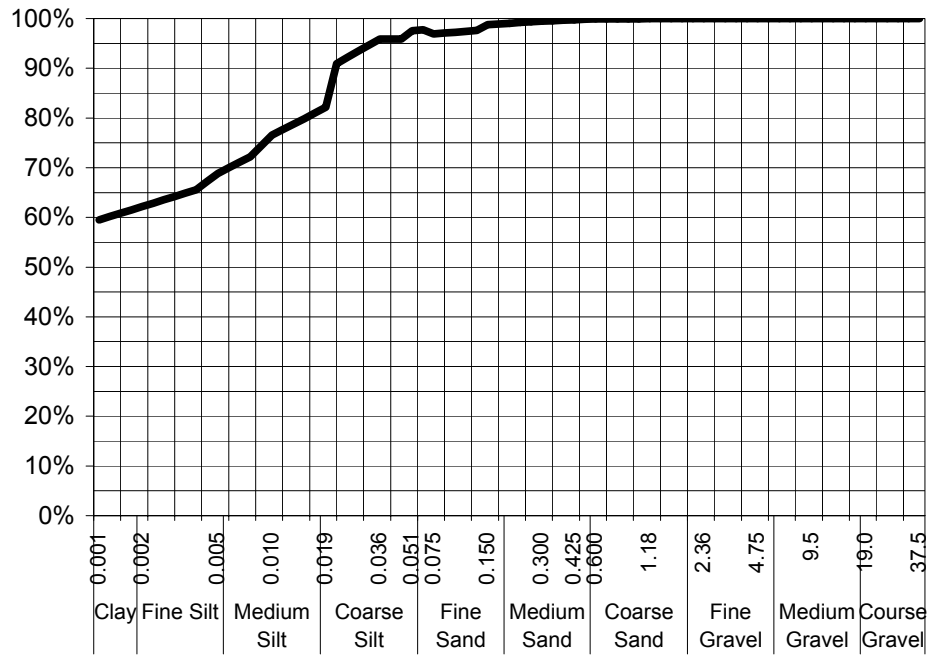
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-003 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH30 1.3-2.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	99%
0.075	97%
Particle Size (microns)	
36	96%
19	82%
10	77%
5	69%
3	66%
1	60%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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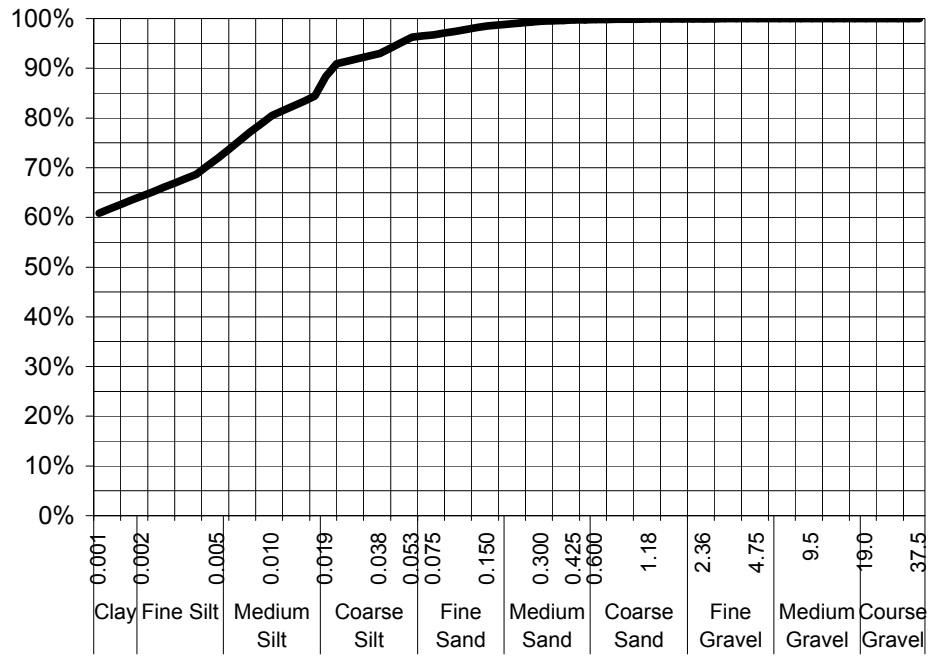
CLIENT:	Julian Dobos	**DATE REPORTED:**	21-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH30 2.1-3.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	99%
0.075	97%
Particle Size (microns)	
38	93%
19	88%
10	80%
5	72%
3	69%
1	61%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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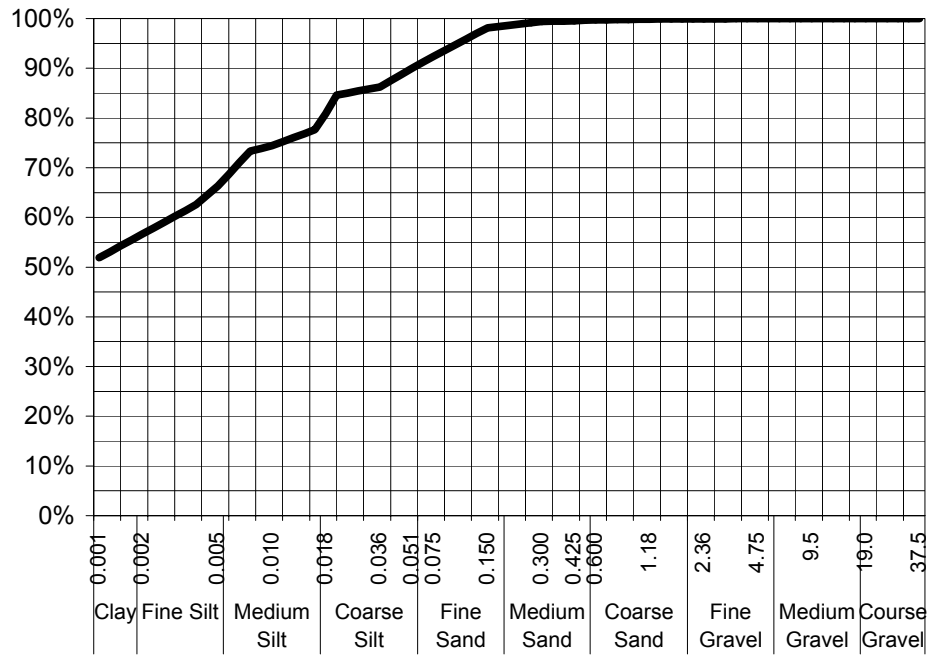
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-005 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH30 3.8-4.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	98%
0.075	92%
Particle Size (microns)	
36	86%
18	81%
10	74%
5	66%
3	63%
1	52%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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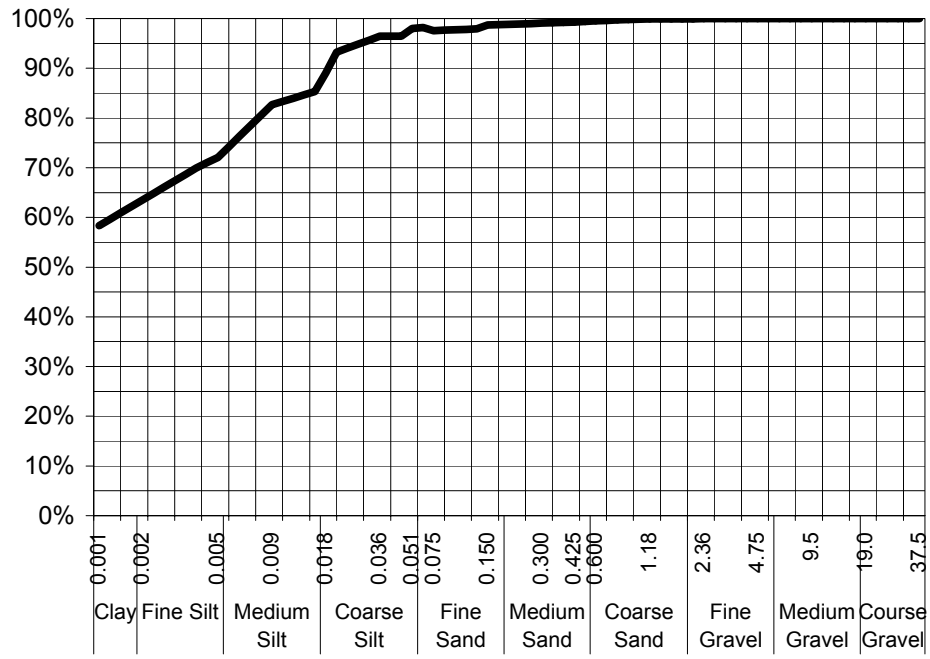
ALS Environmental

Newcastle, NSW

CLIENT:	Julian Dobos	**DATE REPORTED:**	21-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-006 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH30 5.2-5.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	99%
0.300	99%
0.150	99%
0.075	98%
Particle Size (microns)	
36	96%
18	89%
9	83%
5	72%
3	70%
1	58%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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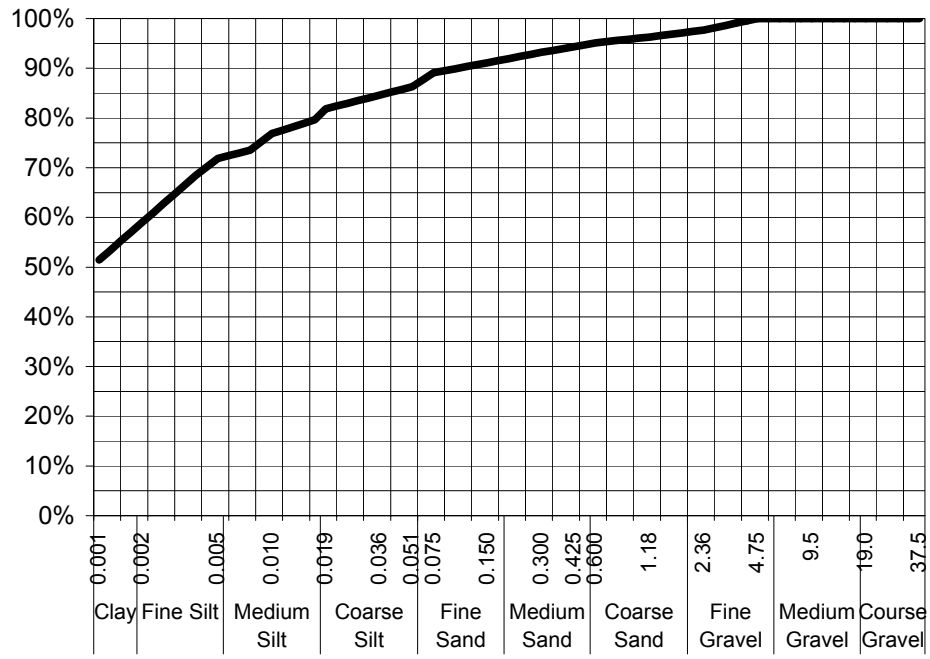
ALS Environmental

Newcastle, NSW

CLIENT:	Julian Dobos	**DATE REPORTED:**	21-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-007 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH30 6.0-6.15

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	98%
1.18	96%
0.600	95%
0.425	94%
0.300	93%
0.150	91%
0.075	89%
Particle Size (microns)	
36	85%
19	82%
10	77%
5	72%
3	69%
1	51%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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ALS Environmental

Newcastle, NSW

CLIENT: Julian Dobos

COMPANY: URS Australia Pty Ltd (Qld)

ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

PROJECT: 42626228.52

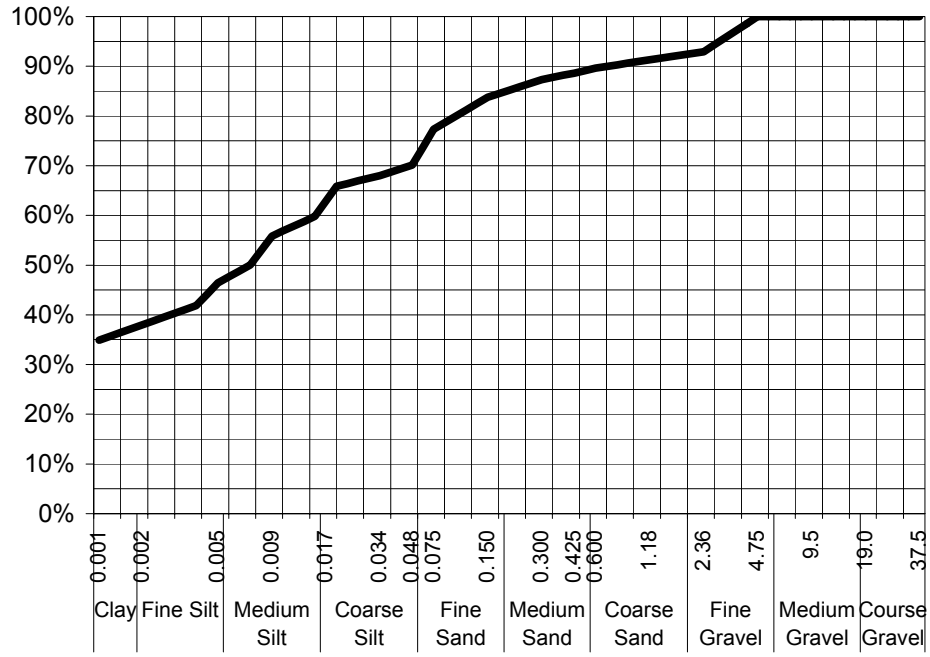
DATE REPORTED: 21-Oct-2008

DATE RECEIVED: 11-Oct-2008

REPORT NO: EB0814114-008 / PSD

SAMPLE ID: BH30 8.3-8.75

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	93%
1.18	91%
0.600	90%
0.425	89%
0.300	87%
0.150	84%
0.075	77%
Particle Size (microns)	
34	68%
17	63%
9	56%
5	46%
3	42%
1	35%

Samples analysed as received.

Sample Comments: The mass of sample supplied does not meet that required by AS 1289.1.1.

Loss on Pretreatment NA

Sample Description: Moist clay & grit

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 16-Oct-08

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

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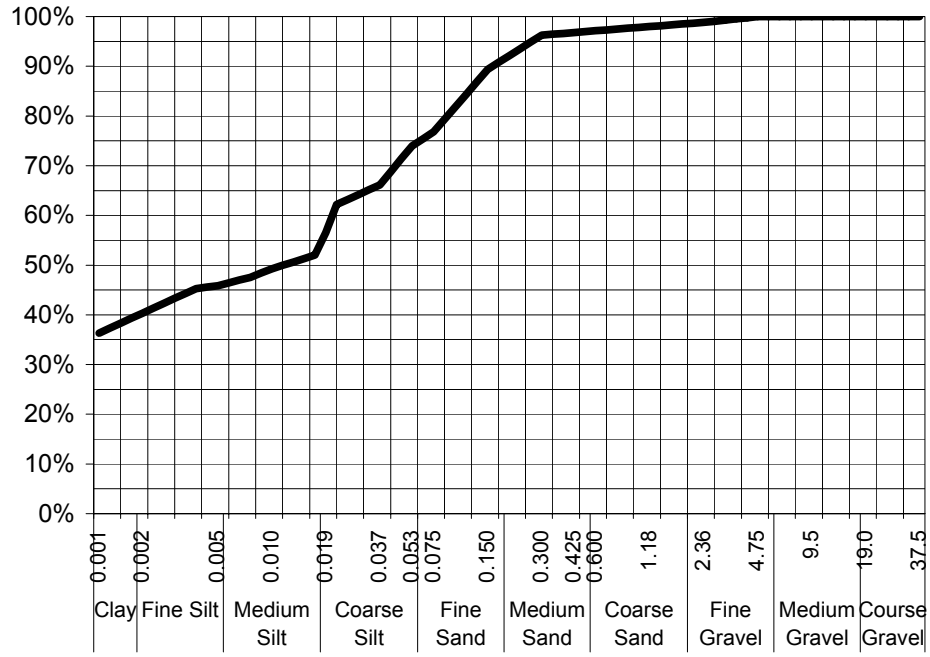
CLIENT:	Julian Dobos	**DATE REPORTED:**	21-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-009 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH30 0.0-0.2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	98%
0.600	97%
0.425	97%
0.300	96%
0.150	89%
0.075	77%
Particle Size (microns)	
37	66%
19	57%
10	49%
5	46%
4	45%
1	36%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay & grit	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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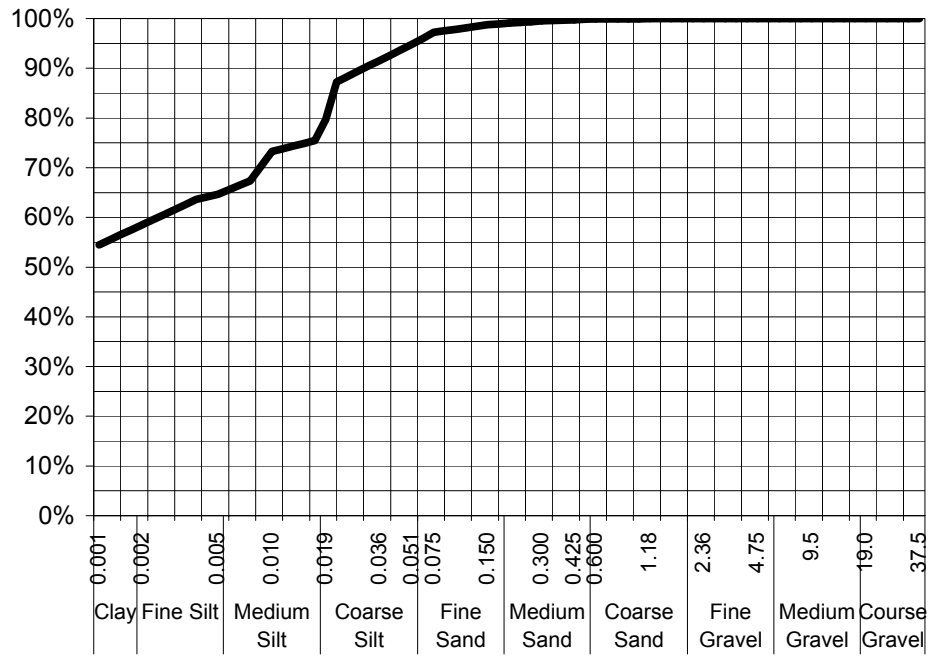
CLIENT:	Julian Dobos	**DATE REPORTED:**	21-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-010 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC85

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	97%
Particle Size (microns)	
36	92%
19	80%
10	73%
5	65%
3	64%
1	54%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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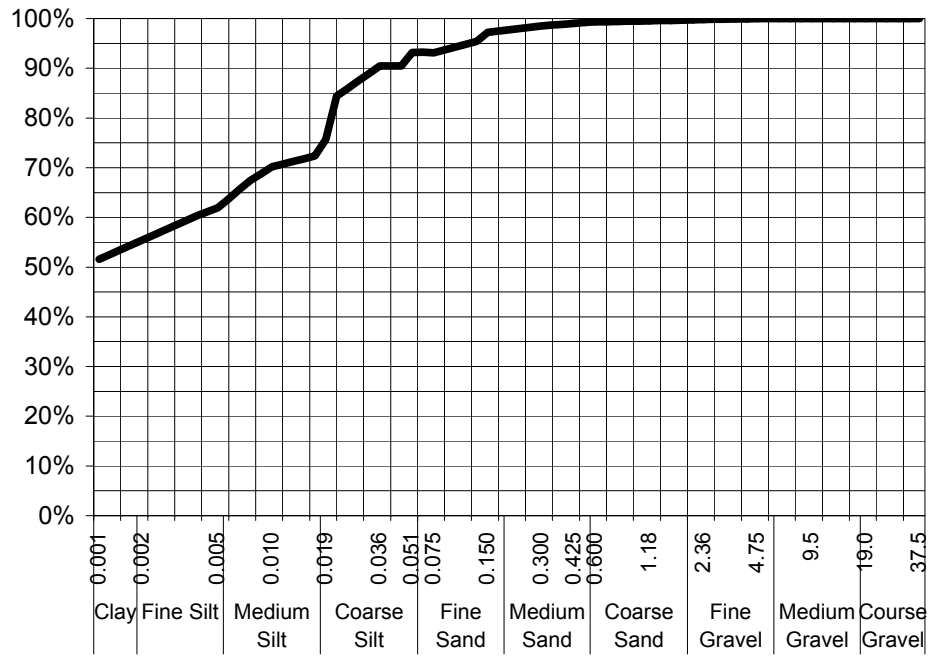
CLIENT:	Julian Dobos	**DATE REPORTED:**	21-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-011 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC86

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	97%
0.075	93%
Particle Size (microns)	
36	90%
19	76%
10	70%
5	62%
3	60%
1	52%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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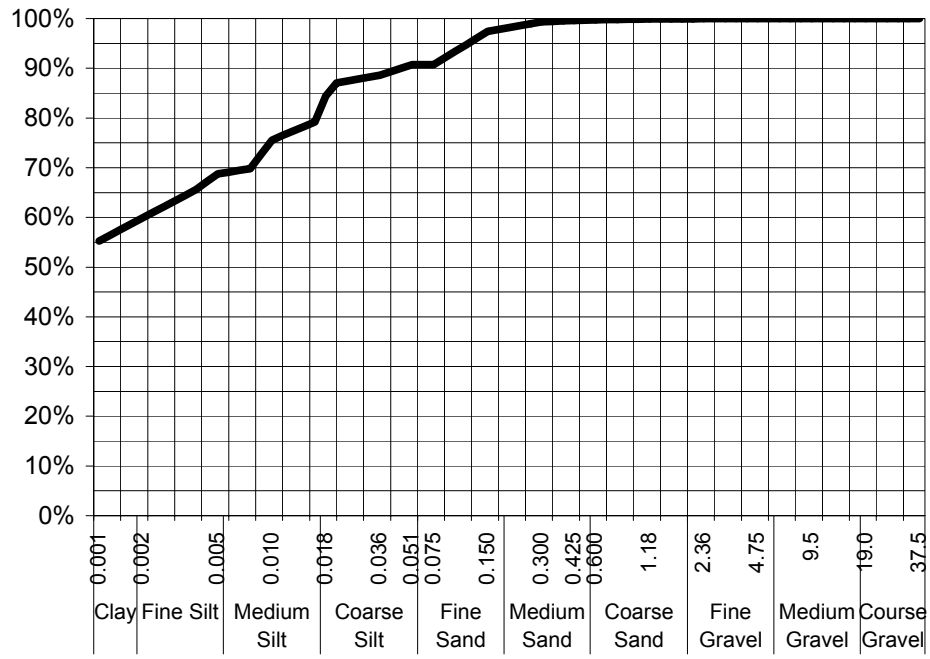
CLIENT:	Julian Dobos	**DATE REPORTED:**	21-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-012 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC87

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	99%
0.150	97%
0.075	91%
Particle Size (microns)	
36	89%
18	84%
10	76%
5	69%
3	66%
1	55%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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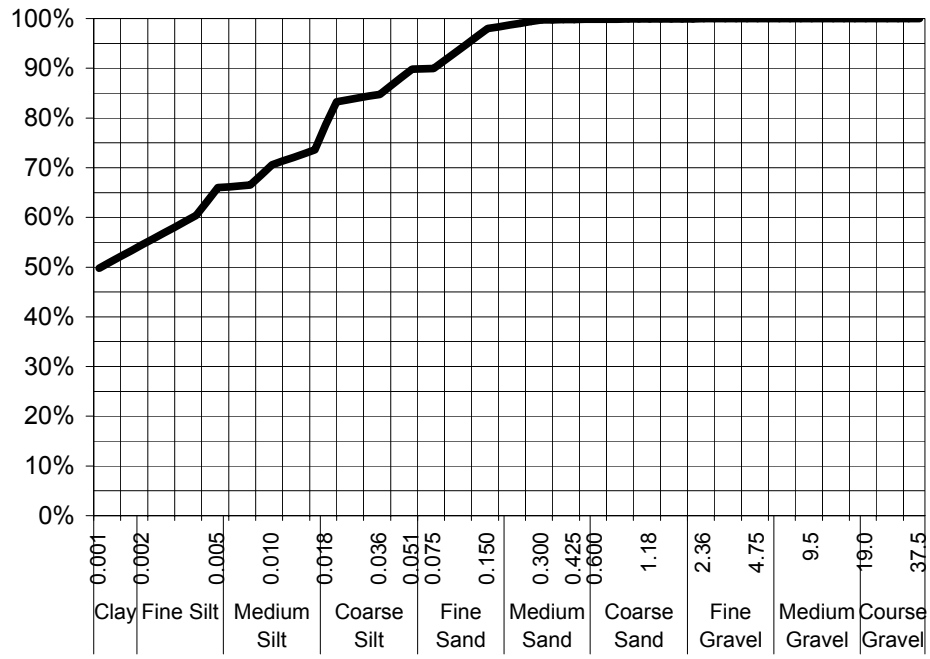
CLIENT:	Julian Dobos	**DATE REPORTED:**	21-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	11-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814114-013 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC88

