EMR

Lot 6 Plan RP149220 Category MANAGED Record Type BP ID 31
Hist ID 140-99

LGA Brisbane City Council Region TBA AMA

Site Name WASTE TRANSFER STATION WILLAWONG PT 4 Notified By DATACONV Notif Rec'd

Street 380 RITCHIE ROAD Entry Date 27/06/1998 Last Altered Date 05/07/2002

Suburb PALLARA QLD Post code 4110 Ext Ref

Owner BRISBANE CITY COUNCIL

Owner Address 69 ANN STREET
BRISBANE

Haz Cont

Post code 4000

Parcel Status D Area 0 m² File 900090 Officer IMRAY

Offsite Disposal Date

Notifiable Activities

LANDFILL

Comments

Registered Site ID 31

Date	User ID	Corr N	Officer Name	Finalised	How Finalised

13/11/1998 BIGNELT

OFFSITE DISPOSAL GRANTED FOR DISPOSAL OF 15M3 OF HYDROCARBON, LEAD & ZINC CONTAMINATED SOIL AT THIS SITE FROM L801/SP108968 (ID. 27).

04/12/1998 BIGNELT

OFFSITE DISPOSAL GRANTED FOR DISPOSAL OF 30M3 OF PB & ZN CONTAMINATED SOIL TO THIS SITE FROM L47/RP40764 (ID 864).

10/12/1998 BIGNELT

OFFSITE DISPOSAL GRANTED FOR DISPOSAL OF 600M3 OF HEAY METAL CONTAMINATED SOIL AT THIS SITE FROM L1/RAIL11 (ID 25113).

21/12/1998 BIGNELT

OFFSITE DISPOSAL GRANTED 18/12/98 FOR DISPOSAL OF 250M3 OF CU, ZN & PB CONTAMINATED SOIL AT THIS SITE FROM L936/RP899094 (I.D. 16686).

22/01/1999 BIGNELT

OFFSITE DISPOSAL GRANTED 21/1/99 FOR DISPOSAL OF 60M3 OF ASB AND METALS CONTAMINATED SOIL AT THIS SITE FROM L367/SL5786 (I.D.: 2721).

02/02/1999 BIGNELT

OFFSITE DISPOSAL GRANTED 28/1/99 FOR DISPOSAL OF 300M3 OF SULFATES CONTAMINATED SOIL AT THIS SITE FROM L468/SL5433 (I.D.: 789).

03/02/1999 BIGNELT

OFFSITE DISPOSAL GRANTED 2/2/99 FOR DISPOSAL OF 60M3 OF ASB AND METALS CONTAMINATED SOIL AT THIS SITE FROM L367/SL5786 (I.D.: 2721).

Released by EHP under the RTI Act 2009

Release

Comments

Registered Site ID 31

Date	User ID	Corr N	Officer Name	Finalised	How Finalised
18/10/2000	TSOURGR				

IPA APPLICATION #31: CLU LTR 16/10/00 TO GRAHAM DAVIS, CITY DESIGN, B.C.C. ADVISES THERE ARE NO REQUIREMENTS IN RELATION TO THE PROPOSED INSTALLATION OF A LEACHATE TREATMENT PLANT AT THE WILLAWONG WASTE DISPOSAL SITE.

05/07/2002 DALTONA

IPA DATED ENTERED 05/07/02.

08/08/2006 IPAILIL

IPA APPLICATION (APPLN#1478 PART 1) REC'D FROM BRISBANE CITY COUNCIL DATED 7/08/06 FOR RECONFIGURATION OF A LOT . REFERRAL AGENCY RESPONSE LETTER DATED 8/08/06 ADVISES THAT CONDITIONS MUST ATTACH TO ANY DEVELOPMENT APPROVAL.

5 . SP183655

1 RP56082 ID 29 M Cat

6 RP149220 ID 31 M

1 RP56082 NA 20

6 RP ~~56082~~ 149220 NA 20

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Release

EMR

Lot 1 **Plan** RP56082 **Category** MANAGED **Record Type** BP **ID** 29
Hist ID 140-97

LGA Brisbane City Council **Region** TBA **AMA**

Site Name WASTE TRANSFER STATION WILLAWONG PT 2 **Notified By** DATACONV **Notif Rec'd**

Street 380 RITCHIE ROAD **Entry Date** 27/06/1998 **Last Altered Date** 08/08/2006

Suburb PALLARA QLD **Post code** 4110 **Ext Ref**

Owner BRISBANE CITY COUNCIL

Owner Address 69 ANN STREET
BRISBANE

Haz Cont

Post code 4000

Parcel Status D **Area** 0 m² **File** 900090 **Officer** IMRAY

Offsite Disposal Date

Notifiable Activities

LANDFILL

Comments

Registered Site ID 29

Date	User ID	Corr N	Officer Name	Finalised	How Finalised
08/08/2006	IPAILIL				

IPA APPLICATION (APPLN#1478 PART 1) REC'D FROM BRISBANE CITY COUNCIL DATED 7/08/06 FOR RECONFIGURATION OF A LOT. REFERRAL AGENCY RESPONSE LETTER DATED 8/08/06 ADVISES THAT CONDITIONS MUST ATTACH TO ANY DEVELOPMENT APPROVAL.

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QLD ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Transaction ID: 1066257 EMR Site Id: 78502 24 July 2008
This response relates to a search request received for the site:
Lot: 5 Plan: SP183655

SEARCH RESULT

The site you have searched is a lot resulting from the amalgamation of the following sites, which are included on the Environmental Management Register (EMR) or the Contaminated Land Register (CLR), as indicated below. Further details for these sites are available by contacting this Agency.

Lot	Plan	
1	RP56082	EMR
6	RP149220	EMR

ADDITIONAL ADVICE

Note: Searches maybe conducted online through the State Government Website www.smartservice.qld.gov.au or Citec Confirm www.confirm.com.au.

If you have any queries in relation to this search please phone (07) 3227 7370.

Lindi Bowen
Registrar, Contaminated Land Unit

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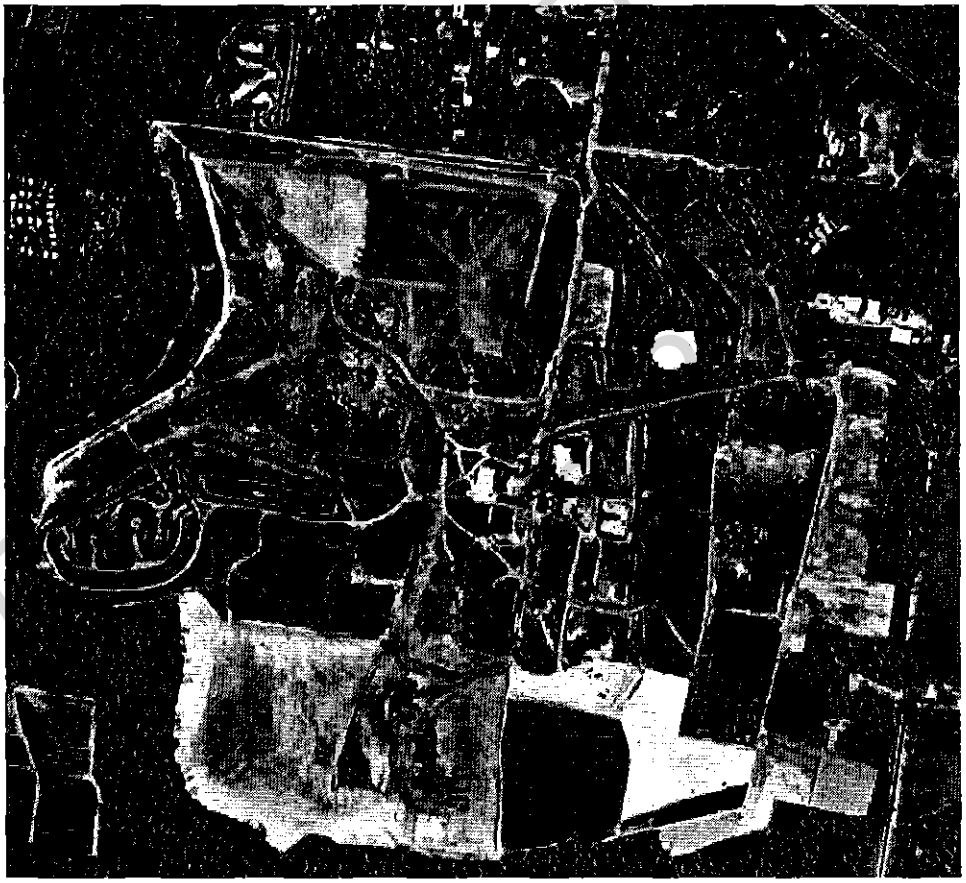
Release

Willawong

Environmental Monitoring
Round 40
January 2008



Release

MEMORANDUM

Brisbane City

To:	**Geotechnical and Environmental Services**	Date:	**29 February 2008**
Attn:	**Carl Dowthwaite, Willawong Remediation Project Manager**		
CC:			
From:	R.B. Gray, Chemist In Charge, Scientific Analytical Services		
Re:	**WILLAWONG ENVIRONMENTAL MONITORING – ROUND 40**		

Scientific Analytical Services
240 Donaldson Road
Rocklea Q 4106

Enquiries: 07 3403 2611
Fax: 07 3403 2646

Chemist in Charge, Bob Gray, 3403 2614
Environmental 1, Sue Mole, 3403 2619
Environmental 2, Patti O'Shea, 3403 2622
Microbiology, Bob Phillips, 3403 2612

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The fortieth round of monitoring for the above project was carried out between 21 and 24 January 2008. This round of sampling was performed under "wet" conditions.

Rainfall (measured at BLR 736 Blunder Creek, Inala Gauging station) was below average for November and December, but above average for January.

Month	Rainfall (mm) At BLR736 Blunder Ck Inala	Mean Rainfall (measured at Brisbane Airport)
November	78	96.5
December	90	126.2
January	167	157.7

The monitoring program for the Willawong Remediation Project currently concentrates primarily on measurement of components leaving the site, by sampling the bores located around the perimeter of the site. The only exceptions to this are the south-west corner, which is of particular interest because of sulfolane and thiolane and other organic compounds existing in the groundwater, and the central region. The collection of sediment samples along Oxley and Blunder Creeks, as well as the Southern Sedimentation Basin, has ceased.

Multi-parameter Field Analysers were employed in the determination of field results for pH, conductivity, temperature, dissolved oxygen and redox potential.

Release

Blunder and Oxley Creeks

Physical / Inorganic Analysis

pH values in the creeks were acidic to neutral, between pH 6.1 (DOEB4, in Blunder Creek) and 7.0 (DOEB2, in Blunder Creek). Brisbane City Council's Water Quality Objectives for fresh water incorporate a desirable pH range of 6.5-8.5. Flow in the creeks has improved after the recent rainfall events..

Significant rainfall in recent months has resulted in water being present at all locations in both creeks. Conductivity values for Blunder Creek were quite low (150 to 220µS/cm) and indicate negligible intrusion of high salinity leachate from the landfill. DOE15 in Oxley Creek returned the highest conductivity result of 380µS/cm.

Only DOEB2 and DOEB3 in Blunder Creek reported dissolved oxygen results above 5mg/L. All other locations were unsatisfactory, ranging from a low of 1.3mg/L at DOEB4 in Blunder Creek, to a high of 4.7mg/L at DOEB1, also in Blunder Creek. A dissolved oxygen concentration of 5mg/L is generally accepted as the minimum concentration desirable for maintenance of a viable aquatic ecosystem.

The historically turbid DOE14 again returned the highest suspended solids result, with 20mg/L being recorded. DOEB3 returned 10mg/L, with all of the other locations returning excellent suspended solids results of 5-6mg/L.

Cadmium was reported above the limit of reporting at all locations in both creeks, but the most significant was the 0.021mg/L result recorded for CMPS&F4. Other metals in the creeks were not detected in significant concentrations above the limit of reporting.

Ammonia nitrogen concentrations in both creeks continued to be very low in comparison with historical data, with all locations returning low concentrations in the range <0.004mg/L (DOEB1) to 0.043mg/L (CMPS&F4). Oxidised nitrogen (NO_2+NO_3 N) was highest in Blunder Creek at DOEB3 (0.052mg/L), with the highest Oxley Creek result being 0.044mg/L at DOE15.

Prior results for cyanide have on occasions been above the level of reporting, but subsequent investigation and re-analysis by the contract laboratory have shown these results to be inaccurate. No location in the creeks returned cyanide results above 0.004mg/L.

Microbiological Analysis

DOE15 in Oxley Creek returned the highest result for faecal coliforms at 700cfu/100mL, followed by DOEB3 and DOEB4 in Blunder Creek, at 350cfu/100mL and 240cfu/100mL respectively. All of the remaining locations were well below the 150cfu/100mL guideline for primary contact (swimming).

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Groundwater Samples

The following locations yielded little or no sample, or were buried or damaged:
BH214 – buried under new northern drain construction
BH6 – buried
BH01/07S – sample point buried
BH01/01 – dry
BH97/4 – buried under new bus depot
BH97/27 - dry
BH97/5S – dry
BH97/7 – damaged
01/03S – horses on property
01/03D – horses on property
01/04S – horses on property
01/04D – horses on property
01/05S – horses on property
01/05D – horses on property
02/01 – horses on property
BH97/20S – dry
BH01/09D – damaged
BH04/01 – damaged
BH04/09B - dry

Physical / Inorganic analysis

pH values for borewaters varied between an acidic pH 3.8 (BH01/02S) and neutral pH 6.9 (BH17S). High salinity continued to be a feature of many of the bores. Two of the newest bores recorded the highest conductivities: BH04/02 (27,000µS/cm and BH04/05 (23,000µS/cm). Redox potentials varied widely, from +380mV at BH01/02S to –110mV at BH17S.

The newest (central) bores returned the highest values for ammonia nitrogen, with BH04/09 the highest at 340mg/L, followed by BH04/10 at 280mg/L and BH04/08 at 200mg/L. These and other results indicate a considerable concentration of leachate present in the centre of the site. Of the older bores, BH17S again returned the highest result of 180mg/L.

High oxidised nitrogen (NO_2 + NO_3) results were reported at 97/9S (30mg/L) and BH97/14S at 11mg/L. These results are consistent with previous results from these locations.

The highest total organic carbon concentrations occur in the centre of the site at BH04/09A (1000mg/L) and BH04/08 (340mg/L).

Only one location (BH01/09S) returned total cyanide above the limit of reporting, at 0.01mg/L. For reference, the Australian Drinking water Guideline maximum value for cyanide is 0.08mg/L.

Many of the bores (13) returned arsenic results between the limit of reporting (0.001mg/L) and 0.010mg/L, but the highest results again came from BH04/09A (0.056mg/L) and BH15D (0.044mg/L).

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Release

Cobalt has historically been found at relatively high concentrations at this site, with concentrations ranging up to 0.19mg/L at BH4A on this occasion.

BH04/05 returned the highest copper result of 0.069mg/L, followed by BH97/16 at 0.060mg/L.

Highest lead results were returned for BH97/17 (0.032mg/L) and BH04/02 (0.026mg/L).

No location returned mercury results above the limit of reporting of 0.1µg/L.

The highest nickel concentrations were obtained for BH4A (0.21mg/L) and BH01/02S (0.14mg/L). These results are consistent with previous results.

The very high results for zinc returned for BH04/05 remain consistent, with 6.8mg/L being reported on this occasion. BH97/5D (3.6mg/L) and BH4A (0.62mg/L) also returned high results.

Organics Analysis

The range of organics targeted for this program is limited to include only the following components of interest:

Benzene
1,4 Dichlorobenzene
2,4 Dichlorophenol
2,6 Dichlorophenol
Endosulfan 1 (alpha Endosulfan)
Endosulfan 2 (beta Endosulfan)
Sulfolane (selected SW corner locations)
Thiolane (selected SW corner locations)

BH04/09A, BH04/08 and BH01/07D have returned high benzene concentrations, in the range 17µg/L to 100µg/L.

1,4 dichlorobenzene was measured above the limit of reporting in the new bore BH04/09A (35µg/L), BH04/10 at 17µg/L, BH17S at 9µg/L and BH7S at 6µg/L.

The 2,4 dichlorophenol concentration for BH04/05 was again well above the limit of reporting at 101µg/L, with no other locations reporting above the limit of reporting. BH05/05 also returned the highest result for 2,6 dichlorophenol of 41µg/L.

Alpha and beta endosulfan were not detected above the limit of reporting in any bore.

Eleven bores returned sulfolane results above the limit of reporting, the highest being 27mg/L at BH01/07D and 24mg/L at BH04/07. BH04/09A returned the highest thiolane result of 30,600µg/L, followed by BH04/06 at 6,700µg/L.

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Data Management

Data from this and preceding Rounds have been entered into the SiteMan database for future interrogation.

Please advise if you have any queries regarding this project or if we can be of further assistance.

Regards

49-Sch4 - Signature

Bob Gray
Attachments - graphs, site maps

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Gary O'Connor

From: Bob Gray [Bob.Gray@brisbane.qld.gov.au]
Sent: Tuesday, 22 January 2008 4:35 PM
To: Carl Dowthwaite
Cc: Gary O'Connor
Subject: Willawong Round 39 Report - Reissue
Attachments: Round 39 memo.pdf; Bob Gray.vcf

Carl

I have reissued the above report after finally receiving revised total cyanide results from the contracting laboratory (ALS). It appears that they used an inappropriate methodology for the analysis, which resulted in false positive results. The analyses were re-run under the correct method and all locations returned results of less than the limit of reporting (0.004mg/L) except BH01/08D, which returned a result of 0.014mg/L. These results align well with historical data. Graphs showing cyanide concentrations and distribution have been removed from the report and the text modified accordingly.

Please replace the previously issued report with this one.

Regards

Bob

Bob Gray
Manager / Chemist in Charge
SAS Laboratory
240 Donaldson Rd
Rocklea Qld 4106
Phone 07 3403 2614
Fax 07 3403 2646
e-mail Bob.Gray@brisbane.qld.gov.au

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Please direct all enquiries to the message author.

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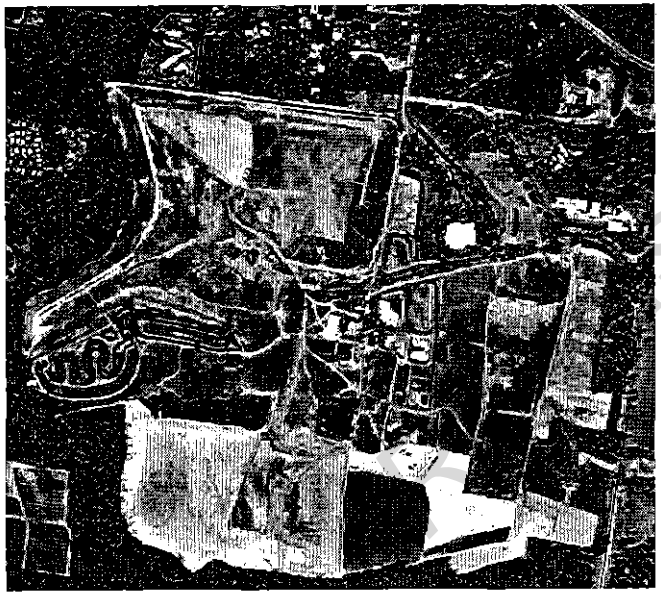
Willawong
Environmental Monitoring
Round 39
November 2007



25/1/08
- Noted
- low salinity in creek waters
- metals OK
- internal bores elevated as in the past.

MEMORANDUM

Brisbane City

Brisbane Water

Scientific Analytical Services
240 Donaldson Road
Rocklea Q 4106

Enquiries: 07 3403 2611
Fax: 07 3403 2646

Chemist in Charge, Bob Gray, 3403 2614
Environmental 1, Sue Mole, 3403 2619
Environmental 2, Patti O'Shea, 3403 2622
Microbiology, Bob Phillips, 3403 2612

To:	**Geotechnical and Environmental Services**	Date:	**2 January 2008**
Attn:	**Steward Edwardes, Willawong Remediation Project Manager**		
CC:			
From:	R.B. Gray, Chemist In Charge, Scientific Analytical Services		
Re:	**WILLAWONG ENVIRONMENTAL MONITORING – ROUND 39**		

The thirty-ninth round of monitoring for the above project was carried out between 21 and 28 November 2007.

Rainfall (measured at BLR 736 (Blunder Creek, Inala Gauging station) was well below average for September, but well above average for October and November..

Month	Rainfall (mm) At BLR736 Blunder Ck Inala	Mean Rainfall (measured at Brisbane Airport)
September	27	71.2
October	105	62.6
November	78	42.7

The monitoring program for the Willawong Remediation Project currently concentrates primarily on measurement of components leaving the site, by sampling the bores located around the perimeter of the site. The only exceptions to this are the south-west corner, which is of particular interest because of sulfolane and thiolane and other organic compounds existing in the groundwater, and the central region. The collection of sediment samples along Oxley and Blunder Creeks, as well as the Southern Sedimentation Basin, has resumed.