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	98%
0.075	90%
Particle Size (microns)	
36	85%
18	79%
10	71%
5	66%
3	60%
1	50%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	16-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Moist clay	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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ALS Environmental
Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	11-Oct-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0814114	BH30 0.6-0.9	001	1%	27%	40%	32%
EB0814114	BH30 1.0-1.45	002	0%	4%	42%	54%
EB0814114	BH30 1.3-2.0	003	0%	8%	32%	60%
EB0814114	BH30 2.1-3.0	004	0%	8%	31%	61%
EB0814114	BH30 3.8-4.8	005	0%	12%	36%	52%
EB0814114	BH30 5.2-5.8	006	0%	4%	38%	58%
EB0814114	BH30 6.0-6.15	007	2%	11%	36%	51%
EB0814114	BH30 8.3-8.75	008	7%	20%	38%	35%
EB0814114	BH30 0.0-0.2	009	1%	26%	37%	36%
EB0814114	QC85	010	0%	8%	38%	54%
EB0814114	QC86	011	0%	10%	38%	52%
EB0814114	QC87	012	0%	12%	33%	55%
EB0814114	QC88	013	0%	12%	38%	50%

Remarks :

Test Procedure :	AS1289.3.6.3	Report Date:	21-Oct-08
Prepared by :	Dianne Blane	Checked by	PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0814114**	Page	: 1 of 13
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 11-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 14
Quote number	: EN/001/08	No. of samples analysed	: 14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Kim McCabe	Senior Inorganic Chemist	Inorganics
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 786072)									
EB0814076-001	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: pH KCl (23A)	----	0.1	pH Unit	Anonymous	Anonymous	Anonymous	Anonymous
EB0814076-011	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: pH KCl (23A)	----	0.1	pH Unit	Anonymous	Anonymous	Anonymous	Anonymous
EA033-A: Actual Acidity (QC Lot: 786074)									
EB0814114-009	BH30 0.0-0.2	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.8	8.8	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 786072)									
EB0814076-001	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
EB0814076-011	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
EA033-B: Potential Acidity (QC Lot: 786074)									
EB0814114-009	BH30 0.0-0.2	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	0.03	0.03	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	17	17	0.0	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 786072)									
EB0814076-001	Anonymous	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
EB0814076-011	Anonymous	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	Anonymous	Anonymous	Anonymous	Anonymous
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	Anonymous	Anonymous	Anonymous	Anonymous
EA033-C: Acid Neutralising Capacity (QC Lot: 786074)									
EB0814114-009	BH30 0.0-0.2	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	5.77	5.77	0.0	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	1.85	1.85	0.0	0% - 20%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-C: Acid Neutralising Capacity (QC Lot: 786074) - continued									
EB0814114-009	BH30 0.0-0.2	EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	1150	1150	0.0	0% - 20%
EA037: Ass Field Screening Analysis (QC Lot: 786073)									
EB0814076-001	Anonymous	EA037: pH (F)	----	0.1	pH Unit	Anonymous	Anonymous	Anonymous	Anonymous
		EA037: pH (Fox)	----	0.1	pH Unit	Anonymous	Anonymous	Anonymous	Anonymous
EB0814076-011	Anonymous	EA037: pH (F)	----	0.1	pH Unit	Anonymous	Anonymous	Anonymous	Anonymous
		EA037: pH (Fox)	----	0.1	pH Unit	Anonymous	Anonymous	Anonymous	Anonymous
EA037: Ass Field Screening Analysis (QC Lot: 786075)									
EB0814114-009	BH30 0.0-0.2	EA037: pH (F)	----	0.1	pH Unit	8.1	8.2	1.2	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	5.2	5.3	1.9	0% - 20%
EA055: Moisture Content (QC Lot: 786247)									
EB0814114-004	BH30 2.1-3.0	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	40.8	41.1	0.5	0% - 20%
EB0814114-011	QC86	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	43.2	42.5	1.4	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 786058)									
EB0814114-001	BH30 0.6-0.9	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	17	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	9	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	16	14	17.5	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	15	16	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	205	183	11.1	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	33	34	3.9	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	7520	8340	10.3	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	18800	18400	1.7	0% - 20%
EB0814114-011	QC86	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	17	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	10	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	11	11	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	29	29	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	9	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	118	115	2.1	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	32	32	0.0	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	9620	9600	0.2	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	18900	18900	0.2	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 786059)									
EB0814114-001	BH30 0.6-0.9	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 786059) - continued									
EB0814114-011	QC86	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 788931)									
EB0814114-001	BH30 0.6-0.9	EP005: Total Organic Carbon	----	0.02	%	1.13	1.13	0.0	0% - 20%
EB0814114-011	QC86	EP005: Total Organic Carbon	----	0.02	%	0.75	0.86	13.7	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 787230)									
EB0814076-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0814114-003	BH30 1.3-2.0	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 787229)									
EB0814076-002	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EB0814114-003	BH30 1.3-2.0	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 787262)									
EB0814114-001	BH30 0.6-0.9	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 787262) - continued									
EB0814114-001	BH30 0.6-0.9	EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0814114-011	QC86	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP090: Organotin Compounds (QC Lot: 787350)									
EB0814114-001	BH30 0.6-0.9	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 788883)									
EB0814076-013	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0814143-006	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 788883) - continued									
EB0814143-006	Anonymous	EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 788884)									
EB0814076-013	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0814143-006	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 789121)									
EB0814071-008	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0814105-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 787641)									
EB0814048-020	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0814087-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 786072)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-A: Actual Acidity (QCLot: 786074)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 786072)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-B: Potential Acidity (QCLot: 786074)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 786072)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 786074)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 786058)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	111	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	105	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	105	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	109	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	103	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	106	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	106	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 786059)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 786059) - continued								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	103	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 788931)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	98.3	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 787230)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	61.4	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 787229)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	78.6	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	67.2	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	66.0	60.8	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	78.0	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	68.1	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	68.7	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	76.3	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	78.4	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	62.9	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	68.8	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 787262)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	111	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	112	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	99.7	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	103	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	112	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	99.4	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	101	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	101	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	82.1	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	84.3	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	95.4	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	122	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	# 120	55	116
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	108	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	99.9	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	117	52	128
EP090: Organotin Compounds (QCLot: 787350)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	75.4	28	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 788883)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	106	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	99.0	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	107	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	111	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	106	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	105	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	106	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	107	81	127
EG020T: Total Metals by ICP-MS (QCLot: 788884)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	91.2	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 789121)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	101	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 787641)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	110	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 787996)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	59.7	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 787995)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	78.5	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	73.8	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	74.1	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	78.0	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	78.4	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	74.4	49.1	135
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	84.0	55.2	123
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	77.2	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	80.2	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	85.0	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	77.3	47.3	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 787993)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	----	5 µg/L	85.2	46	111
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	----	5 µg/L	72.7	51	113
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	----	5 µg/L	74.3	50	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	1	µg/L	----	5 µg/L	73.7	55	118
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 787993) - continued								
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	----	5 µg/L	69.8	54	110
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	1	µg/L	----	5 µg/L	68.4	49	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	----	5 µg/L	70.9	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	1	µg/L	----	5 µg/L	69.5	51	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	----	5 µg/L	66.0	53	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	1	µg/L	----	5 µg/L	56.3	48	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	1	µg/L	----	5 µg/L	73.8	48	130
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	----	5 µg/L	69.6	46	126
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	77.0	49	120
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	----	5 µg/L	61.6	45	129
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	----	5 µg/L	59.3	47	131
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	----	5 µg/L	62.2	42	126
		1.0	µg/L	<1.0	----	----	----	----

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 786058)							
EB0814114-002	BH30 1.0-1.45	EG005T: Arsenic	7440-38-2	50 mg/kg	84.3	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	99.9	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	93.4	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	95.4	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	94.0	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	93.2	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	88.8	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	95.2	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 786059)							
EB0814114-002	BH30 1.0-1.45	EG035T: Mercury	7439-97-6	5.0 mg/kg	101	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 787230)							
EB0814076-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	Anonymous	Anonymous	Anonymous	Anonymous
EP068A: Organochlorine Pesticides (OC) (QCLot: 787229)							
EB0814076-001	Anonymous	EP068: gamma-BHC	58-89-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 787262)							
EB0814114-002	BH30 1.0-1.45	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	102	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	111	70	130
EP090: Organotin Compounds (QCLot: 787350)							
EB0814114-002	BH30 1.0-1.45	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	70.7	20	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 788883)							
EB0814114-014	QC89	EG020A-T: Arsenic	7440-38-2	1.000 mg/L	95.5	70	130
		EG020A-T: Cadmium	7440-43-9	0.500 mg/L	111	70	130
		EG020A-T: Chromium	7440-47-3	1.000 mg/L	101	70	130
		EG020A-T: Copper	7440-50-8	1.000 mg/L	102	70	130
		EG020A-T: Lead	7439-92-1	1.000 mg/L	108	70	130
		EG020A-T: Nickel	7440-02-0	1.000 mg/L	101	70	130
		EG020A-T: Zinc	7440-66-6	1.000 mg/L	101	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG035T: Total Recoverable Mercury by FIMS (QCLot: 789121)							
EB0814071-008	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0814114**	Page	: 1 of 13
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 11-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 14
Quote number	: EN/001/08	No. of samples analysed	: 14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity							
Snap Lock Bag							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	**09-OCT-2008**	**11-OCT-2008**	10-OCT-2008	✗	**21-OCT-2008**	18-JAN-2009	✓
EA033-B: Potential Acidity							
Snap Lock Bag							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	**09-OCT-2008**	**11-OCT-2008**	10-OCT-2008	✗	**21-OCT-2008**	18-JAN-2009	✓
EA033-C: Acid Neutralising Capacity							
Snap Lock Bag							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	**09-OCT-2008**	**11-OCT-2008**	10-OCT-2008	✗	**21-OCT-2008**	18-JAN-2009	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity							
Snap Lock Bag							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	**09-OCT-2008**	**11-OCT-2008**	10-OCT-2008	×	**21-OCT-2008**	18-JAN-2009	✓
EA033-E: Acid Base Accounting							
Snap Lock Bag							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	**09-OCT-2008**	**11-OCT-2008**	10-OCT-2008	×	**21-OCT-2008**	18-JAN-2009	✓
EA037: Ass Field Screening Analysis							
Snap Lock Bag							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	**09-OCT-2008**	**11-OCT-2008**	10-OCT-2008	×	**11-OCT-2008**	10-OCT-2008	×
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	**09-OCT-2008**	**----**	----	----	**16-OCT-2008**	16-OCT-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	**09-OCT-2008**	**20-OCT-2008**	07-APR-2009	✓	**20-OCT-2008**	07-APR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	**09-OCT-2008**	**20-OCT-2008**	07-APR-2009	✓	**21-OCT-2008**	06-NOV-2008	✓
EP005: Total Organic Carbon (TOC)							
Pulp Bag							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	**09-OCT-2008**	**20-OCT-2008**	---	----	**21-OCT-2008**	06-NOV-2008	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 0.0-0.2, QC85, QC86	**09-OCT-2008**	**17-OCT-2008**	23-OCT-2008	✓	**20-OCT-2008**	26-NOV-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 0.0-0.2, QC85, QC86	**09-OCT-2008**	**17-OCT-2008**	23-OCT-2008	✓	**20-OCT-2008**	26-NOV-2008	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	**09-OCT-2008**	**17-OCT-2008**	23-OCT-2008	✓	**20-OCT-2008**	26-NOV-2008	✓
EP090: Organotin Compounds							
Sediment Glass Jar - Frozen (NODG)							
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0	**09-OCT-2008**	**17-OCT-2008**	07-APR-2009	✓	**21-OCT-2008**	26-NOV-2008	✓
Soil Glass Jar - Unpreserved							
BH30 0.0-0.2, QC85, QC86	**09-OCT-2008**	**17-OCT-2008**	23-OCT-2008	✓	**21-OCT-2008**	26-NOV-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC89	**09-OCT-2008**	**20-OCT-2008**	07-APR-2009	✓	**20-OCT-2008**	07-APR-2009	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
QC89	**09-OCT-2008**	**----**	----	----	**20-OCT-2008**	06-NOV-2008	✓
EP005: Total Organic Carbon (TOC)							
Amber Glass Bottle - Unpreserved							
QC89	**09-OCT-2008**	**----**	----	----	**17-OCT-2008**	11-OCT-2008	×
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved							
QC89	**09-OCT-2008**	**16-OCT-2008**	16-OCT-2008	✓	**20-OCT-2008**	26-NOV-2008	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved							
QC89	**09-OCT-2008**	**16-OCT-2008**	16-OCT-2008	✓	**20-OCT-2008**	26-NOV-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QC89	**09-OCT-2008**	**16-OCT-2008**	16-OCT-2008	✓	**20-OCT-2008**	26-NOV-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	3	25	**12.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chromium Suite for Acid Sulphate Soils	EA033	3	25	**12.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	6	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	18	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	16	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	16	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	2	25	**8.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	6	**16.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.6**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	6	**16.7**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.6**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	16	**6.3**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	14	**7.1**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	16	**6.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	2	19	**10.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	4	**25.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	891394-002	----	**Benzo(a)pyrene**	50-32-8	120 %	55-116%	**Recovery greater than upper control limit**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **SOLID**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)T: PAH Surrogates	EB0814114-012	QC87	**2-Fluorobiphenyl**	321-60-8	116 %	30-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814114-013	QC88	**2-Fluorobiphenyl**	321-60-8	123 %	30-115 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA033-A: Actual Acidity							
Snap Lock Bag							
BH30 0.6-0.9,	BH30 1.0-1.45,	11-OCT-2008	10-OCT-2008	**1**	----	----	----
BH30 1.3-2.0,	BH30 2.1-3.0,						
BH30 3.8-4.8,	BH30 5.2-5.8,						
BH30 6.0-6.15,	BH30 8.3-8.75,						
BH30 0.0-0.2,	QC85,						
QC86,	QC87,						
QC88							
EA033-B: Potential Acidity							

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA033-B: Potential Acidity - Analysis Holding Time Compliance						
Snap Lock Bag BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	11-OCT-2008	10-OCT-2008	**1**	----	----	----
EA033-C: Acid Neutralising Capacity						
Snap Lock Bag BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	11-OCT-2008	10-OCT-2008	**1**	----	----	----
EA033-D: Retained Acidity						
Snap Lock Bag BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	11-OCT-2008	10-OCT-2008	**1**	----	----	----
EA033-E: Acid Base Accounting						
Snap Lock Bag BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	11-OCT-2008	10-OCT-2008	**1**	----	----	----
EA037: Ass Field Screening Analysis						

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA037: Ass Field Screening Analysis - Analysis Holding Time Compliance						
Snap Lock Bag						
BH30 0.6-0.9, BH30 1.0-1.45, BH30 1.3-2.0, BH30 2.1-3.0, BH30 3.8-4.8, BH30 5.2-5.8, BH30 6.0-6.15, BH30 8.3-8.75, BH30 0.0-0.2, QC85, QC86, QC87, QC88	11-OCT-2008	10-OCT-2008	**1**	11-OCT-2008	10-OCT-2008	**1**

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP005: Total Organic Carbon (TOC)						
Amber Glass Bottle - Unpreserved						
QC89	----	----	----	17-OCT-2008	11-OCT-2008	**6**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

Environmental Division
Brisbane
Work Order
EB0814331

Telephone : +61-7-3243 7222

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address:	julian_dobos@urscorp.com
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS	COC SEQUENCE NUMBER
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259	✓ Standard - 5 days Non standard	(1) 2 3 4 please circle (1)
URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	
URS PM:	Rob Ully	SITE :	GLNG SANTOS		
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	
COMMENTS:	Please see overleaf for specific analytes		(1) Caution - Samples may contain hazardous substances		

FOR LABORATORY USE ONLY			
Custody Seal ? Y N NA	RECEIVED BY: D Kenny	RELINQUISHED BY:	RECEIVED BY:
Free ice / frozen icebricks present upon receipt? Y N	DATE: 15/10/08 TIME: 13:30	DATE: TIME:	DATE:
Random Sample Temperature on Receipt °C			

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE									ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES																		
				Solid		Liquid																										
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromuim Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's		
1	BH 32 0.7-1.0	15/10/08	S	2	1										✓	✓	✓	✓	✓	✓	✓		✓								
2	BH 32 1.5-1.8	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓								
3	BH 32 2.5-3.2	"	"	2	1										✓	✓					✓		✓					✓			
4	BH 32 3.8-4.1	"	"	2	1										✓	✓					✓		✓					✓			
5	BH 32 4.7-5.1	"	"	2	1										✓	✓					✓		✓					✓			
6	BH 32 6.2-6.65	"	"		1										✓	✓					✓		✓					✓			
7	BH 32 8.1-8.4	"	"		1										✓	✓					✓		✓					✓			
8	BH 32 9.3-9.6	"	"		1										✓	✓					✓		✓					✓			
9	QC 91	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓								
10	QC 92	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓								
11	QC 93	"	"	2	1										✓	✓	✓	✓	✓	✓	✓		✓								
12	QC 94	"	L				2	1								✓		✓	✓	✓	✓										
	TOTAL																														

URS CHAIN OF CUSTODY

ADDRESS:	URS Australia Level 14, 240 Queen Street Brisbane QLD 4001	LABORATORY:	ALS 32 Shand St, Stafford, QLD, 4053	All results to be provided in MRED format email address: julian_dobos@urscorp.com	FOR LABORATORY USE ONLY Custody Seal ? Y N NA
PHONE NO:	(07) 3243 2111	PHONE NO:	(07) 32437222	TURNAROUND DETAILS: ✓ Standard - 5 days; Non standard	COC SEQUENCE NUMBER: (1) 2 3 4
FAX NO:	(07) 3243 2199	FAX NO:	(07) 32437259	please circle (1)	Free ice / frozen icebricks present upon receipt? Y N Random Sample Temperature on Receipt °C
URS PROJECT NO:	42626228.52000	PO NO:		RELINQUISHED BY:	RECEIVED BY: DATE: 16/10/08 TIME: 1530
URS PM:	Rob Ully	SITE :	GLNG SANTOS		RELINQUISHED BY: DATE: TIME:
URS SAMPLERS :	Julian Dobos 0417 382 975	Client PM:	Emma Hicks (SANTOS)	DATE: TIME:	RECEIVED BY: DATE:

COMMENTS: Please see overleaf for specific analytes

(1) Caution - Samples may contain hazardous substances

ANALYSIS REQUIRED - PLEASE SEE OVERLEAF FOR SPECIFIC ANALYTES

	SAMPLE DETAILS			CONTAINER TYPE & PRESERVATIVE										ANALYSIS REQUIRED														
				Solid		Liquid																						
LAB ID	SAMPLE ID	DATE dd/mm/yy (enter in text format in computer)	MATRIX (Solid / Liquid)	Soil Jar (G) Unpr.	ASS Soil Bag	40ml VOA Vial (G) HCL	500ml Amber (G) Unpr.	100ml (P) HNO3	250ml (G) H2SO4	100ml (P) Unpr.	100ml (P) HCL	40ml VOA Vial (G) 1/2 full (methane)	250ml (G) H2SO4	pH_{Field} and pH_{Fox}	ASS (Chromium Suite TAA)	Metals/Metaloids	PAH's	Pesticides	Total PCB's	Tributyltin	Total Organic Carbon	Radionuclide	Particle Size Determination (Gravel, Sand, Silt, Clay) Includes hydrometer	Pore Water Ammonia	Phenoxy Acid	Triazine Herbicides	Carbonates	Napthalene and Total PAH's	
13	BH31 0.18-0.20	13/10/08	S	1											✓	✓	✓	✓	✓	✓	✓		✓					✓	
14	BH31 0.2-0.3	"	"	1											✓	✓	✓	✓	✓	✓	✓		✓						
15	BH31 0.3-0.6	"	"	1											✓	✓	✓	✓	✓	✓	✓		✓						
16	BH31 2.0-2.3	"	"	1											✓	✓					✓		✓					✓	
17	BH31 3.6-3.9	"	"	1											✓	✓					✓		✓					✓	
18	BH31 5.0-5.35	"	"	1											✓	✓					✓		✓					✓	
19	QC90	"	L				2	1								✓		✓	✓	✓	✓								
TOTAL																													

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order : **EB0814331**

Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: RESULTS ADDRESS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: brisbane@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 07 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ES2008URSQLD0041 (EN/001/08)
Site	: GLNG SANTOS		
Sampler	: Julian Dobos	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Dates

Date Samples Received	: 16-OCT-2008	Issue Date	: 20-OCT-2008 21:47
Client Requested Due Date	: 23-OCT-2008	Scheduled Reporting Date	: **27-OCT-2008**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 5.7 C - Ice present
No. of coolers/boxes	: 1 MEDIUM	No. of samples received	: 19
Sercurity Seal	: Intact.	No. of samples analysed	: 19

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Requested Deliverables
- **Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.**
- **Sample(s) have been received within recommended holding times.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Maggie Kahi.
- Analytical work for this work order will be conducted at ALS Brisbane.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

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

Method / Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
EA033 : Chromium Suite for Acid Sulphate Soils		
BH31 0.18-0.20	- Snap Lock Bag	- Snap Lock Bag - frozen
BH31 0.2-0.3	- Snap Lock Bag	- Snap Lock Bag - frozen
BH31 0.3-0.6	- Snap Lock Bag	- Snap Lock Bag - frozen
BH31 2.0-2.3	- Snap Lock Bag	- Snap Lock Bag - frozen
BH31 3.6-3.9	- Snap Lock Bag	- Snap Lock Bag - frozen
BH31 5.0-5.35	- Snap Lock Bag	- Snap Lock Bag - frozen
EP005 : Total Organic Carbon		
QC 94	- Amber Glass Bottle - Unpreserved	- Amber TOC Vial- Sulphuric Acid
QC90	- Amber Glass Bottle - Unpreserved	- Amber TOC Vial- Sulphuric Acid
EP075(SIM) : PAH/Phenols (SIM)		
BH32 6.2-6.65	- Snap Lock Bag	- Soil Glass Jar - Unpreserved
BH32 8.1-8.4	- Snap Lock Bag	- Soil Glass Jar - Unpreserved
BH32 9.3-9.6	- Snap Lock Bag	- Soil Glass Jar - Unpreserved

Summary of Sample(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 the determination of moisture content and preparation tasks, that are included in the package.
When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils	SOIL - EA033 Chromium Suite for Acid Sulphate Soils	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP068A (solids) Organochlorine Pesticides by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP090 (solids) Organotins	SOIL - S-02 8 Metals (incl. Digestion)
EB0814331-001	15-OCT-2008 15:00	BH32 0.7-1.0	✓	✓	✓	✓	✓	✓	✓	✓
EB0814331-002	15-OCT-2008 15:00	BH32 1.5-1.8	✓	✓	✓	✓	✓	✓	✓	✓
EB0814331-003	15-OCT-2008 15:00	BH32 2.5-3.2	✓	✓	✓			✓		✓
EB0814331-004	15-OCT-2008 15:00	BH32 3.8-4.1	✓	✓	✓			✓		✓
EB0814331-005	15-OCT-2008 15:00	BH32 4.7-5.1	✓	✓	✓			✓		✓
EB0814331-006	15-OCT-2008 15:00	BH32 6.2-6.65	✓	✓	✓			✓		✓
EB0814331-007	15-OCT-2008 15:00	BH32 8.1-8.4	✓	✓	✓			✓		✓
EB0814331-008	15-OCT-2008 15:00	BH32 9.3-9.6	✓	✓	✓			✓		✓
EB0814331-009	15-OCT-2008 15:00	QC 91	✓	✓	✓	✓	✓	✓	✓	✓
EB0814331-010	15-OCT-2008 15:00	QC 92	✓	✓	✓	✓	✓	✓	✓	✓
EB0814331-011	15-OCT-2008 15:00	QC 93	✓	✓	✓	✓	✓	✓	✓	✓
EB0814331-013	15-OCT-2008 15:00	BH31 0.18-0.20	✓	✓	✓	✓	✓	✓	✓	✓
EB0814331-014	15-OCT-2008 15:00	BH31 0.2-0.3	✓	✓	✓	✓	✓	✓	✓	✓
EB0814331-015	15-OCT-2008 15:00	BH31 0.3-0.6	✓	✓	✓	✓	✓	✓	✓	✓
EB0814331-016	15-OCT-2008 15:00	BH31 2.0-2.3	✓	✓	✓			✓		✓
EB0814331-017	15-OCT-2008 15:00	BH31 3.6-3.9	✓	✓	✓			✓		✓
EB0814331-018	15-OCT-2008 15:00	BH31 5.0-5.35	✓	✓	✓			✓		✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EG020A-T Total Metals by ICPMS - Suite A	WATER - EG020B-T Total Metals by ICPMS - Suite B	WATER - EP005 Total Organic Carbon (TOC)	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP068A (PEST-WA) Pesticides (OC)	WATER - EP090S Organotins	WATER - W-02T 8 metals (Total)
EB0814331-012	15-OCT-2008 15:00	QC 94	✓	✓	✓	✓	✓	✓	✓
EB0814331-019	15-OCT-2008 15:00	QC90	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR JULIAN DOBOS

- *AU Certificate of Analysis - NATA	Email	julian_dobos@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	julian_dobos@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	julian_dobos@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	julian_dobos@urscorp.com
- Default - Chain of Custody	Email	julian_dobos@urscorp.com
- EDI Format - MRED	Email	julian_dobos@urscorp.com
- Trigger - Subcontract Report	Email	julian_dobos@urscorp.com

MR ROB ULLY

- *AU Certificate of Analysis - NATA	Email	rob_ully@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	rob_ully@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	rob_ully@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	rob_ully@urscorp.com
- Default - Chain of Custody	Email	rob_ully@urscorp.com
- EDI Format - MRED	Email	rob_ully@urscorp.com
- Trigger - Subcontract Report	Email	rob_ully@urscorp.com

RESULTS ADDRESS

- *AU Certificate of Analysis - NATA	Email	brisbane@urscorp.com
- A4 - AU Sample Receipt Notification - Environmental	Email	brisbane@urscorp.com
- AU Interpretive QC Report (Anon QCI Not Rep)	Email	brisbane@urscorp.com
- AU QC Report (Anon QC Not Rep) - NATA	Email	brisbane@urscorp.com
- Default - Chain of Custody	Email	brisbane@urscorp.com
- EDI Format - MRED	Email	brisbane@urscorp.com
- Trigger - Subcontract Report	Email	brisbane@urscorp.com

THE ACCOUNTS BRISBANE

- A4 - AU Tax Invoice	Email	brisbane_accounts@urscorp.com

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EB0814331**	Page	: 1 of 16
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 16-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Site	: GLNG SANTOS		
		No. of samples received	: 19
Quote number	: EN/001/08	No. of samples analysed	: 19

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **Amendment #1: This report has been amended and re-released to allow the reporting of additional analytical data. Specifically Al, Fe and Mn were requested by Navjot Kaur (email 18/12/2008).**
- **EA037 (ASS Field Screening Analysis) Unable to perform analysis due to insufficient sample for the following, sample 006 (BH32 6.2 - 65), sample 008 (BH32 9.3 - 9.6), sample 006 (BH32 6.2 -6.65), sample 0014 (BH31 0.2 - 0.3), sample 0015 (BH31 0.3 - 0.6), sample 016 (BH31 2.0 - 2.3), sample 017 (BH32 3.6 - 3.9), sample 017 (BH31 5.0 - 5.35)**
- **EG005T (Total Metals): Sample EB0814579-003 shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.**
- **Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.**
- **PAH: Particular samples show high failing surrogate recoveries. This has been deemed acceptable as all associated analyte results are less than LOR.**
- **Retained Acidity not required because pH KCl greater than or equal to 4.5**
- **TBT: Samples QC94 and QC90 were not analysed due to insufficient sample volume. Hence water QC are missing.**

Analytical Results

Sub-Matrix: **LIQUID**

Compound	CAS Number	LOR	Unit	Client sample ID	QC 94	QC90	----	----	----
				Client sampling date / time	15-OCT-2008 15:00	15-OCT-2008 15:00	----	----	----
					EB0814331-012	EB0814331-019	----	----	----
EG020T: Total Metals by ICP-MS									
Antimony	7440-36-0	0.001	mg/L		<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0003**	**0.0005**	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	<0.005	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EP005: Total Organic Carbon (TOC)									
Total Organic Carbon	----	1	mg/L		<1	<1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	1	µg/L		<1	<1	----	----	----
EP068A: Organochlorine Pesticides (OC)									
gamma-BHC	58-89-9	0.5	µg/L		<0.5	<0.5	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	----	----	----
4.4`-DDT	50-29-3	2	µg/L		<2	<2	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	<0.5	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L		<0.5	<0.5	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**72.6**	**83.0**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**65.3**	**75.2**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**83.0**	**89.7**	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH32 0.7-1.0	BH32 1.5-1.8	BH32 2.5-3.2	BH32 3.8-4.1	BH32 4.7-5.1
				Client sampling date / time: 15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00
				EB0814331-001	EB0814331-002	EB0814331-003	EB0814331-004	EB0814331-005
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.8	8.2	7.9	7.9	8.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.27	0.86	0.87	0.85	0.86
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	254	173	173	169	172
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.41	0.28	0.28	0.27	0.28
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	7.9	7.8	7.9	7.8	8.6
pH (Fox)	----	0.1	pH Unit	3.4	1.2	1.2	2.8	3.2
Reaction Rate	----	1	-	2	2	4	2	2
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	48.9	44.2	41.6	41.2	20.5
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	11400	13300	14800	11700	2800
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	23	10	12	9	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	26	21	20	18	<2
Copper	7440-50-8	5	mg/kg	22	31	42	28	7
Iron	7439-89-6	50	mg/kg	28700	24400	29700	18900	2400
Lead	7439-92-1	5	mg/kg	12	10	8	9	<5
Manganese	7439-96-5	5	mg/kg	273	423	539	191	15
Nickel	7440-02-0	2	mg/kg	13	12	13	10	2
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	44	39	46	34	<5

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH32 0.7-1.0	BH32 1.5-1.8	BH32 2.5-3.2	BH32 3.8-4.1	BH32 4.7-5.1
				Client sampling date / time: 15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00
				EB0814331-001	EB0814331-002	EB0814331-003	EB0814331-004	EB0814331-005
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**1.30**	**0.71**	**0.68**	**0.72**	<0.02
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	----	----	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	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	----	----	----
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	----	----	----
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	----	----	----
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	----	----	----
EP066S: PCB Surrogate								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH32 0.7-1.0	BH32 1.5-1.8	BH32 2.5-3.2	BH32 3.8-4.1	BH32 4.7-5.1
				Client sampling date / time: 15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00
				EB0814331-001	EB0814331-002	EB0814331-003	EB0814331-004	EB0814331-005
EP066S: PCB Surrogate - Continued								
Decachlorobiphenyl	2051-24-3	0.1	%	**74.8**	**68.9**	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**60.6**	**54.0**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**81.1**	**71.8**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**156**	**112**	**126**	**134**	**119**
2-Chlorophenol-D4	93951-73-6	0.1	%	**146**	**101**	**121**	**117**	**117**
2.4.6-Tribromophenol	118-79-6	0.1	%	**107**	**87.6**	**86.4**	**91.1**	**93.1**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**134**	**99.3**	**95.6**	**121**	**118**
Anthracene-d10	1719-06-8	0.1	%	**111**	**93.5**	**114**	**95.2**	**111**
4-Terphenyl-d14	1718-51-0	0.1	%	**144**	**111**	**123**	**125**	**124**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**71.7**	**64.3**	----	----	----

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH32 6.2-6.65	BH32 8.1-8.4	BH32 9.3-9.6	QC 91	QC 92
				Client sampling date / time: 15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00
				EB0814331-006	EB0814331-007	EB0814331-008	EB0814331-009	EB0814331-010
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	7.1	6.6	6.2	6.8	8.0
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.78	0.78	<0.01	0.78	0.87
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	157	156	<10	156	174
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.25	0.25	<0.01	0.25	0.28
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	----	6.3	----	7.7	7.8
pH (Fox)	----	0.1	pH Unit	----	5.1	----	3.1	2.0
Reaction Rate	----	1	-	----	2	----	2	4
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	21.1	15.9	10.3	43.5	41.2
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	2380	3100	5700	12000	13400
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	6	<5	8	9	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	<2	2	3	19	20
Copper	7440-50-8	5	mg/kg	<5	<5	16	28	40
Iron	7439-89-6	50	mg/kg	6570	5900	19300	22500	37600
Lead	7439-92-1	5	mg/kg	<5	<5	9	9	8
Manganese	7439-96-5	5	mg/kg	20	5	84	232	405
Nickel	7440-02-0	2	mg/kg	<2	2	5	11	12
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	<5	11	42	35	40

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH32 6.2-6.65	BH32 8.1-8.4	BH32 9.3-9.6	QC 91	QC 92
				Client sampling date / time: 15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00
				EB0814331-006	EB0814331-007	EB0814331-008	EB0814331-009	EB0814331-010
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	<0.02	<0.02	**0.02**	**0.66**	**0.62**
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	----	----	----	<0.10	<0.10
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	<0.05
Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	<0.05
trans-Chlordane	5103-74-2	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
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
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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	----	----	----	<0.5	<0.5
EP066S: PCB Surrogate								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: BH32 6.2-6.65	BH32 8.1-8.4	BH32 9.3-9.6	QC 91	QC 92
				Client sampling date / time: 15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00
				EB0814331-006	EB0814331-007	EB0814331-008	EB0814331-009	EB0814331-010
EP066S: PCB Surrogate - Continued								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	**63.5**	**68.8**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	----	**50.1**	**52.0**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	----	----	**66.4**	**79.1**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**130**	**128**	**98.0**	**126**	**112**
2-Chlorophenol-D4	93951-73-6	0.1	%	**125**	**126**	**96.4**	**122**	**108**
2.4.6-Tribromophenol	118-79-6	0.1	%	**91.0**	**87.1**	**72.6**	**87.4**	**84.4**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**116**	**99.5**	**88.8**	**104**	**111**
Anthracene-d10	1719-06-8	0.1	%	**109**	**116**	**88.4**	**99.6**	**91.6**
4-Terphenyl-d14	1718-51-0	0.1	%	**135**	**131**	**101**	**128**	**77.2**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	----	----	----	**64.9**	**64.1**

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC 93	BH31 0.18-0.20	BH31 0.2-0.3	BH31 0.3-0.6	BH31 2.0-2.3
				Client sampling date / time: 15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00
				EB0814331-011	EB0814331-013	EB0814331-014	EB0814331-015	EB0814331-016
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.0	8.5	7.4	7.6	6.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	<10	<10	<10
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.87	1.16	0.83	0.97	0.82
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	175	232	165	194	163
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.28	0.37	0.26	0.31	0.26
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
EA037: Ass Field Screening Analysis								
pH (F)	----	0.1	pH Unit	8.5	7.5	----	----	----
pH (Fox)	----	0.1	pH Unit	1.3	1.7	----	----	----
Reaction Rate	----	1	-	4	4	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	40.5	54.6	17.4	12.6	19.0
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	12300	13000	8620	9770	3910
Antimony	7440-36-0	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	9	33	27	12	10
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	18	27	21	14	4
Copper	7440-50-8	5	mg/kg	35	27	39	41	18
Iron	7439-89-6	50	mg/kg	23600	39900	37300	31800	21500
Lead	7439-92-1	5	mg/kg	8	11	18	22	7
Manganese	7439-96-5	5	mg/kg	337	448	1860	2400	55
Nickel	7440-02-0	2	mg/kg	12	16	21	45	4
Silver	7440-22-4	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	38	51	29	26	23

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC 93	BH31 0.18-0.20	BH31 0.2-0.3	BH31 0.3-0.6	BH31 2.0-2.3
				Client sampling date / time: 15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00
				EB0814331-011	EB0814331-013	EB0814331-014	EB0814331-015	EB0814331-016
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	**0.63**	**1.50**	**0.26**	**0.12**	<0.02
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	----
EP068A: Organochlorine Pesticides (OC)								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Total Chlordane (sum)	----	0.05	mg/kg	<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	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	<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	----
Endrin	72-20-8	0.05	mg/kg	<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	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<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	----
Endrin ketone	53494-70-5	0.05	mg/kg	<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
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
EP090: Organotin Compounds								
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	----	<0.5	----
EP066S: PCB Surrogate								

Analytical Results

Sub-Matrix: **SOLID**

Compound	CAS Number	LOR	Unit	Client sample ID: QC 93	BH31 0.18-0.20	BH31 0.2-0.3	BH31 0.3-0.6	BH31 2.0-2.3
				Client sampling date / time: 15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00	15-OCT-2008 15:00
				EB0814331-011	EB0814331-013	EB0814331-014	EB0814331-015	EB0814331-016
EP066S: PCB Surrogate - Continued								
Decachlorobiphenyl	2051-24-3	0.1	%	**55.5**	**71.8**	**68.0**	**60.1**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**42.2**	**62.4**	**59.2**	**58.3**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**56.2**	**83.3**	**87.5**	**83.6**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	**130**	**93.7**	**114**	**128**	**136**
2-Chlorophenol-D4	93951-73-6	0.1	%	**129**	**99.2**	**112**	**128**	**115**
2.4.6-Tribromophenol	118-79-6	0.1	%	**85.3**	**82.8**	**101**	**99.5**	**92.7**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	**133**	**96.7**	**130**	**115**	**108**
Anthracene-d10	1719-06-8	0.1	%	**100**	**88.4**	**84.9**	**132**	**105**
4-Terphenyl-d14	1718-51-0	0.1	%	**81.3**	**153**	**80.0**	**198**	**122**
EP090S: Organotin Surrogate								
Tripropyltin	----	0.1	%	**66.5**	**66.0**	----	**65.2**	----

Analytical Results

Sub-Matrix: SOLID			Client sample ID	BH31 3.6-3.9	BH31 5.0-5.35	----	----	----
			Client sampling date / time	15-OCT-2008 15:00	15-OCT-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit	EB0814331-017	EB0814331-018	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**6.2**	**6.9**	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	----	----	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	**0.80**	----	----	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	**160**	----	----	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	**0.26**	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	----	----	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	----	----	----
EA055: Moisture Content								
^ Moisture Content (dried @ 103°C)	----	1.0	%	**13.4**	**13.1**	----	----	----
EG005T: Total Metals by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**3110**	**4140**	----	----	----
Antimony	7440-36-0	5	mg/kg	<5	<5	----	----	----
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**2**	**3**	----	----	----
Copper	7440-50-8	5	mg/kg	**7**	**21**	----	----	----
Iron	7439-89-6	50	mg/kg	**10500**	**11200**	----	----	----
Lead	7439-92-1	5	mg/kg	<5	**8**	----	----	----
Manganese	7439-96-5	5	mg/kg	**39**	**41**	----	----	----
Nickel	7440-02-0	2	mg/kg	**2**	**3**	----	----	----
Silver	7440-22-4	2	mg/kg	<2	<2	----	----	----
Zinc	7440-66-6	5	mg/kg	**20**	**32**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	**0.1**	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	0.02	%	<0.02	**0.08**	----	----	----

Analytical Results

Sub-Matrix: SOLID				Client sample ID	BH31 3.6-3.9	BH31 5.0-5.35	----	----	----
				Client sampling date / time	15-OCT-2008 15:00	15-OCT-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		EB0814331-017	EB0814331-018	----	----	----
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	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**105**	**170**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**106**	**152**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**85.6**	**149**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**97.2**	**140**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**88.8**	**152**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**92.0**	**163**	----	----	----

Surrogate Control Limits

Sub-Matrix: LIQUID		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110

Sub-Matrix: SOLID		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	110
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	115
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP090S: Organotin Surrogate			
Tripropyltin	----	34	108

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ALS Environmental

Newcastle, NSW

CLIENT: Rob Ully

DATE REPORTED: 27-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 16-Oct-2008

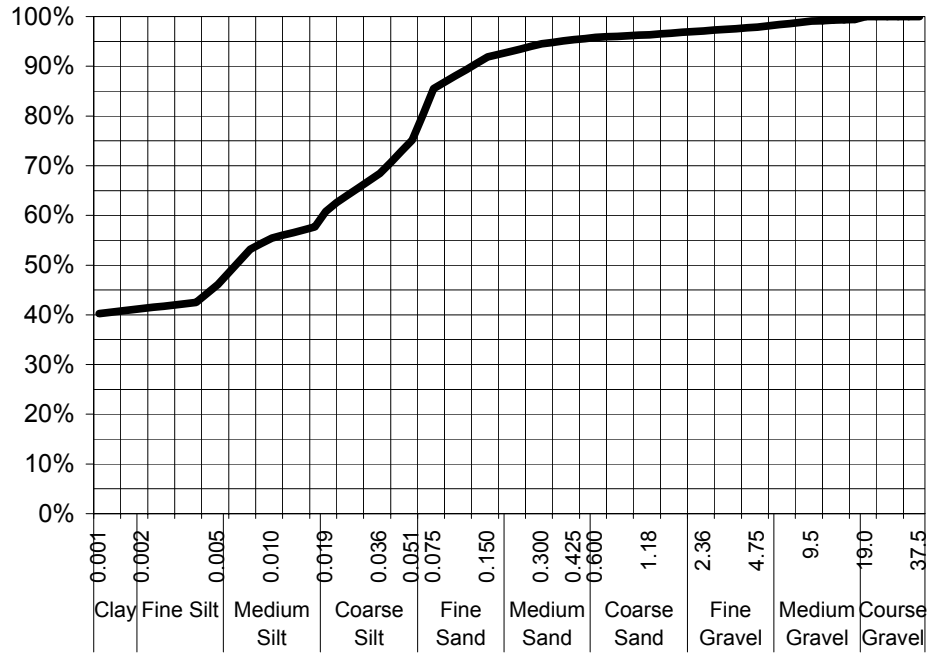
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0814331-001 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH32 0.7-1.0

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	99%
4.75	98%
2.36	97%
1.18	96%
0.600	96%
0.425	95%
0.300	95%
0.150	92%
0.075	86%
Particle Size (microns)	
36	68%
19	61%
10	55%
5	46%
4	43%
1	40%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Dark clay, silt & sand

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 22-Oct-08

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Dianne Blane
Senior Analyst
Authorised Signatory

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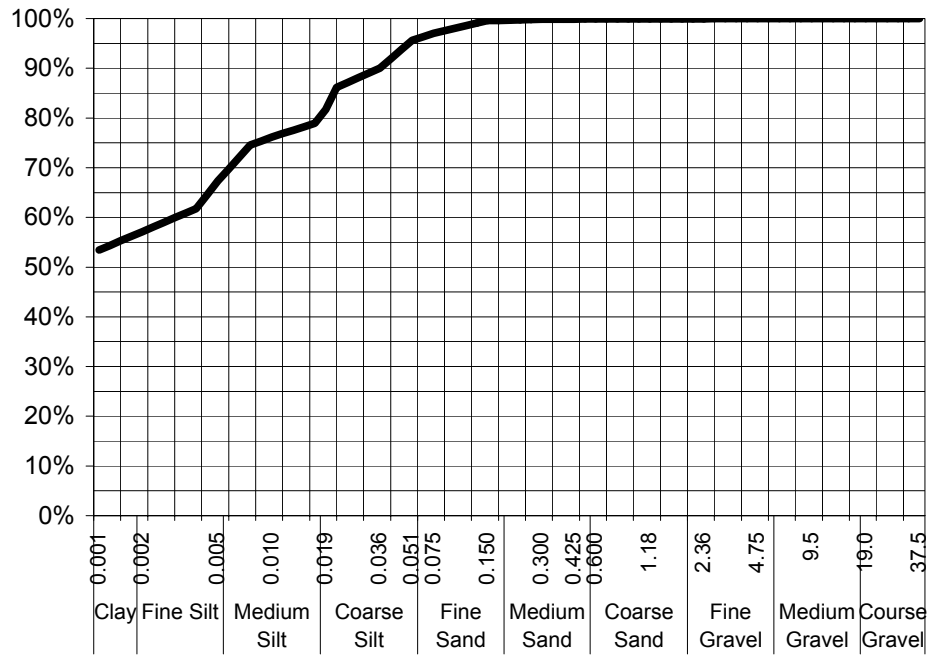
CLIENT:	Rob Ully	**DATE REPORTED:**	27-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-002 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH32 1.5-1.8

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	100%
0.075	97%
Particle Size (microns)	
36	90%
19	82%
10	76%
5	67%
3	62%
1	53%

Samples analysed as received.

Sample Comments:		**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark clay & silt	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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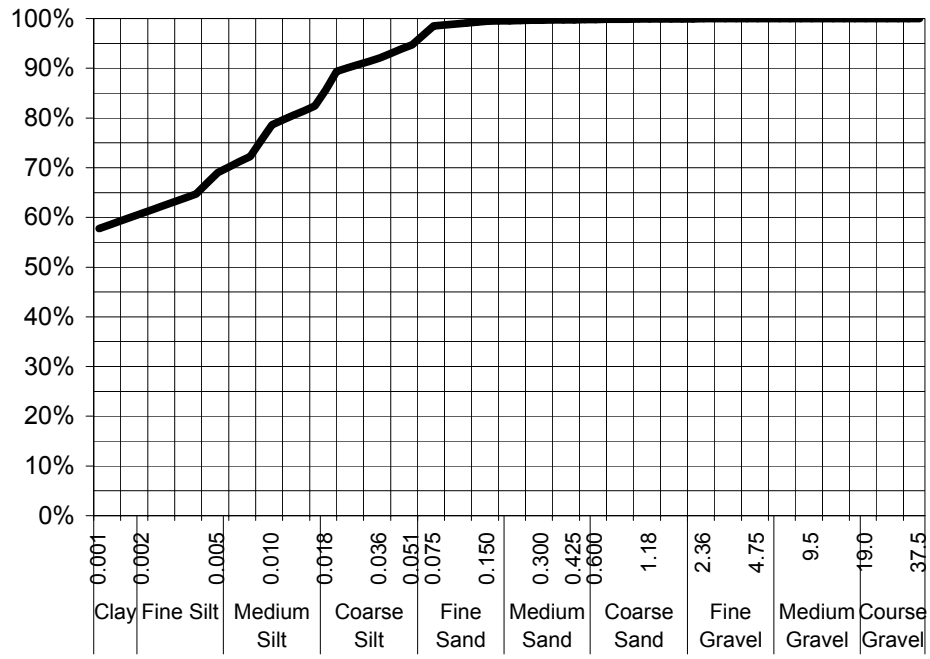
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-003 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH32 2.5-3.2

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	99%
Particle Size (microns)	
36	92%
18	86%
10	79%
5	69%
3	65%
1	58%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Dark clay & silt

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 22-Oct-08

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

Dianne Blane
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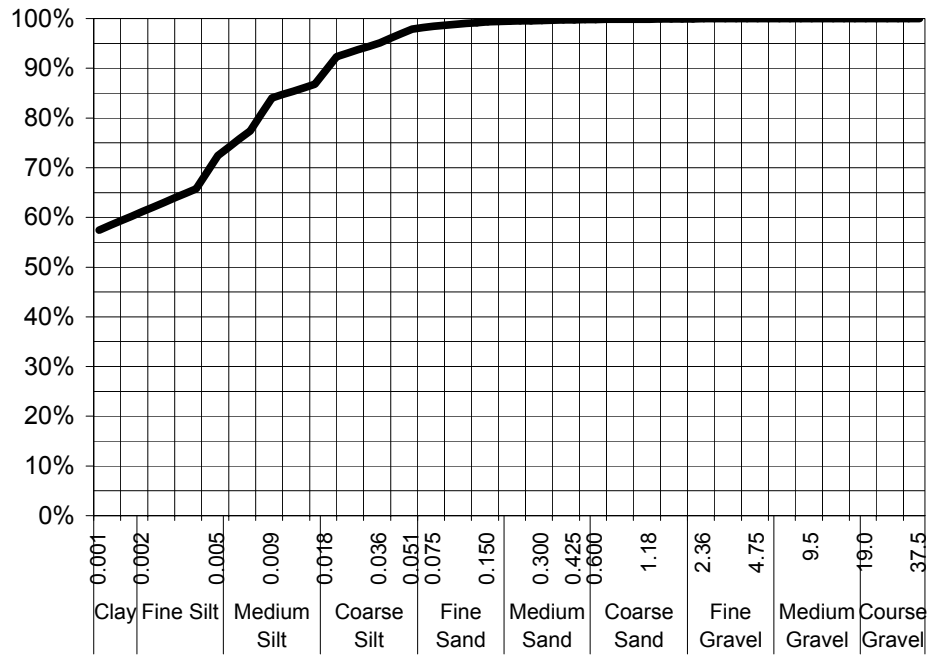
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-004 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH32 3.8-4.1

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%
Particle Size (microns)	
36	95%
18	90%
9	84%
5	72%
3	66%
1	57%

Samples analysed as received.