Multi-parameter Field Analysers were employed in the determination of field results for pH, conductivity, temperature, dissolved oxygen and redox potential.

TPH testing not in this round

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Blunder and Oxley Creeks

Physical / Inorganic Analysis

pH values in the creeks were acidic to slightly alkaline, between pH 6.2 (DOE14, in Oxley Creek) and 7.2 (DOEB2, in Blunder Creek). Brisbane City Council's Water Quality Objectives for fresh water incorporate a desirable pH range of 6.5-8.5. Flow in the creeks has improved after the recent rainfall events..

Significant rainfall in October and November has resulted in water being present at all locations in both creeks. Conductivity values for Blunder Creek were quite low (160 to 180µS/cm) and indicate negligible intrusion of high salinity leachate from the landfill. DOE15 in Oxley Creek returned the highest conductivity result of 370µS/cm as a result of sand extraction activities in the area.

The upstream location DOEB1 was the only creek sample to return a barely satisfactory dissolved oxygen reading of 5.0mg/L. All other locations were unsatisfactory, ranging from a low of 2.4mg/L at DOEB4 in Blunder Creek, to a high of 4.7mg/L at DOEB2, also in Blunder Creek. A dissolved oxygen concentration of 5mg/L is generally accepted as the minimum concentration desirable for maintenance of a viable aquatic ecosystem.

The historically turbid DOE14 again returned the highest suspended solids result, with 99mg/L being recorded. Apart from DOEB1 at 6mg/L, all of the other locations returned excellent suspended solids results of less than 5mg/L.

Metals in the creeks were not detected in significant concentrations above the limit of reporting.

Ammonia nitrogen concentrations in both creeks continued to be very low in comparison with historical data, with all locations returning low concentrations in the range 0.006mg/L (DOEB4) to 0.034mg/L (DOE15). Oxidised nitrogen (NO_2+NO_3 N) was highest in Oxley Creek at DOE15 (0.062mg/L), with the highest Blunder Creek result being 0.023mg/L at DOEB2.

Unusually, four locations returned total cyanide results above the limit of reporting of 0.004mg/L, in the range 0.005 to 0.011mg/L, but as some of the field blanks were reported at 0.008mg/L, these results should not be given much credence. For reference, the Australian Drinking Water Guideline for cyanide is 0.08mg/L.

Microbiological Analysis

Microbial quality of water in both creeks remains surprisingly good, with CMPS&F4 in Blunder Creek (faecal coliforms 190cfu/100mL) and DOE15 in Oxley Creek (also 190cfu/100mL) being the only location to exceed the guideline for primary contact (swimming) of 150cfu/100mL. Results at the other locations ranged from 10cfu/100mL at DOEB2 to 120cfu/100mL at DOEB4.

Sediment Samples

No location reported results outside the range for the NEPC Guideline on the Investigation Levels for Soil and Groundwater (1999).

Metal	Background Range mg/kg	Maximum Recorded mg/kg
Arsenic	1-50	11 (SW13)
Barium	100-3000	170 (SW5)
Cadmium	1-3	<1
Chromium	5-1000	29 (SW2)
Cobalt	1-40	120 (SW2)
Copper	2-100	24 (DOEB1)
Lead	2 - 200	25 (DOEB1)
Mercury	0.03-1.0	<0.1
Nickel	5-500	25 (SW2)
Selenium	Not listed	<5 (SW2)
Zinc	10-300	99 (DOEB1)

Groundwater Samples

The following locations yielded little or no sample, or were buried or damaged:
BH214 – buried under new northern drain construction
BH6 – buried
BH01/07S – sample point buried
BH01/01 – dry
BH97/4 – buried under new bus depot
BH97/27 - dry
BH97/55 – dry
BH97/7 – damaged
01/03S – horses on property
01/03D – horses on property
01/04S – horses on property
01/04D – horses on property
01/05S – horses on property
01/05D – horses on property
02/01 – horses on property
BH97/20S – dry
BH01/09D – damaged
BH04/01 – damaged
BH04/09B - dry

Physical / Inorganic analysis

pH values for borewaters varied between an acidic pH 3.5 (BH01/02S) and neutral pH 7.0 (BH17S). High salinity continued to be a feature of many of the bores. Two of the newest bores recorded the highest conductivities: BH04/04 and BH04/05 (both 23,000µS/cm). Redox potentials varied widely, from +450mV at BH01/02S to –111.5mV at BH15D.

The newest (central) bores returned the highest values for ammonia nitrogen, with BH04/10 the highest at 270mg/L, followed by BH04/09A at 240mg/L and BH04/08 at 220mg/L. These and other results indicate a considerable concentration of leachate present in the centre of the

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site. Of the older bores, BH17S returned the highest result of 190mg/L.

High oxidised nitrogen (NO_2 + NO_3) results were reported at 97/9S (29mg/L) and BH97/14S at 22mg/L. These results are consistent with previous results from these locations.

The highest total organic carbon concentrations occur in the centre of the site at BH04/09A (960mg/L) and BH04/08 (280mg/L).

Only one location (BH01/08D) returned total cyanide above the limit of reporting. For reference, the Australian Drinking water Guideline maximum value for cyanide is 0.08mg/L.

The highest arsenic result of 0.043mg/L was recorded for BH15D and 0.034 at BH04/09A. Many of the bores (13) returned results between the limit of reporting (0.001mg/L) and 0.010mg/L.

Cobalt has historically been found at relatively high concentrations at this site, with concentrations ranging up to 0.20mg/L at BH4A on this occasion.

The new bores were again prominent in copper results, with BH04/05 reporting 0.070mg/L and 0.018mg/L at BH04/03.

Highest lead results were returned for BH97/16 (0.022mg/L) and BH04/05 (0.021mg/L).

Two locations returned mercury results above the limit of reporting of 0.1µg/L. They were BH04/03 (0.4µg/L) and BH02/02 (0.1µg/L).

The highest nickel concentrations were obtained for BH4A(0.21mg/L) and BH04/05 (0.15mg/L). These results are consistent with previous results.

The very high results for zinc returned for BH04/05 remain consistent, with 8.3mg/L being reported on this occasion. BH97/5D (1.6mg/L) and BH4A (0.52mg/L) also returned high results.

Organics Analysis

The range of organics targeted for this program is limited to include only the following components of interest:

Benzene
1,4 Dichlorobenzene
2,4 Dichlorophenol
2,6 Dichlorophenol
Endosulfan 1 (alpha Endosulfan)
Endosulfan 2 (beta Endosulfan)
Sulfolane (selected SW corner locations)
Thiolane (selected SW corner locations)

BH04/09A, BH04/05 and BH04/08 have returned high benzene concentrations, in the range 97µg/L to 18µg/L respectively. The bore history graph for BH04/09A is attached for your information.

1,4 dichlorobenzene was measured above the limit of reporting in the new bore BH04/09A (27µg/L) and in BH17S at 8µg/L.

The 2,4 dichlorophenol concentration for BH04/05 was again well above the limit of reporting at 93µg/L and BH01/07D returned the next lowest result of 3.3µg/L. These locations also returned the highest results for 2,6 dichlorophenol of 46µg/L and 4.5µg/L respectively.

Alpha and beta endosulfan were not detected above the limit of reporting in any bore.

Five bores returned sulfolane results above the limit of reporting, all of these being the 04/ series, with BH04/09A being the highest at 20mg/L. BH04/09A also returned the highest thiolane result of 16,900µg/L, followed by BH04/06 at 5,900µg/L.

Data Management

Data from this and preceding Rounds have been entered into the SiteMan database for future interrogation.

Please advise if you have any queries regarding this project or if we can be of further assistance.

Regards

49-Sch4 - Signature

Bob Gray
Attachments - graphs, site maps

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Gary O'Connor

From: Gary O'Connor
Sent: Friday, 2 November 2007 3:44 PM
To: 'Bob Gray'; 'stewart.edwardes@brisbane.qld.gov.au'
Subject: RE: Latest Willawong Report
Attachments: Selected Sites Hydrocarbons 1996-2007.XLS

Thanks Bob

The hydrocarbons in that middle west seem to have gone up a bit, it would be wise to resample them in the next round and have a look at the creek near there. Also could you send a spreadsheet with all the parameters for these bores over time.

Stewart

Could you please provide the bore logs for the bores in the attached spreadsheet.

thanks

Gary O'Connor
Manager, Project Support
Integrated Assessment Branch
Environmental Operations
Environmental Protection Agency

Telephone: 61 7 3404 3331
Facsimile: 61 7 3227 7677
Mobile: 49-Sch4 - Mobile p
email:gary.oconnor@epa.qld.gov.au
Web:www.epa.qld.gov.au

PO Box 15155
BRISBANE CITY EAST QLD 4002

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Gary O'Connor

From: Bob Gray [Bob.Gray@brisbane.qld.gov.au]
Sent: Thursday, 1 November 2007 1:28 PM
To: Gary O'Connor
Subject: RE: Latest Willawong Report
Attachments: Selected Sites Hydrocarbons 1996-2007.XLS

Hi Gary

Thanks for pointing out the Cd issue - looks like it's a contamination in our rinse water for field blanks, but we're checking that out. Re the hydrocarbons - the results are variable, so I've attached the results for the bores in question FYI.

Regards

Bob

****

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****

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Gary O'Connor

From: Bob Gray [Bob.Gray@brisbane.qld.gov.au]
Sent: Friday, 2 November 2007 11:54 AM
To: Gary O'Connor
Subject: RE: Latest Willawong Report
Attachments: Bob Gray.vcf

Hi Gary

We think we've solved the Cd problem. In prior times, we have had Cd anomalies occurring, which we tracked back to the Cadmium Nitrate pillows that ALS provide as preservative for CN. If the sampler got some of the Cad Nitrate on their gloves, there was a possibility of transferring this to a subsequent sample container. This potential contamination hwas overcome by making the CN bottling the last action at any sample location. However, we had some less experienced staff involved for Round 38 and Bec is of the opinion that the order of performing bottling has not been followed and contamination has occurred. Our check of the DI water used for each sample run has not shown any Cd presence, so this would appear to be the most likely scenario. Bec will be enforcing the bottlieng order and explaining its importance to her field staff.

Regards

Bob

Bob Gray
Manager / Chemist in Charge
SAS Laboratory
Brisbane Water
240 Donaldson Rd
Rocklea Qld 4106
Phone 07 3403 2614
Fax 07 3403 2646
e-mail Bob.Gray@brisbane.qld.gov.au

>>> "Gary O'Connor" <Gary.OConnor@epa.qld.gov.au> 31/10/2007 7:21 >>>

Thanks Bob

The field blanks for Cd I think are 10 to 20 times the LOR by the chart.

With regard to Round 37 TPHs, is there any trend in TPH for the bores around and including BH97/2D&S (BH01/08D&S, BH8A)?

Cheers

goc

Gary O'Connor
Manager, Project Support
Integrated Assessment Branch
Environmental Operations
Environmental Protection Agency

Telephone: 61 7 3404 3331

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PO Box 15155
BRISBANE CITY EAST QLD 4002

From: Bob Gray [mailto:Bob.Gray@brisbane.qld.gov.au]
Sent: Wednesday, 24 October 2007 2:13 PM
To: Gary O'Connor
Subject: RE: Latest Willawong Report

Hi Gary

I think ALS's Cd LOR is a bit ambitious at 0.0001mg/L, so I wasn't too concerned at readings around that for field blanks. Round 37 attached FYI. (NB that this is the HLA developed suite + sites, so not all thst comparable with our historical data...)

Regards

Bob

>>> "Gary O'Connor" <Gary.OConnor@epa.qld.gov.au> 23/10/2007 16:44 >>>

Thanks Bob

I didn?t get round 37. The round 38 looks similar to earlier sets with the creek water quality reasonable (considering the level of contamination on site). I noticed in the Cd chart there were a couple of higher readings for field blanks ? is the data quality suspect for Cd for this round?

Cheers

goc

Gary O'Connor
Manager, Project Support
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Environmental Operations
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BRISBANE CITY EAST QLD 4002

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From: Bob Gray [mailto:Bob.Gray@brisbane.qld.gov.au]
Sent: Friday, 12 October 2007 4:06 PM
To: Gary O'Connor
Subject: Latest Willawong Report

Gary

Please see attached

Regards

Bob

Bob Gray
Manager / Chemist in Charge
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240 Donaldson Rd
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Willawong TPH
Middle West

Chemicals_Description	date_sampled	fieldid	LabName	Locations_Description	Matrix_Description	result	site	units
C10-C14 Fraction	15/10/1996	BH8A_15/10/96	ALS-BRISBANE	BH8A	WATER	10700	BORES	UG/L
C15-C28 Fraction	15/10/1996	BH8A_15/10/96	ALS-BRISBANE	BH8A	WATER	1190	BORES	UG/L
C29-C36 Fraction	15/10/1996	BH8A_15/10/96	ALS-BRISBANE	BH8A	WATER	132	BORES	UG/L
C6-C9 Fraction	15/10/1996	BH8A_15/10/96	ALS-BRISBANE	BH8A	WATER	35	BORES	UG/L
C10-C14 Fraction	21/01/1997	BH8A_21/01/97	ALS-BRISBANE	BH8A	WATER	1480	BORES	UG/L
C15-C28 Fraction	21/01/1997	BH8A_21/01/97	ALS-BRISBANE	BH8A	WATER	1720	BORES	UG/L
C29-C36 Fraction	21/01/1997	BH8A_21/01/97	ALS-BRISBANE	BH8A	WATER	46	BORES	UG/L
C6-C9 Fraction	21/01/1997	BH8A_21/01/97	ALS-BRISBANE	BH8A	WATER	20	BORES	UG/L
C10-C14 Fraction	9/04/1997	BH8A_09/04/97	ALS-BRISBANE	BH8A	WATER	1060	BORES	UG/L
C15-C28 Fraction	9/04/1997	BH8A_09/04/97	ALS-BRISBANE	BH8A	WATER	2720	BORES	UG/L
C29-C36 Fraction	9/04/1997	BH8A_09/04/97	ALS-BRISBANE	BH8A	WATER	55	BORES	UG/L
C6-C9 Fraction	9/04/1997	BH8A_09/04/97	ALS-BRISBANE	BH8A	WATER	42	BORES	UG/L
C10-C14 Fraction	22/05/1997	BH8A_22/05/97	ALS-BRISBANE	BH8A	WATER	1590	BORES	UG/L
C15-C28 Fraction	22/05/1997	BH8A_22/05/97	ALS-BRISBANE	BH8A	WATER	342	BORES	UG/L
C29-C36 Fraction	22/05/1997	BH8A_22/05/97	ALS-BRISBANE	BH8A	WATER	-50	BORES	UG/L
C6-C9 Fraction	22/05/1997	BH8A_22/05/97	ALS-BRISBANE	BH8A	WATER	-20	BORES	UG/L
C10-C14 Fraction	2/09/1997	BH8A_02/09/97	ALS-BRISBANE	BH8A	WATER	1830	BORES	UG/L
C15-C28 Fraction	2/09/1997	BH8A_02/09/97	ALS-BRISBANE	BH8A	WATER	295	BORES	UG/L
C29-C36 Fraction	2/09/1997	BH8A_02/09/97	ALS-BRISBANE	BH8A	WATER	-50	BORES	UG/L
C6-C9 Fraction	2/09/1997	BH8A_02/09/97	ALS-BRISBANE	BH8A	WATER	-20	BORES	UG/L
C10-C14 Fraction	2/09/1997	BH97/2D_02/09/97	ALS-BRISBANE	BH97/2D	WATER	1360	BORES	UG/L
C15-C28 Fraction	2/09/1997	BH97/2D_02/09/97	ALS-BRISBANE	BH97/2D	WATER	312	BORES	UG/L
C29-C36 Fraction	2/09/1997	BH97/2D_02/09/97	ALS-BRISBANE	BH97/2D	WATER	-50	BORES	UG/L
C6-C9 Fraction	2/09/1997	BH97/2D_02/09/97	ALS-BRISBANE	BH97/2D	WATER	28	BORES	UG/L
C10-C14 Fraction	2/09/1997	BH97/2S_02/09/97	ALS-BRISBANE	BH97/2S	WATER	189	BORES	UG/L
C15-C28 Fraction	2/09/1997	BH97/2S_02/09/97	ALS-BRISBANE	BH97/2S	WATER	189	BORES	UG/L
C29-C36 Fraction	2/09/1997	BH97/2S_02/09/97	ALS-BRISBANE	BH97/2S	WATER	-50	BORES	UG/L
C6-C9 Fraction	2/09/1997	BH97/2S_02/09/97	ALS-BRISBANE	BH97/2S	WATER	-20	BORES	UG/L
C10-C14 Fraction	27/11/1997	BH8A_27/11/97	ALS-BRISBANE	BH8A	WATER	1130	BORES	UG/L
C15-C28 Fraction	27/11/1997	BH8A_27/11/97	ALS-BRISBANE	BH8A	WATER	209	BORES	UG/L
C29-C36 Fraction	27/11/1997	BH8A_27/11/97	ALS-BRISBANE	BH8A	WATER	-50	BORES	UG/L
C10-C14 Fraction	27/11/1997	BH97/2D_27/11/97	ALS-BRISBANE	BH97/2D	WATER	1700	BORES	UG/L
C15-C28 Fraction	27/11/1997	BH97/2D_27/11/97	ALS-BRISBANE	BH97/2D	WATER	302	BORES	UG/L
C29-C36 Fraction	27/11/1997	BH97/2D_27/11/97	ALS-BRISBANE	BH97/2D	WATER	-50	BORES	UG/L
C10-C14 Fraction	27/11/1997	BH97/2S_27/11/97	ALS-BRISBANE	BH97/2S	WATER	-50	BORES	UG/L
C15-C28 Fraction	27/11/1997	BH97/2S_27/11/97	ALS-BRISBANE	BH97/2S	WATER	213	BORES	UG/L
C29-C36 Fraction	27/11/1997	BH97/2S_27/11/97	ALS-BRISBANE	BH97/2S	WATER	-50	BORES	UG/L
C10-C14 Fraction	6/03/1998	BH8A_06/03/98	ALS-BRISBANE	BH8A	WATER	1680	BORES	UG/L
C15-C28 Fraction	6/03/1998	BH8A_06/03/98	ALS-BRISBANE	BH8A	WATER	394	BORES	UG/L
C29-C36 Fraction	6/03/1998	BH8A_06/03/98	ALS-BRISBANE	BH8A	WATER	60	BORES	UG/L
C6-C9 Fraction	6/03/1998	BH8A_06/03/98	ALS-BRISBANE	BH8A	WATER	-20	BORES	UG/L
C10-C14 Fraction	6/03/1998	BH97/2D_06/03/98	ALS-BRISBANE	BH97/2D	WATER	1430	BORES	UG/L
C15-C28 Fraction	6/03/1998	BH97/2D_06/03/98	ALS-BRISBANE	BH97/2D	WATER	2220	BORES	UG/L
C29-C36 Fraction	6/03/1998	BH97/2D_06/03/98	ALS-BRISBANE	BH97/2D	WATER	1560	BORES	UG/L
C6-C9 Fraction	6/03/1998	BH97/2D_06/03/98	ALS-BRISBANE	BH97/2D	WATER	79	BORES	UG/L
C10-C14 Fraction	6/03/1998	BH97/2S_06/03/98	ALS-BRISBANE	BH97/2S	WATER	93	BORES	UG/L
C15-C28 Fraction	6/03/1998	BH97/2S_06/03/98	ALS-BRISBANE	BH97/2S	WATER	246	BORES	UG/L
C29-C36 Fraction	6/03/1998	BH97/2S_06/03/98	ALS-BRISBANE	BH97/2S	WATER	113	BORES	UG/L
C6-C9 Fraction	6/03/1998	BH97/2S_06/03/98	ALS-BRISBANE	BH97/2S	WATER	-20	BORES	UG/L
C10-C14 Fraction	28/05/1998	BH8A_28/05/98	ALS	BH8A	WATER	2930	BORES	UG/L
C15-C28 Fraction	28/05/1998	BH8A_28/05/98	ALS	BH8A	WATER	4760	BORES	UG/L
C29-C36 Fraction	28/05/1998	BH8A_28/05/98	ALS	BH8A	WATER	186	BORES	UG/L
C6-C9 Fraction	28/05/1998	BH8A_28/05/98	ALS	BH8A	WATER	24	BORES	UG/L
C10-C14 Fraction	28/05/1998	BH97/2D_28/05/98	ALS	BH97/2D	WATER	2570	BORES	UG/L
C15-C28 Fraction	28/05/1998	BH97/2D_28/05/98	ALS	BH97/2D	WATER	1320	BORES	UG/L
C29-C36 Fraction	28/05/1998	BH97/2D_28/05/98	ALS	BH97/2D	WATER	749	BORES	UG/L
C6-C9 Fraction	28/05/1998	BH97/2D_28/05/98	ALS	BH97/2D	WATER	64	BORES	UG/L
C10-C14 Fraction	28/05/1998	BH97/2S_28/05/98	ALS	BH97/2S	WATER	106	BORES	UG/L
C15-C28 Fraction	28/05/1998	BH97/2S_28/05/98	ALS	BH97/2S	WATER	181	BORES	UG/L
C29-C36 Fraction	28/05/1998	BH97/2S_28/05/98	ALS	BH97/2S	WATER	57	BORES	UG/L
C6-C9 Fraction	28/05/1998	BH97/2S_28/05/98	ALS	BH97/2S	WATER	-20	BORES	UG/L
C10-C14 Fraction	9/10/1998	BH8A_09/10/98	ALS-BRISBANE	BH8A	WATER	4080	BORES	UG/L
C15-C28 Fraction	9/10/1998	BH8A_09/10/98	ALS-BRISBANE	BH8A	WATER	6040	BORES	UG/L
C29-C36 Fraction	9/10/1998	BH8A_09/10/98	ALS-BRISBANE	BH8A	WATER	185	BORES	UG/L
C6-C9 Fraction	9/10/1998	BH8A_09/10/98	ALS-BRISBANE	BH8A	WATER	58	BORES	UG/L
C10-C14 Fraction	9/10/1998	BH97/2D_09/10/98	ALS-BRISBANE	BH97/2D	WATER	14000	BORES	UG/L
C15-C28 Fraction	9/10/1998	BH97/2D_09/10/98	ALS-BRISBANE	BH97/2D	WATER	2910	BORES	UG/L
C29-C36 Fraction	9/10/1998	BH97/2D_09/10/98	ALS-BRISBANE	BH97/2D	WATER	220	BORES	UG/L
C6-C9 Fraction	9/10/1998	BH97/2D_09/10/98	ALS-BRISBANE	BH97/2D	WATER	4550	BORES	UG/L
C10-C14 Fraction	9/10/1998	BH97/2S_09/10/98	ALS-BRISBANE	BH97/2S	WATER	66	BORES	UG/L
C15-C28 Fraction	9/10/1998	BH97/2S_09/10/98	ALS-BRISBANE	BH97/2S	WATER	174	BORES	UG/L
C29-C36 Fraction	9/10/1998	BH97/2S_09/10/98	ALS-BRISBANE	BH97/2S	WATER	80	BORES	UG/L
C6-C9 Fraction	9/10/1998	BH97/2S_09/10/98	ALS-BRISBANE	BH97/2S	WATER	-20	BORES	UG/L
C10-C14 Fraction	17/02/1999	BH8A_17/02/1999	ALS-BRISBANE	BH8A	WATER	4560	BORES	UG/L
C15-C28 Fraction	17/02/1999	BH8A_17/02/1999	ALS-BRISBANE	BH8A	WATER	10300	BORES	UG/L
C29-C36 Fraction	17/02/1999	BH8A_17/02/1999	ALS-BRISBANE	BH8A	WATER	198	BORES	UG/L
C6-C9 Fraction	17/02/1999	BH8A_17/02/1999	ALS-BRISBANE	BH8A	WATER	132	BORES	UG/L
C10-C14 Fraction	17/02/1999	BH97/2D_17/02/1999	ALS-BRISBANE	BH97/2D	WATER	5270	BORES	UG/L
C15-C28 Fraction	17/02/1999	BH97/2D_17/02/1999	ALS-BRISBANE	BH97/2D	WATER	9470	BORES	UG/L
C29-C36 Fraction	17/02/1999	BH97/2D_17/02/1999	ALS-BRISBANE	BH97/2D	WATER	122	BORES	UG/L
C6-C9 Fraction	17/02/1999	BH97/2D_17/02/1999	ALS-BRISBANE	BH97/2D	WATER	550	BORES	UG/L
C10-C14 Fraction	17/02/1999	BH97/2S_17/02/1999	ALS-BRISBANE	BH97/2S	WATER	63	BORES	UG/L
C15-C28 Fraction	17/02/1999	BH97/2S_17/02/1999	ALS-BRISBANE	BH97/2S	WATER	205	BORES	UG/L
C29-C36 Fraction	17/02/1999	BH97/2S_17/02/1999	ALS-BRISBANE	BH97/2S	WATER	102	BORES	UG/L
C6-C9 Fraction	17/02/1999	BH97/2S_17/02/1999	ALS-BRISBANE	BH97/2S	WATER	-20	BORES	UG/L
C10-C14 Fraction	2/06/1999	BH8A_02/06/1999	ALS-BRISBANE	BH8A	WATER	4030	BORES	UG/L
C15-C28 Fraction	2/06/1999	BH8A_02/06/1999	ALS-BRISBANE	BH8A	WATER	7480	BORES	UG/L
C29-C36 Fraction	2/06/1999	BH8A_02/06/1999	ALS-BRISBANE	BH8A	WATER	321	BORES	UG/L
C6-C9 Fraction	2/06/1999	BH8A_02/06/1999	ALS-BRISBANE	BH8A	WATER	165	BORES	UG/L
C10-C14 Fraction	2/06/1999	BH97/2D_02/06/1999	ALS-BRISBANE	BH97/2D	WATER	55	BORES	UG/L
C15-C28 Fraction	2/06/1999	BH97/2D_02/06/1999	ALS-BRISBANE	BH97/2D	WATER	-100	BORES	UG/L
C29-C36 Fraction	2/06/1999	BH97/2D_02/06/1999	ALS-BRISBANE	BH97/2D	WATER	-50	BORES	UG/L
C6-C9 Fraction	2/06/1999	BH97/2D_02/06/1999	ALS-BRISBANE	BH97/2D	WATER	-20	BORES	UG/L
C10-C14 Fraction	2/06/1999	BH97/2S_02/06/1999	ALS-BRISBANE	BH97/2S	WATER	4650	BORES	UG/L
C15-C28 Fraction	2/06/1999	BH97/2S_02/06/1999	ALS-BRISBANE	BH97/2S	WATER	9070	BORES	UG/L
C29-C36 Fraction	2/06/1999	BH97/2S_02/06/1999	ALS-BRISBANE	BH97/2S	WATER	151	BORES	UG/L
C6-C9 Fraction	2/06/1999	BH97/2S_02/06/1999	ALS-BRISBANE	BH97/2S	WATER	3860	BORES	UG/L
C10-C14 Fraction	14/09/1999	BH8A_14/09/1999	ALS-BRISBANE	BH8A	WATER	5420	BORES	UG/L