Sample Comments:		**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark clay & silt	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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DATE REPORTED: 27-Oct-2008

COMPANY: URS Australia Pty Ltd (Qld)

DATE RECEIVED: 16-Oct-2008

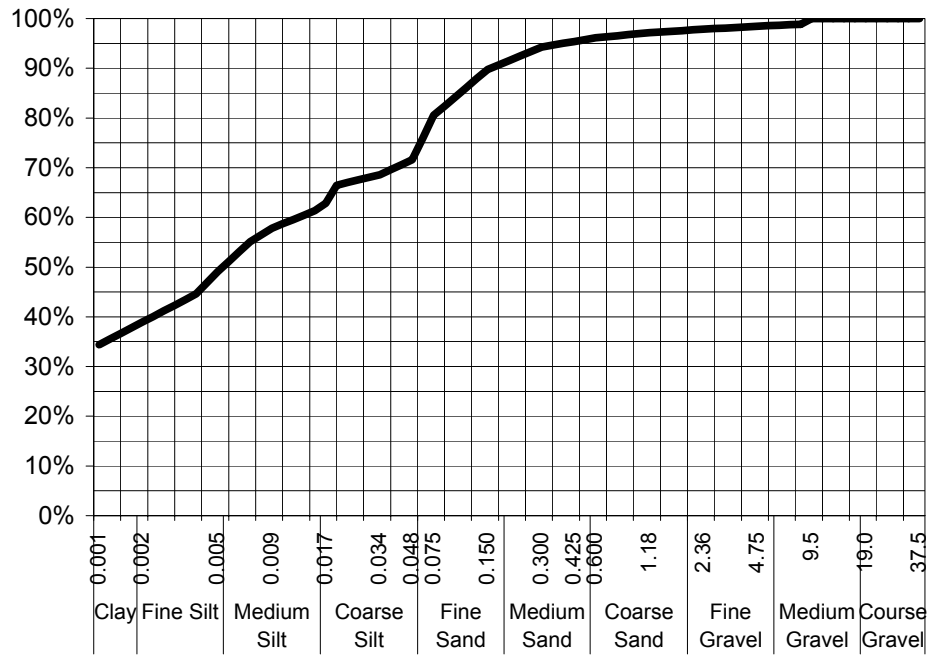
ADDRESS: GPO Box 302
Brisbane, Qld, Australia 4001

REPORT NO: EB0814331-005 / PSD

PROJECT: 42626228.52

SAMPLE ID: BH32 4.7-5.1

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	98%
2.36	98%
1.18	97%
0.600	96%
0.425	95%
0.300	94%
0.150	90%
0.075	81%
Particle Size (microns)	
34	69%
17	63%
9	58%
5	49%
3	45%
1	34%

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description: Dark clay, silt & sand

Test Method: AS1289.3.6.3

Soil Particle Density 2.65 Assumed

Analysed: 22-Oct-08

Limit of Reporting: 1%

Dispersion Method Shaker

Hydrometer Type ASTM E100

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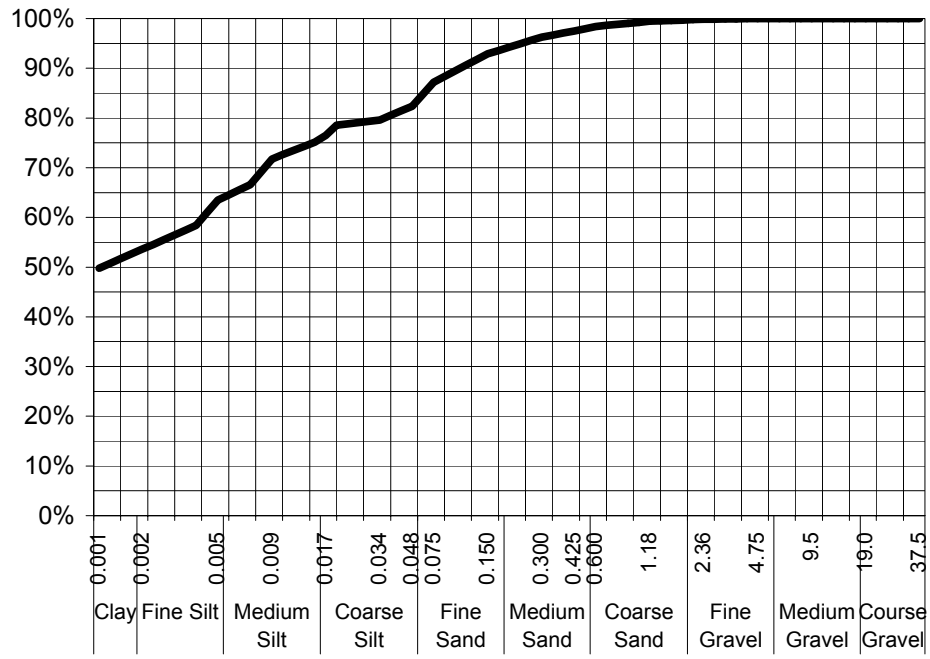
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-006 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH32 6.2-6.65

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	99%
0.600	98%
0.425	97%
0.300	96%
0.150	93%
0.075	87%
Particle Size (microns)	
34	80%
17	77%
9	72%
5	64%
3	58%
1	50%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Grey clay & sand	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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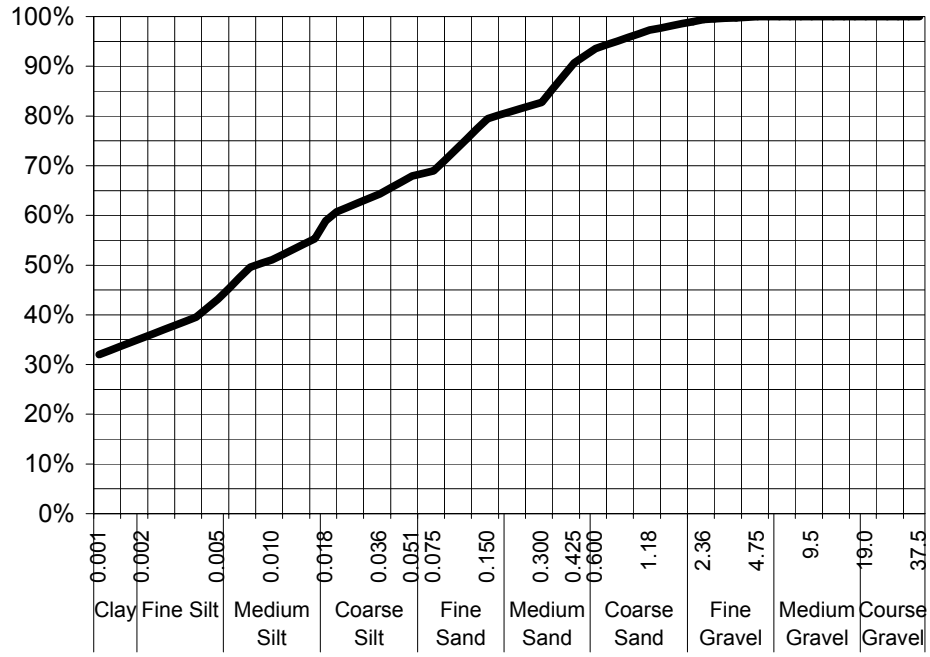
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-007 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH32 8.1-8.4

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	99%
1.18	97%
0.600	94%
0.425	91%
0.300	83%
0.150	79%
0.075	69%
Particle Size (microns)	
36	64%
18	59%
10	51%
5	43%
3	40%
1	32%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Grey clay & sand	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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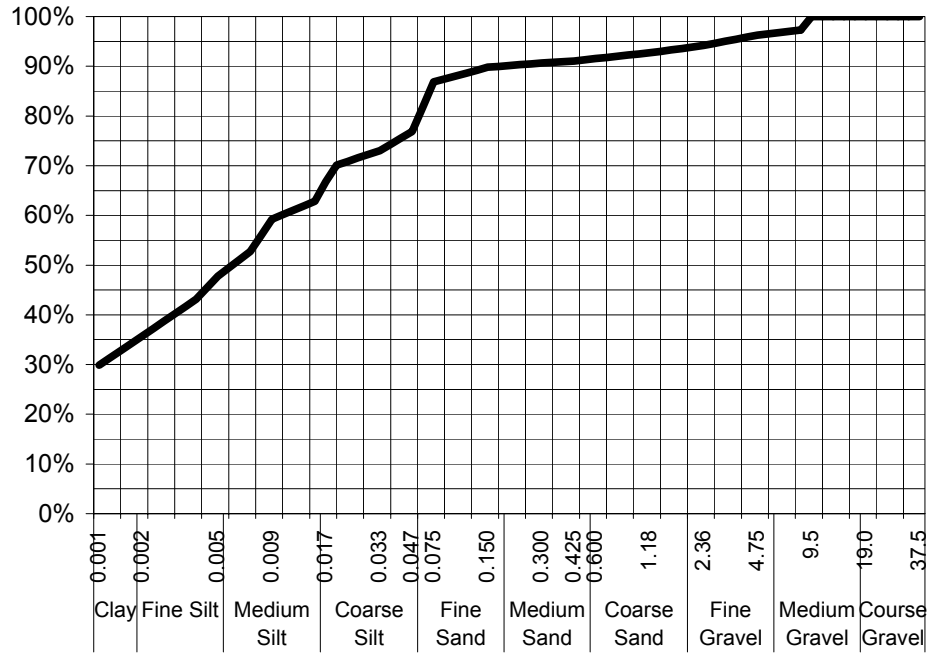
CLIENT:	Rob Ully	**DATE REPORTED:**	27-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-008 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH32 9.3-9.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	96%
2.36	94%
1.18	93%
0.600	92%
0.425	91%
0.300	91%
0.150	90%
0.075	87%
Particle Size (microns)	
33	73%
17	67%
9	59%
5	48%
3	43%
1	30%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Grey clay & sand	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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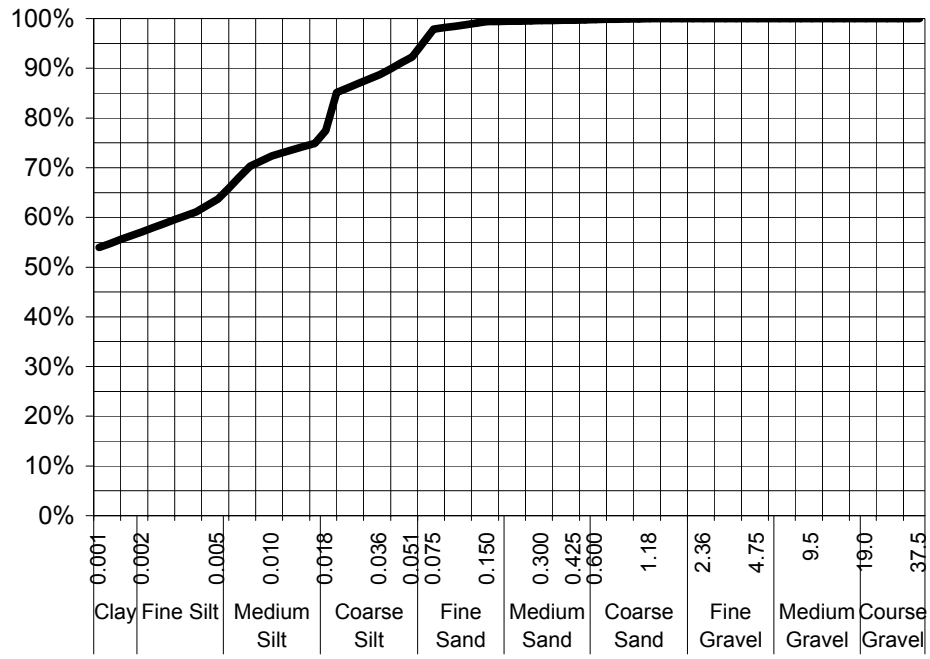
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-009 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC 91

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%
Particle Size (microns)	
36	89%
18	77%
10	72%
5	64%
3	61%
1	54%

Samples analysed as received.

Sample Comments:		**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark clay & silt	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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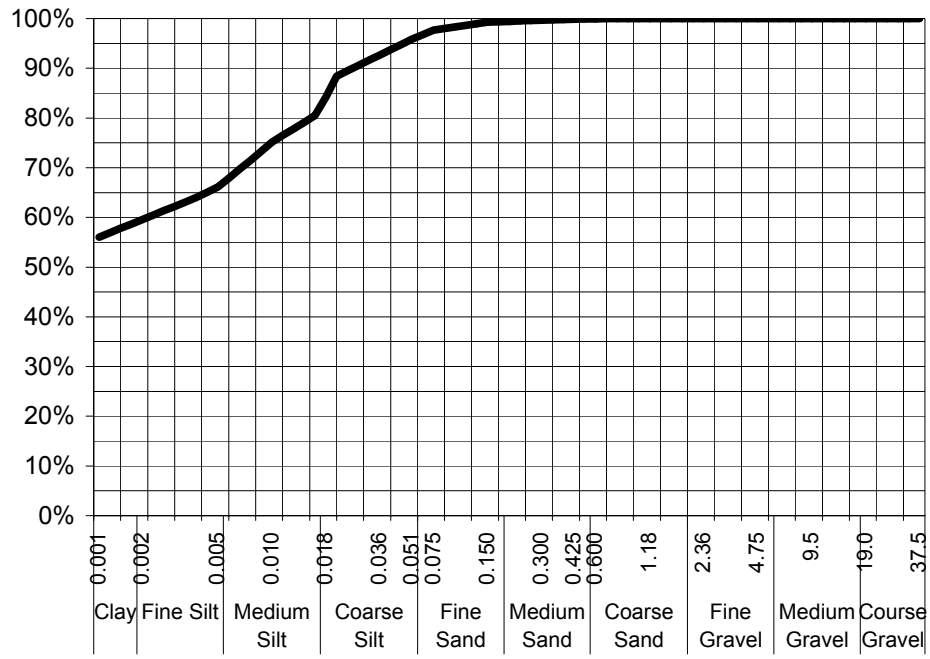
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-010 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC 92

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%
Particle Size (microns)	
36	93%
18	84%
10	75%
5	66%
3	64%
1	56%

Samples analysed as received.

Sample Comments:		**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark clay & silt	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

Dianne Blane
Senior Analyst
Authorised Signatory

Certificate of Analysis

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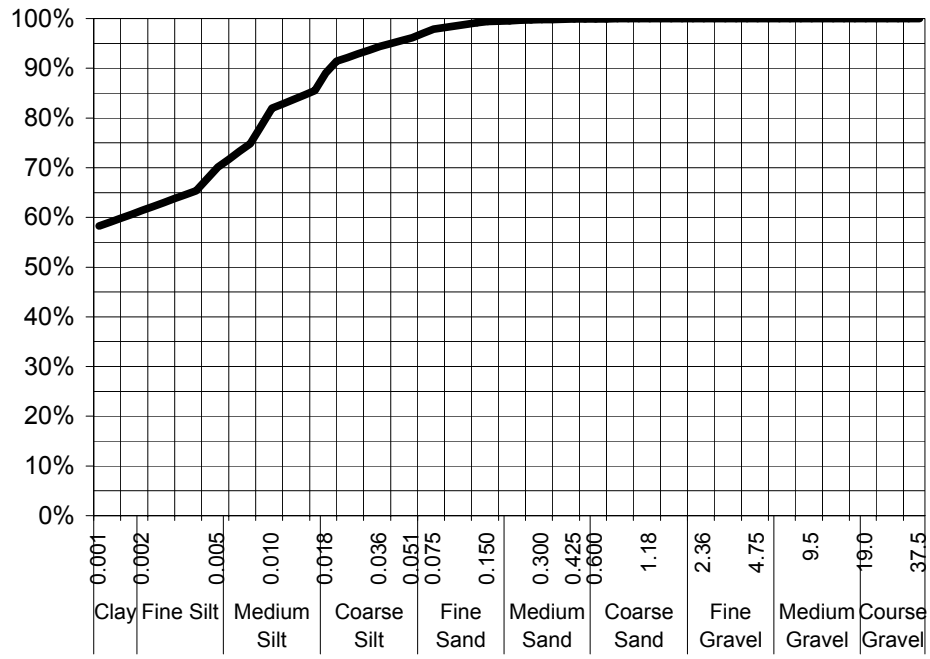
ALS Environmental

Newcastle, NSW

CLIENT:	Rob Ully	**DATE REPORTED:**	27-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-011 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	QC 93

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	100%
1.18	100%
0.600	100%
0.425	100%
0.300	100%
0.150	99%
0.075	98%
Particle Size (microns)	
36	94%
18	89%
10	82%
5	70%
3	65%
1	58%

Samples analysed as received.

Sample Comments:		**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark clay & silt	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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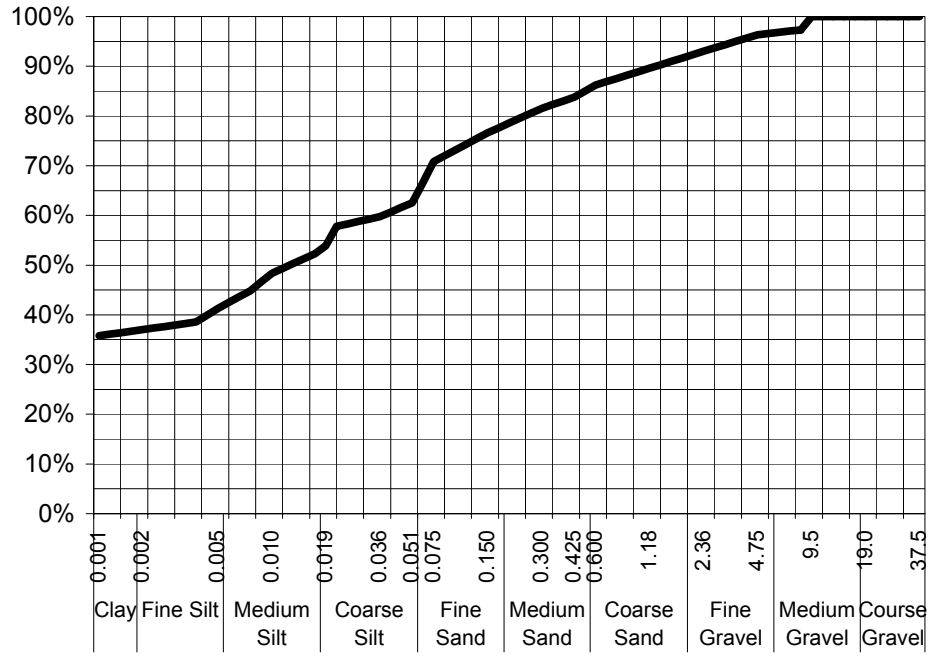
CLIENT:	Rob Ully	**DATE REPORTED:**	27-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-013 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH31 0.18-0.20

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	96%
2.36	93%
1.18	90%
0.600	86%
0.425	84%
0.300	82%
0.150	77%
0.075	71%
Particle Size (microns)	
36	60%
19	54%
10	48%
5	41%
4	39%
1	36%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark silt & sand	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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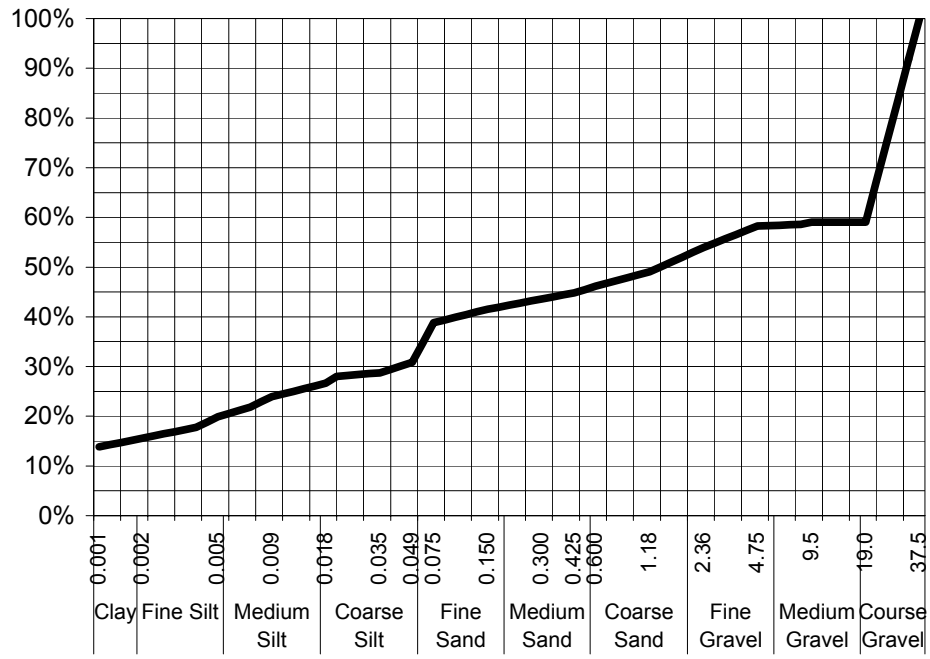
CLIENT:	Rob Ully	**DATE REPORTED:**	27-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-014 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH31 0.2-0.3

Particle Size Distribution



Particle Size (mm)	Percent Passing
37.5	100%
19.0	59%
9.5	59%
4.75	58%
2.36	54%
1.18	49%
0.600	46%
0.425	45%
0.300	44%
0.150	42%
0.075	39%
Particle Size (microns)	
35	29%
18	27%
9	24%
5	20%
3	18%
1	14%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark silt, sand & gravel	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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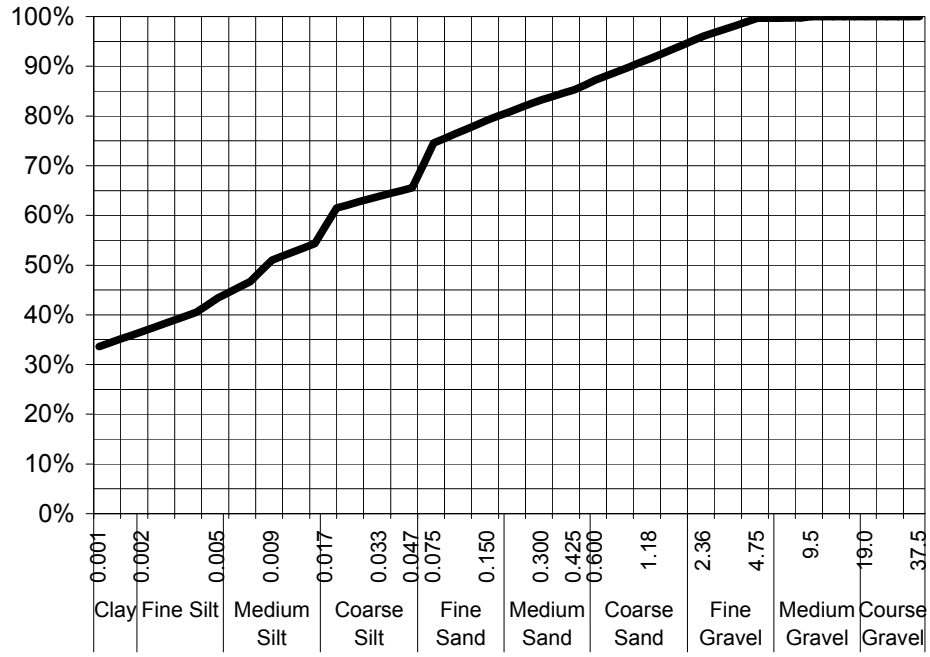
CLIENT:	Rob Ully	**DATE REPORTED:**	27-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-015 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH31 0.3-0.6

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	100%
2.36	96%
1.18	91%
0.600	87%
0.425	85%
0.300	83%
0.150	79%
0.075	75%
Particle Size (microns)	
33	64%
17	58%
9	51%
5	43%
3	41%
1	34%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark silt & sand	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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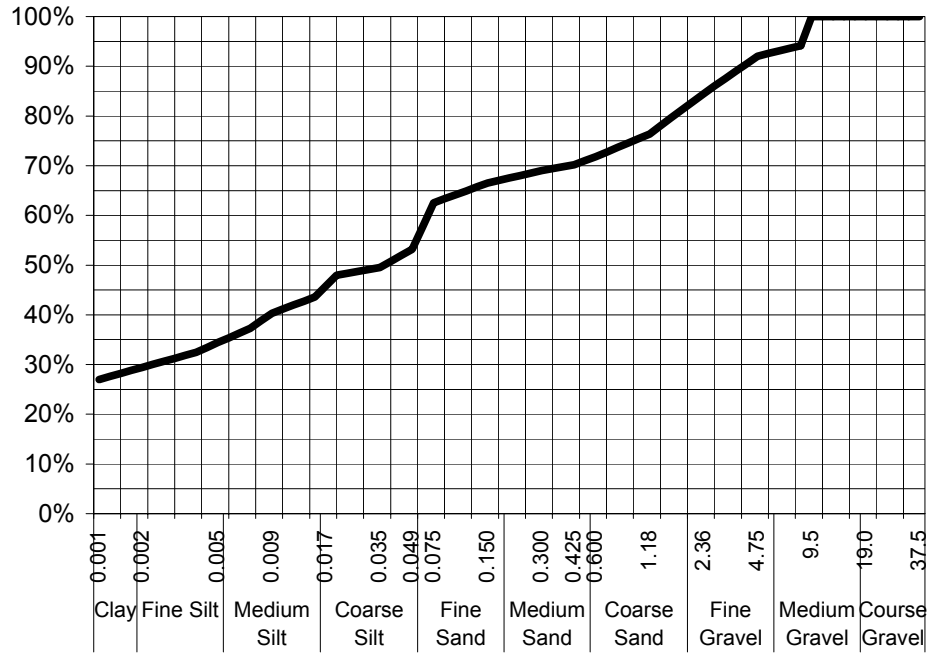
CLIENT:	Rob Ully	**DATE REPORTED:**	27-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-016 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH31 2.0-2.3

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	92%
2.36	84%
1.18	76%
0.600	72%
0.425	70%
0.300	69%
0.150	67%
0.075	63%
Particle Size (microns)	
35	50%
17	46%
9	40%
5	34%
3	32%
1	27%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark silt, sand & gravel	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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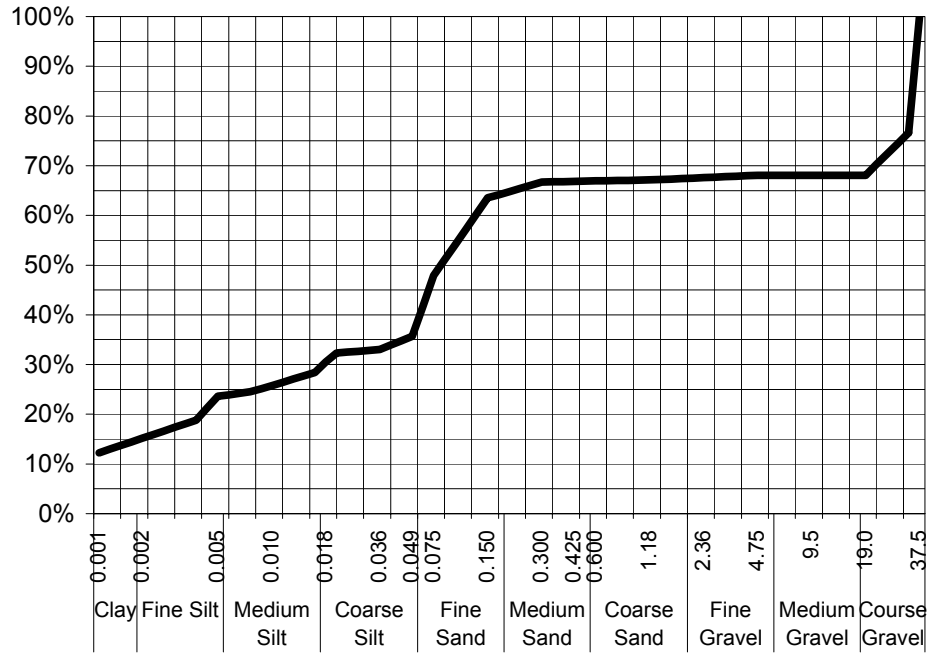
CLIENT:	Rob Ully	**DATE REPORTED:**	27-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-017 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH31 3.6-3.9

Particle Size Distribution



Particle Size (mm)	Percent Passing
37.5	100%
19.0	68%
9.5	68%
4.75	68%
2.36	68%
1.18	67%
0.600	67%
0.425	67%
0.300	67%
0.150	64%
0.075	48%
Particle Size (microns)	
36	33%
18	31%
10	26%
5	24%
3	19%
1	12%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark silt, sand & gravel	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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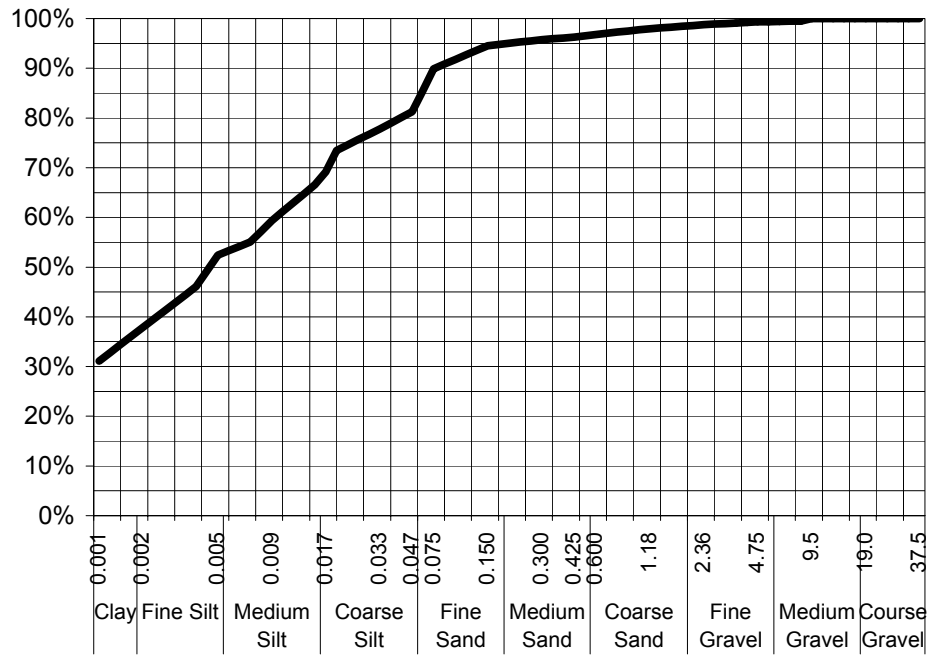
CLIENT:	Rob Ully	**DATE REPORTED:**	27-Oct-2008
COMPANY:	URS Australia Pty Ltd (Qld)	**DATE RECEIVED:**	16-Oct-2008
ADDRESS:	GPO Box 302 Brisbane, Qld, Australia 4001	**REPORT NO:**	EB0814331-018 / PSD
PROJECT:	42626228.52	**SAMPLE ID:**	BH31 5.0-5.35

Particle Size Distribution



Particle Size (mm)	Percent Passing
19.0	100%
9.5	100%
4.75	99%
2.36	99%
1.18	98%
0.600	97%
0.425	96%
0.300	96%
0.150	95%
0.075	90%
Particle Size (microns)	
33	78%
17	69%
9	59%
5	52%
3	46%
1	31%

Samples analysed as received.

Sample Comments:	The mass of sample supplied does not meet that required by AS 1289.1.1.	**Analysed:**	22-Oct-08
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:	Dark silt & sand	**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.3	**Hydrometer Type**	ASTM E100
Soil Particle Density	2.65 Assumed		

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TEST RESULTS

Client : URS AUSTRALIA PTY LTD (QLD)
Project : 42626228.52

Date Received : 16-Oct-08
Sampled by : Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0814331	BH32 0.7-1.0	001	3%	14%	43%	40%
EB0814331	BH32 1.5-1.8	002	0%	3%	44%	53%
EB0814331	BH32 2.5-3.2	003	0%	4%	38%	58%
EB0814331	BH32 3.8-4.1	004	0%	6%	37%	57%
EB0814331	BH32 4.7-5.1	005	2%	22%	42%	34%
EB0814331	BH32 6.2-6.65	006	0%	16%	34%	50%
EB0814331	BH32 8.1-8.4	007	1%	34%	33%	32%
EB0814331	BH32 9.3-9.6	008	6%	13%	51%	30%
EB0814331	QC 91	009	0%	7%	39%	54%
EB0814331	QC 92	010	0%	10%	34%	56%
EB0814331	QC 93	011	0%	8%	34%	58%
EB0814331	BH31 0.18-0.20	013	7%	27%	30%	36%
EB0814331	BH31 0.2-0.3	014	46%	17%	23%	14%
EB0814331	BH31 0.3-0.6	015	4%	23%	39%	34%
EB0814331	BH31 2.0-2.3	016	16%	25%	32%	27%
EB0814331	BH31 3.6-3.9	017	32%	21%	35%	12%
EB0814331	BH31 5.0-5.35	018	1%	12%	56%	31%

Remarks :

Test Procedure : AS1289.3.6.3
Report Date: 27-Oct-08

Prepared by : Dianne Blane
Checked by PK

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Newcastle, NSW

TEST RESULTS

Client :	URS AUSTRALIA PTY LTD (QLD)	Date Received :	16-Oct-08
Project :	42626228.52	Sampled by :	Client

PARTICLE SIZE SUMMARY

Work Order No.	Client Sample ID	ALS Sample No.	Percent Gravel (+ 2 mm)	Percent Sand (2 mm - ~0.060 mm)	Percent Silt (~0.060mm - 0.002mm)	Percent Clay (-0.002mm)
EB0814331	BH31 0.18-0.20	013	7%	27%	30%	36%
EB0814331	BH31 0.2-0.3	014	46%	17%	23%	14%
EB0814331	BH31 0.3-0.6	015	4%	23%	39%	34%
EB0814331	BH31 2.0-2.3	016	16%	25%	32%	27%
EB0814331	BH31 3.6-3.9	017	32%	21%	35%	12%
EB0814331	BH31 5.0-5.35	018	1%	12%	56%	31%
EB0814331	BH32 0.7-1.0	001	3%	14%	43%	40%
EB0814331	BH32 1.5-1.8	002	0%	3%	44%	53%
EB0814331	QC 91	009	0%	7%	39%	54%
EB0814331	BH32 2.5-3.2	003	0%	4%	38%	58%
EB0814331	QC 92	010	0%	10%	34%	56%
EB0814331	QC 93	011	0%	8%	34%	58%
EB0814331	BH32 3.8-4.1	004	0%	6%	37%	57%
EB0814331	BH32 4.7-5.1	005	2%	22%	42%	34%
EB0814331	BH32 6.2-6.65	006	0%	16%	34%	50%
EB0814331	BH32 8.1-8.4	007	1%	34%	33%	32%
EB0814331	BH32 9.3-9.6	008	6%	13%	51%	30%

Remarks :

Test Procedure :	AS1289.3.6.3	Report Date:	27-Oct-08
Prepared by :	Dianne Blane	Checked by	PK

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EB0814331**	Page	: 1 of 15
Amendment	: **1**		
Client	: **URS AUSTRALIA PTY LTD (QLD)**	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: julian_dobos@urscorp.com	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 16-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 19
Quote number	: EN/001/08	No. of samples analysed	: 19

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Inorganics
Cass Sealby	Senior Chemist - Acid Sulphate Soils	Stafford Minerals - AY
Kim McCabe	Senior Inorganic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Inorganics
Matthew Goodwin	Senior Organic Chemist	Organics
Peter Keyte	Lab Manager	Newcastle
Phillip Kennedy	2IC Environmental Laboratory	Inorganics
Stephen Hislop	Senior Inorganic Chemist	Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates 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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 792936)									
EB0814331-001	BH32 0.7-1.0	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.8	8.8	0.0	0% - 20%
EB0814331-011	QC 93	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.0	8.0	0.0	0% - 20%
EA033-B: Potential Acidity (QC Lot: 792936)									
EB0814331-001	BH32 0.7-1.0	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EB0814331-011	QC 93	EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	<0.02	0.0	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.0	No Limit
EA033-C: Acid Neutralising Capacity (QC Lot: 792936)									
EB0814331-001	BH32 0.7-1.0	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	1.27	1.26	0.0	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.41	0.40	0.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	254	252	0.0	0% - 20%
EB0814331-011	QC 93	EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	0.87	0.89	2.2	0% - 20%
		EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	0.28	0.29	0.0	0% - 20%
		EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	175	179	2.2	0% - 50%
EA037: Ass Field Screening Analysis (QC Lot: 792937)									
EB0814331-001	BH32 0.7-1.0	EA037: pH (F)	----	0.1	pH Unit	7.9	7.9	0.0	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	3.4	3.1	9.2	0% - 20%
EB0814331-011	QC 93	EA037: pH (F)	----	0.1	pH Unit	8.5	8.4	1.2	0% - 20%
		EA037: pH (Fox)	----	0.1	pH Unit	1.3	1.6	20.7	0% - 50%
EA055: Moisture Content (QC Lot: 794446)									
EB0814331-002	BH32 1.5-1.8	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	44.2	44.0	0.4	0% - 20%
EB0814331-009	QC 91	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	43.5	44.9	3.2	0% - 20%
EA055: Moisture Content (QC Lot: 794472)									
EB0814229-041	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EB0814229-048	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EA055: Moisture Content (QC Lot: 794473)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 794473) - continued									
EB0814579-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 792571)									
EB0814331-001	BH32 0.7-1.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	26	23	10.7	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	13	13	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	23	21	10.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	22	23	4.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	11	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	273	310	12.9	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	44	48	7.6	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	11400	12100	6.5	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	28700	29600	2.8	0% - 20%
EB0814489-016	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 793888)									
EB0814331-010	QC 92	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	20	19	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	12	0.0	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Antimony	7440-36-0	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	10	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	40	32	22.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	405	454	11.3	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	40	37	7.7	No Limit
		EG005T: Aluminium	7429-90-5	50	mg/kg	13400	12800	4.2	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	37600	45900	19.9	0% - 20%
EB0814579-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005T: Total Metals by ICP-AES (QC Lot: 793888) - continued									
EB0814579-003	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Silver	7440-22-4	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Antimony	7440-36-0	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Aluminium	7429-90-5	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Iron	7439-89-6	50	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 792572)									
EB0814331-001	BH32 0.7-1.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0814489-016	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 793889)									
EB0814331-010	QC 92	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB0814579-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 793029)									
EB0814331-001	BH32 0.7-1.0	EP005: Total Organic Carbon	----	0.02	%	1.30	1.30	0.0	0% - 20%
EB0814331-011	QC 93	EP005: Total Organic Carbon	----	0.02	%	0.63	0.61	3.2	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 794232)									
EB0814331-001	BH32 0.7-1.0	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 794231)									
EB0814331-001	BH32 0.7-1.0	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EB0814565-001	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Dieldrin	60-57-1	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin	72-20-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 794231) - continued									
EB0814565-001	Anonymous	EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 794241)									
EB0814331-001	BH32 0.7-1.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0814331-011	QC 93	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 794245)									
EB0814331-016	BH31 2.0-2.3	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 794245) - continued									
EB0814331-016	BH31 2.0-2.3	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EB0814348-009	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP090: Organotin Compounds (QC Lot: 794260)									
EB0814331-001	BH32 0.7-1.0	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 789941)									
EB0814246-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020T: Total Metals by ICP-MS (QC Lot: 789941) - continued									
EB0814246-001	Anonymous	EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0814285-004	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG020T: Total Metals by ICP-MS (QC Lot: 789942)									
EB0814246-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0814285-004	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 793301)									
EB0814247-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0814330-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 790210)									
EB0814268-004	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EB0814302-010	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

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 parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 792936)								
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	----	----	----	----
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 792936)								
EA033: Chromium Reducible Sulfur (22B)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-C: Acid Neutralising Capacity (QCLot: 792936)								
EA033: Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	<0.01	----	----	----	----
EA033: acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	<0.01	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 792571)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	105	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	93.0	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	101	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	102	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	98.7	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	99.0	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	99.2	86.7	119
EG005T: Total Metals by ICP-AES (QCLot: 793888)								
EG005T: Aluminium	7429-90-5	50	mg/kg	<50	----	----	----	----
EG005T: Antimony	7440-36-0	5	mg/kg	<5	----	----	----	----
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.8 mg/kg	109	79.7	120
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.82 mg/kg	104	80.9	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	61.6 mg/kg	104	87.2	121
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	106	90.2	122
EG005T: Iron	7439-89-6	50	mg/kg	<50	----	----	----	----
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.5 mg/kg	102	85.9	116
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.1 mg/kg	110	87.8	122
EG005T: Silver	7440-22-4	2	mg/kg	<2	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 793888) - continued								
EG005T: Zinc	7440-66-6	5	mg/kg	<5	105 mg/kg	104	86.7	119
EG035T: Total Recoverable Mercury by FIMS (QCLot: 792572)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	114	79.5	129
EG035T: Total Recoverable Mercury by FIMS (QCLot: 793889)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
		0.10	mg/kg	----	1.34 mg/kg	115	79.5	129
EP005: Total Organic Carbon (TOC) (QCLot: 793029)								
EP005: Total Organic Carbon	----	0.02	%	<0.02	100 %	101	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 794232)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	86.8	53.8	105
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 794231)								
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	73.1	59.1	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	65.1	60.3	114
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	65.3	60.8	113
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	77.5	58.8	113
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	83.7	61.2	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	65.2	47	133
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	83.8	58.4	118
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	79.4	46.3	115
EP068: 4.4`-DDT	50-29-3	0.05	mg/kg	----	0.25 mg/kg	74.2	52.6	129
		0.2	mg/kg	<0.2	----	----	----	----
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	79.6	51.6	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 794241)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	5.0 mg/kg	98.4	66	114
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	5.0 mg/kg	101	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	5.0 mg/kg	87.7	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	5.0 mg/kg	91.2	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.0 mg/kg	67.9	60	112
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	5.0 mg/kg	91.6	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	5.0 mg/kg	104	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	5.0 mg/kg	102	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	5.0 mg/kg	94.3	61	115
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	5.0 mg/kg	98.5	57	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	5.0 mg/kg	102	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	5.0 mg/kg	96.6	48	124
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	5.0 mg/kg	95.6	55	116

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 794241) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	5.0 mg/kg	85.2	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	5.0 mg/kg	88.0	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	5.0 mg/kg	84.8	52	128
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 794245)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	----	5.0 mg/kg	96.4	66	114
				<0.5	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	96.8	63	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	91.6	65	114
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	93.2	65	111
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	----	5.0 mg/kg	89.6	60	112
				<0.5	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	86.0	65	110
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	87.2	64	111
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	88.4	64	111
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	----	5.0 mg/kg	91.6	61	115
				<0.5	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	----	5.0 mg/kg	83.2	57	114
				<0.5	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	104	46	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	5.0 mg/kg	100	48	124
				<0.5	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	5.0 mg/kg	93.6	55	116
				<0.5	----	----	----	----
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	92.8	52	130
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
				----	5.0 mg/kg	92.8	54	129
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	5.0 mg/kg	92.4	52	128
				<0.5	----	----	----	----
EP090: Organotin Compounds (QCLot: 794260)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	12.5 µgSn/kg	93.0	28	129

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Spike Concentration	Laboratory Control Spike (LCS) Report Spike Recovery (%) LCS	Recovery Limits (%) Low	High
EG020T: Total Metals by ICP-MS (QCLot: 789941)								
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.100 mg/L	108	84.6	112
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.100 mg/L	98.2	75.7	110
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.100 mg/L	106	81.8	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.100 mg/L	112	80.9	125
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.200 mg/L	104	80.9	115
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.100 mg/L	106	84.4	113
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.100 mg/L	103	81.5	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.200 mg/L	118	81	127
EG020T: Total Metals by ICP-MS (QCLot: 789942)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.100 mg/L	85.2	70	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 793301)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.0100 mg/L	98.3	84.2	118
EP005: Total Organic Carbon (TOC) (QCLot: 790210)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	108	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 790802)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	77.5	56.7	114
EP068A: Organochlorine Pesticides (OC) (QCLot: 790801)								
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	93.9	54.2	127
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	81.7	53.4	120
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	81.5	52.4	120
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	87.6	55	128
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	83.5	54.8	125
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	85.4	49.1	135
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	87.1	54.3	129
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	92.1	54.3	126
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2	----	----	----	----
		2.0	µg/L	----	5 µg/L	82.3	40	130
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	81.7	47.3	137

Matrix Spike (MS) Report

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 parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 792571)							
EB0814331-002	BH32 1.5-1.8	EG005T: Arsenic	7440-38-2	50 mg/kg	89.1	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	100	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	94.7	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	100	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	95.2	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	98.4	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	95.8	70	130
EG005T: Total Metals by ICP-AES (QCLot: 793888)							
EB0814331-011	QC 93	EG005T: Arsenic	7440-38-2	50 mg/kg	94.6	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	107	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	100	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	104	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	101	70	130
		EG005T: Manganese	7439-96-5	50 mg/kg	# Not Determined	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	108	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	102	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 792572)							
EB0814331-002	BH32 1.5-1.8	EG035T: Mercury	7439-97-6	5.0 mg/kg	100	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 793889)							
EB0814331-011	QC 93	EG035T: Mercury	7439-97-6	5.0 mg/kg	105	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 794232)							
EB0814331-002	BH32 1.5-1.8	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	77.3	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 794231)							
EB0814331-002	BH32 1.5-1.8	EP068: gamma-BHC	58-89-9	0.25 mg/kg	83.7	70	130
		EP068: Dieldrin	60-57-1	0.25 mg/kg	76.5	70	130
		EP068: Endrin	72-20-8	1.0 mg/kg	79.5	70	130
		EP068: 4.4`-DDT	50-29-3	1.0 mg/kg	100	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 794241)							
EB0814331-002	BH32 1.5-1.8	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	115	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	117	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 794245)							
EB0814331-017	BH31 3.6-3.9	EP075(SIM): Acenaphthene	83-32-9	2.5 mg/kg	105	70	130
		EP075(SIM): Pyrene	129-00-0	2.5 mg/kg	113	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP090: Organotin Compounds (QCLot: 794260)							
EB0814331-002	BH32 1.5-1.8	EP090: Tributyltin	56573-85-4	12.5 µgSn/kg	88.1	20	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 789941)							
EB0814246-002	Anonymous	EG020A-T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 793301)							
EB0814247-001	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EB0814331**	Page	: 1 of 14
Amendment	: **1**		
Client	: URS AUSTRALIA PTY LTD (QLD)	Laboratory	: Environmental Division Brisbane
Contact	: MR JULIAN DOBOS	Contact	: Tim Kilmister
Address	: GPO BOX 302 BRISBANE QLD, AUSTRALIA 4001	Address	: 32 Shand Street Stafford QLD Australia 4053
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Telephone	: +61 32432111	Telephone	: +61-7-3243 7222
Facsimile	: +61 07 32432199	Facsimile	: +61-7-3243 7218
Project	: 42626228.52000	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: GLNG SANTOS		
C-O-C number	: ----	Date Samples Received	: 16-OCT-2008
Sampler	: Julian Dobos	Issue Date	: 23-DEC-2008
Order number	: ----		
		No. of samples received	: 19
Quote number	: EN/001/08	No. of samples analysed	: 19