Stewart, Edwardes @ Brs bann. 9/04, gone

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Release

C15-C28 Fraction	14/09/1999	BH8A_14/09/1999	ALS-BRISBANE	BH8A	WATER	13100	BORES	UG/L
C29-C36 Fraction	14/09/1999	BH8A_14/09/1999	ALS-BRISBANE	BH8A	WATER	250	BORES	UG/L
C6-C9 Fraction	14/09/1999	BH8A_14/09/1999	ALS-BRISBANE	BH8A	WATER	122	BORES	UG/L
C10-C14 Fraction	14/09/1999	BH97/2D_14/09/1999	ALS-BRISBANE	BH97/2D	WATER	4730	BORES	UG/L
C15-C28 Fraction	14/09/1999	BH97/2D_14/09/1999	ALS-BRISBANE	BH97/2D	WATER	13300	BORES	UG/L
C29-C36 Fraction	14/09/1999	BH97/2D_14/09/1999	ALS-BRISBANE	BH97/2D	WATER	368	BORES	UG/L
C6-C9 Fraction	14/09/1999	BH97/2D_14/09/1999	ALS-BRISBANE	BH97/2D	WATER	589	BORES	UG/L
C10-C14 Fraction	14/09/1999	BH97/2S_14/09/1999	ALS-BRISBANE	BH97/2S	WATER	-50	BORES	UG/L
C15-C28 Fraction	14/09/1999	BH97/2S_14/09/1999	ALS-BRISBANE	BH97/2S	WATER	-133	BORES	UG/L
C29-C36 Fraction	14/09/1999	BH97/2S_14/09/1999	ALS-BRISBANE	BH97/2S	WATER	-50	BORES	UG/L
C6-C9 Fraction	14/09/1999	BH97/2S_14/09/1999	ALS-BRISBANE	BH97/2S	WATER	-20	BORES	UG/L
C10-C14 Fraction	16/09/1999	BH8A_16/09/1999	ALS-BRISBANE	BH8A	WATER	8950	BORES	UG/L
C15-C28 Fraction	16/09/1999	BH8A_16/09/1999	ALS-BRISBANE	BH8A	WATER	6160	BORES	UG/L
C29-C36 Fraction	16/09/1999	BH8A_16/09/1999	ALS-BRISBANE	BH8A	WATER	245	BORES	UG/L
C6-C9 Fraction	16/09/1999	BH8A_16/09/1999	ALS-BRISBANE	BH8A	WATER	67	BORES	UG/L
C10-C14 Fraction	16/09/1999	BH97/2D_16/09/1999	ALS-BRISBANE	BH97/2D	WATER	10500	BORES	UG/L
C15-C28 Fraction	16/09/1999	BH97/2D_16/09/1999	ALS-BRISBANE	BH97/2D	WATER	10300	BORES	UG/L
C29-C36 Fraction	16/09/1999	BH97/2D_16/09/1999	ALS-BRISBANE	BH97/2D	WATER	91	BORES	UG/L
C6-C9 Fraction	16/09/1999	BH97/2D_16/09/1999	ALS-BRISBANE	BH97/2D	WATER	506	BORES	UG/L
C10-C14 Fraction	16/09/1999	BH97/2S_16/09/1999	ALS-BRISBANE	BH97/2S	WATER	-50	BORES	UG/L
C15-C28 Fraction	16/09/1999	BH97/2S_16/09/1999	ALS-BRISBANE	BH97/2S	WATER	131	BORES	UG/L
C29-C36 Fraction	16/09/1999	BH97/2S_16/09/1999	ALS-BRISBANE	BH97/2S	WATER	-50	BORES	UG/L
C6-C9 Fraction	16/09/1999	BH97/2S_16/09/1999	ALS-BRISBANE	BH97/2S	WATER	-20	BORES	UG/L
C10-C14 Fraction	19/01/2000	BH8A_19/01/2000	ALS-BRISBANE	BH8A	WATER	3610	BORES	UG/L
C15-C28 Fraction	19/01/2000	BH8A_19/01/2000	ALS-BRISBANE	BH8A	WATER	10100	BORES	UG/L
C29-C36 Fraction	19/01/2000	BH8A_19/01/2000	ALS-BRISBANE	BH8A	WATER	418	BORES	UG/L
C6-C9 Fraction	19/01/2000	BH8A_19/01/2000	ALS-BRISBANE	BH8A	WATER	65	BORES	UG/L
C10-C14 Fraction	19/01/2000	BH97/2D_19/01/2000	ALS-BRISBANE	BH97/2D	WATER	14200	BORES	UG/L
C15-C28 Fraction	19/01/2000	BH97/2D_19/01/2000	ALS-BRISBANE	BH97/2D	WATER	-10000	BORES	UG/L
C29-C36 Fraction	19/01/2000	BH97/2D_19/01/2000	ALS-BRISBANE	BH97/2D	WATER	-5000	BORES	UG/L
C6-C9 Fraction	19/01/2000	BH97/2D_19/01/2000	ALS-BRISBANE	BH97/2D	WATER	485	BORES	UG/L
C10-C14 Fraction	10/02/2000	BH8A_10/02/2000	ALS-BRISBANE	BH8A	WATER	7710	BORES	UG/L
C15-C28 Fraction	10/02/2000	BH8A_10/02/2000	ALS-BRISBANE	BH8A	WATER	5420	BORES	UG/L
C29-C36 Fraction	10/02/2000	BH8A_10/02/2000	ALS-BRISBANE	BH8A	WATER	203	BORES	UG/L
C6-C9 Fraction	10/02/2000	BH8A_10/02/2000	ALS-BRISBANE	BH8A	WATER	140	BORES	UG/L
C10-C14 Fraction	13/09/2000	BH8A_13/09/2000	ALS	BH8A	WATER	7580	BORES	UG/L
C15-C28 Fraction	13/09/2000	BH8A_13/09/2000	ALS	BH8A	WATER	4160	BORES	UG/L
C29-C36 Fraction	13/09/2000	BH8A_13/09/2000	ALS	BH8A	WATER	406	BORES	UG/L
C6-C9 Fraction	13/09/2000	BH8A_13/09/2000	ALS	BH8A	WATER	48	BORES	UG/L
C10-C14 Fraction	13/09/2000	BH97/2D_13/09/2000	ALS	BH97/2D	WATER	11800	BORES	UG/L
C15-C28 Fraction	13/09/2000	BH97/2D_13/09/2000	ALS	BH97/2D	WATER	11000	BORES	UG/L
C29-C36 Fraction	13/09/2000	BH97/2D_13/09/2000	ALS	BH97/2D	WATER	143	BORES	UG/L
C6-C9 Fraction	13/09/2000	BH97/2D_13/09/2000	ALS	BH97/2D	WATER	693	BORES	UG/L
C10-C14 Fraction	1/03/2001	BH8A_01/03/2001	ALS-BRISBANE	BH8A	WATER	2610	BORES	UG/L
C15-C28 Fraction	1/03/2001	BH8A_01/03/2001	ALS-BRISBANE	BH8A	WATER	6940	BORES	UG/L
C29-C36 Fraction	1/03/2001	BH8A_01/03/2001	ALS-BRISBANE	BH8A	WATER	285	BORES	UG/L
C6-C9 Fraction	1/03/2001	BH8A_01/03/2001	ALS-BRISBANE	BH8A	WATER	22	BORES	UG/L
C10-C14 Fraction	1/03/2001	BH97/2_01/03/2001	ALS-BRISBANE	BH97/2D	WATER	14100	BORES	UG/L
C15-C28 Fraction	1/03/2001	BH97/2_01/03/2001	ALS-BRISBANE	BH97/2D	WATER	9800	BORES	UG/L
C29-C36 Fraction	1/03/2001	BH97/2_01/03/2001	ALS-BRISBANE	BH97/2D	WATER	106	BORES	UG/L
C6-C9 Fraction	1/03/2001	BH97/2_01/03/2001	ALS-BRISBANE	BH97/2D	WATER	390	BORES	UG/L
C10-C14 Fraction	24/05/2001	BH8A_24/05/2001	ALS-BRISBANE	BH8A	WATER	6760	BORES	UG/L
C15-C28 Fraction	24/05/2001	BH8A_24/05/2001	ALS-BRISBANE	BH8A	WATER	11500	BORES	UG/L
C29-C36 Fraction	24/05/2001	BH8A_24/05/2001	ALS-BRISBANE	BH8A	WATER	207	BORES	UG/L
C6-C9 Fraction	24/05/2001	BH8A_24/05/2001	ALS-BRISBANE	BH8A	WATER	45	BORES	UG/L
C10-C14 Fraction	24/05/2001	BH97/2D_24/05/2001	ALS-BRISBANE	BH97/2D	WATER	12300	BORES	UG/L
C15-C28 Fraction	24/05/2001	BH97/2D_24/05/2001	ALS-BRISBANE	BH97/2D	WATER	20000	BORES	UG/L
C29-C36 Fraction	24/05/2001	BH97/2D_24/05/2001	ALS-BRISBANE	BH97/2D	WATER	133	BORES	UG/L
C6-C9 Fraction	24/05/2001	BH97/2D_24/05/2001	ALS-BRISBANE	BH97/2D	WATER	537	BORES	UG/L
C10-C14 Fraction	22/11/2006	BH01/08D_22/11/2006	SAS	BH01/08D	WATER	7300	Bores	ug/L
C15-C28 Fraction	22/11/2006	BH01/08D_22/11/2006	SAS	BH01/08D	WATER	77	Bores	ug/L
C29-C36 Fraction	22/11/2006	BH01/08D_22/11/2006	SAS	BH01/08D	WATER	-50	Bores	ug/L
C6-C9 Fraction	22/11/2006	BH01/08D_22/11/2006	SAS	BH01/08D	WATER	110	Bores	ug/L
C10-C14 Fraction	22/11/2006	BH8A_22/11/2006	SAS	BH8A	WATER	490	Bores	ug/L
C15-C28 Fraction	22/11/2006	BH8A_22/11/2006	SAS	BH8A	WATER	510	Bores	ug/L
C29-C36 Fraction	22/11/2006	BH8A_22/11/2006	SAS	BH8A	WATER	600	Bores	ug/L
C6-C9 Fraction	22/11/2006	BH8A_22/11/2006	SAS	BH8A	WATER	-10	Bores	ug/L
C10-C14 Fraction	22/11/2006	BH97/2D_22/11/2006	SAS	BH97/2D	WATER	5800	Bores	ug/L
C15-C28 Fraction	22/11/2006	BH97/2D_22/11/2006	SAS	BH97/2D	WATER	110	Bores	ug/L
C29-C36 Fraction	22/11/2006	BH97/2D_22/11/2006	SAS	BH97/2D	WATER	-50	Bores	ug/L
C6-C9 Fraction	22/11/2006	BH97/2D_22/11/2006	SAS	BH97/2D	WATER	440	Bores	ug/L
C10-C14 Fraction	22/11/2006	BH97/2S_22/11/2006	SAS	BH97/2S	WATER	-50	Bores	ug/L
C15-C28 Fraction	22/11/2006	BH97/2S_22/11/2006	SAS	BH97/2S	WATER	93	Bores	ug/L
C29-C36 Fraction	22/11/2006	BH97/2S_22/11/2006	SAS	BH97/2S	WATER	-50	Bores	ug/L
C6-C9 Fraction	22/11/2006	BH97/2S_22/11/2006	SAS	BH97/2S	WATER	-10	Bores	ug/L
C10-C14 Fraction	2/05/2007	BH01/08D_02/05/2007	SAS	BH01/08D	WATER	8200	Bores	ug/L
C15-C28 Fraction	2/05/2007	BH01/08D_02/05/2007	SAS	BH01/08D	WATER	380	Bores	ug/L
C29-C36 Fraction	2/05/2007	BH01/08D_02/05/2007	SAS	BH01/08D	WATER	-50	Bores	ug/L
C6-C9 Fraction	2/05/2007	BH01/08D_02/05/2007	SAS	BH01/08D	WATER	120	Bores	ug/L
C10-C14 Fraction	2/05/2007	BH01/08S_02/05/2007	SAS	BH01/08S	WATER	14000	Bores	ug/L
C15-C28 Fraction	2/05/2007	BH01/08S_02/05/2007	SAS	BH01/08S	WATER	240	Bores	ug/L
C29-C36 Fraction	2/05/2007	BH01/08S_02/05/2007	SAS	BH01/08S	WATER	-50	Bores	ug/L
C6-C9 Fraction	2/05/2007	BH01/08S_02/05/2007	SAS	BH01/08S	WATER	810	Bores	ug/L
C10-C14 Fraction	2/05/2007	BH8A_02/05/2007	SAS	BH8A	WATER	910	Bores	ug/L
C15-C28 Fraction	2/05/2007	BH8A_02/05/2007	SAS	BH8A	WATER	4800	Bores	ug/L
C29-C36 Fraction	2/05/2007	BH8A_02/05/2007	SAS	BH8A	WATER	520	Bores	ug/L
C6-C9 Fraction	2/05/2007	BH8A_02/05/2007	SAS	BH8A	WATER	19	Bores	ug/L
C10-C14 Fraction	2/05/2007	BH97/2D_02/05/2007	SAS	BH97/2D	WATER	760000	Bores	ug/L
C15-C28 Fraction	2/05/2007	BH97/2D_02/05/2007	SAS	BH97/2D	WATER	22000	Bores	ug/L
C29-C36 Fraction	2/05/2007	BH97/2D_02/05/2007	SAS	BH97/2D	WATER	980	Bores	ug/L
C6-C9 Fraction	2/05/2007	BH97/2D_02/05/2007	SAS	BH97/2D	WATER	500	Bores	ug/L
C10-C14 Fraction	2/05/2007	BH97/2S_02/05/2007	SAS	BH97/2S	WATER	-50	Bores	ug/L
C15-C28 Fraction	2/05/2007	BH97/2S_02/05/2007	SAS	BH97/2S	WATER	170	Bores	ug/L
C29-C36 Fraction	2/05/2007	BH97/2S_02/05/2007	SAS	BH97/2S	WATER	-50	Bores	ug/L
C6-C9 Fraction	2/05/2007	BH97/2S_02/05/2007	SAS	BH97/2S	WATER	-10	Bores	ug/L

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Release

Gary O'Connor

From: Gary O'Connor
Sent: Wednesday, 31 October 2007 7:21 AM
To: 'Bob Gray'
Subject: RE: Latest Willawong Report

Thanks Bob

The field blanks for Cd I think are 10 to 20 times the LOR by the chart.

With regard to Round 37 TPHs, is there any trend in TPH for the bores around and including BH97/2D&S (BH01/08D&S, BH8A)?

Cheers

goc

Gary O'Connor
Manager, Project Support
Integrated Assessment Branch
Environmental Operations
Environmental Protection Agency

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From: Bob Gray [mailto:Bob.Gray@brisbane.qld.gov.au]
Sent: Wednesday, 24 October 2007 2:13 PM
To: Gary O'Connor
Subject: RE: Latest Willawong Report

Hi Gary

I think ALS's Cd LOR is a bit ambitious at 0.0001mg/L, so I wasn't too concerned at readings around that for field blanks. Round 37 attached FYI. (NB that this is the HLA developed suite + sites, so not all thst comparable with our historical data...)