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

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 precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Snap Lock Bag								
BH31 0.18-0.20,	BH31 0.2-0.3,	**15-OCT-2008**	**16-OCT-2008**	16-OCT-2008	✓	**16-OCT-2008**	22-JAN-2009	✓
BH31 0.3-0.6,	BH31 2.0-2.3,							
BH31 3.6-3.9,	BH31 5.0-5.35							
Snap Lock Bag - frozen on receipt at ALS								
BH32 0.7-1.0,	BH32 1.5-1.8,	**15-OCT-2008**	**16-OCT-2008**	13-APR-2009	✓	**16-OCT-2008**	22-JAN-2009	✓
BH32 2.5-3.2,	BH32 3.8-4.1,							
BH32 4.7-5.1,	BH32 6.2-6.65,							
BH32 8.1-8.4,	BH32 9.3-9.6,							
QC 91,	QC 92,							
QC 93								
EA033-B: Potential Acidity								
Snap Lock Bag								
BH31 0.18-0.20,	BH31 0.2-0.3,	**15-OCT-2008**	**16-OCT-2008**	16-OCT-2008	✓	**16-OCT-2008**	22-JAN-2009	✓
BH31 0.3-0.6,	BH31 2.0-2.3,							
BH31 3.6-3.9,	BH31 5.0-5.35							
Snap Lock Bag - frozen on receipt at ALS								
BH32 0.7-1.0,	BH32 1.5-1.8,	**15-OCT-2008**	**16-OCT-2008**	13-APR-2009	✓	**16-OCT-2008**	22-JAN-2009	✓
BH32 2.5-3.2,	BH32 3.8-4.1,							
BH32 4.7-5.1,	BH32 6.2-6.65,							
BH32 8.1-8.4,	BH32 9.3-9.6,							
QC 91,	QC 92,							
QC 93								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity								
Snap Lock Bag								
BH31 0.18-0.20,	BH31 0.2-0.3,	**15-OCT-2008**	**16-OCT-2008**	16-OCT-2008	✓	**16-OCT-2008**	22-JAN-2009	✓
BH31 0.3-0.6,	BH31 2.0-2.3,							
BH31 3.6-3.9,	BH31 5.0-5.35							
Snap Lock Bag - frozen on receipt at ALS								
BH32 0.7-1.0,	BH32 1.5-1.8,	**15-OCT-2008**	**16-OCT-2008**	13-APR-2009	✓	**16-OCT-2008**	22-JAN-2009	✓
BH32 2.5-3.2,	BH32 3.8-4.1,							
BH32 4.7-5.1,	BH32 6.2-6.65,							
BH32 8.1-8.4,	BH32 9.3-9.6,							
QC 91,	QC 92,							
QC 93								
EA033-D: Retained Acidity								
Snap Lock Bag								
BH31 0.18-0.20,	BH31 0.2-0.3,	**15-OCT-2008**	**16-OCT-2008**	16-OCT-2008	✓	**16-OCT-2008**	22-JAN-2009	✓
BH31 0.3-0.6,	BH31 2.0-2.3,							
BH31 3.6-3.9,	BH31 5.0-5.35							
Snap Lock Bag - frozen on receipt at ALS								
BH32 0.7-1.0,	BH32 1.5-1.8,	**15-OCT-2008**	**16-OCT-2008**	13-APR-2009	✓	**16-OCT-2008**	22-JAN-2009	✓
BH32 2.5-3.2,	BH32 3.8-4.1,							
BH32 4.7-5.1,	BH32 6.2-6.65,							
BH32 8.1-8.4,	BH32 9.3-9.6,							
QC 91,	QC 92,							
QC 93								
EA033-E: Acid Base Accounting								
Snap Lock Bag								
BH31 0.18-0.20,	BH31 0.2-0.3,	**15-OCT-2008**	**16-OCT-2008**	16-OCT-2008	✓	**16-OCT-2008**	22-JAN-2009	✓
BH31 0.3-0.6,	BH31 2.0-2.3,							
BH31 3.6-3.9,	BH31 5.0-5.35							
Snap Lock Bag - frozen on receipt at ALS								
BH32 0.7-1.0,	BH32 1.5-1.8,	**15-OCT-2008**	**16-OCT-2008**	13-APR-2009	✓	**16-OCT-2008**	22-JAN-2009	✓
BH32 2.5-3.2,	BH32 3.8-4.1,							
BH32 4.7-5.1,	BH32 6.2-6.65,							
BH32 8.1-8.4,	BH32 9.3-9.6,							
QC 91,	QC 92,							
QC 93								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA037: Ass Field Screening Analysis							
Snap Lock Bag							
BH31 0.18-0.20	**15-OCT-2008**	**16-OCT-2008**	16-OCT-2008	✓	**24-OCT-2008**	16-OCT-2008	×
Snap Lock Bag - frozen on receipt at ALS							
BH32 0.7-1.0, BH32 1.5-1.8, BH32 2.5-3.2, BH32 3.8-4.1, BH32 4.7-5.1, BH32 8.1-8.4, QC 91, QC 92, QC 93	**15-OCT-2008**	**16-OCT-2008**	13-APR-2009	✓	**24-OCT-2008**	13-APR-2009	✓
EA055: Moisture Content							
Snap Lock Bag							
BH32 6.2-6.65, BH32 8.1-8.4, BH32 9.3-9.6	**15-OCT-2008**	**----**	----	----	**24-OCT-2008**	22-OCT-2008	×
Soil Glass Jar - Unpreserved							
BH32 0.7-1.0, BH32 1.5-1.8, BH32 2.5-3.2, BH32 3.8-4.1, BH32 4.7-5.1, QC 91, QC 92, QC 93, BH31 0.18-0.20, BH31 0.2-0.3, BH31 0.3-0.6, BH31 2.0-2.3, BH31 3.6-3.9, BH31 5.0-5.35	**15-OCT-2008**	**----**	----	----	**24-OCT-2008**	22-OCT-2008	×
EG005T: Total Metals by ICP-AES							
Snap Lock Bag							
BH32 6.2-6.65, BH32 8.1-8.4, BH32 9.3-9.6	**15-OCT-2008**	**23-OCT-2008**	13-APR-2009	✓	**23-OCT-2008**	13-APR-2009	✓
Soil Glass Jar - Unpreserved							
BH32 0.7-1.0, BH32 1.5-1.8, BH32 2.5-3.2, BH32 3.8-4.1, BH32 4.7-5.1, QC 91	**15-OCT-2008**	**23-OCT-2008**	13-APR-2009	✓	**23-OCT-2008**	13-APR-2009	✓
Soil Glass Jar - Unpreserved							
QC 92, QC 93, BH31 0.18-0.20, BH31 0.2-0.3, BH31 0.3-0.6, BH31 2.0-2.3, BH31 3.6-3.9, BH31 5.0-5.35	**15-OCT-2008**	**24-OCT-2008**	13-APR-2009	✓	**27-OCT-2008**	13-APR-2009	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Snap Lock Bag								
BH32 6.2-6.65,	BH32 8.1-8.4,	**15-OCT-2008**	**23-OCT-2008**	13-APR-2009	✓	**23-OCT-2008**	12-NOV-2008	✓
BH32 9.3-9.6								
Soil Glass Jar - Unpreserved								
BH32 0.7-1.0,	BH32 1.5-1.8,	**15-OCT-2008**	**23-OCT-2008**	13-APR-2009	✓	**23-OCT-2008**	12-NOV-2008	✓
BH32 2.5-3.2,	BH32 3.8-4.1,							
BH32 4.7-5.1,	QC 91							
Soil Glass Jar - Unpreserved								
QC 92,	QC 93,	**15-OCT-2008**	**24-OCT-2008**	13-APR-2009	✓	**28-OCT-2008**	12-NOV-2008	✓
BH31 0.18-0.20,	BH31 0.2-0.3,							
BH31 0.3-0.6,	BH31 2.0-2.3,							
BH31 3.6-3.9,	BH31 5.0-5.35							
EP005: Total Organic Carbon (TOC)								
Pulp Bag								
BH32 0.7-1.0,	BH32 1.5-1.8,	**15-OCT-2008**	**23-OCT-2008**	---	----	**23-OCT-2008**	12-NOV-2008	✓
BH32 2.5-3.2,	BH32 3.8-4.1,							
BH32 4.7-5.1,	BH32 6.2-6.65,							
BH32 8.1-8.4,	BH32 9.3-9.6,							
QC 91,	QC 92,							
QC 93,	BH31 0.18-0.20,							
BH31 0.2-0.3,	BH31 0.3-0.6,							
BH31 2.0-2.3,	BH31 3.6-3.9,							
BH31 5.0-5.35								
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
BH32 0.7-1.0,	BH32 1.5-1.8,	**15-OCT-2008**	**24-OCT-2008**	29-OCT-2008	✓	**27-OCT-2008**	03-DEC-2008	✓
QC 91,	QC 92,							
QC 93,	BH31 0.18-0.20,							
BH31 0.2-0.3,	BH31 0.3-0.6							
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved								
BH32 0.7-1.0,	BH32 1.5-1.8,	**15-OCT-2008**	**24-OCT-2008**	29-OCT-2008	✓	**27-OCT-2008**	03-DEC-2008	✓
QC 91,	QC 92,							
QC 93,	BH31 0.18-0.20,							
BH31 0.2-0.3,	BH31 0.3-0.6							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Snap Lock Bag								
BH32 6.2-6.65,	BH32 8.1-8.4,	**15-OCT-2008**	**24-OCT-2008**	29-OCT-2008	✓	**26-OCT-2008**	03-DEC-2008	✓
BH32 9.3-9.6								
Soil Glass Jar - Unpreserved								
BH32 0.7-1.0,	BH32 1.5-1.8,	**15-OCT-2008**	**24-OCT-2008**	29-OCT-2008	✓	**26-OCT-2008**	03-DEC-2008	✓
BH32 2.5-3.2,	BH32 3.8-4.1,							
BH32 4.7-5.1,	QC 91,							
QC 92,	QC 93,							
BH31 0.18-0.20,	BH31 0.2-0.3,							
BH31 0.3-0.6,	BH31 2.0-2.3,							
BH31 3.6-3.9,	BH31 5.0-5.35							
EP090: Organotin Compounds								
Sediment Glass Jar - Frozen (NODG)								
BH32 0.7-1.0,	BH32 1.5-1.8,	**15-OCT-2008**	**28-OCT-2008**	13-APR-2009	✓	**28-OCT-2008**	07-DEC-2008	✓
QC 91,	QC 92,							
QC 93,	BH31 0.18-0.20,							
BH31 0.2-0.3,	BH31 0.3-0.6							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Nitric Acid; Unfiltered								
QC 94,	QC90	**15-OCT-2008**	**21-OCT-2008**	13-APR-2009	✓	**21-OCT-2008**	13-APR-2009	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Nitric Acid; Unfiltered								
QC 94,	QC90	**15-OCT-2008**	**----**	----	----	**23-OCT-2008**	12-NOV-2008	✓
EP005: Total Organic Carbon (TOC)								
Amber Glass Bottle - Unpreserved								
QC 94,	QC90	**15-OCT-2008**	**----**	----	----	**21-OCT-2008**	17-OCT-2008	×
EP066: Polychlorinated Biphenyls (PCB)								
Amber Glass Bottle - Unpreserved								
QC 94,	QC90	**15-OCT-2008**	**22-OCT-2008**	22-OCT-2008	✓	**24-OCT-2008**	01-DEC-2008	✓
EP068A: Organochlorine Pesticides (OC)								
Amber Glass Bottle - Unpreserved								
QC 94,	QC90	**15-OCT-2008**	**22-OCT-2008**	22-OCT-2008	✓	**24-OCT-2008**	01-DEC-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
ASS Field Screening Analysis	EA037	2	10	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chromium Suite for Acid Sulphate Soils	EA033	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	6	58	**10.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	7	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	31	**12.9**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	32	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	32	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	31	**6.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	32	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	32	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organotin Analysis	EP090	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	31	**6.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	32	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	32	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	7	**14.3**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	31	**6.5**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	17	**5.9**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	32	**6.3**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	32	**6.3**	**5.0**	✓	ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Organotin Compounds (Soluble)	EP090S	1	19	**5.3**	**10.0**	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	16	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Organotin Compounds (Soluble)	EP090S	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Organotin Compounds (Soluble)	EP090S	1	19	**5.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides	EP068	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	16	**6.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organotin Compounds (Soluble)	EP090S	1	19	**5.3**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division 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 in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
ASS Field Screening Analysis	* EA037	SOIL	Acid Sulfate Soils Laboratory Methods Guidelines, version 2.1 June 2004. As received samples are tested for pH field and pH fox and assessed for a reaction rating.
Moisture Content	EA055-103	SOIL	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)
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st 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)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 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)
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automaticaly measured by infra-red detector.
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(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)
Pesticides by GCMS	EP068	SOIL	(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)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(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)
Organotin Analysis	EP090	SOIL	(USEPA SW 846 - 8270D) Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Pesticides	EP068	WATER	USEPA SW 846 - 8270D Sample 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) (Appdx. 2)
Organotin Compounds (Soluble)	EP090S	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	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)
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	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.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	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.
Organotin Sample Preparation	ORG35	SOIL	In house. 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Organotin Sample Preparation	ORG34	WATER	In-house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EB0814331-011	QC 93	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	EB0814331-002	BH32 1.5-1.8	**Manganese**	7439-96-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**

Regular Sample Surrogates

Sub-Matrix: **SOLID**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-001	BH32 0.7-1.0	**Phenol-d6**	13127-88-3	156 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-003	BH32 2.5-3.2	**Phenol-d6**	13127-88-3	126 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-005	BH32 4.7-5.1	**Phenol-d6**	13127-88-3	119 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-007	BH32 8.1-8.4	**Phenol-d6**	13127-88-3	128 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-009	QC 91	**Phenol-d6**	13127-88-3	126 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-011	QC 93	**Phenol-d6**	13127-88-3	130 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-015	BH31 0.3-0.6	**Phenol-d6**	13127-88-3	128 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-004	BH32 3.8-4.1	**Phenol-d6**	13127-88-3	134 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-006	BH32 6.2-6.65	**Phenol-d6**	13127-88-3	130 %	24-113 %	**Recovery greater than upper data quality objective**

Sub-Matrix: **SOLID**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted - Continued							
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-014	BH31 0.2-0.3	**Phenol-d6**	13127-88-3	114 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-016	BH31 2.0-2.3	**Phenol-d6**	13127-88-3	136 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-018	BH31 5.0-5.35	**Phenol-d6**	13127-88-3	170 %	24-113 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-001	BH32 0.7-1.0	**2-Chlorophenol-D4**	93951-73-6	146 %	23-134 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-018	BH31 5.0-5.35	**2-Chlorophenol-D4**	93951-73-6	152 %	23-134 %	**Recovery greater than upper data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	EB0814331-018	BH31 5.0-5.35	**2.4.6-Tribromophenol**	118-79-6	149 %	19-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-001	BH32 0.7-1.0	**2-Fluorobiphenyl**	321-60-8	134 %	30-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-005	BH32 4.7-5.1	**2-Fluorobiphenyl**	321-60-8	118 %	30-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-011	QC 93	**2-Fluorobiphenyl**	321-60-8	133 %	30-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-004	BH32 3.8-4.1	**2-Fluorobiphenyl**	321-60-8	121 %	30-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-006	BH32 6.2-6.65	**2-Fluorobiphenyl**	321-60-8	116 %	30-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-014	BH31 0.2-0.3	**2-Fluorobiphenyl**	321-60-8	130 %	30-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-018	BH31 5.0-5.35	**2-Fluorobiphenyl**	321-60-8	140 %	30-115 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-018	BH31 5.0-5.35	**Anthracene-d10**	1719-06-8	152 %	27-133 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-001	BH32 0.7-1.0	**4-Terphenyl-d14**	1718-51-0	144 %	18-137 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-013	BH31 0.18-0.20	**4-Terphenyl-d14**	1718-51-0	153 %	18-137 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-015	BH31 0.3-0.6	**4-Terphenyl-d14**	1718-51-0	198 %	18-137 %	**Recovery greater than upper data quality objective**
EP075(SIM)T: PAH Surrogates	EB0814331-018	BH31 5.0-5.35	**4-Terphenyl-d14**	1718-51-0	163 %	18-137 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA037: Ass Field Screening Analysis						
Snap Lock Bag						
BH31 0.18-0.20	----	----	----	24-OCT-2008	16-OCT-2008	**8**
EA055: Moisture Content						
Snap Lock Bag						
BH32 6.2-6.65, BH32 8.1-8.4, BH32 9.3-9.6	----	----	----	24-OCT-2008	22-OCT-2008	**2**
Soil Glass Jar - Unpreserved						
BH32 0.7-1.0, BH32 1.5-1.8, BH32 2.5-3.2, BH32 3.8-4.1, BH32 4.7-5.1, QC 91, QC 92, QC 93, BH31 0.18-0.20, BH31 0.2-0.3, BH31 0.3-0.6, BH31 2.0-2.3, BH31 3.6-3.9, BH31 5.0-5.35	----	----	----	24-OCT-2008	22-OCT-2008	**2**

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP005: Total Organic Carbon (TOC)						
Amber Glass Bottle - Unpreserved						
QC 94, QC90	----	----	----	21-OCT-2008	17-OCT-2008	**4**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: **WATER**

Quality Control Sample Type / Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Organotin Compounds (Soluble)	1	19	5.3	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Appendix E

URS 2008 - Data Validation and Quality Control Tables

Appendix E: Data Validation and Quality Control Tables

Table 1: Equipment Rinsate Full Analytical Results

Sample ID			QC02	QC05	QC06	QC13	QC 14	QC17	QC20	QC21	QC28	QC33	QC 38	QC41	QC 44	QC 47	QC49
Date Sampled			30/07/2008	4/08/2008	5/08/2008	10/08/2008	11/08/2008	12/08/2008	14/08/2008	18/08/2008	19/08/2008	20/08/2008	26/08/2008	27/08/2008	28/08/2008	29/08/2008	1/09/2008
Sample Type			Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank
Batch No.			EB0810222_MRED	EB0810480_MRED	EB0810571_MRED	EB0810762_MRED	EB0810824_MRED	EB0810850_MRED	EB0811004_MRED	EB0811130_MRED	EB0811213_MRED	EB0811298_MRED	EB0811611_MRED	EB0811673_MRED	EB0811787_MRED	EB0811799_MRED	EB0811949_MRED
Analyte	**LOR**	**Units**															
Metals (Total)																	
Antimony	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0001	mg/L	**0.0002**	**0.0064**	**0.0007**	**0.0003**	<0.0001	**0.0002**	<0.0001	<0.0001	<0.0001	**0.0014**	<0.0001	**0.0002**	**0.0004**	**0.0198**	<0.0001
Chromium	0.001	mg/L	<0.001	**0.002**	<0.001	**0.013**	**0.012**	<0.001	**0.002**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.003**	**0.003**
Lead	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.002**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	0.005	mg/L	<0.005	**0.005**	<0.005	<0.005	<0.005	<0.005	<0.005	**0.006**	**0.01**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Natural Attenuation Parameters																	
Total Organic Carbon	1	mg/L	<1	**6**	<1	<1	**1**	**2**	-	-	<1	**1**	<1	<1	<1	<1	<1
Polynuclear Aromatic Hydrocarbons																	
Acenaphthene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Acenaphthylene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Anthracene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Benzo(a)anthracene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Benzo(a)pyrene	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-
Benzo(b&k)fluoranthene	2	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	-	-	-	-	-	-	-
Benzo(b)fluoranthene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Benzo(k)fluoranthene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Chrysene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Fluoranthene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Fluorene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Naphthalene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Phenanthrene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-
Pyrene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-

Appendix E: Data Validation and Quality Control Tables

Table 1: Equipment Rinsate Full Analytical Results

Sample ID			QC02	QC05	QC06	QC13	QC 14	QC17	QC20	QC21	QC28	QC33	QC 38	QC41	QC 44	QC 47	QC49
Date Sampled			30/07/2008	4/08/2008	5/08/2008	10/08/2008	11/08/2008	12/08/2008	14/08/2008	18/08/2008	19/08/2008	20/08/2008	26/08/2008	27/08/2008	28/08/2008	29/08/2008	1/09/2008
Sample Type			Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank
Batch No.			EB0810222_MRED	EB0810480_MRED	EB0810571_MRED	EB0810762_MRED	EB0810824_MRED	EB0810850_MRED	EB0811004_MRED	EB0811130_MRED	EB0811213_MRED	EB0811298_MRED	EB0811611_MRED	EB0811673_MRED	EB0811787_MRED	EB0811799_MRED	EB0811949_MRED
Analyte	**LOR**	**Units**															
Organochlorine Pesticides (OC)																	
4,4-DDD	0.5	µg/L	<1	<2.2	<2.2	<1	<0.9	<2.4	<1	<0.9	<0.9	<0.9	<2.4	<2.5	<0.9	<1	<0.9
4,4-DDE	0.5	µg/L	<1	<2.2	<2.2	<1	<0.9	<2.4	<1	<0.9	<0.9	<0.9	<2.4	<2.5	<0.9	<1	<0.9
4,4-DDT	2	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
a-BHC	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Aldrin	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
b-BHC	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Chlordane - cis	0.5	µg/L	<1	<2.2	<2.2	<1	<0.9	<2.4	<1	<0.9	<0.9	<0.9	<2.4	<2.5	<0.9	<1	<0.9
Chlordane - trans	0.5	µg/L	<1	<2.2	<2.2	<1	<0.9	<2.4	<1	<0.9	<0.9	<0.9	<2.4	<2.5	<0.9	<1	<0.9
d-BHC	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Dieldrin	0.5	µg/L	<1	<2.2	<2.2	<1	<0.9	<2.4	<1	<0.9	<0.9	<0.9	<2.4	<2.5	<0.9	<1	<0.9
Endosulfan 1	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Endosulfan 2	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Endosulfan sulfate	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Endrin	0.5	µg/L	<1	<2.2	<2.2	<1	<0.9	<2.4	<1	<0.9	<0.9	<0.9	<2.4	<2.5	<0.9	<1	<0.9
Endrin aldehyde	0.5	µg/L	<1	<2.2	<2.2	<1	<0.9	<2.4	<1	<0.9	<0.9	<0.9	<2.4	<2.5	<0.9	<1	<0.9
Endrin ketone	0.5	µg/L	<1	<2.2	<2.2	<1	<0.9	<2.4	<1	<0.9	<0.9	<0.9	<2.4	<2.5	<0.9	<1	<0.9
g-BHC	0.5	µg/L	<1	<2.2	<2.2	<1	<0.9	<2.4	<1	<0.9	<0.9	<0.9	<2.4	<2.5	<0.9	<1	<0.9
Heptachlor	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Heptachlor epoxide	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Hexachlorobenzene	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Methoxychlor	2	µg/L	-	-	-	-	-	<2	<2	-	-	-	-	-	-	-	-
Total Chlordane	0.5	µg/L	<1	<2.2	<2.2	-	-	-	-	<0.9	<0.9	-	<2.4	<2.5	<0.9	<1	<0.9
Organophosphorus Pesticides (OP)																	
Azinphos methyl	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Bromophos-ethyl	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Carbophenothion	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Chlorfenvinphos	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Chlorpyrifos	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Chlorpyrifos-methyl	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Demeton-S-methyl	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Diazinon	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Dichlorvos	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Dimethoate	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Ethion	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Fenamiphos	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Fenthion	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Malathion	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Monocrotophos	2	µg/L	-	-	-	-	-	<2	<2	-	-	-	-	-	-	-	-
Parathion	2	µg/L	-	-	-	-	-	<2	<2	-	-	-	-	-	-	-	-
Parathion-methyl	2	µg/L	-	-	-	-	-	<2	<2	-	-	-	-	-	-	-	-
Pirimphos-ethyl	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Prothiofos	0.5	µg/L	-	-	-	-	-	<2.4	<1	-	-	-	-	-	-	-	-
Organotin Compounds																	
Tributyltin	2	µgsn/L	-	<2	<2	-	-	<2	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls																	
Polychlorinated biphenyls	1	µg/L	<2	<4	<4	<2	<2	<5	<2	<2	<2	<2	<2	<2	<2	<2	<2

Appendix E: Data Validation and Quality Control Tables

Table 1: Equipment Rinsate Full Analytical Results

Sample ID			QC 50	QC56	QC57	QC60	QC61	QC66	QC69	QC70	QC71	QC76	QC79	QC84	QC89	QC90	QC 94
Date Sampled			2/09/2008	8/09/2008	9/09/2008	10/09/2008	11/09/2008	20/09/2008	21/09/2008	22/09/2008	23/09/2008	28/09/2008	4/10/2008	8/10/2008	9/10/2008	13/10/2008	15/10/2008
Sample Type			Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank
Batch No.			EB0812007_MRED	EB0812313_MRED	EB0812358_MRED	EB0812603_MRED	EB0812603_MRED	EB0813051_MRED	EB0813051_MRED	EB0813167_MRED	EB0813167_MRED	EB0813420_MRED	EB0813733_MRED	EB0814076_MRED	EB0814114_MRED	EB0814331_MRED	EB0814331_MRED
Analyte	**LOR**	**Units**															
Metals (Total)																	
Antimony	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0001	mg/L	<0.0001	<0.0001	**0.0001**	<0.0001	<0.0001	**0.0005**	<0.0001	<0.0001	**0.0001**	**0.0016**	<0.0001	<0.0001	<0.0001	**0.0005**	**0.0003**
Chromium	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.001**	<0.001	<0.001	<0.001	<0.001
Copper	0.001	mg/L	**0.003**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.012**	<0.005	<0.005	**0.005**	<0.005	<0.005
Natural Attenuation Parameters																	
Total Organic Carbon	1	mg/L	<1	<1	<1	**1**	<1	<1	<1	<1	<1	<1	**1**	<1	<1	<1	<1
Polynuclear Aromatic Hydrocarbons																	
Acenaphthene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Acenaphthylene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Anthracene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Benzo(a)anthracene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Benzo(a)pyrene	0.5	µg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-
Benzo(b&k)fluoranthene	2	µg/L	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-
Benzo(b)fluoranthene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Benzo(g,h,i)perylene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Benzo(k)fluoranthene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Chrysene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Dibenz(a,h)anthracene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Fluoranthene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Fluorene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Indeno(1,2,3-cd)pyrene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Naphthalene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Phenanthrene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-
Pyrene	1	µg/L	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-

Appendix E: Data Validation and Quality Control Tables

Table 1: Equipment Rinsate Full Analytical Results

Sample ID			QC 50	QC56	QC57	QC60	QC61	QC66	QC69	QC70	QC71	QC76	QC79	QC84	QC89	QC90	QC 94
Date Sampled			2/09/2008	8/09/2008	9/09/2008	10/09/2008	11/09/2008	20/09/2008	21/09/2008	22/09/2008	23/09/2008	28/09/2008	4/10/2008	8/10/2008	9/10/2008	13/10/2008	15/10/2008
Sample Type			Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank
Batch No.			EB0812007_MRED	EB0812313_MRED	EB0812358_MRED	EB0812603_MRED	EB0812603_MRED	EB0813051_MRED	EB0813051_MRED	EB0813167_MRED	EB0813167_MRED	EB0813420_MRED	EB0813733_MRED	EB0814076_MRED	EB0814114_MRED	EB0814331_MRED	EB0814331_MRED
Analyte	**LOR**	**Units**															
Organochlorine Pesticides (OC)																	
4,4-DDD	0.5	µg/L	<0.9	<0.8	<1	<1.2	<1.1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5
4,4-DDE	0.5	µg/L	<0.9	<0.8	<1	<1.2	<1.1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5
4,4-DDT	2	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
a-BHC	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aldrin	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b-BHC	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlordane - cis	0.5	µg/L	<0.9	<0.8	<1	<1.2	<1.1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Chlordane - trans	0.5	µg/L	<0.9	<0.8	<1	<1.2	<1.1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5
d-BHC	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	0.5	µg/L	<0.9	<0.8	<1	<1.2	<1.1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan 1	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan 2	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan sulfate	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	0.5	µg/L	<0.9	<0.8	<1	<1.2	<1.1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	0.5	µg/L	<0.9	<0.8	<1	<1.2	<1.1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin ketone	0.5	µg/L	<0.9	<0.8	<1	<1.2	<1.1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5
g-BHC	0.5	µg/L	<0.9	<0.8	<1	<1.2	<1.1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor epoxide	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	2	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Chlordane	0.5	µg/L	<0.9	<0.8	<1	<1.2	<1.1	<1	<1	-	-	-	-	-	<0.5	<0.5	<0.5
Organophosphorus Pesticides (OP)																	
Azinphos methyl	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromophos-ethyl	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbophenothion	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorfenvinphos	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorpyrifos	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorpyrifos-methyl	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demeton-S-methyl	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diazinon	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorvos	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dimethoate	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethion	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fenamiphos	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fenthion	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malathion	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monocrotophos	2	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parathion	2	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parathion-methyl	2	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pirimphos-ethyl	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prothiofos	0.5	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organotin Compounds																	
Tributyltin	2	µgsn/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls																	
Polychlorinated biphenyls	1	µg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<1

Appendix E: Data Validation and Quality Control Tables

Table 1: Equipment Rinsate Summary

Sample ID	Date Sampled	Sample Type	Batch No.	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Total Organic Carbon
				0.001 mg/L	0.0001 mg/L	0.001 mg/L	0.001 mg/L	0.001 mg/L	0.001 mg/L	0.001 mg/L	1 mg/L
QC02	30/07/2008	Rinsate Blank	EB0810222	<0.001	**0.0002**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC05	4/08/2008	Rinsate Blank	EB0810480	<0.001	**0.0064**	**0.002**	<0.001	<0.001	<0.001	**0.005**	**6**
QC06	5/08/2008	Rinsate Blank	EB0810571	<0.001	**0.0007**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC13	10/08/2008	Rinsate Blank	EB0810762	<0.001	**0.0003**	**0.013**	<0.001	<0.001	<0.001	<0.005	<1
QC 14	11/08/2008	Rinsate Blank	EB0810824	<0.001	<0.0001	**0.012**	<0.001	<0.001	<0.001	<0.005	**1**
QC17	12/08/2008	Rinsate Blank	EB0810850	<0.001	**0.0002**	<0.001	<0.001	<0.001	<0.001	<0.005	**2**
QC20	14/08/2008	Rinsate Blank	EB0811004	**0.001**	<0.0001	**0.002**	<0.001	<0.001	**0.002**	<0.005	-
QC21	18/08/2008	Rinsate Blank	EB0811130	<0.001	<0.0001	<0.001	<0.001	**0.001**	<0.001	**0.006**	-
QC28	19/08/2008	Rinsate Blank	EB0811213	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	**0.01**	<1
QC33	20/08/2008	Rinsate Blank	EB0811298	<0.001	**0.0014**	<0.001	<0.001	<0.001	<0.001	<0.005	**1**
QC 44	28/08/2008	Rinsate Blank	EB0811787	<0.001	**0.0004**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC 47	29/08/2008	Rinsate Blank	EB0811799	<0.001	**0.0198**	<0.001	**0.003**	<0.001	<0.001	<0.005	<1
QC49	1/09/2008	Rinsate Blank	EB0811949	<0.001	<0.0001	<0.001	**0.003**	<0.001	<0.001	<0.005	<1
QC 50	2/09/2008	Rinsate Blank	EB0812007	<0.001	<0.0001	<0.001	**0.003**	<0.001	<0.001	<0.005	<1
QC57	9/09/2008	Rinsate Blank	EB0812358	<0.001	**0.0001**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC66	20/09/2008	Rinsate Blank	EB0813051	<0.001	**0.0005**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC71	23/09/2008	Rinsate Blank	EB0813167	<0.001	**0.0001**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC76	28/09/2008	Rinsate Blank	EB0813420	<0.001	**0.0016**	<0.001	<0.001	<0.001	<0.001	**0.012**	<1
QC79	4/10/2008	Rinsate Blank	EB0813733	<0.001	<0.0001	**0.001**	<0.001	<0.001	<0.001	<0.005	**1**
QC89	9/10/2008	Rinsate Blank	EB0814114	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	**0.005**	<1
QC90	13/10/2008	Rinsate Blank	EB0814331	<0.001	**0.0005**	<0.001	<0.001	<0.001	<0.001	<0.005	<1
QC 94	15/10/2008	Rinsate Blank	EB0814331	<0.001	**0.0003**	<0.001	<0.001	<0.001	<0.001	<0.005	<1

URS 2008 Santos GLNG
Appendix E: Data Validation and Quality Control Tables
Table 3: Relative Percentange Difference (RPD%) Summary

Location	GC/GLNG #3_0-0.5	GC/GLNG #3_0-0.5	GC/GLNG #3_0-0.5
Sample ID	GC/GLNG #3_0-0.5	GC/GLNG #13_0-0.5	
Date Sampled	6/08/2008	6/08/2008	
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Moisture Content	Moisture Content	1	1	-	%	33.8	37.1	-	9.31%	-	-	Pass	-	-
Physico-Chemical Parameters	Clay (<2 µm)	1	1	-	%	14	14	-	0.00%	-	-	Pass	-	-
Physico-Chemical Parameters	Silt (2-63 µm)	1	1	-	%	7	8	-	13.33%	-	-	Pass	-	-
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	-	%	0.48	0.39	-	20.69%	-	-	Pass	-	-
Nutrients	Phosphorus (total)	20	20	-	mg/kg	345	309	-	11.01%	-	-	Pass	-	-
Nutrients	Total Kjeldahl Nitrogen as N	20	20	-	mg/kg	380	420	-	10.00%	-	-	Pass	-	-
Nutrients	Total Nitrogen as N	20	20	-	mg/kg	380	420	-	10.00%	-	-	Pass	-	-
Nutrients	Ammonia as N(Porewater)	0.01	20	-	mg/L	3.54	< 20	-	**139.85%**	-	-	Fail	-	-
Metals (Total)	Aluminium	50	50	-	mg/kg	4240	9570	-	**77.19%**	-	-	Fail	-	-
Metals (Total)	Arsenic	5	5	-	mg/kg	11	13	-	16.67%	-	-	Pass	-	-
Metals (Total)	Chromium	2	2	-	mg/kg	12	19	-	45.16%	-	-	Pass	-	-
Metals (Total)	Copper	5	5	-	mg/kg	7	15	-	72.73%	-	-	Pass-1	-	-
Metals (Total)	Iron	50	50	-	mg/kg	14800	21300	-	36.01%	-	-	Pass	-	-
Metals (Total)	Lead	5	5	-	mg/kg	< 5	7	-	33.33%	-	-	Pass	-	-
Metals (Total)	Manganese	5	5	-	mg/kg	725	359	-	**67.53%**	-	-	Fail	-	-
Metals (Total)	Nickel	2	2	-	mg/kg	6	10	-	50.00%	-	-	Pass	-	-
Metals (Total)	Zinc	5	5	-	mg/kg	19	36	-	61.82%	-	-	Pass-1	-	-
Phenolic Compounds	Phenol	10	10	-	µg/kg	20	30	-	40.00%	-	-	Pass	-	-
Polynuclear Aromatic Hydrocarbons	2-Methylnaphthalene	5	5	-	µg/kg	21	< 5	-	123.08%	-	-	Pass-1	-	-
Polynuclear Aromatic Hydrocarbons	Naphthalene	5	5	-	µg/kg	15	< 5	-	100.00%	-	-	Pass-1	-	-
Polynuclear Aromatic Hydrocarbons	Phenanthrene	4	4	-	µg/kg	9	< 4	-	76.92%	-	-	Pass-1	-	-
Polynuclear Aromatic Hydrocarbons	Pyrene	4	4	-	µg/kg	5	< 4	-	22.22%	-	-	Pass	-	-

Location	BH4 1.5-2.0	BH4 1.5-2.0	BH4 1.5-2.0
Sample ID	BH4 1.5-2.0	QC18	QC19
Date Sampled	14/08/2008	14/08/2008	14/08/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	0.91	0.52	0.79	**54.55%**	14.12%	41.22%	Fail	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	182	103	157	**55.44%**	14.75%	41.54%	Fail	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	9.2	7.4	8.9	21.69%	3.32%	18.41%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	0.29	0.16	0.25	**57.78%**	14.82%	43.90%	Fail	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	5	< 5	< 5	0.00%	0.00%	-	Pass	Pass	-
Metals (Total)	Chromium	2	2	2	mg/kg	3	4	3	28.57%	0.00%	28.57%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	14	11	< 5	24.00%	94.74%	75.00%	Pass	Pass-1	Pass-1
Metals (Total)	Lead	5	5	5	mg/kg	< 5	< 5	9	-	57.14%	57.14%	-	Pass-1	Pass-1
Metals (Total)	Nickel	2	2	2	mg/kg	3	3	< 2	0.00%	40.00%	40.00%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	17	17	12	0.00%	34.48%	34.48%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	11	12.1	18	9.52%	48.28%	39.20%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Carbon	0.02	0.02	0.02	%	0.07	0.03	0.06	80.00%	15.39%	66.67%	Pass-1	Pass	Pass-1
Natural Attenuation Parameters	Total Inorganic Carbon	0.02	0.02	0.02	%	0.02	< 0.02	0.03	0.00%	40.00%	40.00%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.05	0.03	0.03	50.00%	50.00%	0.00%	Pass	Pass	Pass

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Table 3: Relative Percentange Difference (RPD%) Summary

Pass	RPD <= 50%		
Pass-1	RPD > 50%, Analyis result < 10 times LOR		
Fail	RPD > 50%, Analyis result > 10 times LOR		

Location	BH26 3.5-3.9	BH26 3.5-3.9	BH26 3.5-3.9
Sample ID	BH26 3.5-3.9	QC15	QC16
Date Sampled	8/12/2008	8/12/2008	8/12/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	0.96	0.77	0.99	21.97%	3.08%	25.00%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	192	154	198	21.97%	3.08%	25.00%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	211	255	336	18.88%	45.70%	27.41%	Pass	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.34	0.41	0.54	18.67%	45.46%	27.37%	Pass	Pass	Pass
Acid Sulphate Soils	Liming Rate	1	1	1	kg caco3/t	6	11	15	58.82%	85.71%	30.77%	Pass-1	Pass-1	Pass
Acid Sulphate Soils	Net Acidity (acidity units)	10	10	10	mole h+ /	83	153	205	59.32%	84.72%	29.05%	Pass-1	Pass-1	Pass
Acid Sulphate Soils	Net Acidity (sulfur units)	0.02	0.02	0.02	% s	0.13	0.24	0.33	59.46%	86.96%	31.58%	Pass-1	Pass-1	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	8.2	7.4	7.6	10.26%	7.60%	2.67%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	0.31	0.25	0.32	21.43%	3.18%	24.56%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	< 5	6	< 5	18.18%	-	18.18%	Pass	-	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	7	6	7	15.39%	0.00%	15.39%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	33	28	507	16.39%	**175.56%**	**179.07%**	Pass	Fail	Fail
Metals (Total)	Lead	5	5	5	mg/kg	6	6	7	0.00%	15.39%	15.39%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	< 5	< 5	110	-	**182.61%**	**182.61%**	-	Fail	Fail
Moisture Content	Moisture Content	1	1	1	%	22.6	21.5	22.2	4.99%	1.79%	3.20%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.32	0.29	0.23	9.84%	32.73%	23.08%	Pass	Pass	Pass

Pass	RPD <= 50%		
Pass-1	RPD > 50%, Analyis result < 10 times LOR		
Fail	RPD > 50%, Analyis result > 10 times LOR		

Location	BH25 2.4-3.0	BH25 2.4-3.0	BH25 2.4-3.0
Sample ID	BH25 2.4-3.0	QC03	QC04
Date Sampled	8/04/2008	8/04/2008	8/04/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	17.8	12.3	18.2	36.55%	2.22%	38.69%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	3560	2460	3630	36.55%	1.95%	38.42%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	43	50	29	15.05%	38.89%	53.17%	Pass	Pass	Pass-1
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.07	0.08	0.04	13.33%	54.55%	66.67%	Pass	Pass-1	Pass-1
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	9.3	9.4	9.5	1.07%	2.13%	1.06%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	5.71	3.94	5.82	36.68%	1.91%	38.53%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	31	8	6	117.95%	135.14%	28.57%	Pass-1	Pass-1	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	4	4	3	0.00%	28.57%	28.57%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	4	3	2	28.57%	66.67%	40.00%	Pass	Pass-1	Pass
Moisture Content	Moisture Content	1	1	1	%	24.3	21.8	20.1	10.85%	18.92%	8.12%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.22	0.17	0.09	25.64%	83.87%	61.54%	Pass	Pass-1	Pass-1

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Table 3: Relative Percentange Difference (RPD%) Summary

Pass	RPD <= 50%		
Pass-1	RPD > 50%, Analyis result < 10 times LOR		
Fail	RPD > 50%, Analyis result > 10 times LOR		

Location	BH24 0.7-1.7	BH24 0.7-1.7	BH24 0.7-1.7
Sample ID	BH24 0.7-1.7	QC01	
Date Sampled	30/07/2008	30/07/2008	
Sample Type	**Primary**	**Secondary**	**Tertiary**

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	-	% caco3	13.3	17.8	-	28.94%	-	-	Pass	-	-
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	-	mole h+ /	2650	3550	-	29.03%	-	-	Pass	-	-
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	-	mole h+ /	297	326	-	9.31%	-	-	Pass	-	-
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	-	-	1.5	1.5	-	0.00%	-	-	Pass	-	-
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	-	% s	0.48	0.52	-	8.00%	-	-	Pass	-	-
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	-	ph unit	9	9	-	0.00%	-	-	Pass	-	-
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	-	% pyrite s	4.25	5.7	-	29.15%	-	-	Pass	-	-
Metals (Total)	Arsenic	5	5	-	mg/kg	16	19	-	17.14%	-	-	Pass	-	-
Metals (Total)	Chromium	2	2	-	mg/kg	15	18	-	18.18%	-	-	Pass	-	-
Metals (Total)	Copper	5	5	-	mg/kg	13	12	-	8.00%	-	-	Pass	-	-
Metals (Total)	Lead	5	5	-	mg/kg	7	6	-	15.39%	-	-	Pass	-	-
Metals (Total)	Nickel	2	2	-	mg/kg	8	9	-	11.77%	-	-	Pass	-	-
Metals (Total)	Zinc	5	5	-	mg/kg	23	24	-	4.26%	-	-	Pass	-	-
Moisture Content	Moisture Content	1	1	-	%	31.2	32.5	-	4.08%	-	-	Pass	-	-
Natural Attenuation Parameters	Total Carbon	0.02	0.02	-	%	2.26	2.11	-	6.87%	-	-	Pass	-	-
Natural Attenuation Parameters	Total Inorganic Carbon	0.02	0.02	-	%	1.62	1.4	-	14.57%	-	-	Pass	-	-
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	-	%	0.64	0.71	-	10.37%	-	-	Pass	-	-

Location	BH02 2.4-3.2	BH02 2.4-3.2	BH02 2.4-3.2
Sample ID	BH02 2.4-3.2	QC11	QC12
Date Sampled	8/10/2008	8/10/2008	8/10/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	0.97	0.91	0.97	6.38%	0.00%	6.38%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	194	182	195	6.38%	0.51%	6.90%	Pass	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	7.6	9	7.7	16.87%	1.31%	15.57%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	0.31	0.29	0.31	6.67%	0.00%	6.67%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	29	18	15	46.81%	63.64%	18.18%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	31	35	31	12.12%	0.00%	12.12%	Pass	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	< 5	6	6	18.18%	18.18%	0.00%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	20	16	15	22.22%	28.57%	6.45%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	40	40	34	0.00%	16.22%	16.22%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	18.5	16.3	16.7	12.64%	10.23%	2.42%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Carbon	0.02	0.02	0.02	%	0.06	0.04	0.05	40.00%	18.18%	22.22%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.06	0.04	0.05	40.00%	18.18%	22.22%	Pass	Pass	Pass

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Table 3: Relative Percentange Difference (RPD%) Summary

Location	BH02 1.9-2.3	BH02 1.9-2.3	BH02 1.9-2.3
Sample ID	BH02 1.9-2.3	QC09	QC10
Date Sampled	8/10/2008	8/10/2008	8/10/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	5.03	6.7	7.17	28.47%	35.08%	6.78%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	1000	1340	1430	29.06%	35.39%	6.50%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	67	102	208	41.42%	102.55%	**68.39%**	Pass	Pass-1	Fail
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.11	0.16	0.33	37.04%	100.00%	**69.39%**	Pass-1	Pass-1	Fail
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	9.1	9.2	9	1.09%	1.11%	2.20%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	1.61	2.15	2.3	28.72%	35.29%	6.74%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	10	11	12	9.52%	18.18%	8.70%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	11	12	13	8.70%	16.67%	8.00%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	11	9	11	20.00%	0.00%	20.00%	Pass	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	5	< 5	5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	7	8	8	13.33%	13.33%	0.00%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	22	17	20	25.64%	9.52%	16.22%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	26.5	23.5	27.7	12.00%	4.43%	16.41%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Carbon	0.02	0.02	0.02	%	0.9	0.95	1.27	5.41%	34.10%	28.83%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Inorganic Carbon	0.02	0.02	0.02	%	0.47	0.68	0.83	36.52%	**55.39%**	19.87%	Pass	Fail	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.43	0.27	0.44	45.71%	2.30%	47.89%	Pass	Pass	Pass

Location	BH02 0.3-0.9	BH02 0.3-0.9	BH02 0.3-0.9
Sample ID	BH02 0.3-0.9	QC07	QC08
Date Sampled	8/10/2008	8/10/2008	8/10/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	3.77	2.74	3.58	31.64%	5.17%	26.58%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	753	547	715	31.69%	5.18%	26.62%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	36	16	12	76.92%	100.00%	28.57%	Pass-1	Pass-1	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.06	0.03	< 0.02	66.67%	100.00%	40.00%	Pass-1	Pass-1	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	9.4	9.6	9.6	2.11%	2.11%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	1.21	0.88	1.14	31.58%	5.96%	25.74%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	6	< 5	< 5	18.18%	18.18%	-	Pass	Pass	-
Metals (Total)	Chromium	2	2	2	mg/kg	8	6	6	28.57%	28.57%	0.00%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	6	< 5	5	18.18%	18.18%	0.00%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	4	4	4	0.00%	0.00%	0.00%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	12	7	7	52.63%	52.63%	0.00%	Pass-1	Pass-1	Pass
Moisture Content	Moisture Content	1	1	1	%	23.3	20.3	20.1	13.76%	14.75%	0.99%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Carbon	0.02	0.02	0.02	%	0.56	0.3	0.38	60.47%	38.30%	23.53%	Pass-1	Pass	Pass
Natural Attenuation Parameters	Total Inorganic Carbon	0.02	0.02	0.02	%	0.42	0.23	0.33	58.46%	24.00%	35.71%	Pass-1	Pass	Pass-1
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.14	0.07	0.05	66.67%	94.74%	33.33%	Pass-1	Pass-1	Pass

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Appendix E: Data Validation and Quality Control Tables
Table 3: Relative Percentange Difference (RPD%) Summary

Location	BH28 5.9-6.3	BH28 5.9-6.3	BH28 5.9-6.3
Sample ID	BH28 5.9-6.3	QC74	QC75
Date Sampled	28/09/2008	28/09/2008	28/09/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulfate Soils	Acid Neutralising Capacity (19A2)	0.01	0.01	0.01	% caco3	1.14	0.92	1.03	21.36%	10.14%	11.28%	Pass	Pass	Pass
Acid Sulfate Soils	acidity - Acid Neutralising Capacity (a-19A2)	10	10	10	mole h+ /	228	185	206	20.82%	10.14%	10.74%	Pass	Pass	Pass
Acid Sulfate Soils	pH (F)	0.1	0.1	0.1	ph unit	9.8	9.7	9.4	1.03%	4.17%	3.14%	Pass	Pass	Pass
Acid Sulfate Soils	pH (Fox)	0.1	0.1	0.1	ph unit	5.8	6.1	6	5.04%	3.39%	1.65%	Pass	Pass	Pass
Acid Sulfate Soils	Reaction Rate	1	1	1	-	1	1	1	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulfate Soils	sulfidic - Acid Neutralising Capacity (s-19A2)	0.01	0.01	0.01	% pyrite s	0.36	0.3	0.33	18.18%	8.70%	9.52%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	22	41	35	60.32%	45.61%	15.79%	Pass-1	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.04	0.07	0.06	54.55%	40.00%	15.39%	Pass-1	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	8.6	8.7	8.5	1.16%	1.17%	2.33%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	6	6	< 5	0.00%	18.18%	18.18%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	8	17	15	72.00%	60.87%	12.50%	Pass-1	Pass-1	Pass
Metals (Total)	Copper	5	5	5	mg/kg	16	55	31	109.86%	63.83%	55.81%	Pass-1	Pass-1	Pass-1
Metals (Total)	Lead	5	5	5	mg/kg	7	28	16	120.00%	78.26%	54.55%	Pass-1	Pass-1	Pass-1
Metals (Total)	Nickel	2	2	2	mg/kg	4	10	4	85.71%	0.00%	85.71%	Pass-1	Pass	Pass-1
Metals (Total)	Zinc	5	5	5	mg/kg	10	24	16	82.35%	46.15%	40.00%	Pass-1	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	19.9	21.9	20.2	9.57%	1.50%	8.08%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.08	0.05	0.04	46.15%	66.67%	22.22%	Pass	Pass-1	Pass

Location	BH28 2.4-3.4	BH28 2.4-3.4	BH28 2.4-3.4
Sample ID	BH28 2.4-3.4	QC72	QC73
Date Sampled	28/09/2008	28/09/2008	28/09/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulfate Soils	Acid Neutralising Capacity (19A2)	0.01	0.01	0.01	% caco3	6.41	3.42	6.3	**60.83%**	1.73%	**59.26%**	Fail	Pass	Fail
Acid Sulfate Soils	acidity - Acid Neutralising Capacity (a-19A2)	10	10	10	mole h+ /	1280	684	1260	**60.69%**	1.58%	**59.26%**	Fail	Pass	Fail
Acid Sulfate Soils	pH (F)	0.1	0.1	0.1	ph unit	8.4	8.4	8.5	0.00%	1.18%	1.18%	Pass	Pass	Pass
Acid Sulfate Soils	pH (Fox)	0.1	0.1	0.1	ph unit	5.6	5.6	5.6	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulfate Soils	Reaction Rate	1	1	1	-	1	1	1	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulfate Soils	sulfidic - Acid Neutralising Capacity (s-19A2)	0.01	0.01	0.01	% pyrite s	2.05	1.1	2.02	**60.32%**	1.47%	**58.97%**	Fail	Pass	Fail
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	386	507	543	27.10%	33.80%	6.86%	Pass	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.62	0.81	0.87	26.57%	33.56%	7.14%	Pass	Pass	Pass
Acid Sulphate Soils	Liming Rate	1	1	1	kg caco3/t	< 1	4	< 1	120.00%	-	120.00%	Pass-1	-	Pass-1
Acid Sulphate Soils	Net Acidity (acidity units)	10	10	10	mole h+ /	< 10	51	< 10	134.43%	-	134.43%	Pass-1	-	Pass-1
Acid Sulphate Soils	Net Acidity (sulfur units)	0.02	0.02	0.02	% s	< 0.02	0.08	< 0.02	120.00%	-	120.00%	Pass-1	-	Pass-1
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	8.6	8.3	8.6	3.55%	0.00%	3.55%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	14	12	12	15.39%	15.39%	0.00%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	29	28	26	3.51%	10.91%	7.41%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	25	36	25	36.07%	0.00%	36.07%	Pass	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	12	11	10	8.70%	18.18%	9.52%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	18	17	16	5.71%	11.77%	6.06%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	46	55	46	17.82%	0.00%	17.82%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	45.3	47.4	43.6	4.53%	3.83%	8.35%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	1.41	1.47	1.17	4.17%	18.61%	22.73%	Pass	Pass	Pass

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Appendix E: Data Validation and Quality Control Tables
Table 3: Relative Percentange Difference (RPD%) Summary

Location	BH27 0.85-1.1	BH27 0.85-1.1	BH27 0.85-1.1
Sample ID	BH27 0.85-1.1	QC77	QC78
Date Sampled	10/04/2008	10/04/2008	10/04/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulfate Soils	Acid Neutralising Capacity (19A2)	0.01	0.01	0.01	% caco3	0.73	0.15	0.02	**131.82%**	**189.33%**	**152.94%**	Fail	Fail	Fail
Acid Sulfate Soils	acidity - Acid Neutralising Capacity (a-19A2)	10	10	10	mole h+ /	146	30	< 10	**131.82%**	**174.36%**	100.00%	Fail	Fail	Pass-1
Acid Sulfate Soils	pH (F)	0.1	0.1	0.1	ph unit	7.5	7.8	7.6	3.92%	1.33%	2.60%	Pass	Pass	Pass
Acid Sulfate Soils	pH (Fox)	0.1	0.1	0.1	ph unit	5.6	5.5	3	1.80%	**60.47%**	**58.82%**	Pass	Fail	Fail
Acid Sulfate Soils	Reaction Rate	1	1	1	-	2	2	3	0.00%	40.00%	40.00%	Pass	Pass	Pass
Acid Sulfate Soils	sulfidic - Acid Neutralising Capacity (s-19A2)	0.01	0.01	0.01	% pyrite s	0.23	0.05	< 0.01	**128.57%**	**183.33%**	133.33%	Fail	Fail	Pass-1
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	14	< 10	< 10	33.33%	33.33%	-	Pass	Pass	-
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.02	< 0.02	< 0.02	0.00%	0.00%	-	Pass	Pass	-
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	7.1	8.1	7.6	13.16%	6.80%	6.37%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	8	9	12	11.77%	40.00%	28.57%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	11	6	16	58.82%	37.04%	90.91%	Pass-1	Pass	Pass-1
Metals (Total)	Copper	5	5	5	mg/kg	37	26	39	34.92%	5.26%	40.00%	Pass-1	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	8	10	12	22.22%	40.00%	18.18%	Pass	Pass	Pass
Metals (Total)	Mercury	0.1	0.1	0.1	mg/kg	< 0.1	< 0.1	0.1	-	0.00%	0.00%	-	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	12	10	14	18.18%	15.39%	33.33%	Pass	Pass	Pass-1
Metals (Total)	Zinc	5	5	5	mg/kg	24	49	25	68.49%	4.08%	64.87%	Pass-1	Pass	Pass-1
Moisture Content	Moisture Content	1	1	1	%	14.6	17.3	16.2	16.93%	10.39%	6.57%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.04	0.05	0.06	22.22%	40.00%	18.18%	Pass	Pass	Pass

Location	BH21 2.95-3.2	BH21 2.95-3.2	BH21 2.95-3.2
Sample ID	BH21 2.95-3.2	QC64	QC65
Date Sampled	20/09/2008	20/09/2008	20/09/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulfate Soils	pH (F)	0.1	0.1	0.1	ph unit	7.8	7.6	7.4	2.60%	5.26%	2.67%	Pass	Pass	Pass
Acid Sulfate Soils	pH (Fox)	0.1	0.1	0.1	ph unit	5	5.2	5.1	3.92%	1.98%	1.94%	Pass	Pass	Pass
Acid Sulfate Soils	Reaction Rate	1	1	1	-	1	1	1	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	6.1	6.2	6.1	1.63%	0.00%	1.63%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	< 5	< 5	7	-	33.33%	33.33%	-	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	6	10	10	50.00%	50.00%	0.00%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	8	10	11	22.22%	31.58%	9.52%	Pass	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	7	9	11	25.00%	44.44%	20.00%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	< 2	4	4	66.67%	66.67%	0.00%	Pass-1	Pass-1	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	6	10	13	50.00%	73.68%	26.09%	Pass	Pass-1	Pass
Moisture Content	Moisture Content	1	1	1	%	15.8	16.6	17.2	4.94%	8.49%	3.55%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.16	0.12	0.13	28.57%	20.69%	8.00%	Pass	Pass	Pass

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Table 3: Relative Percentange Difference (RPD%) Summary