Regards

Bob

>>> "Gary O'Connor" <Gary.OConnor@epa.qld.gov.au> 23/10/2007 16:44 >>>

Thanks Bob

I didn't get round 37. The round 38 looks similar to earlier sets with the creek water quality reasonable (considering the level of contamination on site). I noticed in the Cd chart there were a couple of higher readings for field blanks is the data quality suspect for Cd for this round?

Cheers

goc

Gary O'Connor
Manager, Project Support
Integrated Assessment Branch
Environmental Operations
Environmental Protection Agency

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PO Box 15155
BRISBANE CITY EAST QLD 4002

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From: Bob Gray [mailto:Bob.Gray@brisbane.qld.gov.au]
Sent: Friday, 12 October 2007 4:06 PM
To: Gary O'Connor
Subject: Latest Willawong Report

Gary

Please see attached

Regards

Bob

Bob Gray
Manager / Chemist in Charge
SAS Laboratory
Brisbane Water
240 Donaldson Rd
Rocklea Qld 4106
Phone 07 3403 2614
Fax 07 3403 2646
e-mail Bob.Gray@brisbane.qld.gov.au

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97/2D area bores

Noted 31/10/07

Willawong
Environmental Monitoring
Round 37
May 2007

MEMORANDUM

Brisbane City

Brisbane Water

Scientific Analytical Services
240 Donaldson Road
Rocklea Q 4106

Enquiries: 07 3403 2611
Fax: 07 3403 2646

Chemist in Charge, Bob Gray, 3403 2614
Environmental 1, Sue Mole, 3403 2619
Environmental 2, Patti O'Shea, 3403 2622
Microbiology, Bob Phillips, 3403 2612
Environmental Monitoring, Rebecca MacKinney, 0414 999 221

To:	City Design Environmental Management	Date:	7 June 2007
Attn:	Stewart Edwardes, Willawong Remediation Project Manager		
From:	R.B. Gray, Manager, Scientific Analytical Services		
Re:	WILLAWONG ENVIRONMENTAL MONITORING – ROUND 37 (Q4 2007)		

The thirty-seventh round of monitoring for the above project was carried out on 30 April to 2 May 2007.

This Round of sampling was under the driest conditions encountered in more than 10 years of visits to the site, with three of the creek locations (CMPS&F5, DOEB2 and DOEB3) being dry at the time of sampling. Review of the groundwater results also shows some increased concentrations of analytes, particularly organics and hydrocarbons, that may be attributable to the dry conditions.

Rainfall (measured at BLR 736 Blunder Creek, Inala Gauging station) was well below average.

Month	Rainfall (mm) At BLR736 Blunder Ck Inala	Mean Rainfall (measured at Brisbane Airport)
March	11	138.5
April	4	90.4
May	19	98.8

The monitoring program for the Willawong Remediation Project bores and creeks has been reviewed and incorporates a reduced number of locations and analytes. Sediment collection from the surface water locations has been discontinued.

Multi-parameter Field Analysers, calibrated on each day of use, were employed in the determination of field results for pH, conductivity, temperature, dissolved oxygen and redox potential.

Blunder and Oxley Creeks

Physical / Inorganic Analysis

pH values in the creeks, where there was water, were slightly acidic, between pH 6.4 and 6.5. Brisbane City Council's Water Quality Objectives for fresh water incorporate a desirable pH range of 6.5-8.5. Field staff reported that water was present at DOE14 and DOE15 in Oxley

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Creek and DOEB1 in Blunder Creek on this occasion.

Oxley Creek's DOE15 continues to report the highest conductivity readings, on this occasion slightly higher than previous at 600µS/cm. The upstream point DOE14 recorded a much lower result of 270µS/cm, and Blunder Creek's only reading was 210µS/cm at the upstream DOEB1.

The low water levels and non-existent flows contributed to very low dissolved oxygen concentrations at the three locations monitored, in the range 2.2 – 3.4mg/L. 5mg/L is generally regarded as the minimum concentration desirable for maintenance of a viable aquatic ecosystem.

Suspended solids concentrations remained low, in the range 8 – 10mg/L.
No significant heavy metals were detected above the limit of reporting.

Ammonia and oxidised nitrogen concentrations in both creeks continued to be very low in comparison with historical data, with all locations returning low concentrations.

Microbiological Analysis

Bacteriological quality of the Oxley Creek water samples has deteriorated significantly under the low or no flow conditions, with all three locations above the primary contact guideline for faecal coliforms. DOE14 was the worst, with 1100cfu/100mL being reported. The NHMRC guideline value for primary contact (swimming) is 150cfu/100mL.

Groundwater Samples

The following locations yielded little or no sample, or were buried or damaged:
BH3S, 3D and BH6 were damaged and were not able to be sampled, and BH97/20S was dry.

Physical / Inorganic analysis

pH values for borewaters varied between an acidic pH 4.0 (BH04/04) and a near-neutral 7.1 (BH13S). High salinity continued to be a feature of many of the bores, with a high value of 18,000µS/cm recorded for BH01/05S. Redox potentials varied widely, from –106.9mV at BH17S to +400mV at BH04/04.

A very high ammonia nitrogen result was recorded for BH13S, at 590mg/L. High results were also returned for BH17S, BH04/08, BH04/10 and BH97/6S.

BH97/9S reported a very high oxidised nitrogen result of 28mg/L.
High total organic carbon results were reported for a number of bores, with the highest result coming from BH04/08 at 330mg/L and 250mg/L at BH13S.

Four bores returned cyanides result above the limit of reporting of 0.004mg/L. They were BH97/8 at 0.05mg/L, BH97/17 (0.032mg/L), BH97/3 (0.009mg/L) and BH04/10 (0.005mg/L).

Four bores returned an arsenic result above the limit of reporting of 0.010mg/L, with the highest being 0.047 at BH15D.

The highest cadmium result of 0.001mg/L was returned for BH242 and BH11S.

The highest copper result of 0.014mg/L was returned for BH8A.

Highest lead result was returned for BH01/08S (0.019mg/L).

The highest nickel concentrations were obtained for BH11S (0.16mg/L).

BH01/11S returned the highest zinc result of 0.27mg/L.

No mercury was detected at any location at the limit of reporting of 0.1µg/L.

Organics Analysis

Hydrocarbons

High hydrocarbon results were reported across the site, with the highest results appearing below:

location	date_sample	labsampleid	chemical	Result	Units
BH97/2D	02/05/2007	07/03185/8	C10-C14 Fraction	760000	ug/L
BH97/2D	02/05/2007	07/03185/8	C15-C28 Fraction	22000	ug/L
BH01/08S	02/05/2007	07/03185/4	C10-C14 Fraction	14000	ug/L
BH01/08D	02/05/2007	07/03185/5	C10-C14 Fraction	8200	ug/L
BH04/10	02/05/2007	07/03185/11	C10-C14 Fraction	6400	ug/L
BH8A	02/05/2007	07/03185/9	C15-C28 Fraction	4800	ug/L
BH97/3	02/05/2007	07/03185/2	C10-C14 Fraction	3200	ug/L
BH04/10	02/05/2007	07/03185/11	C6-C9 Fraction	1500	ug/L
BH97/2D	02/05/2007	07/03185/8	C29-C36 Fraction	980	ug/L
BH8A	02/05/2007	07/03185/9	C10-C14 Fraction	910	ug/L
BH13S	02/05/2007	07/03184/6	C15-C28 Fraction	900	ug/L
BH01/08S	02/05/2007	07/03185/4	C6-C9 Fraction	810	ug/L
BH8A	02/05/2007	07/03185/9	C29-C36 Fraction	520	ug/L
BH97/2D	02/05/2007	07/03185/8	C6-C9 Fraction	500	ug/L
BH13S	02/05/2007	07/03184/6	C10-C14 Fraction	470	ug/L
BH97/17	01/05/2007	07/03186/11	C15-C28 Fraction	470	ug/L
BH17S	02/05/2007	07/03184/10	C10-C14 Fraction	420	ug/L
BH17S	02/05/2007	07/03184/10	C15-C28 Fraction	420	ug/L
BH01/08D	02/05/2007	07/03185/5	C15-C28 Fraction	380	ug/L
BH04/10	02/05/2007	07/03185/11	C15-C28 Fraction	350	ug/L
BH97/8	02/05/2007	07/03185/1	C15-C28 Fraction	300	ug/L

Other Organic Compounds

AOX results ranged from a high of 1500µg/L at BH13S to a low of 26µg/L at BH97/9D.

A wide variety of substituted benzenes, phenols, phthalates and xylenes were reported in the low µg/L range.

Sulfolane and thiolane remain significant issues, particularly in the central region, with BH97/2D and BH97/3 returning the highest results of 4.0 and 2.3mg/L respectively for sulfolane and 562µg/L and 489 µg/L for thiolane.Data Management

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Microbiological Analysis

BH97/8, in the central north of the site, returned extremely high results (35,000cfu/100mL) for faecal coliforms, with other high results being obtained for BH97/5D and BH97/2S (1,100 and 900cfu/100mL respectively).

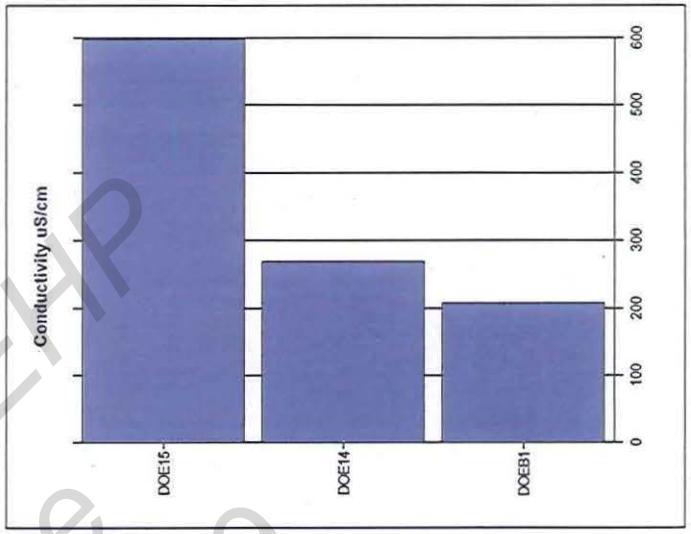
Data from this and preceding Rounds have been entered into the SiteMan database for future interrogation and forwarded to iO Digital for entry into their managed database.

Please advise if you have any queries regarding this project or if we can be of further assistance.

Regards

49-Sch4 - Signature

Bob Gray
Manager, Scientific Analytical Services
Attachments - graphs, site maps, data



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Scientific Analytical Services

ABN 72 002 765 795

Biological Accreditation Number 11085
Chemical Accreditation Number 11750

240 Donaldson Road
Rocklea Brisbane Qld 4106

Telephone 07 3403 2811
Facsimile 07 3403 2846

A unit of Brisbane City Council

SCIENTIFIC ANALYTICAL SERVICES LABORATORY REPORT

Attention:	Stewart Edwardes
Client:	Willawong Remediation Project Manager St Paul's Terrace Fortitude Valley
Job Name:	WWREM - Creeks Q4
Sampled By:	SAS Laboratory
Sampling Date:	30/04/2007
Sampling Method:	Grab
Sample Matrix:	Aqueous
Batch Number:	07/03183
Registration Date:	30 April 2007
Date of Report:	18 May 2007

CMPS & F5, DOEB2, DOEB3 were all Dry :- Not tested.

49-Sch4 - Signat

Patti O'Shea
Supervising Chemist

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

NATA
ACCREDITED FOR TECHNICAL COMPETENCE
This document is issued in accordance with NATA's accreditation requirements.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Creeks Q4

Batch Number: 07/03183
Report Date: 18/05/07

Method	Test	Units	07/03183/1 CMPS & F5	07/03183/2 DOE14	07/03183/3 DOE15	07/03183/4 DOEB1
F.002	pH - Field	pH Unit	[NT]	6.5	6.4	6.5
F.007	Conductivity - Field	uS/cm	[NT]	270	600	210
F.005	Temperature - Field	°C	[NT]	20.8	20.2	20.1
F.014	Redox Potential	mV	[NT]	100	120	150
F.007	Total Dissolved Salt Est.	mg/L	[NT]	170	380	140
F.004	Dissolved O2 - Field	mg/L	[NT]	3.4	2.2	2.6
1.601	Suspended Solids	mg/L	[NT]	8	10	8
1.603	Total Organic Carbon as C	mg/L	[NT]	9.7	5.0	6.8
4.404	Faecal Coliforms (MF)	cfu/100mL	[NT]	240	550	1,100
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	[NT]	0.84	0.55	0.61
FIA.013	Total Nitrogen as N	mg/L	[NT]	0.84	0.55	0.61
FIA.010B	Nitrite+Nitrate as N	mg/L	[NT]	<0.002	<0.002	<0.002
FIA.008	Ammonia N	mg/L	[NT]	0.044	0.015	0.008
FIA.011B	Total Phosphorus as P	mg/L	[NT]	0.075	0.10	0.038
FIA.109	Chloride	mg/L	[NT]	60	150	34
5.304F	Sulphur as SO4 (Soluble)	mg/L	[NT]	7.3	9.6	10
1.012	Total Alkalinity as CaCO3	mg/L	[NT]	27	28	38
5.304F	Cadmium (Soluble) as Cd	mg/L	[NT]	<0.001	<0.001	<0.001
5.304F	Calcium (Soluble) as Ca	mg/L	[NT]	7.3	12	9.0
5.304F	Chromium (Soluble) as Cr	mg/L	[NT]	0.001	0.001	0.001
5.304F	Copper (Soluble) as Cu	mg/L	[NT]	<0.002	<0.002	<0.002
5.304F	Iron (Soluble) as Fe	mg/L	[NT]	0.45	0.16	0.97
5.304F	Manganese (Soluble) as Mn	mg/L	[NT]	0.35	0.60	0.094
5.304F	Potassium (Soluble) as K	mg/L	[NT]	4.7	3.9	2.7
5.304F	Zinc (Soluble) as Zn	mg/L	[NT]	<0.005	<0.005	<0.005
5.304	Cadmium as Cd	mg/L	[NT]	<0.001	<0.001	<0.001
5.304	Calcium as Ca	mg/L	[NT]	7.5	12	9.1
5.304	Chromium as Cr	mg/L	[NT]	0.001	0.001	0.001
5.304	Copper as Cu	mg/L	[NT]	0.002	<0.002	<0.002
5.304	Iron as Fe	mg/L	[NT]	1.3	2.3	2.7
5.304	Manganese as Mn	mg/L	[NT]	0.38	0.61	0.15
5.304	Potassium as K	mg/L	[NT]	4.7	4.0	2.7
5.304	Zinc as Zn	mg/L	[NT]	<0.005	0.005	<0.005

[ND] - Not Detected [NR] - Not Required [NT] - Not Tested

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Released by EHP under the RTI Act 09

Scientific Analytical Services

ABN 72 002 765 795

Biological Accreditation Number 11085
Chemical Accreditation Number 11750

240 Donaldson Road
Rocklea Brisbane Qld 4106

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A unit of Brisbane City Council

SCIENTIFIC ANALYTICAL SERVICES LABORATORY REPORT

Attention:	Stewart Edwardes
Client:	Willawong Remediation Project Manager St Paul's Terrace Fortitude Valley
Job Name:	WWREM - Bore Run 1 Q4
Sampled By:	SAS Laboratory
Sampling Date:	02/05/2007
Sampling Method:	Grab
Sample Matrix:	Aqueous
Batch Number:	07/03184
Registration Date:	2 May 2007
Date of Report:	24 May 2007

BH3S BH3D & BH6 Damaged - Not Tested
BH 97/20S Dry - Not Tested

AOX analysis performed by Levay & Co. Environmental Services. L&C-07-247.

49-Sch4 - Sign

Patti O'Shea
Supervising Chemist

49-Sch4 - Sign

Bob Phillips
Supervising Microbiologist

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

NATA
ACCREDITED FOR TECHNICAL COMPETENCE
This document is issued in accordance with NATA's accreditation requirements.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 1 Q4

Batch Number: 07/03184
Report Date: 24/05/07

Method	Test	Units	07/03184/1 BH3S	07/03184/2 BH3D	07/03184/3 BH6	07/03184/4 BH7S
Misc. *	Groundwater Level	cm	[NT]	[NT]	[NT]	322
F.002	pH - Field	pH Unit	[NT]	[NT]	[NT]	6.2
F.007	Conductivity - Field	uS/cm	[NT]	[NT]	[NT]	7,100
F.005	Temperature - Field	°C	[NT]	[NT]	[NT]	21.2
F.014	Redox Potential	mV	[NT]	[NT]	[NT]	-31
F.007	Total Dissolved Salt Est.	mg/L	[NT]	[NT]	[NT]	4,600
1.603	Total Organic Carbon as C	mg/L	[NT]	[NT]	[NT]	40
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	[NT]	[NT]	[NT]	55
FIA.013	Total Nitrogen as N	mg/L	[NT]	[NT]	[NT]	55
FIA.010B	Nitrite+Nitrate as N	mg/L	[NT]	[NT]	[NT]	0.30
FIA.008	Ammonia N	mg/L	[NT]	[NT]	[NT]	47
FIA.109	Chloride	mg/L	[NT]	[NT]	[NT]	2,000
5.304F	Sulphur as SO4 (Soluble)	mg/L	[NT]	[NT]	[NT]	53
1.012	Total Alkalinity as CaCO3	mg/L	[NT]	[NT]	[NT]	430
1.610	COD as O2	mg/L	[NT]	[NT]	[NT]	70
1.604	BOD 5 days @ 20°C	mg/L	[NT]	[NT]	[NT]	<5
4.404	Faecal Coliforms (MF)	cfu/100mL	[NT]	[NT]	[NT]	10
FIA.011A	Ortho Phosphorus as P	mg/L	[NT]	[NT]	[NT]	0.070
FIA.011B	Total Phosphorus as P	mg/L	[NT]	[NT]	[NT]	0.070
5.304F	Cadmium (Soluble) as Cd	mg/L	[NT]	[NT]	[NT]	<0.001
5.304F	Calcium (Soluble) as Ca	mg/L	[NT]	[NT]	[NT]	12
5.304F	Chromium (Soluble) as Cr	mg/L	[NT]	[NT]	[NT]	0.003
5.304F	Copper (Soluble) as Cu	mg/L	[NT]	[NT]	[NT]	0.004
5.304F	Iron (Soluble) as Fe	mg/L	[NT]	[NT]	[NT]	67
5.304F	Manganese (Soluble) as Mn	mg/L	[NT]	[NT]	[NT]	0.40
5.304F	Potassium (Soluble) as K	mg/L	[NT]	[NT]	[NT]	29
5.304F	Zinc (Soluble) as Zn	mg/L	[NT]	[NT]	[NT]	0.015
5.304F	Arsenic (Soluble) as As	mg/L	[NT]	[NT]	[NT]	<0.01
5.303F	Mercury (Soluble)	ug/L	[NT]	[NT]	[NT]	<0.10
5.304F	Lead (Soluble) as Pb	mg/L	[NT]	[NT]	[NT]	<0.005
5.304F	Nickel (Soluble) as Ni	mg/L	[NT]	[NT]	[NT]	0.012
5.304F	Sodium (Soluble) as Na	mg/L	[NT]	[NT]	[NT]	940

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Released by EHP under the RTI Act 2009

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 1 Q4

Batch Number: 07/03184
Report Date: 24/05/07

Method	Test	Units	07/03184/5 BH7D	07/03184/6 BH13S	07/03184/7 BH13D	07/03184/8 BH15S
Misc. *	Groundwater Level	cm	395	355	160	257
F.002	pH - Field	pH Unit	5.2	7.1	5.8	5.9
F.007	Conductivity - Field	uS/cm	3,900	11,000	1,600	8,400
F.005	Temperature - Field	°C	21.8	22.7	23.6	22.7
F.014	Redox Potential	mV	140	-87	140	75
F.007	Total Dissolved Salt Est.	mg/L	2,500	7,000	1,000	5,400
1.603	Total Organic Carbon as C	mg/L	11	250	12	40
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	2.5	670	0.92	2.9
FIA.013	Total Nitrogen as N	mg/L	2.7	670	1.1	2.9
FIA.010B	Nitrite+Nitrate as N	mg/L	0.18	0.64	0.16	<0.02
FIA.008	Ammonia N	mg/L	1.9	590	0.30	0.52
FIA.109	Chloride	mg/L	1,200	1,600	430	2,500
5.304F	Sulphur as SO4 (Soluble)	mg/L	11	25	22	87
1.012	Total Alkalinity as $CaCO_3$	mg/L	12	3,400	52	410
1.610	COD as O_2	mg/L	16	1,000	<5.0	97
1.604	BOD 5 days @ 20°C	mg/L	<5	22	<5	<5
4.404	Faecal Coliforms (MF)	cfu/100mL	<10	<10	20	<10
FIA.011A	Ortho Phosphorus as P	mg/L	<0.02	<0.02	<0.02	<0.02
FIA.011B	Total Phosphorus as P	mg/L	0.067	0.17	0.053	0.069
5.304F	Cadmium (Soluble) as Cd	mg/L	<0.001	<0.001	<0.001	<0.001
5.304F	Calcium (Soluble) as Ca	mg/L	25	48	3.4	14
5.304F	Chromium (Soluble) as Cr	mg/L	0.002	0.018	0.001	0.002
5.304F	Copper (Soluble) as Cu	mg/L	0.004	0.004	0.004	0.003
5.304F	Iron (Soluble) as Fe	mg/L	13	17	0.17	4.5
5.304F	Manganese (Soluble) as Mn	mg/L	0.51	0.055	0.046	0.056
5.304F	Potassium (Soluble) as K	mg/L	8.1	390	4.3	7.1
5.304F	Zinc (Soluble) as Zn	mg/L	0.19	0.011	0.076	0.021
5.304F	Arsenic (Soluble) as As	mg/L	<0.01	0.017	<0.01	<0.01
5.303F	Mercury (Soluble)	ug/L	<0.10	<0.10	<0.10	<0.10
5.304F	Lead (Soluble) as Pb	mg/L	<0.005	<0.005	<0.005	<0.005
5.304F	Nickel (Soluble) as Ni	mg/L	0.038	0.063	0.005	0.067
5.304F	Sodium (Soluble) as Na	mg/L	510	1,200	260	1,300