Location	BH21 2.0-2.9	BH21 2.0-2.9	BH21 2.0-2.9
Sample ID	BH21 2.0-2.9	QC62	QC63
Date Sampled	20/09/2008	20/09/2008	20/09/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulfate Soils	Acid Neutralising Capacity (19A2)	0.01	0.01	0.01	% caco3	1.26	1.36	1.41	7.63%	11.24%	3.61%	Pass	Pass	Pass
Acid Sulfate Soils	acidity - Acid Neutralising Capacity (a-19A2)	10	10	10	mole h+ /	251	272	283	8.03%	11.99%	3.96%	Pass	Pass	Pass
Acid Sulfate Soils	pH (F)	0.1	0.1	0.1	ph unit	9.4	8.1	8.2	14.86%	13.64%	1.23%	Pass	Pass	Pass
Acid Sulfate Soils	pH (Fox)	0.1	0.1	0.1	ph unit	5.5	5.8	5.7	5.31%	3.57%	1.74%	Pass	Pass	Pass
Acid Sulfate Soils	Reaction Rate	1	1	1	-	1	1	1	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulfate Soils	sulfidic - Acid Neutralising Capacity (s-19A2)	0.01	0.01	0.01	% pyrite s	0.4	0.44	0.45	9.52%	11.77%	2.25%	Pass	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	7.1	8	8.3	11.92%	15.58%	3.68%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	9	9	9	0.00%	0.00%	0.00%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	278	28	15	**163.40%**	**179.52%**	60.47%	Fail	Fail	Pass-1
Metals (Total)	Lead	5	5	5	mg/kg	9	14	8	43.48%	11.77%	54.55%	Pass	Pass	Pass-1
Metals (Total)	Nickel	2	2	2	mg/kg	4	4	4	0.00%	0.00%	0.00%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	10	11	12	9.52%	18.18%	8.70%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	21.9	21.8	20.4	0.46%	7.09%	6.64%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.29	0.36	0.33	21.54%	12.90%	8.70%	Pass	Pass	Pass

Location	BH21 10.7-11.1	BH21 10.7-11.1	BH21 10.7-11.1
Sample ID	BH21 10.7-11.1	QC67	QC68
Date Sampled	21/09/2008	21/09/2008	21/09/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulfate Soils	Acid Neutralising Capacity (19A2)	0.01	0.01	0.01	% caco3	0.37	2.15	1.31	**141.27%**	**111.91%**	48.56%	Fail	Fail	Pass
Acid Sulfate Soils	acidity - Acid Neutralising Capacity (a-19A2)	10	10	10	mole h+ /	73	429	262	**141.83%**	**112.84%**	48.34%	Fail	Fail	Pass
Acid Sulfate Soils	pH (F)	0.1	0.1	0.1	ph unit	7.8	8.3	8.1	6.21%	3.77%	2.44%	Pass	Pass	Pass
Acid Sulfate Soils	pH (Fox)	0.1	0.1	0.1	ph unit	5.1	7.2	4.9	34.15%	4.00%	38.02%	Pass	Pass	Pass
Acid Sulfate Soils	Reaction Rate	1	1	1	-	1	3	1	100.00%	0.00%	100.00%	Pass-1	Pass	Pass-1
Acid Sulfate Soils	sulfidic - Acid Neutralising Capacity (s-19A2)	0.01	0.01	0.01	% pyrite s	0.12	0.69	0.42	**140.74%**	**111.11%**	48.65%	Fail	Fail	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	6.5	6.6	6.7	1.53%	3.03%	1.50%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	35	< 5	10	150.00%	111.11%	66.67%	Pass-1	Pass-1	Pass-1
Metals (Total)	Chromium	2	2	2	mg/kg	13	9	9	36.36%	36.36%	0.00%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	31	< 5	10	144.44%	102.44%	66.67%	Pass-1	Pass-1	Pass-1
Metals (Total)	Lead	5	5	5	mg/kg	13	9	9	36.36%	36.36%	0.00%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	18	3	6	142.86%	100.00%	66.67%	Pass-1	Pass-1	Pass-1
Metals (Total)	Zinc	5	5	5	mg/kg	31	12	19	88.37%	48.00%	45.16%	Pass-1	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	16.7	15.3	17.2	8.75%	2.95%	11.69%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.04	0.09	0.07	76.92%	54.55%	25.00%	Pass-1	Pass-1	Pass

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Appendix E: Data Validation and Quality Control Tables
Table 3: Relative Percentange Difference (RPD%) Summary

Location	BH20 1.1-1.4	BH20 1.1-1.4	BH20 1.1-1.4
Sample ID	BH20 1.1-1.4	QC54	QC55
Date Sampled	9/08/2008	9/08/2008	9/08/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulfate Soils	pH (F)	0.1	0.1	0.1	ph unit	9.3	8.9	8.6	4.40%	7.82%	3.43%	Pass	Pass	Pass
Acid Sulfate Soils	pH (Fox)	0.1	0.1	0.1	ph unit	5.7	5.4	6	5.41%	5.13%	10.53%	Pass	Pass	Pass
Acid Sulfate Soils	Reaction Rate	1	1	1	-	1	1	1	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	5.86	10.3	11.1	**54.95%**	**61.79%**	7.48%	Fail	Fail	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	1170	2060	2210	**55.11%**	**61.54%**	7.03%	Fail	Fail	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	290	283	290	2.44%	0.00%	2.44%	Pass	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.46	0.45	0.46	2.20%	0.00%	2.20%	Pass	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	8.8	8.9	8.8	1.13%	0.00%	1.13%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	1.88	3.3	3.55	**54.83%**	**61.51%**	7.30%	Fail	Fail	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	16	23	24	35.90%	40.00%	4.26%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	28	28	27	0.00%	3.64%	3.64%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	16	14	15	13.33%	6.45%	6.90%	Pass	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	10	10	10	0.00%	0.00%	0.00%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	16	13	14	20.69%	13.33%	7.41%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	37	28	31	27.69%	17.65%	10.17%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	26.7	29.3	38.6	9.29%	36.45%	27.39%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.63	0.55	0.53	13.56%	17.24%	3.70%	Pass	Pass	Pass

Location	BH20 12.5-13.0	BH20 12.5-13.0	BH20 12.5-13.0
Sample ID	BH20 12.5-13.0	QC58	QC59
Date Sampled	9/09/2008	9/09/2008	9/09/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulfate Soils	pH (F)	0.1	0.1	0.1	ph unit	6.6	7	6.7	5.88%	1.50%	4.38%	Pass	Pass	Pass
Acid Sulfate Soils	pH (Fox)	0.1	0.1	0.1	ph unit	5.1	5	5	1.98%	1.98%	0.00%	Pass	Pass	Pass
Acid Sulfate Soils	Reaction Rate	1	1	1	-	1	1	1	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	6.3	6.2	6.1	1.60%	3.23%	1.63%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	< 5	9	< 5	57.14%	-	57.14%	Pass-1	-	Pass-1
Metals (Total)	Chromium	2	2	2	mg/kg	6	10	6	50.00%	0.00%	50.00%	Pass-1	Pass	Pass-1
Metals (Total)	Copper	5	5	5	mg/kg	< 5	39	7	154.55%	33.33%	139.13%	Pass-1	Pass-1	Pass-1
Metals (Total)	Lead	5	5	5	mg/kg	< 5	6	< 5	18.18%	-	18.18%	Pass	-	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	8	51	12	**145.76%**	40.00%	**123.81%**	Fail	Pass-1	Fail
Metals (Total)	Zinc	5	5	5	mg/kg	29	88	31	**100.86%**	6.67%	**95.80%**	Fail	Pass	Fail
Moisture Content	Moisture Content	1	1	1	%	19.2	19.1	15.7	0.52%	20.06%	19.54%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.04	0.03	0.04	28.57%	0.00%	28.57%	Pass	Pass	Pass

Location	BH19 0.5-0.9	BH19 0.5-0.9	BH19 0.5-0.9
Sample ID	BH19 0.5-0.9	QC 45	QC 46
Date Sampled	29/08/2008	29/08/2008	29/08/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	0.72	0.82	0.45	12.99%	46.15%	**58.27%**	Pass	Pass	Fail
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	144	164	89	12.99%	47.21%	**59.29%**	Pass	Pass	Fail
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	8.2	7.3	7.1	11.61%	14.38%	2.78%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	0.23	0.26	0.14	12.25%	48.65%	**60.00%**	Pass	Pass	Fail
Metals (Total)	Arsenic	5	5	5	mg/kg	6	8	9	28.57%	40.00%	11.77%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	21	23	22	9.09%	4.65%	4.44%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	10	10	6	0.00%	50.00%	50.00%	Pass	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	< 5	< 5	5	-	0.00%	0.00%	-	Pass	Pass
Metals (Total)	Mercury	0.1	0.1	0.1	mg/kg	0.1	< 0.1	< 0.1	0.00%	0.00%	-	Pass	Pass	-
Metals (Total)	Nickel	2	2	2	mg/kg	2	2	< 2	0.00%	0.00%	0.00%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	19.1	17.8	15.2	7.05%	22.74%	15.76%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.06	0.05	0.05	18.18%	18.18%	0.00%	Pass	Pass	Pass

Location	BH18 7.7-8.1	BH18 7.7-8.1	BH18 7.7-8.1
Sample ID	BH18 7.7-8.1	QC 36	QC 37
Date Sampled	26/08/2008	26/08/2008	26/08/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	10.5	10.7	10.6	1.89%	0.95%	0.94%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	2100	2130	2130	1.42%	1.42%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	44	20	37	75.00%	17.28%	59.65%	Pass-1	Pass	Pass-1
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.07	0.03	0.06	80.00%	15.39%	66.67%	Pass-1	Pass	Pass-1
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	9.5	9.6	9.6	1.05%	1.05%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	3.37	3.42	3.41	1.47%	1.18%	0.29%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	5	5	< 5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	8	8	6	0.00%	28.57%	28.57%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	4	4	3	0.00%	28.57%	28.57%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	8	8	5	0.00%	46.15%	46.15%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	16.5	15.8	13.7	4.33%	18.54%	14.24%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.09	0.06	0.09	40.00%	0.00%	40.00%	Pass-1	Pass	Pass

Location	BH18 1.3-1.7	BH18 1.3-1.7	BH18 1.3-1.7
Sample ID	BH18 1.3-1.7	QC 34	QC 35
Date Sampled	26/08/2008	26/08/2008	26/08/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	21.9	16.4	12.9	28.72%	**51.72%**	23.89%	Pass	Fail	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	4380	3280	2580	28.72%	**51.72%**	23.89%	Pass	Fail	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	152	87	94	**54.39%**	47.15%	7.74%	Fail	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.24	0.14	0.15	**52.63%**	46.15%	6.90%	Fail	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	9.4	9.4	9.4	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	7.02	5.25	4.14	28.85%	**51.61%**	23.64%	Pass	Fail	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	11	11	12	0.00%	8.70%	8.70%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	8	8	11	0.00%	31.58%	31.58%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	5	< 5	7	0.00%	33.33%	33.33%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	5	5	6	0.00%	18.18%	18.18%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	10	11	17	9.52%	51.85%	42.86%	Pass	Pass-1	Pass
Moisture Content	Moisture Content	1	1	1	%	27	21.1	23.2	24.53%	15.14%	9.48%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.39	0.29	0.4	29.41%	2.53%	31.88%	Pass	Pass	Pass

Location	BH17 1.55-2.0	BH17 1.55-2.0	BH17 1.55-2.0
Sample ID	BH17 1.55-2.0	QC24	QC25
Date Sampled	18/08/2008	18/08/2008	18/08/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	0.86	1.11	0.77	25.38%	11.04%	36.17%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	171	222	154	25.95%	10.46%	36.17%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	< 10	14	< 10	33.33%	-	33.33%	Pass	-	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	< 0.02	0.02	< 0.02	0.00%	-	0.00%	Pass	-	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	7.8	8.6	7.2	9.76%	8.00%	17.72%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	0.27	0.36	0.25	28.57%	7.69%	36.07%	Pass	Pass	Pass
Metals (Total)	Antimony	5	5	5	mg/kg	< 5	< 5	21	-	123.08%	123.08%	-	Pass-1	Pass-1
Metals (Total)	Chromium	2	2	2	mg/kg	15	16	18	6.45%	18.18%	11.77%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	32	28	36	13.33%	11.77%	25.00%	Pass	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	< 5	6	6	18.18%	18.18%	0.00%	Pass	Pass	Pass
Metals (Total)	Mercury	0.1	0.1	0.1	mg/kg	< 0.1	0.1	0.2	0.00%	66.67%	66.67%	Pass	Pass-1	Pass-1
Metals (Total)	Nickel	2	2	2	mg/kg	21	18	23	15.39%	9.09%	24.39%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	55	50	62	9.52%	11.97%	21.43%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	19.6	19.6	19.7	0.00%	0.51%	0.51%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.14	0.13	0.04	7.41%	111.11%	105.88%	Pass	Pass-1	Pass-1

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Appendix E: Data Validation and Quality Control Tables
Table 3: Relative Percentange Difference (RPD%) Summary

Location	BH17 0.5-1.0	BH17 0.5-1.0	BH17 0.5-1.0
Sample ID	BH17 0.5-1.0	QC22	QC23
Date Sampled	18/08/2008	18/08/2008	18/08/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	10.3	11.4	9.44	10.14%	8.71%	18.81%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	2050	2270	1880	10.19%	8.65%	18.80%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	353	314	309	11.69%	13.29%	1.61%	Pass	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.56	0.5	0.49	11.32%	13.33%	2.02%	Pass	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	8.9	8.9	9	0.00%	1.12%	1.12%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	3.29	3.64	3.02	10.10%	8.56%	18.62%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	15	12	8	22.22%	60.87%	40.00%	Pass	Pass-1	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	24	20	22	18.18%	8.70%	9.52%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	20	16	15	22.22%	28.57%	6.45%	Pass	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	11	8	9	31.58%	20.00%	11.77%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	13	11	12	16.67%	8.00%	8.70%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	39	32	34	19.72%	13.70%	6.06%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	41.4	29.7	35.6	32.91%	15.07%	18.07%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.82	0.73	0.88	11.61%	7.06%	18.63%	Pass	Pass	Pass

Location	BH16 1.0-1.45	BH16 1.0-1.45	BH16 1.0-1.45
Sample ID	BH16 1.0-1.45	QC26	QC27
Date Sampled	19/08/2008	19/08/2008	19/08/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	1.39	1.27	1.12	9.02%	21.51%	12.55%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	278	254	224	9.02%	21.51%	12.55%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	379	404	325	6.39%	15.34%	21.67%	Pass	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.61	0.65	0.52	6.35%	15.93%	22.22%	Pass	Pass	Pass
Acid Sulphate Soils	Liming Rate	1	1	1	kg caco3/t	14	18	13	25.00%	7.41%	32.26%	Pass	Pass	Pass
Acid Sulphate Soils	Net Acidity (acidity units)	10	10	10	mole h+ /	194	235	175	19.11%	10.30%	29.27%	Pass	Pass	Pass
Acid Sulphate Soils	Net Acidity (sulfur units)	0.02	0.02	0.02	% s	0.31	0.38	0.28	20.29%	10.17%	30.30%	Pass	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	7.8	7.6	7.8	2.60%	0.00%	2.60%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	0.44	0.41	0.36	7.06%	20.00%	12.99%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	8	8	6	0.00%	28.57%	28.57%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	16	16	16	0.00%	0.00%	0.00%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	27	26	27	3.77%	0.00%	3.77%	Pass	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	9	8	8	11.77%	11.77%	0.00%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	10	10	9	0.00%	10.53%	10.53%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	31	30	30	3.28%	3.28%	0.00%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	41.3	41.8	40.6	1.20%	1.71%	2.91%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.72	0.87	0.6	18.87%	18.18%	36.74%	Pass	Pass	Pass

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Appendix E: Data Validation and Quality Control Tables
Table 3: Relative Percentange Difference (RPD%) Summary

Location	BH15 1.5-2.0	BH15 1.5-2.0	BH15 1.5-2.0
Sample ID	BH15 1.5-2.0	QC31	QC32
Date Sampled	20/08/2008	20/08/2008	20/08/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Dupli	hary vs. Tripli	icate v. Tripli	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	0.63	< 0.01	0.9	**193.75%**	35.29%	**195.60%**	Fail	Pass	Fail
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	126	< 10	180	**170.59%**	35.29%	**178.95%**	Fail	Pass	Fail
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	14	< 10	29	33.33%	69.77%	97.44%	Pass-1	Pass-1	Pass-1
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.02	< 0.02	0.05	0.00%	85.71%	85.71%	Pass	Pass-1	Pass-1
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	7.2	7.8	7.4	8.00%	2.74%	5.26%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	0.2	< 0.01	0.29	**180.95%**	36.74%	**186.67%**	Fail	Pass	Fail
Metals (Total)	Chromium	2	2	2	mg/kg	7	8	6	13.33%	15.39%	28.57%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	28	66	40	**80.85%**	35.29%	49.06%	Fail	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	6	6	< 5	0.00%	18.18%	18.18%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	7	9	8	25.00%	13.33%	11.77%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	22	25	18	12.77%	20.00%	32.56%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	21.4	20.2	16	5.77%	28.88%	23.20%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.23	0.23	0.39	0.00%	**51.61%**	**51.61%**	Pass	Fail	Fail

Location	BH15 0-0.45	BH15 0-0.45	BH15 0-0.45
Sample ID	BH15 0-0.45	QC29	QC30
Date Sampled	20/08/2008	20/08/2008	20/08/2008
Sample Type	**Primary**	**Secondary**	**Tertiary**

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	9.98	11.2	9.03	11.52%	10.00%	21.45%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	1990	2250	1800	12.26%	10.03%	22.22%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	571	506	513	12.07%	10.70%	1.37%	Pass	Pass	Pass
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.92	0.81	0.82	12.72%	11.49%	1.23%	Pass	Pass	Pass
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	8.2	8.4	8.4	2.41%	2.41%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	3.2	3.6	2.89	11.77%	10.18%	21.88%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	49	22	35	76.06%	33.33%	45.61%	Pass-1	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	28	27	24	3.64%	15.39%	11.77%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	23	17	22	30.00%	4.44%	25.64%	Pass	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	11	8	11	31.58%	0.00%	31.58%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	18	15	15	18.18%	18.18%	0.00%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	63	40	55	44.66%	13.56%	31.58%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	61.8	46.4	55.7	28.47%	10.38%	18.22%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	1.47	1.83	1.7	21.82%	14.51%	7.37%	Pass	Pass	Pass

Location						BH14 1.6-2	BH14 1.6-2	BH14 1.6-2						
Sample ID						BH14 1.6-2	QC39	QC40						
Date Sampled						27/08/2008	27/08/2008	27/08/2008						
Sample Type						**Primary**	**Secondary**	**Tertiary**						

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR
Fail RPD > 50%, Analyis result > 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	8.64	12.7	8.34	38.05%	3.53%	41.45%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	1730	2540	1670	37.94%	3.53%	41.33%	Pass	Pass	Pass
Acid Sulphate Soils	acidity - Chromium Reducible Sulfur (a-22B)	10	10	10	mole h+ /	59	50	88	16.51%	39.46%	55.07%	Pass	Pass	Pass-1
Acid Sulphate Soils	ANC Fineness Factor	0.5	0.5	0.5	-	1.5	1.5	1.5	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	Chromium Reducible Sulfur (22B)	0.02	0.02	0.02	% s	0.1	0.08	0.14	22.22%	33.33%	54.55%	Pass	Pass	Pass-1
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	9.2	9.2	9.2	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	2.77	4.08	2.67	38.25%	3.68%	41.78%	Pass	Pass	Pass
Metals (Total)	Arsenic	5	5	5	mg/kg	12	15	12	22.22%	0.00%	22.22%	Pass	Pass	Pass
Metals (Total)	Chromium	2	2	2	mg/kg	10	11	11	9.52%	9.52%	0.00%	Pass	Pass	Pass
Metals (Total)	Copper	5	5	5	mg/kg	8	10	8	22.22%	0.00%	22.22%	Pass	Pass	Pass
Metals (Total)	Nickel	2	2	2	mg/kg	6	7	7	15.39%	15.39%	0.00%	Pass	Pass	Pass
Metals (Total)	Zinc	5	5	5	mg/kg	17	20	19	16.22%	11.11%	5.13%	Pass	Pass	Pass
Moisture Content	Moisture Content	1	1	1	%	22.3	24.2	23.8	8.17%	6.51%	1.67%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.28	0.28	0.24	0.00%	15.39%	15.39%	Pass	Pass	Pass

Location						BH 19 27.7-28.15	BH 19 27.7-28.15	BH 19 27.7-28.15						
Sample ID						BH 19 27.7-28.15	QC 51	QC 52						
Date Sampled						9/02/2008	9/02/2008	9/02/2008						
Sample Type						**Primary**	**Secondary**	**Tertiary**						

Pass RPD <= 50%
Pass-1 RPD > 50%, Analyis result < 10 times LOR

Analyte Group	Analyte	LOR1	LOR2	LOR3	Units				Primary vs. Duplicate	Primary vs. Triplicate	Duplicate v. Triplicate	Category1	Category2	Category3
Acid Sulphate Soils	Acid Neutralising Capacity (19A1)	0.01	0.01	0.01	% caco3	0.1	0.05	0.15	**66.67%**	40.00%	**100.00%**	Fail	Pass	Fail
Acid Sulphate Soils	acidity - Acid Neutralising Capacity (a-19A1)	10	10	10	mole h+ /	20	< 10	30	66.67%	40.00%	100.00%	Pass-1	Pass	Pass-1
Acid Sulphate Soils	pH KCl (23A)	0.1	0.1	0.1	ph unit	7	7	7	0.00%	0.00%	0.00%	Pass	Pass	Pass
Acid Sulphate Soils	sulfidic - Acid Neutralising Capacity (s-19A1)	0.01	0.01	0.01	% pyrite s	0.03	0.02	0.05	40.00%	50.00%	85.71%	Pass	Pass	Pass-1
Metals (Total)	Chromium	2	2	2	mg/kg	4	5	4	22.22%	0.00%	22.22%	Pass	Pass	Pass
Metals (Total)	Lead	5	5	5	mg/kg	< 5	6	< 5	18.18%	-	18.18%	Pass	-	Pass
Moisture Content	Moisture Content	1	1	1	%	16.3	15	16.8	8.31%	3.02%	11.32%	Pass	Pass	Pass
Natural Attenuation Parameters	Total Organic Carbon	0.02	0.02	0.02	%	0.02	0.02	0.05	0.00%	85.71%	85.71%	Pass	Pass-1	Pass-1

Appendix F

URS 2008 - Sediment Samples Remaining on Hold

URS 2008 Marine Sediment Investigation.

Samples In Long Term Storage at Australian Laboratory Services (Brisbane)

ALS Batch #	EB0811949	EB0812007	EB0812313	EB0812358	EB0813051	EB0813167	EB0813420	EB0813733	EB0814076	EB0814114	EB0814331
Sample ID	BH19 14.9-15.14	BH 19 20.2-20.35	BH20 0-0.2	BH20 10.7-11.0	BH21 1.5-1.6	BH21_14.0-14.4	BH25B 0.5-0.95	BH27 0.4-0.8	BH29 0.2-0.5	BH30 0.0-0.2	BH31 0.18-0.20
	BH19 16.5-16.95	BH 19 21.8-22.05	BH20 1.1-1.4	BH20 12.1-12.53	BH21 1.65-1.90	BH21_15.43-15.80	BH25B 1.0-1.45	BH27 0.85-1.1	BH29 0.5-0.7	BH30 0.6-0.9	BH31 0.2-0.3
	BH19 18.4-18.83	BH 19 22.05-22.25	QC54	BH20 13.0-13.2	BH21 2.0-2.9		BH25B 1.5-2.0	QC77	BH29 0.7-1.0	BH30 1.0-1.45	BH31 0.3-0.6
		BH 19 24.8-24.95	QC55		QC62		BH28 2.4-3.4	QC78	BH29 1.0-1.5	QC85	BH31 2.0-2.3
		BH 19 25.1-25.25	BH20 1.4-1.8		QC63		QC72	BH27 1.6-1.8	QC80	QC86	BH31 3.6-3.9
		BH 19 26.2-26.65	BH20 1.8-2.0		BH21 2.95-3.2		QC73	BH27 2.0-2.3	QC81	BH30 1.3-2.0	BH31 5.0-5.35
		BH 19 27.7-28.15	BH20 3.0-3.5		QC64		BH28 3.5-4.4	BH27 2.5-3.0	BH29 1.6-2.0	BH30 2.1-3.0	BH32 0.7-1.0
		QC 51	BH20 4.65-4.95		QC65		BH28 5.3-5.7	BH27 3.7-4.35	BH29 2.2-2.7	BH30 3.8-4.8	BH32 1.5-1.8
		QC 52	BH20 5.0-5.25		BH21 4.0-4.45		BH28 5.9-6.3		QC82	QC87	QC 91
			BH20 8.6-8.78		BH21 5.6-6.05		QC74		QC83	QC88	BH32 2.5-3.2
					BH21 7.0-7.45		QC75		BH29 4.1-4.4	BH30 5.2-5.8	QC 92
					BH21 8.5-8.9				BH29 7.2-7.45	BH30 6.0-6.15	QC 93
					BH21 9.6-10.0					BH30 8.3-8.75	BH32 3.8-4.1
					BH21 11.6-11.9						BH32 4.7-5.1
											BH32 6.2-6.65
											BH32 8.1-8.4
											BH32 9.3-9.6

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