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 1 Q4

Batch Number: 07/03184
Report Date: 24/05/07

Method	Test	Units	07/03184/9 BH15D	07/03184/10 BH17S	07/03184/11 BH17D	07/03184/12 BH18S
Misc. *	Groundwater Level	cm	234	339	344	319
F.002	pH - Field	pH Unit	5.7	6.8	5.2	6.1
F.007	Conductivity - Field	uS/cm	3,400	7,500	890	1,000
F.005	Temperature - Field	°C	22.8	24.3	24.3	23.0
F.014	Redox Potential	mV	29	-110	150	-11
F.007	Total Dissolved Salt Est.	mg/L	2,200	4,800	570	650
1.603	Total Organic Carbon as C	mg/L	6.4	200	11	9.5
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	1.2	230	0.43	0.70
FIA.013	Total Nitrogen as N	mg/L	1.2	230	0.46	0.70
FIA.010B	Nitrite+Nitrate as N	mg/L	0.048	0.20	0.029	<0.02
FIA.008	Ammonia N	mg/L	0.74	220	0.28	0.70
FIA.109	Chloride	mg/L	1,000	1,200	250	260
5.304F	Sulphur as SO4 (Soluble)	mg/L	72	18	24	12
1.012	Total Alkalinity as $CaCO_3$	mg/L	51	1,900	6.8	34
1.610	COD as O_2	mg/L	12	800	<5.0	7.0
1.604	BOD 5 days @ 20°C	mg/L	<5	<15	<5	<5
4.404	Faecal Coliforms (MF)	cfu/100mL	10	<10	<10	<10
FIA.011A	Ortho Phosphorus as P	mg/L	0.022	<0.02	<0.02	0.027
FIA.011B	Total Phosphorus as P	mg/L	0.12	0.047	0.038	0.052
5.304F	Cadmium (Soluble) as Cd	mg/L	<0.001	<0.001	<0.001	<0.001
5.304F	Calcium (Soluble) as Ca	mg/L	13	15	3.6	2.6
5.304F	Chromium (Soluble) as Cr	mg/L	0.002	0.011	0.001	0.001
5.304F	Copper (Soluble) as Cu	mg/L	0.004	0.003	<0.002	<0.002
5.304F	Iron (Soluble) as Fe	mg/L	17	43	3.2	38
5.304F	Manganese (Soluble) as Mn	mg/L	0.16	0.46	0.51	0.12
5.304F	Potassium (Soluble) as K	mg/L	4.0	170	4.0	1.9
5.304F	Zinc (Soluble) as Zn	mg/L	0.077	0.01	0.076	0.009
5.304F	Arsenic (Soluble) as As	mg/L	0.047	<0.01	<0.01	<0.01
5.303F	Mercury (Soluble)	ug/L	<0.10	<0.10	<0.10	<0.10
5.304F	Lead (Soluble) as Pb	mg/L	<0.005	<0.005	<0.005	<0.005
5.304F	Nickel (Soluble) as Ni	mg/L	0.026	0.058	0.047	0.008
5.304F	Sodium (Soluble) as Na	mg/L	520	800	120	130

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

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49-Sch4 - S

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 1 Q4

Batch Number: 07/03184
Report Date: 24/05/07

Method	Test	Units	07/03184/13 BH18D	07/03184/14 BH01/03S	07/03184/15 BH01/03D	07/03184/16 BH01/05S
Misc. *	Groundwater Level	cm	309	352	342	458
F.002	pH - Field	pH Unit	6.1	6.0	5.7	4.7
F.007	Conductivity - Field	uS/cm	1,800	1,100	2,700	17,000
F.005	Temperature - Field	° C	22.6	23.1	23.7	24.2
F.014	Redox Potential	mV	35	150	59	240
F.007	Total Dissolved Salt Est.	mg/L	1,200	730	1,700	11,000
1.603	Total Organic Carbon as C	mg/L	<5.0	16	5.4	[NT]
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	0.84	0.66	0.52	2.6
FIA.013	Total Nitrogen as N	mg/L	0.97	1.8	0.69	2.8
FIA.010B	Nitrite+Nitrate as N	mg/L	0.13	1.2	0.17	0.15
FIA.008	Ammonia N	mg/L	0.72	<0.06	0.19	<0.06
FIA.109	Chloride	mg/L	500	300	1,000	6,000
5.304F	Sulphur as SO4 (Soluble)	mg/L	29	50	28	75
1.012	Total Alkalinity as $CaCO_3$	mg/L	73	40	21	3.4
1.610	COD as O_2	mg/L	<5.0	<5.0	14	620
1.604	BOD 5 days @ 20°C	mg/L	<5	<5	<5	<5
4.404	Faecal Coliforms (MF)	cfu/100mL	<10	<10	<10	[NT]
FIA.011A	Ortho Phosphorus as P	mg/L	<0.02	<0.02	<0.02	0.034
FIA.011B	Total Phosphorus as P	mg/L	0.028	0.095	0.051	0.36
5.304F	Cadmium (Soluble) as Cd	mg/L	<0.001	<0.001	<0.001	<0.001
5.304F	Calcium (Soluble) as Ca	mg/L	10	12	5.8	5.4
5.304F	Chromium (Soluble) as Cr	mg/L	<0.001	0.002	0.001	0.002
5.304F	Copper (Soluble) as Cu	mg/L	<0.002	0.002	<0.002	0.01
5.304F	Iron (Soluble) as Fe	mg/L	6.0	0.090	11	0.11
5.304F	Manganese (Soluble) as Mn	mg/L	0.26	0.14	0.29	0.14
5.304F	Potassium (Soluble) as K	mg/L	3.5	10	8.6	24
5.304F	Zinc (Soluble) as Zn	mg/L	0.018	0.011	0.072	0.25
5.304F	Arsenic (Soluble) as As	mg/L	<0.01	<0.01	<0.01	<0.01
5.303F	Mercury (Soluble)	ug/L	<0.10	<0.10	<0.10	<0.10
5.304F	Lead (Soluble) as Pb	mg/L	<0.005	<0.005	<0.005	0.011
5.304F	Nickel (Soluble) as Ni	mg/L	0.017	0.002	0.016	0.060
5.304F	Sodium (Soluble) as Na	mg/L	290	140	400	3,200

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 1 Q4

Batch Number: 07/03184
Report Date: 24/05/07

Method	Test	Units	07/03184/17 BH01/05D	07/03184/18 BH97/20S	07/03184/19 BH97/20D	07/03184/20 BH01/09S
Misc. *	Groundwater Level	cm	502	[NT]	300	346
F.002	pH - Field	pH Unit	4.6	[NT]	6.7	6.2
F.007	Conductivity - Field	uS/cm	13,000	[NT]	2,300	17,000
F.005	Temperature - Field	° C	23.2	[NT]	23.8	24.2
F.014	Redox Potential	mV	280	[NT]	200	-65
F.007	Total Dissolved Salt Est.	mg/L	8,600	[NT]	1,400	11,000
1.603	Total Organic Carbon as C	mg/L	5.4	[NT]	88	[NT]
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	0.27	[NT]	96	1.4
FIA.013	Total Nitrogen as N	mg/L	0.47	[NT]	97	1.6
FIA.010B	Nitrite+Nitrate as N	mg/L	0.20	[NT]	0.60	0.18
FIA.008	Ammonia N	mg/L	0.084	[NT]	80	0.26
FIA.109	Chloride	mg/L	4,700	[NT]	280	5,800
5.304F	Sulphur as SO4 (Soluble)	mg/L	76	[NT]	140	67
1.012	Total Alkalinity as $CaCO_3$	mg/L	7.1	[NT]	610	180
1.610	COD as O_2	mg/L	28	[NT]	290	55
1.604	BOD 5 days @ 20°C	mg/L	<5	[NT]	<5	<5
4.404	Faecal Coliforms (MF)	cfu/100mL	<10	[NT]	60	[NT]
FIA.011A	Ortho Phosphorus as P	mg/L	<0.02	[NT]	0.035	<0.02
FIA.011B	Total Phosphorus as P	mg/L	0.025	[NT]	0.11	0.072
5.304F	Cadmium (Soluble) as Cd	mg/L	<0.001	[NT]	<0.001	<0.001
5.304F	Calcium (Soluble) as Ca	mg/L	9.5	[NT]	6.0	6.5
5.304F	Chromium (Soluble) as Cr	mg/L	0.001	[NT]	0.002	0.001
5.304F	Copper (Soluble) as Cu	mg/L	0.004	[NT]	0.01	0.011
5.304F	Iron (Soluble) as Fe	mg/L	0.14	[NT]	0.31	0.084
5.304F	Manganese (Soluble) as Mn	mg/L	0.078	[NT]	0.076	0.63
5.304F	Potassium (Soluble) as K	mg/L	16	[NT]	55	23
5.304F	Zinc (Soluble) as Zn	mg/L	0.12	[NT]	0.024	0.014
5.304F	Arsenic (Soluble) as As	mg/L	<0.01	[NT]	<0.01	<0.01
5.303F	Mercury (Soluble)	ug/L	<0.10	[NT]	<0.10	<0.10
5.304F	Lead (Soluble) as Pb	mg/L	<0.005	[NT]	<0.005	<0.005
5.304F	Nickel (Soluble) as Ni	mg/L	0.039	[NT]	0.007	0.006
5.304F	Sodium (Soluble) as Na	mg/L	2,400	[NT]	210	3,000

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Released by EHP under the RTI Act 2009

Release

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 1 Q4

Batch Number: 07/03184
Report Date: 24/05/07

Method	Test	Units	07/03184/1 BH3S	07/03184/2 BH3D	07/03184/3 BH6	07/03184/4 BH7S
External	ALS Batch No.	Text	EB0704918	[NR]	[NR]	[NR]
External	Total Cyanide	mg/L	[NT]	[NT]	[NT]	Complete
External	AOX	ug/L	[NT]	[NT]	[NT]	195
External	Total Phenols	mg/L	[NT]	[NT]	[NT]	Complete
5.270	C6-C9 Fraction	ug/L	[NR]	[NR]	[NR]	17
5.270	C10-C14 Fraction	ug/L	[NR]	[NR]	[NR]	<50
5.270	C15-C28 Fraction	ug/L	[NR]	[NR]	[NR]	120
5.270	C29-C36 Fraction	ug/L	[NR]	[NR]	[NR]	<50
5.261	Benzene	ug/L	[NR]	[NR]	[NR]	3.6
5.261	Toluene	ug/L	[NR]	[NR]	[NR]	<2.0
5.261	Ethyl Benzene	ug/L	[NR]	[NR]	[NR]	<1.0
5.261	meta & para-Xylene	ug/L	[NR]	[NR]	[NR]	<2.0
5.261	ortho-Xylene	ug/L	[NR]	[NR]	[NR]	<1.0
5.261	1.2.4-Trimethylbenzene	ug/L	[NR]	[NR]	[NR]	<1.0
5.261	1.3.5-Trimethylbenzene	ug/L	[NR]	[NR]	[NR]	<1.0
Method	Test	Units	07/03184/5 BH7D	07/03184/6 BH13S	07/03184/7 BH13D	07/03184/8 BH15S
External	Total Cyanide	mg/L	Complete	Complete	Complete	Complete
External	AOX	ug/L	129	1,470	140	511
External	Total Phenols	mg/L	Complete	Complete	Complete	Complete
External	OC/OP/PCB	Text	[NR]	[NR]	CompleteCompletec	Complete
External	PAH/Phenols/Phthalate Esters	Text	[NR]	[NR]	Complete	Complete
5.270	C6-C9 Fraction	ug/L	[NR]	[NR]	<10	18
5.270	C10-C14 Fraction	ug/L	[NR]	[NR]	<50	51
5.270	C15-C28 Fraction	ug/L	[NR]	[NR]	65	160
5.270	C29-C36 Fraction	ug/L	[NR]	[NR]	<50	<50
5.261	Benzene	ug/L	[NR]	[NR]	<1.0	<1.0
5.261	Toluene	ug/L	[NR]	[NR]	<2.0	<2.0
5.261	Ethyl Benzene	ug/L	[NR]	[NR]	<1.0	<1.0
5.261	meta & para-Xylene	ug/L	[NR]	[NR]	<2.0	<2.0
5.261	ortho-Xylene	ug/L	[NR]	[NR]	<1.0	<1.0
5.261	1.2.4-Trimethylbenzene	ug/L	[NR]	[NR]	<1.0	<1.0
5.261	1.3.5-Trimethylbenzene	ug/L	[NR]	[NR]	<1.0	<1.0
5.270	C6-C9 Fraction	ug/L	<10	66	[NR]	[NR]
5.270	C10-C14 Fraction	ug/L	<50	470	[NR]	[NR]
5.270	C15-C28 Fraction	ug/L	210	900	[NR]	[NR]
5.270	C29-C36 Fraction	ug/L	160	<50	[NR]	[NR]
5.261	Benzene	ug/L	<1.0	59	[NR]	[NR]
5.261	Toluene	ug/L	<2.0	<2.0	[NR]	[NR]

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 1 Q4

Batch Number: 07/03184
Report Date: 24/05/07

Method	Test	Units	07/03184/5 BH7D	07/03184/6 BH13S	07/03184/7 BH13D	07/03184/8 BH15S
5.261	Ethyl Benzene	ug/L	<1.0	<1.0	[NR]	[NR]
5.261	meta & para-Xylene	ug/L	<2.0	<2.0	[NR]	[NR]
5.261	ortho-Xylene	ug/L	<1.0	<1.0	[NR]	[NR]
5.261	1.2.4-Trimethylbenzene	ug/L	<1.0	<1.0	[NR]	[NR]
5.261	1.3.5-Trimethylbenzene	ug/L	<1.0	<1.0	[NR]	[NR]
Method	Test	Units	07/03184/9 BH15D	07/03184/10 BH17S	07/03184/11 BH17D	07/03184/12 BH18S
External	Total Cyanide	mg/L	Complete	Complete	Complete	Complete
External	AOX	ug/L	169	965	175	29
External	Total Phenols	mg/L	Complete	Complete	Complete	Complete
External	OC/OP/PCB	Text	Complete	Complete	Complete	Complete
External	PAH/Phenols/Phthalate Esters	Text	Complete	Complete	Complete	Complete
5.270	C6-C9 Fraction	ug/L	<10	100	<10	<10
5.270	C10-C14 Fraction	ug/L	<50	420	<50	<50
5.270	C15-C28 Fraction	ug/L	<50	420	<50	69
5.270	C29-C36 Fraction	ug/L	<50	<50	<50	<50
5.261	Benzene	ug/L	<1.0	5.4	<1.0	<1.0
5.261	Toluene	ug/L	<2.0	<2.0	<2.0	<2.0
5.261	Ethyl Benzene	ug/L	<1.0	<1.0	<1.0	<1.0
5.261	meta & para-Xylene	ug/L	<2.0	2.7	<2.0	<2.0
5.261	ortho-Xylene	ug/L	<1.0	1.5	<1.0	<1.0
5.261	1.2.4-Trimethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
5.261	1.3.5-Trimethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

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Release

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 1 Q4

Batch Number: 07/03184
Report Date: 24/05/07

Method	Test	Units	07/03184/13 BH18D	07/03184/14 BH01/03S	07/03184/15 BH01/03D	07/03184/16 BH01/05S
External	Total Cyanide	mg/L	Complete	Complete	Complete	[NT]
External	AOX	ug/L	26	51	48	[NT]
External	Total Phenols	mg/L	Complete	Complete	Complete	[NT]
External	OC/OP/PCB	Text	Complete	Complete	Complete	[NT]
External	PAH/Phenols/Phthalate Esters	Text	Complete	Complete	Complete	[NT]
5.270	C6-C9 Fraction	ug/L	<10	<10	<10	[NT]
5.270	C10-C14 Fraction	ug/L	<50	<50	<50	[NT]
5.270	C15-C28 Fraction	ug/L	<50	<50	<50	[NT]
5.270	C29-C36 Fraction	ug/L	<50	<50	<50	[NT]
5.261	Benzene	ug/L	<1.0	<1.0	<1.0	[NT]
5.261	Toluene	ug/L	<2.0	<2.0	<2.0	[NT]
5.261	Ethyl Benzene	ug/L	<1.0	<1.0	<1.0	[NT]
5.261	meta & para-Xylene	ug/L	<2.0	<2.0	<2.0	[NT]
5.261	ortho-Xylene	ug/L	<1.0	<1.0	<1.0	[NT]
5.261	1.2.4-Trimethylbenzene	ug/L	<1.0	<1.0	<1.0	[NT]
5.261	1.3.5-Trimethylbenzene	ug/L	<1.0	<1.0	<1.0	[NT]

Method	Test	Units	07/03184/17 BH01/05D	07/03184/18 BH97/20S	07/03184/19 BH97/20D	07/03184/20 BH01/09S
External	Total Cyanide	mg/L	Complete	[NT]	Complete	[NT]
External	AOX	ug/L	202	[NT]	526	[NT]
External	Total Phenols	mg/L	Complete	[NT]	Complete	[NT]
External	OC/OP/PCB	Text	Complete	[NR]	[NR]	[NT]
External	PAH/Phenols/Phthalate Esters	Text	Complete	[NR]	[NR]	[NT]
5.270	C6-C9 Fraction	ug/L	<10	[NR]	[NR]	[NT]
5.270	C10-C14 Fraction	ug/L	<50	[NR]	[NR]	[NT]
5.270	C15-C28 Fraction	ug/L	<50	[NR]	[NR]	[NT]
5.270	C29-C36 Fraction	ug/L	<50	[NR]	[NR]	[NT]
5.261	Benzene	ug/L	<1.0	[NR]	[NR]	[NT]
5.261	Toluene	ug/L	<2.0	[NR]	[NR]	[NT]
5.261	Ethyl Benzene	ug/L	<1.0	[NR]	[NR]	[NT]
5.261	meta & para-Xylene	ug/L	<2.0	[NR]	[NR]	[NT]
5.261	ortho-Xylene	ug/L	<1.0	[NR]	[NR]	[NT]
5.261	1.2.4-Trimethylbenzene	ug/L	<1.0	[NR]	[NR]	[NT]
5.261	1.3.5-Trimethylbenzene	ug/L	<1.0	[NR]	[NR]	[NT]
5.270	C6-C9 Fraction	ug/L	[NR]	[NT]	<10	[NR]
5.270	C10-C14 Fraction	ug/L	[NR]	[NT]	<50	[NR]
5.270	C15-C28 Fraction	ug/L	[NR]	[NT]	<50	[NR]
5.270	C29-C36 Fraction	ug/L	[NR]	[NT]	<50	[NR]
5.261	Benzene	ug/L	[NR]	[NT]	<1.0	[NR]

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 1 Q4

Batch Number: 07/03184
Report Date: 24/05/07

Method	Test	Units	07/03184/17 BH01/05D	07/03184/18 BH97/20S	07/03184/19 BH97/20D	07/03184/20 BH01/09S
5.261	Toluene	ug/L	[NR]	[NT]	<2.0	[NR]
5.261	Ethyl Benzene	ug/L	[NR]	[NT]	<1.0	[NR]
5.261	meta & para-Xylene	ug/L	[NR]	[NT]	<2.0	[NR]
5.261	ortho-Xylene	ug/L	[NR]	[NT]	<1.0	[NR]
5.261	1.2.4-Trimethylbenzene	ug/L	[NR]	[NT]	<1.0	[NR]
5.261	1.3.5-Trimethylbenzene	ug/L	[NR]	[NT]	<1.0	[NR]

[ND] - Not Detected [NR] - Not Required [NT] - Not Tested

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Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

SCIENTIFIC ANALYTICAL SERVICES LABORATORY

Report Name: Quality Control Report ICP sw04-05
Batch Number: 07/04996
Date of Report: 18 May 2007

Scientific Analytical Services
ABN 72 002 765 795
Biological Accreditation Number 11085
Chemical Accreditation Number 11750
240 Donaldson Road
Rocklea Brisbane Qld 4106
Telephone 07 3403 2811
Facsimile 07 3403 2946
A unit of Brisbane City Council

Method	Test	Units	Replicate	Replicate	Spike	Spike
5.304	Aluminium	%	[ND]	3.6	[NR]	[NR]
5.304	Arsenic	%	[ND]	[ND]	105.4	104.2
5.304	Barium	%	0.4	1.2	98.8	98.2
5.304	Calcium	%	1.6	0.7	[NR]	[NR]
5.304	Cadmium	%	[ND]	17.5	100.1	98.5
5.304	Chromium	%	13.3	[ND]	103.6	105.2
5.304	Copper	%	19.0	[ND]	102.7	106.1
5.304	Iron	%	0.3	0.2	[NR]	[NR]
5.304	Potassium	%	2.2	12.6	[NR]	[NR]
5.304	Magnesium	%	1.4	0.4	[NR]	[NR]
5.304	Manganese	%	0.8	1.2	100.2	99.3
5.304	Sodium	%	0.4	0.3	[NR]	[NR]
5.304	Nickel	%	22.3	0.3	97.5	96.1
5.304	Lead	%	[ND]	[ND]	100.7	100.6
5.304	Zinc	%	3.9	0.2	106.3	103.7

[ND] - Not Detected [NR] - Not Required [NT] - Not Tested

Analyst: John Bratt

Control Limits for Replicates: 10% for values > 20xDL, 25% for values < 20xDL.
Control Limit for Spike Recovery 80% - 120%
*Sample background > 10x spike concentration.

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CERTIFICATE OF ANALYSIS

Client	: BRISBANE CITY COUNCIL	Laboratory	: Environmental Division Brisbane	Page	: 1 of 15
Contact	: MR BOB GRAY	Contact	: Tim Kilmister	Work Order	: EB0704918
Address	: ANALYTICAL SERVICES SECTION-240 DONALDSON ROAD ROCKLEA QLD AUSTRALIA 4106	Address	: 32 Shand Street Stafford QLD Australia 4053		
E-mail	: Bob.Gray@brisbane.qld.gov.au	E-mail	: Services.Brisbane@alsenviro.com		
Telephone	: 34032622	Telephone	: 61-7-3243 7222		
Facsimile	: 34032646	Facsimile	: 61-7-3243 7259		
Project	: WW 0305-9	Quote number	: BN/281a/05	Date received	: 3 May 2007
Order number	: - Not provided -			Date issued	: 21 May 2007
C-O-C number	: - Not provided -			No. of samples	- Received : 14
Site	: - Not provided -				Analysed : 14

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory 825

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

Accredited for compliance with ISO/IEC 17025.

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

Signatory	Position	Department
Carsten Emrich	Senior Organic Chemist	Organics - NATA 825 (818 - Brisbane)
Kim McCabe	Senior Inorganic Chemist	Inorganics - NATA 825 (818 - Brisbane)
Stephen Hislop	Senior Inorganic Chemist	Inorganics - NATA 825 (818 - Brisbane)

Release

ALS Environmental

Comments

This report for the ALSE reference EB0704918 supersedes any previous reports with this reference. Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Analytical Results for Samples Submitted
- Surrogate Recovery Data

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

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

Specific comments for Work Order EB0704918

EP075(SIM): Particular samples required dilution due to the presence of high level contaminants. Surrogates not determined.

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Analytical Results

Client Sample ID				07/03184/4 BHS	07/03184/5 BHD	07/03184/6 BH13S	07/03184/7 BH13D	07/03184/8 BH15S
Sample Matrix Type / Description				WATER	WATER	WATER	WATER	WATER
Sample Date / Time				2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00
Laboratory Sample ID								
Analyte	CAS number	LOR	Units	EB0704918-001	EB0704918-002	EB0704918-003	EB0704918-004	EB0704918-005
EK026: Total Cyanide								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	<0.004	<0.004	<0.004
EP035: Phenols (Total)								
Phenols (Total)		0.05	mg/L	<0.05	1.90	<0.05	0.08	<0.05
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		1	µg/L	---	---	---	<1	<1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	---	---	---	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	---	---	---	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L	---	---	---	<0.5	<0.5
gamma-BHC	58-89-9	0.5	µg/L	---	---	---	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L	---	---	---	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L	---	---	---	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L	---	---	---	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L	---	---	---	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L	---	---	---	<0.5	<0.5
alpha-Endosulfan	959-98-8	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
beta-Endosulfan	33213-65-9	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
Endosulfan sulfate	1031-07-8	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
Methoxychlor	72-43-5	2	µg/L	---	---	---	<2	<2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	---	---	---	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	---	---	---	<0.5	<0.5
Monocrotophos	6923-22-4	2	µg/L	---	---	---	<2	<2
Dimethoate	60-51-5	0.5	µg/L	---	---	---	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	---	---	---	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	---	---	---	<0.5	<0.5
Parathion-methyl	298-00-0	2	µg/L	---	---	---	<2	<2
Malathion	121-75-5	0.5	µg/L	---	---	---	<0.5	<0.5

Release

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03184/4 BHS	07/03184/5 BHD	07/03184/6 BH13S	07/03184/7 BH13D	07/03184/8 BH15S
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00
Laboratory Sample ID:				EB0704918-001	EB0704918-002	EB0704918-003	EB0704918-004	EB0704918-005
EP068B: Organophosphorus Pesticides (OP)								
Fenthion	55-38-9	0.5	µg/L	---	---	---	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	---	---	---	<0.5	<0.5
Parathion	56-38-2	2	µg/L	---	---	---	<2	<2
Pirimphos-ethyl	23505-41-1	0.5	µg/L	---	---	---	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	---	---	---	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	---	---	---	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	---	---	---	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	---	---	---	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	---	---	---	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	---	---	---	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	---	---	---	<0.5	<0.5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	---	---	---	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	---	---	---	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	---	---	---	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	---	---	---	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	---	---	---	<1.0	<1.0
2.4-Dimethylphenol	105-67-9	1.0	µg/L	---	---	---	<1.0	<1.0
2.4-Dichlorophenol	120-83-2	1.0	µg/L	---	---	---	<1.0	<1.0
2.6-Dichlorophenol	87-65-0	1.0	µg/L	---	---	---	<1.0	<1.0
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	---	---	---	<1.0	<1.0
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	---	---	---	<1.0	<1.0
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	---	---	---	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	---	---	---	<2.0	<2.0
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
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	---	---	---	<1.0	<1.0

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03184/4 BHS	07/03184/5 BHD	07/03184/6 BH13S	07/03184/7 BH13D	07/03184/8 BH15S
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00
Laboratory Sample ID:				EB0704918-001	EB0704918-002	EB0704918-003	EB0704918-004	EB0704918-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
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
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	2	µg/L	---	---	---	<2	<2
Diethyl phthalate	84-66-2	2	µg/L	---	---	---	<2	<2
Di-n-butyl phthalate	84-74-2	2	µg/L	---	---	---	<2	<2
Butyl benzyl phthalate	85-68-7	2	µg/L	---	---	---	<2	<2
bis(2-ethylhexyl) phthalate	117-81-7	20	µg/L	---	---	---	30	<20
Di-n-octylphthalate	117-84-0	2	µg/L	---	---	---	<2	<2
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	---	---	---	84.6	89.2
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	---	---	---	77.6	74.9
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	---	---	---	73.3	81.7
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	---	---	---	33.4	37.4
2-Chlorophenol-D4	93951-73-6	0.1	%	---	---	---	76.9	77.5
2.4.6-Tribromophenol	118-79-6	0.1	%	---	---	---	85.3	86.4
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	---	---	---	70.0	75.5
Anthracene-d10	1719-06-8	0.1	%	---	---	---	67.5	50.8
4-Terphenyl-d14	1718-51-0	0.1	%	---	---	---	68.8	61.5
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.1	%	---	---	---	52.3	52.4
Phenol-d6	13127-88-3	0.1	%	---	---	---	32.4	33.5
2-Chlorophenol-D4	93951-73-6	0.1	%	---	---	---	81.5	81.7
2.4.6-Tribromophenol	118-79-6	0.1	%	---	---	---	84.7	87.5
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	---	---	---	79.3	77.9
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	---	---	---	51.5	69.2
2-Fluorobiphenyl	321-60-8	0.1	%	---	---	---	76.0	79.3
Anthracene-d10	1719-06-8	0.1	%	---	---	---	82.9	79.6

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03184/4 BHS	07/03184/5 BHD	07/03184/6 BH13S	07/03184/7 BH13D	07/03184/8 BH15S
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00
Laboratory Sample ID:				EB0704918-001	EB0704918-002	EB0704918-003	EB0704918-004	EB0704918-005
EP076T: Base/Neutral Extractable Surrogates								
4-Terphenyl-d14	1718-51-0	0.1	%	---	---	---	90.0	89.9

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03184/9 BH15D	07/03184/10 BH17S	07/03184/11 BH17D	07/03184/12 BH18S	07/03184/13 BH18D
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00
Laboratory Sample ID:				EB0704918-006	EB0704918-007	EB0704918-008	EB0704918-009	EB0704918-010
EK026: Total Cyanide								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	<0.004	<0.004	<0.004
EP035: Phenols (Total)								
Phenols (Total)		0.05	mg/L	0.05	<0.05	0.13	0.44	<0.05
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		1	µg/L	<1	<1	<1	<1	<1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2	µg/L	<2	<2	<2	<2	<2
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2	µg/L	<2	<2	<2	<2	<2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2	µg/L	<2	<2	<2	<2	<2
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2	µg/L	<2	<2	<2	<2	<2
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03184/9 BH15D	07/03184/10 BH17S	07/03184/11 BH17D	07/03184/12 BH18S	07/03184/13 BH18D
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00
Laboratory Sample ID:				EB0704918-006	EB0704918-007	EB0704918-008	EB0704918-009	EB0704918-010
EP068B: Organophosphorus Pesticides (OP)								
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2	µg/L	<2	<2	<2	<2	<2
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	42.4	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	1.1	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03184/9 BH15D	07/03184/10 BH17S	07/03184/11 BH17D	07/03184/12 BH18S	07/03184/13 BH18D
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00
Laboratory Sample ID:				EB0704918-006	EB0704918-007	EB0704918-008	EB0704918-009	EB0704918-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	2	µg/L	<2	<2	<2	<2	<2
Diethyl phthalate	84-66-2	2	µg/L	<2	<2	<2	<2	<2
Di-n-butyl phthalate	84-74-2	2	µg/L	<2	<2	<2	<2	<2
Butyl benzyl phthalate	85-68-7	2	µg/L	<2	<2	<2	<2	<2
bis(2-ethylhexyl) phthalate	117-81-7	20	µg/L	40	<20	<20	<20	<20
Di-n-octylphthalate	117-84-0	2	µg/L	<2	<2	<2	<2	<2
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	78.6	83.4	84.6	82.8	74.2
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	65.3	70.6	72.7	69.9	64.4
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	69.6	83.7	78.8	72.8	68.0
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	29.3	Not Determined	33.9	33.2	29.4
2-Chlorophenol-D4	93951-73-6	0.1	%	67.1	Not Determined	77.5	78.6	69.8
2.4.6-Tribromophenol	118-79-6	0.1	%	78.0	Not Determined	81.2	79.7	66.5
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	67.0	Not Determined	77.6	74.9	66.1
Anthracene-d10	1719-06-8	0.1	%	65.0	Not Determined	68.8	70.8	66.3
4-Terphenyl-d14	1718-51-0	0.1	%	67.0	Not Determined	75.8	76.2	70.7
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.1	%	43.0	54.9	52.0	51.3	45.4
Phenol-d6	13127-88-3	0.1	%	28.2	27.9	33.8	33.3	28.2
2-Chlorophenol-D4	93951-73-6	0.1	%	70.3	86.0	84.6	85.6	73.5
2.4.6-Tribromophenol	118-79-6	0.1	%	82.9	71.1	86.8	77.9	71.5
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	71.1	84.2	84.4	86.6	73.1
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	62.4	76.1	77.3	77.0	64.9
2-Fluorobiphenyl	321-60-8	0.1	%	74.0	88.6	88.1	83.8	72.4
Anthracene-d10	1719-06-8	0.1	%	72.2	90.7	77.9	78.8	70.6

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03184/9 BH15D	07/03184/10 BH17S	07/03184/11 BH17D	07/03184/12 BH18S	07/03184/13 BH18D
				Sample Matrix Type / Description: WATER	WATER	WATER	WATER	WATER
				Sample Date / Time: 2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00
				Laboratory Sample ID: EB0704918-006	EB0704918-007	EB0704918-008	EB0704918-009	EB0704918-010
EP075T: Base/Neutral Extractable Surrogates								
4-Terphenyl-d14	1718-51-0	0.1	%	80.2	109	91.0	89.0	82.5

A Campbell Brothers Limited Company

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03184/14 BH01/03S	07/03184/15 BH01/03D	07/03184/17 BH01/05D	BH97/20D	
				Sample Matrix Type / Description: WATER	WATER	WATER	WATER	
				Sample Date / Time: 2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	2 May 2007 15:00	
				Laboratory Sample ID: EB0704918-011	EB0704918-012	EB0704918-013	EB0704918-014	
EK026: Total Cyanide								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	<0.004	<0.004	
EP035: Phenols (Total)								
Phenols (Total)		0.05	mg/L	<0.05	<0.05	<0.05	0.10	
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		1	µg/L	<1	<1	<1	---	
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	<0.5	---	
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	<0.5	---	
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	<0.5	---	
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	<0.5	---	
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	<0.5	---	
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	---	
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	<0.5	---	
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	<0.5	---	
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	<0.5	---	
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	<0.5	---	
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	---	
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	---	
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	<0.5	---	
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	<0.5	---	
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	<0.5	---	
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	<0.5	---	
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	<0.5	---	
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	---	
4,4'-DDT	50-29-3	2	µg/L	<2	<2	<2	---	
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	---	
Methoxychlor	72-43-5	2	µg/L	<2	<2	<2	---	
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	---	
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	---	
Monocrotophos	6923-22-4	2	µg/L	<2	<2	<2	---	
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	---	
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	---	
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	---	
Parathion-methyl	298-00-0	2	µg/L	<2	<2	<2	---	
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	---	

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03184/14 BH01/03S Sample Matrix Type / Description: WATER Sample Date / Time: 2 May 2007 15:00 Laboratory Sample ID: EB0704918-011	07/03184/15 BH01/03D WATER 2 May 2007 15:00 EB0704918-012	07/03184/17 BH01/05D WATER 2 May 2007 15:00 EB0704918-013	BH97/20D WATER 2 May 2007 15:00 EB0704918-014	
EP068B: Organophosphorus Pesticides (OP)								
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	---	
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	---	
Parathion	56-38-2	2	µg/L	<2	<2	<2	---	
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	---	
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	---	
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	---	
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	---	
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	---	
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	---	
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	---	
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	---	
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	---	
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	---	
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	---	
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	---	
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	---	
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	---	
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	---	
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	---	
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	---	
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	---	
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	---	
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	---	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	---	
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	---	
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	---	
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	---	
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	---	
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	---	
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	---	
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	---	
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	---	
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	---	
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	---	

A Campbell Brothers Limited Company

ALS Environmental

Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03184/14 BH01/03S Sample Matrix Type / Description: WATER Sample Date / Time: 2 May 2007 15:00 Laboratory Sample ID: EB0704918-011	07/03184/15 BH01/03D WATER 2 May 2007 15:00 EB0704918-012	07/03184/17 BH01/05D WATER 2 May 2007 15:00 EB0704918-013	BH97/20D WATER 2 May 2007 15:00 EB0704918-014	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	---	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	---	
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	---	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	---	
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	---	
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	2	µg/L	<2	<2	<2	---	
Diethyl phthalate	84-66-2	2	µg/L	<2	<2	<2	---	
Di-n-butyl phthalate	84-74-2	2	µg/L	<2	<2	<2	---	
Butyl benzyl phthalate	85-68-7	2	µg/L	<2	<2	<2	---	
bis(2-ethylhexyl) phthalate	117-81-7	20	µg/L	<20	<20	<20	---	
Di-n-octylphthalate	117-84-0	2	µg/L	<2	<2	<2	---	
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	84.4	81.8	76.4	---	
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	72.7	72.9	69.5	---	
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	72.3	71.6	65.5	---	
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	32.0	29.8	27.4	---	
2-Chlorophenol-D4	93951-73-6	0.1	%	72.7	68.9	64.6	---	
2.4.6-Tribromophenol	118-79-6	0.1	%	76.8	72.5	61.0	---	
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	67.2	63.2	66.8	---	
Anthracene-d10	1719-06-8	0.1	%	76.3	69.0	48.5	---	
4-Terphenyl-d14	1718-51-0	0.1	%	73.7	70.3	63.7	---	
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.1	%	46.5	45.5	39.0	---	
Phenol-d6	13127-88-3	0.1	%	31.2	28.8	26.5	---	
2-Chlorophenol-D4	93951-73-6	0.1	%	76.7	74.0	68.4	---	
2.4.6-Tribromophenol	118-79-6	0.1	%	78.4	74.5	56.3	---	
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	77.0	75.8	69.6	---	
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	50.9	48.5	59.6	---	
2-Fluorobiphenyl	321-60-8	0.1	%	78.6	71.2	72.8	---	
Anthracene-d10	1719-06-8	0.1	%	78.0	72.3	55.2	---	

A Campbell Brothers Limited Company

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Release

ALS Environmental

Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03184/14 BH01/03S Sample Matrix Type / Description: WATER Sample Date / Time: 2 May 2007 15:00 Laboratory Sample ID: EB0704918-011	07/03184/15 BH01/03D WATER 2 May 2007 15:00 EB0704918-012	07/03184/17 BH01/05D WATER 2 May 2007 15:00 EB0704918-013	BH97/20D WATER 2 May 2007 15:00 EB0704918-014	
EP075T: Base/Neutral Extractable Surrogates								
4-Terphenyl-d14	1718-51-0	0.1	%	86.2	87.3	79.6	---	

A Campbell Brothers Limited Company

ALS Environmental

Surrogate Control Limits

Matrix Type: WATER - Surrogate Control Limits

Method name	Analyte name	Surrogate Control Limits Lower Limit	Upper Limit
EP066: Polychlorinated Biphenyls (PCB)			
EP066S: PCB Surrogate	Decachlorobiphenyl	10	164
EP068: Pesticides			
EP068S: Organochlorine Pesticide Surrogate	Dibromo-DDE	10	136
EP068T: Organophosphorus Pesticide Surrogate	DEF	10	110
EP075: Semivolatile Organic Compounds			
EP075S: Acid Extractable Surrogates	2-Fluorophenol	21	100
	Phenol-d6	10	94
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	10	123
EP075T: Base/Neutral Extractable Surrogates	Nitrobenzene-D5	35	114
	1,2-Dichlorobenzene-D4	32	129
	2-Fluorobiphenyl	43	116
	Anthracene-d10	27	133
	4-Terphenyl-d14	33	141
EP075(SIM): PAH/Phenols (GC/MS - SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	10	94
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	10	123
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	43	116
	Anthracene-d10	27	133
	4-Terphenyl-d14	33	141

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LEVAY & CO. ENVIRONMENTAL SERVICES
Water Quality, Water Treatment and Environmental Pollution Research Laboratories

Job No. L&C-07-247

17th May, 2007

Brisbane Water,
SAS Laboratory,
Attn. Ms. Patti O'Shea,
Supervising Chemist Environmental Laboratory 2,
240 Donaldson Road,
Rocklea. QLD. 4106.

Dear Patti,

REPORT

RE: MEASUREMENT OF HALOGENATED ORGANICS
Purchase Order No. H64806 RQ
Request No. WW0305-8

I refer to your request regarding AOX analysis of aqueous samples received on the 4th May, 2007.

The results are now attached.

Yours sincerely,

49-Sch4 - Signature

George Levay
Managing Director

Enc.

Ian Wark Research Institute
University of South Australia, Mawson Lakes Campus, Mawson Lakes SA 5095, Australia

Tel. 61-8-8302 3130, Fax. 61-8-8302 3549, Email: george.levay@unisa.edu.au

LEVAY & CO. ENVIRONMENTAL SERVICES
Water Quality, Water Treatment and Environmental Pollution Research Laboratories

Job No. L&C-07-247			
	BRISBANE WATER		
	SAS Laboratory		
	Purchase Order No. H64806 RQ		
	Request No. WW0305-8		
Batch No.	**Sample Description**	**Sample Date**	**AOX (µg/l)**
	AOX Analysis		
	WW Bore Run 1		
07/03184/4	BH7S	02/05/07	195
07/03184/5	BH7D	"	129
07/03184/6	BH13S	"	1470
07/03184/7	BH13D	"	140
07/03184/8	BH15S	"	511
07/03184/9	BH15D	"	169
07/03184/10	BH17S	"	965
07/03184/11	BH17D	"	175
07/03184/12	BH18S	"	29
07/03184/13	BH18D	"	26
07/03184/14	BH01/03S	"	51
07/03184/15	BH01/03D	"	48
07/03184/17	BH01/05D	"	202
07/03184/19	BH01/09S	02/05/07	526
	Note:		
	AOX was measured in the supernatant of settled samples		
	QC DATA		
	Detection Limit		*2µg/l*
	Blank		*< 2µg/l*
	Spiked Blank Recovery		*101%*
	Replicate: BH13S		*1400*
	Replicate: BH17S		1040

Ian Wark Research Institute, University of South Australia, Mawson Lakes SA 5095
Tel: 61-8-8302 3130, Fax: 61-8-8302 3549, Email: george.levay@unisa.edu.au

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LEVAY & CO. ENVIRONMENTAL SERVICES
Water Quality, Water Treatment and Environmental Pollution Research Laboratories

Scientific Analytical Services

ABN 72 002 765 795

Biological Accreditation Number 11085
Chemical Accreditation Number 11750

240 Donaldson Road
Rocklea Brisbane Qld 4106

Telephone 07 3403 2611
Facsimile 07 3403 2646

A unit of Brisbane City Council

SCIENTIFIC ANALYTICAL SERVICES LABORATORY REPORT

Attention:	Stewart Edwardes
Client:	Willawong Remediation Project Manager St Paul's Terrace Fortitude Valley
Job Name:	WWREM - Bore Run 2 Q4
Sampled By:	SAS Laboratory
Sampling Date:	01/05/2007
Sampling Method:	Grab
Sample Matrix:	Aqueous
Batch Number:	07/03185
Registration Date:	2 May 2007
Date of Report:	24 May 2007

AOX analysis performed by Levay & Co. Environmental Services. L&C-07-246.

Released by EHP under the RTI Act 2009

49-Sch4 - Signat

Patti O'Shea
Supervising Chemist

49-Sch4 - Sig

Bob Phillips
Supervising Microbiologist

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

NATA
ACCREDITED FOR TECHNICAL COMPETENCE
This document is issued in accordance with NATA's accreditation requirements.

Ian Wark Research Institute, University of South Australia, Mawson Lakes SA 5095
Tel: 61-8-8302 3130, Fax: 61-8-8302 3549, Email: george.levay@unisa.edu.au

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 2 Q4

Batch Number: 07/03185
Report Date: 24/05/07

Method	Test	Units	07/03185/1 BH97/8	07/03185/2 BH97/3	07/03185/3 BH97/4	07/03185/4 BH01/08S
Misc. *	Groundwater Level	cm	118	460	198	370
F.002	pH - Field	pH Unit	5.7	5.9	5.7	4.3
F.007	Conductivity - Field	uS/cm	3,800	1,400	3,500	7,200
F.005	Temperature - Field	°C	25.2	22.7	23.3	22.6
F.014	Redox Potential	mV	-44	20	130	82
F.007	Total Dissolved Salt Est.	mg/L	2,400	880	2,300	4,600
1.603	Total Organic Carbon as C	mg/L	86	91	9.0	130
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	2.9	25	0.11	32
FIA.013	Total Nitrogen as N	mg/L	3.1	25	0.11	32
FIA.010B	Nitrite+Nitrate as N	mg/L	0.17	<0.02	<0.02	<0.02
FIA.008	Ammonia N	mg/L	0.66	4.0	<0.06	9.8
FIA.109	Chloride	mg/L	1,200	320	1,100	2,100
5.304F	Sulphur as SO4 (Soluble)	mg/L	26	32	34	650
1.012	Total Alkalinity as CaCO3	mg/L	55	140	46	<1.0
1.610	COD as O2	mg/L	570	190	<5.0	26
1.604	BOD 5 days @ 20°C	mg/L	9	10	<5	33
4.404	Faecal Coliforms (MF)	cfu/100mL	35,000	<10	140	<10
FIA.011A	Ortho Phosphorus as P	mg/L	0.022	0.037	<0.02	<0.02
FIA.011B	Total Phosphorus as P	mg/L	1.3	0.092	0.046	0.054
5.304F	Cadmium (Soluble) as Cd	mg/L	<0.001	<0.001	<0.001	<0.001
5.304F	Calcium (Soluble) as Ca	mg/L	8.4	5.0	7.1	14
5.304F	Chromium (Soluble) as Cr	mg/L	0.001	0.001	0.001	0.009
5.304F	Copper (Soluble) as Cu	mg/L	0.002	0.002	0.003	0.003
5.304F	Iron (Soluble) as Fe	mg/L	58	24	0.085	110
5.304F	Manganese (Soluble) as Mn	mg/L	0.69	0.26	0.083	0.19
5.304F	Potassium (Soluble) as K	mg/L	3.8	6.6	1.9	45
5.304F	Zinc (Soluble) as Zn	mg/L	0.024	0.054	0.021	0.086
5.304F	Arsenic (Soluble) as As	mg/L	0.013	<0.01	<0.01	0.019
5.303F	Mercury (Soluble)	ug/L	<0.10	<0.10	<0.10	<0.10
5.304F	Lead (Soluble) as Pb	mg/L	<0.005	<0.005	<0.005	0.019
5.304F	Nickel (Soluble) as Ni	mg/L	0.015	0.022	0.009	0.031
5.304F	Sodium (Soluble) as Na	mg/L	550	180	620	1,000

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 2 Q4

Batch Number: 07/03185
Report Date: 24/05/07

Method	Test	Units	07/03185/5 BH01/08D	07/03185/6 BH114	07/03185/7 BH97/2S	07/03185/8 BH97/2D
Misc. *	Groundwater Level	cm	368	254	293	332
F.002	pH - Field	pH Unit	4.7	6.2	4.9	4.4
F.007	Conductivity - Field	uS/cm	2,200	2,400	1,500	6,100
F.005	Temperature - Field	°C	22.1	22.0	21.5	21.9
F.014	Redox Potential	mV	110	130	190	51
F.007	Total Dissolved Salt Est.	mg/L	1,400	1,500	970	3,900
1.603	Total Organic Carbon as C	mg/L	36	11	15	31
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	4.9	0.46	0.55	4.0
FIA.013	Total Nitrogen as N	mg/L	5.0	0.65	0.59	4.0
FIA.010B	Nitrite+Nitrate as N	mg/L	0.021	0.19	0.039	0.063
FIA.008	Ammonia N	mg/L	0.12	<0.06	0.15	1.2
FIA.109	Chloride	mg/L	660	590	420	2,000
5.304F	Sulphur as SO4 (Soluble)	mg/L	19	74	67	40
1.012	Total Alkalinity as CaCO3	mg/L	<1.0	180	29	5.8
1.610	COD as O2	mg/L	78	13	20	83
1.604	BOD 5 days @ 20°C	mg/L	11	<5	<5	14
4.404	Faecal Coliforms (MF)	cfu/100mL	270	60	900	<10
FIA.011A	Ortho Phosphorus as P	mg/L	<0.02	0.034	<0.02	<0.02
FIA.011B	Total Phosphorus as P	mg/L	0.050	0.083	0.16	0.090
5.304F	Cadmium (Soluble) as Cd	mg/L	<0.001	<0.001	<0.001	<0.001
5.304F	Calcium (Soluble) as Ca	mg/L	9.7	5.6	7.0	5.3
5.304F	Chromium (Soluble) as Cr	mg/L	0.002	0.001	0.001	0.003
5.304F	Copper (Soluble) as Cu	mg/L	0.004	0.004	0.004	0.002
5.304F	Iron (Soluble) as Fe	mg/L	4.0	0.049	0.065	19
5.304F	Manganese (Soluble) as Mn	mg/L	0.037	0.14	0.43	0.077
5.304F	Potassium (Soluble) as K	mg/L	2.8	2.5	3.2	3.7
5.304F	Zinc (Soluble) as Zn	mg/L	0.087	0.014	0.063	0.092
5.304F	Arsenic (Soluble) as As	mg/L	<0.01	<0.01	<0.01	<0.01
5.303F	Mercury (Soluble)	ug/L	<0.10	<0.10	<0.10	<0.10
5.304F	Lead (Soluble) as Pb	mg/L	0.005	<0.005	<0.005	<0.005
5.304F	Nickel (Soluble) as Ni	mg/L	0.022	0.008	0.030	0.050
5.304F	Sodium (Soluble) as Na	mg/L	250	450	240	860

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

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Release

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 2 Q4

Batch Number: 07/03185
Report Date: 24/05/07

Method	Test	Units	07/03185/9 BH8A	07/03185/10 BH04/08	07/03185/11 BH04/10	07/03185/12 BH04/04
Misc. *	Groundwater Level	cm	335	865	391	664
F.002	pH - Field	pH Unit	4.9	6.1	6.2	4.0
F.007	Conductivity - Field	uS/cm	2,000	9,600	8,800	7,600
F.005	Temperature - Field	° C	20.9	22.2	21.4	22.0
F.014	Redox Potential	mV	200	-39	-9.9	400
F.007	Total Dissolved Salt Est.	mg/L	1,300	6,100	5,600	4,900
1.603	Total Organic Carbon as C	mg/L	45	330	220	20
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	6.0	240	210	2.4
FIA.013	Total Nitrogen as N	mg/L	6.1	240	210	2.4
FIA.010B	Nitrite+Nitrate as N	mg/L	0.086	0.067	0.37	0.032
FIA.008	Ammonia N	mg/L	1.5	210	150	1.6
FIA.109	Chloride	mg/L	570	2,300	2,100	2,500
5.304F	Sulphur as SO4 (Soluble)	mg/L	92	850	840	150
1.012	Total Alkalinity as CaCO3	mg/L	33	1,000	690	<1.0
1.610	COD as O2	mg/L	140	[NR]	500	<25
1.604	BOD 5 days @ 20°C	mg/L	27	[NR]	83	<5
4.404	Faecal Coliforms (MF)	cfu/100mL	80	[NR]	20	<10
FIA.011A	Ortho Phosphorus as P	mg/L	<0.02	[NR]	<0.02	<0.02
FIA.011B	Total Phosphorus as P	mg/L	0.23	[NR]	0.18	0.035
5.304F	Cadmium (Soluble) as Cd	mg/L	<0.001	<0.001	<0.001	<0.001
5.304F	Calcium (Soluble) as Ca	mg/L	9.4	32	35	1.0
5.304F	Chromium (Soluble) as Cr	mg/L	0.002	0.002	0.003	0.003
5.304F	Copper (Soluble) as Cu	mg/L	0.014	0.004	0.002	0.011
5.304F	Iron (Soluble) as Fe	mg/L	1.9	110	9.2	0.88
5.304F	Manganese (Soluble) as Mn	mg/L	0.26	0.25	0.55	0.054
5.304F	Potassium (Soluble) as K	mg/L	4.3	89	86	8.1
5.304F	Zinc (Soluble) as Zn	mg/L	0.094	0.016	0.069	0.13
5.304F	Arsenic (Soluble) as As	mg/L	<0.01	[NR]	<0.01	<0.01
5.303F	Mercury (Soluble)	ug/L	<0.10	[NR]	<0.10	<0.10
5.304F	Lead (Soluble) as Pb	mg/L	0.009	[NR]	<0.005	0.012
5.304F	Nickel (Soluble) as Ni	mg/L	0.025	[NR]	0.049	0.036
5.304F	Sodium (Soluble) as Na	mg/L	270	[NR]	1,200	1,300

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 2 Q4

Batch Number: 07/03185
Report Date: 24/05/07

Method	Test	Units	07/03185/1 BH97/8	07/03185/2 BH97/3	07/03185/3 BH97/4	07/03185/4 BH01/08S
External	ALS Batch No.	Text	EB0704846	[NR]	[NR]	[NR]
External	Total Cyanide	mg/L	Complete	Complete	Complete	Complete
External	AOX	ug/L	254	103	74	431
External	Total Phenols	mg/L	Complete	Complete	Complete	Complete
External	OC/OP/PCB	Text	[NR]	[NR]	[NR]	Complete
External	PAH/Phenols/Phthalate Esters	Text	[NR]	[NR]	[NR]	Complete
5.270	C6-C9 Fraction	ug/L	[NR]	[NR]	[NR]	810
5.270	C10-C14 Fraction	ug/L	[NR]	[NR]	[NR]	14,000
5.270	C15-C28 Fraction	ug/L	[NR]	[NR]	[NR]	240
5.270	C29-C36 Fraction	ug/L	[NR]	[NR]	[NR]	<50
5.261	Benzene	ug/L	[NR]	[NR]	[NR]	11
5.261	Toluene	ug/L	[NR]	[NR]	[NR]	<2.0
5.261	Ethyl Benzene	ug/L	[NR]	[NR]	[NR]	3.9
5.261	meta & para-Xylene	ug/L	[NR]	[NR]	[NR]	4.2
5.261	ortho-Xylene	ug/L	[NR]	[NR]	[NR]	1.8
5.261	1.2.4-Trimethylbenzene	ug/L	[NR]	[NR]	[NR]	<1.0
5.261	1.3.5-Trimethylbenzene	ug/L	[NR]	[NR]	[NR]	<1.0
5.270	C6-C9 Fraction	ug/L	<10	300	<10	[NR]
5.270	C10-C14 Fraction	ug/L	<50	3,200	<50	[NR]
5.270	C15-C28 Fraction	ug/L	300	110	52	[NR]
5.270	C29-C36 Fraction	ug/L	120	<50	<50	[NR]
5.261	Benzene	ug/L	<1.0	6.1	<1.0	[NR]
5.261	Toluene	ug/L	<2.0	<2.0	<2.0	[NR]
5.261	Ethyl Benzene	ug/L	<1.0	<1.0	<1.0	[NR]
5.261	meta & para-Xylene	ug/L	<2.0	<2.0	<2.0	[NR]
5.261	ortho-Xylene	ug/L	<1.0	<1.0	<1.0	[NR]
5.261	1.2.4-Trimethylbenzene	ug/L	<1.0	<1.0	<1.0	[NR]
5.261	1.3.5-Trimethylbenzene	ug/L	<1.0	<1.0	<1.0	[NR]

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

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Release

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 2 Q4

Batch Number: 07/03185
Report Date: 24/05/07

Method	Test	Units	07/03185/5 BH01/08D	07/03185/6 BH114	07/03185/7 BH97/2S	07/03185/8 BH97/2D
External	Total Cyanide	mg/L	Complete	Complete	[NT]	Complete
External	AOX	ug/L	147	269	28	302
External	Total Phenols	mg/L	Complete	Complete	[NT]	Complete
External	OC/OP/PCB	Text	Complete	[NT]	[NT]	Complete
External	PAH/Phenols/Phthalate Esters	Text	Complete	Complete	Complete	Complete
5.270	C6-C9 Fraction	ug/L	120	23	<10	500
5.270	C10-C14 Fraction	ug/L	8,200	<50	<50	760,000
5.270	C15-C28 Fraction	ug/L	380	<50	170	22,000
5.270	C29-C36 Fraction	ug/L	<50	<50	<50	980
5.261	Benzene	ug/L	4.1	<1.0	<1.0	16
5.261	Toluene	ug/L	<2.0	<2.0	<2.0	<2.0
5.261	Ethyl Benzene	ug/L	<1.0	<1.0	<1.0	<1.0
5.261	meta & para-Xylene	ug/L	<2.0	<2.0	<2.0	3.6
5.261	ortho-Xylene	ug/L	<1.0	<1.0	<1.0	8.8
5.261	1.2.4-Trimethylbenzene	ug/L	<1.0	<1.0	<1.0	1.7
5.261	1.3.5-Trimethylbenzene	ug/L	<1.0	<1.0	<1.0	2.5
Method	Test	Units	07/03185/9 BH8A	07/03185/10 BH04/08	07/03185/11 BH04/10	07/03185/12 BH04/04
External	Total Cyanide	mg/L	Complete	[NR]	Complete	Complete
External	AOX	ug/L	48	[NR]	493	489
External	Total Phenols	mg/L	[NT]	[NR]	Complete	Complete
External	OC/OP/PCB	Text	[NR]	[NR]	[NT]	Complete
External	PAH/Phenols/Phthalate Esters	Text	[NR]	[NR]	Complete	Complete
5.270	C6-C9 Fraction	ug/L	[NR]	[NR]	1,500	<10
5.270	C10-C14 Fraction	ug/L	[NR]	[NR]	6,400	<50
5.270	C15-C28 Fraction	ug/L	[NR]	[NR]	350	150
5.270	C29-C36 Fraction	ug/L	[NR]	[NR]	<50	<50
5.261	Benzene	ug/L	[NR]	[NR]	3.6	<1.0
5.261	Toluene	ug/L	[NR]	[NR]	<2.0	<2.0
5.261	Ethyl Benzene	ug/L	[NR]	[NR]	<1.0	<1.0
5.261	meta & para-Xylene	ug/L	[NR]	[NR]	<2.0	<2.0
5.261	ortho-Xylene	ug/L	[NR]	[NR]	<1.0	<1.0
5.261	1.2.4-Trimethylbenzene	ug/L	[NR]	[NR]	<1.0	<1.0
5.261	1.3.5-Trimethylbenzene	ug/L	[NR]	[NR]	<1.0	<1.0
5.270	C6-C9 Fraction	ug/L	19	[NR]	[NR]	[NR]
5.270	C10-C14 Fraction	ug/L	910	[NR]	[NR]	[NR]
5.270	C15-C28 Fraction	ug/L	4,800	[NR]	[NR]	[NR]
5.270	C29-C36 Fraction	ug/L	520	[NR]	[NR]	[NR]
5.261	Benzene	ug/L	<1.0	[NR]	[NR]	[NR]

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 2 Q4

Batch Number: 07/03185
Report Date: 24/05/07

Method	Test	Units	07/03185/9 BH8A	07/03185/10 BH04/08	07/03185/11 BH04/10	07/03185/12 BH04/04
5.261	Toluene	ug/L	<2.0	[NR]	[NR]	[NR]
5.261	Ethyl Benzene	ug/L	<1.0	[NR]	[NR]	[NR]
5.261	meta & para-Xylene	ug/L	<2.0	[NR]	[NR]	[NR]
5.261	ortho-Xylene	ug/L	<1.0	[NR]	[NR]	[NR]
5.261	1.2.4-Trimethylbenzene	ug/L	<1.0	[NR]	[NR]	[NR]
5.261	1.3.5-Trimethylbenzene	ug/L	<1.0	[NR]	[NR]	[NR]

[ND] - Not Detected [NR] - Not Required [NT] - Not Tested

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Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Release

Scientific Analytical Services

ABN 72 002 765 795

Biological Accreditation Number 11085
Chemical Accreditation Number 11750

240 Donaldson Road
Rocklea Brisbane Qld 4106

Telephone 07 3403 2811
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A unit of Brisbane City Council

SCIENTIFIC ANALYTICAL SERVICES LABORATORY

Report Name: Quality Control Report ICP sw04-05
Batch Number: 07/04996
Date of Report: 18 May 2007

Method	Test	Units	Replicate	Replicate	Spike	Spike
5.304	Aluminium	%	[ND]	3.6	[NR]	[NR]
5.304	Arsenic	%	[ND]	[ND]	105.4	104.2
5.304	Barium	%	0.4	1.2	98.8	98.2
5.304	Calcium	%	1.6	0.7	[NR]	[NR]
5.304	Cadmium	%	[ND]	17.5	100.1	98.5
5.304	Chromium	%	13.3	[ND]	103.6	105.2
5.304	Copper	%	19.0	[ND]	102.7	106.1
5.304	Iron	%	0.3	0.2	[NR]	[NR]
5.304	Potassium	%	2.2	12.6	[NR]	[NR]
5.304	Magnesium	%	1.4	0.4	[NR]	[NR]
5.304	Manganese	%	0.8	1.2	100.2	99.3
5.304	Sodium	%	0.4	0.3	[NR]	[NR]
5.304	Nickel	%	22.3	0.3	97.5	96.1
5.304	Lead	%	[ND]	[ND]	100.7	100.6
5.304	Zinc	%	3.9	0.2	106.3	103.7

[ND] - Not Detected [NR] - Not Required [NT] - Not Tested

Analyst: John Bratt

Control Limits for Replicates: 10% for values > 20xDL, 25% for values < 20xDL.
Control Limit for Spike Recovery 80% - 120%
*Sample background > 10x spike concentration.

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CERTIFICATE OF ANALYSIS

Client	: BRISBANE CITY COUNCIL	Laboratory	: Environmental Division Brisbane	Page	: 1 of 15
Contact	: MR BOB GRAY	Contact	: Tim Kilminster	Work Order	: EB0704846
Address	: ANALYTICAL SERVICES SECTION-240 DONALDSON ROAD ROCKLEA QLD AUSTRALIA 4106	Address	: 32 Shand Street Stafford QLD Australia 4053		
E-mail	: Bob.Gray@brisbane.qld.gov.au	E-mail	: Services.Brisbane@alsenviro.com		
Telephone	: 34032622	Telephone	: 61-7-3243 7222		
Facsimile	: 34032646	Facsimile	: 61-7-3243 7269	Date received	: 2 May 2007
Project	: WW0205-2	Quote number	: BN/281e/05	Date issued	: 23 May 2007
Order number	: - Not provided -			No. of samples	- Received : 11
C-O-C number	: - Not provided -				Analysed : 11
Site	: - Not provided -				

ALSE - Excellence in Analytical Testing

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

Signatory	Position	Department
Stephen Hislop	Senior Inorganic Chemist	Inorganics - NATA 825 (818 - Brisbane)
Tim Kilminster	Laboratory Manager	Organics - NATA 826 (818 - Brisbane)

NATA Accredited Laboratory 825

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

Accredited for compliance with ISO/IEC 17025.

Release

ALS Environmental

Comments

This report for the ALSE reference EB0704846 supersedes any previous reports with this reference. Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- Analytical Results for Samples Submitted
- Surrogate Recovery Data

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

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

Specific comments for Work Order EB0704846

EP075(SIM): Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly. Surrogates not determined.

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03185/1 BH97/8 WATER 1 May 2007 15:00 EB0704846-001	07/03185/2 BH97/3 WATER 1 May 2007 15:00 EB0704846-002	07/03185/3 BH97/4 WATER 1 May 2007 15:00 EB0704846-003	07/03185/4 BH01/08S WATER 1 May 2007 15:00 EB0704846-004	07/03185/5 BH/01/08D WATER 1 May 2007 15:00 EB0704846-005
EK026: Total Cyanide								
Total Cyanide	57-12-5	0.004	mg/L	0.050	0.009	<0.004	<0.004	<0.004
EP035: Phenols (Total)								
Phenols (Total)		0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated Biphenyls		1	µg/L	---	---	---	<1	<1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	---	---	---	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	---	---	---	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L	---	---	---	<0.5	<0.5
gamma-BHC	58-89-9	0.5	µg/L	---	---	---	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L	---	---	---	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L	---	---	---	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L	---	---	---	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L	---	---	---	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L	---	---	---	<0.5	<0.5
alpha-Endosulfan	959-98-8	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
beta-Endosulfan	33213-65-9	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
Endosulfan sulfate	1031-07-8	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
Methoxychlor	72-43-5	2	µg/L	---	---	---	<2	<2
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	---	---	---	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	---	---	---	<0.5	<0.5
Monocrotophos	6923-22-4	2	µg/L	---	---	---	<2	<2
Dimethoate	60-51-5	0.5	µg/L	---	---	---	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	---	---	---	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	---	---	---	<0.5	<0.5
Parathion-methyl	298-00-0	2	µg/L	---	---	---	<2	<2
Malathion	121-75-5	0.5	µg/L	---	---	---	<0.5	<0.5

Release

ALS Environmental

Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03185/1 BH97/8	07/03185/2 BH97/3	07/03185/3 BH97/4	07/03185/4 BH01/08S	07/03185/5 BH/01/08D
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00
Laboratory Sample ID:				EB0704846-001	EB0704846-002	EB0704846-003	EB0704846-004	EB0704846-005
EP068B: Organophosphorus Pesticides (OP)								
Fenthion	55-38-9	0.5	µg/L	---	---	---	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	---	---	---	<0.5	<0.5
Parathion	56-38-2	2	µg/L	---	---	---	<2	<2
Pirimphos-ethyl	23505-41-1	0.5	µg/L	---	---	---	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	---	---	---	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	---	---	---	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	---	---	---	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	---	---	---	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	---	---	---	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	---	---	---	<0.5	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	---	---	---	<0.5	<0.5
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	---	---	---	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	---	---	---	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	---	---	---	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	---	---	---	<2.0	<2.1
2-Nitrophenol	88-75-5	1.0	µg/L	---	---	---	<1.0	<1.0
2.4-Dimethylphenol	105-67-9	1.0	µg/L	---	---	---	1.2	<1.0
2.4-Dichlorophenol	120-83-2	1.0	µg/L	---	---	---	1.8	<1.0
2.6-Dichlorophenol	87-65-0	1.0	µg/L	---	---	---	2.0	2.1
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	---	---	---	2.0	<1.0
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	---	---	---	<1.0	<1.0
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	---	---	---	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	---	---	---	<2.0	<2.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	---	---	---	<1.0	1.1
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
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	---	---	---	<1.0	<1.0

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03185/1 BH97/8	07/03185/2 BH97/3	07/03185/3 BH97/4	07/03185/4 BH01/08S	07/03185/5 BH/01/08D
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00
Laboratory Sample ID:				EB0704846-001	EB0704846-002	EB0704846-003	EB0704846-004	EB0704846-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	---	---	---	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	---	---	---	<1.0	<1.0
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
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	2	µg/L	---	---	---	<2	<2
Diethyl phthalate	84-66-2	2	µg/L	---	---	---	<2	<2
Di-n-butyl phthalate	84-74-2	2	µg/L	---	---	---	<2	<2
Butyl benzyl phthalate	85-68-7	2	µg/L	---	---	---	<2	<2
bis(2-ethylhexyl) phthalate	117-81-7	20	µg/L	---	---	---	<20	50
Di-n-octylphthalate	117-84-0	2	µg/L	---	---	---	<2	<2
EP101: Sulfolane								
Sulfolane	126-33-0	1.0	mg/L	---	2.3	<1.0	---	---
EP102: Thiolane								
Thiolane	110-01-0	5	µg/L	---	489	<5	---	---
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	---	---	---	99.6	88.8
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	---	---	---	82.1	76.2
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	---	---	---	88.2	77.9
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	---	---	---	Not Determined	Not Determined
2-Chlorophenol-D4	93951-73-6	0.1	%	---	---	---	Not Determined	Not Determined
2.4.6-Tribromophenol	118-79-6	0.1	%	---	---	---	Not Determined	Not Determined
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	---	---	---	Not Determined	Not Determined
Anthracene-d10	1719-06-8	0.1	%	---	---	---	Not Determined	Not Determined
4-Terphenyl-d14	1718-51-0	0.1	%	---	---	---	Not Determined	Not Determined
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.1	%	---	---	---	73.4	69.8
Phenol-d6	13127-88-3	0.1	%	---	---	---	50.8	46.2
2-Chlorophenol-D4	93951-73-6	0.1	%	---	---	---	93.2	92.5
2.4.6-Tribromophenol	118-79-6	0.1	%	---	---	---	Not Determined	126

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Release

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03185/1 BH97/8 WATER 1 May 2007 15:00 EB0704846-001	07/03185/2 BH97/3 WATER 1 May 2007 15:00 EB0704846-002	07/03185/3 BH97/4 WATER 1 May 2007 15:00 EB0704846-003	07/03185/4 BH01/08S WATER 1 May 2007 15:00 EB0704846-004	07/03185/5 BH01/08D WATER 1 May 2007 15:00 EB0704846-005
EP076T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	---	---	---	104	104
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	---	---	---	90.5	91.5
2-Fluorobiphenyl	321-60-8	0.1	%	---	---	---	109	108
Anthracene-d10	1719-06-8	0.1	%	---	---	---	55.8	101
4-Terphenyl-d14	1718-51-0	0.1	%	---	---	---	77.8	105
EP102S: Volatile Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	---	108	115	---	---
Toluene-D8	2037-26-5	0.1	%	---	99.9	95.5	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	---	85.4	81.4	---	---

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03185/6 BH114 WATER 1 May 2007 15:00 EB0704846-006	07/03185/7 BH97/2S WATER 1 May 2007 15:00 EB0704846-007	07/03185/8 BH97/2D WATER 1 May 2007 15:00 EB0704846-008	07/03185/9 BH8A WATER 1 May 2007 15:00 EB0704846-009	07/03185/11 BH04/10 WATER 1 May 2007 15:00 EB0704846-010
EK026: Total Cyanide								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	---	<0.004	<0.004	0.005
EP035: Phenols (Total)								
Phenols (Total)		0.05	mg/L	<0.05	---	<0.05	---	<0.05
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		1	µg/L	---	---	<1	---	---
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	---	---	<0.5	---	---
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	---	---	<0.5	---	---
beta-BHC	319-85-7	0.5	µg/L	---	---	<0.5	---	---
gamma-BHC	58-89-9	0.5	µg/L	---	---	<0.5	---	---
delta-BHC	319-86-8	0.5	µg/L	---	---	<0.5	---	---
Heptachlor	76-44-8	0.5	µg/L	---	---	<0.5	---	---
Aldrin	309-00-2	0.5	µg/L	---	---	<0.5	---	---
Heptachlor epoxide	1024-57-3	0.5	µg/L	---	---	<0.5	---	---
trans-Chlordane	5103-74-2	0.5	µg/L	---	---	<0.5	---	---
alpha-Endosulfan	959-98-8	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	---	---
Endosulfan sulfate	1031-07-8	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	---	---
Methoxychlor	72-43-5	2	µg/L	---	---	<2	---	---
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	---	---	<0.5	---	---
Demeton-S-methyl	919-86-8	0.5	µg/L	---	---	<0.5	---	---
Monocrotophos	6923-22-4	2	µg/L	---	---	<2	---	---
Dimethoate	60-51-5	0.5	µg/L	---	---	<0.5	---	---
Diazinon	333-41-5	0.5	µg/L	---	---	<0.5	---	---
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	---	---	<0.5	---	---
Parathion-methyl	298-00-0	2	µg/L	---	---	<2	---	---
Malathion	121-75-5	0.5	µg/L	---	---	<0.5	---	---

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03185/6 BH114	07/03185/7 BH97/2S	07/03185/8 BH97/2D	07/03185/9 BH8A	07/03185/11 BH04/10
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00
Laboratory Sample ID:				EB0704846-006	EB0704846-007	EB0704846-008	EB0704846-009	EB0704846-010
EP068B: Organophosphorus Pesticides (OP)								
Fenthion	55-38-9	0.5	µg/L	---	---	<0.5	---	---
Chlorpyrifos	2921-88-2	0.5	µg/L	---	---	<0.5	---	---
Parathion	56-38-2	2	µg/L	---	---	<2	---	---
Pirimphos-ethyl	23505-41-1	0.5	µg/L	---	---	<0.5	---	---
Chlorfenvinphos	470-90-6	0.5	µg/L	---	---	<0.5	---	---
Bromophos-ethyl	4824-78-6	0.5	µg/L	---	---	<0.5	---	---
Fenamiphos	22224-92-6	0.5	µg/L	---	---	<0.5	---	---
Prothiofos	34643-46-4	0.5	µg/L	---	---	<0.5	---	---
Ethion	563-12-2	0.5	µg/L	---	---	<0.5	---	---
Carbophenothion	786-19-6	0.5	µg/L	---	---	<0.5	---	---
Azinphos Methyl	86-50-0	0.5	µg/L	---	---	<0.5	---	---
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	---	---	<1.0	---	---
2-Chlorophenol	95-57-8	1.0	µg/L	---	---	<1.0	---	---
2-Methylphenol	95-48-7	1.0	µg/L	---	---	<1.0	---	---
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	---	---	<2.0	---	---
2-Nitrophenol	88-75-5	1.0	µg/L	---	---	<1.0	---	---
2.4-Dimethylphenol	105-67-9	1.0	µg/L	---	---	1.8	---	---
2.4-Dichlorophenol	120-83-2	1.0	µg/L	---	---	2.5	---	---
2.6-Dichlorophenol	87-65-0	1.0	µg/L	---	---	3.3	---	---
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	---	---	4.0	---	---
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	---	---	1.2	---	---
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	---	---	1.2	---	---
Pentachlorophenol	87-86-5	2.0	µg/L	---	---	<2.0	---	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	---	---	2.3	---	---
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	---	---

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03185/6 BH114	07/03185/7 BH97/2S	07/03185/8 BH97/2D	07/03185/9 BH8A	07/03185/11 BH04/10
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00
Laboratory Sample ID:				EB0704846-006	EB0704846-007	EB0704846-008	EB0704846-009	EB0704846-010
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	---	---	<1.0	---	---
Benzo(a)pyrene	50-32-8	0.5	µg/L	---	---	<1.0	---	---
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	---	---
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	2	µg/L	---	---	<2	---	---
Diethyl phthalate	84-66-2	2	µg/L	---	---	<2	---	---
Di-n-butyl phthalate	84-74-2	2	µg/L	---	---	<2	---	---
Butyl benzyl phthalate	85-68-7	2	µg/L	---	---	<2	---	---
bis(2-ethylhexyl) phthalate	117-81-7	20	µg/L	---	---	<20	---	---
Di-n-octylphthalate	117-84-0	2	µg/L	---	---	<2	---	---
EP101: Sulfolane								
Sulfolane	126-33-0	1.0	mg/L	---	<1.0	4.0	---	---
EP102: Thiolane								
Thiolane	110-01-0	5	µg/L	---	<5	562	---	---
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	---	---	84.8	---	---
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	---	---	71.1	---	---
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	---	---	73.0	---	---
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	---	---
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.1	%	---	---	69.7	---	---
Phenol-d6	13127-88-3	0.1	%	---	---	47.1	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	---	---	91.4	---	---
2.4.6-Tribromophenol	118-79-6	0.1	%	---	---	127	---	---

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03185/6 BH114 WATER 1 May 2007 15:00 EB0704846-006	07/03185/7 BH97/2S WATER 1 May 2007 15:00 EB0704846-007	07/03185/8 BH97/2D WATER 1 May 2007 15:00 EB0704846-008	07/03185/9 BH8A WATER 1 May 2007 15:00 EB0704846-009	07/03185/11 BH04/10 WATER 1 May 2007 15:00 EB0704846-010
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	---	---	103	---	---
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	---	---	90.4	---	---
2-Fluorobiphenyl	321-60-8	0.1	%	---	---	105	---	---
Anthracene-d10	1719-06-8	0.1	%	---	---	102	---	---
4-Terphenyl-d14	1718-51-0	0.1	%	---	---	104	---	---
EP102S: Volatile Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	---	119	114	---	---
Toluene-D8	2037-26-5	0.1	%	---	98.9	107	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	---	85.5	89.8	---	---

A Campbell Brothers Limited Company

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03185/12 BH04/04 WATER 1 May 2007 15:00 EB0704846-011
EK026: Total Cyanide				
Total Cyanide	57-12-5	0.004	mg/L	<0.004
EP035: Phenols (Total)				
Phenols (Total)		0.05	mg/L	<0.05
EP066: Polychlorinated Biphenyls (PCB)				
Total Polychlorinated biphenyls		1	µg/L	<1
EP068A: Organochlorine Pesticides (OC)				
alpha-BHC	319-84-6	0.5	µg/L	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5
beta-BHC	319-85-7	0.5	µg/L	<0.5
gamma-BHC	58-89-9	0.5	µg/L	<0.5
delta-BHC	319-86-8	0.5	µg/L	<0.5
Heptachlor	76-44-8	0.5	µg/L	<0.5
Aldrin	309-00-2	0.5	µg/L	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5
alpha-Endosulfan	959-98-8	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
Endosulfan sulfate	1031-07-8	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
Methoxychlor	72-43-5	2	µg/L	<2
EP068B: Organophosphorus Pesticides (OP)				
Dichlorvos	62-73-7	0.5	µg/L	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5
Monocrotophos	6923-22-4	2	µg/L	<2
Dimethoate	60-51-5	0.5	µg/L	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5
Parathion-methyl	298-00-0	2	µg/L	<2
Malathion	121-75-5	0.5	µg/L	<0.5

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Analytical Results

	Client Sample ID :	07/03185/12 BH04/04
	Sample Matrix Type / Description :	WATER
	Sample Date / Time :	1 May 2007 15:00
	Laboratory Sample ID :	EB0704846-011

Analyte	CAS number	LOR	Units	
EP068B: Organophosphorus Pesticides (OP)				
Ferthion	55-38-9	0.5	µg/L	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5
Parathion	56-38-2	2	µg/L	<2
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5
EP075(SIM)A: Phenolic Compounds				
Phenol	108-95-2	1.0	µg/L	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	<1.0
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0
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

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Analytical Results

	Client Sample ID :	07/03185/12 BH04/04
	Sample Matrix Type / Description :	WATER
	Sample Date / Time :	1 May 2007 15:00
	Laboratory Sample ID :	EB0704846-011

Analyte	CAS number	LOR	Units	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons				
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<1.0
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
EP075C: Phthalate Esters				
Dimethyl phthalate	131-11-3	2	µg/L	<2
Diethyl phthalate	84-66-2	2	µg/L	<2
Di-n-butyl phthalate	84-74-2	2	µg/L	<2
Butyl benzyl phthalate	85-68-7	2	µg/L	<2
bis(2-ethylhexyl) phthalate	117-81-7	20	µg/L	30
Di-n-octylphthalate	117-84-0	2	µg/L	<2
EP066S: PCB Surrogate				
Decachlorobiphenyl	2051-24-3	0.1	%	86.4
EP068S: Organochlorine Pesticide Surrogate				
Dibromo-DDE	21655-73-2	0.1	%	71.7
EP068T: Organophosphorus Pesticide Surrogate				
DEF	78-48-8	0.1	%	74.5
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
EP075S: Acid Extractable Surrogates				
2-Fluorophenol	367-12-4	0.1	%	62.9
Phenol-d6	13127-88-3	0.1	%	39.4
2-Chlorophenol-D4	93951-73-6	0.1	%	84.7
2.4.6-Tribromophenol	118-79-6	0.1	%	117
EP075T: Base/Neutral Extractable Surrogates				
Nitrobenzene-D5	4165-60-0	0.1	%	95.6
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	85.2
2-Fluorobiphenyl	321-60-8	0.1	%	103
Anthracene-d10	1719-06-8	0.1	%	83.3

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ALS Environmental

Analytical Results

	Client Sample ID :	07/03185/12 BH04/04				
	Sample Matrix Type / Description :	WATER				
	Sample Date / Time :	1 May 2007 15:00				
	Laboratory Sample ID :	EB0704846-011				
Analyte / CAS number / LOR / Units						
EP075T: Base/Neutral Extractable Surrogates						
4-Terphenyl-d14 / 1718-51-0 / 0.1 %	108					

A Campbell Brothers Limited Company

ALS Environmental

Surrogate Control Limits

Matrix Type: WATER - Surrogate Control Limits

Method name	Analyte name	Surrogate Control Limits Lower Limit	Surrogate Control Limits Upper Limit
EP066: Polychlorinated Biphenyls (PCB)			
EP066S: PCB Surrogate	Decachlorobiphenyl	10	164
EP068: Pesticides			
EP068S: Organochlorine Pesticide Surrogate	Dibromo-DDE	10	136
EP068T: Organophosphorus Pesticide Surrogate	DEF	10	110
EP075: Semivolatile Organic Compounds			
EP075S: Acid Extractable Surrogates	2-Fluorophenol	21	100
	Phenol-d6	10	94
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	10	123
EP075T: Base/Neutral Extractable Surrogates	Nitrobenzene-D5	35	114
	1,2-Dichlorobenzene-D4	32	129
	2-Fluorobiphenyl	43	116
	Anthracene-d10	27	133
	4-Terphenyl-d14	33	141
EP076(SIM): PAH/Phenols (GC/MS - SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	10	94
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	10	123
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	43	116
	Anthracene-d10	27	133
	4-Terphenyl-d14	33	141
EP102: Thiolane by Purge and Trap GCMS			
EP102S: Volatile Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	88	110
	4-Bromofluorobenzene	86	115

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LEVAY & CO. ENVIRONMENTAL SERVICES
Water Quality, Water Treatment and Environmental Pollution Research Laboratories

Job No. L&C-07-246

15th May, 2007

Brisbane Water,
SAS Laboratory,
Attn. Ms. Patti O'Shea,
Supervising Chemist Environmental Laboratory 2,
240 Donaldson Road,
Rocklea. QLD. 4106.

Dear Patti,

REPORT

RE: MEASUREMENT OF HALOGENATED ORGANICS
Purchase Order No. H64806 RQ
Request No. WW0305-4

I refer to your request regarding AOX analysis of aqueous samples received on the 4th May, 2007.

The results are now attached.

Yours sincerely,

49-Sch4 - Signatur

George Levay
Managing Director

Enc.

Ian Wark Research Institute
University of South Australia, Mawson Lakes Campus, Mawson Lakes SA 5095, Australia

Tel. 61-8-8302 3130, Fax. 61-8-8302 3549, Email: george.levay@unisa.edu.au

LEVAY & CO. ENVIRONMENTAL SERVICES
Water Quality, Water Treatment and Environmental Pollution Research Laboratories

Job No. L&C-07-246			
	BRISBANE WATER		
	SAS Laboratory		
	Purchase Order No. H64806 RQ		
	Request No. WW0305-4		
Batch No.	**Sample Description**	**Sample Date**	**AOX (µg/l)**
	AOX Analysis		
	WW Bore Run 2		
07/03185/1	BH97/8	01/05/07	254
07/03185/2	BH97/3	"	103
07/03185/3	BH97/4	"	74
07/03185/4	BH01/08S	"	431
07/03185/5	BH/01/08D	"	147
07/03185/6	BH114	"	269
07/03185/7	BH97/2S	"	28
07/03185/8	BH97/2D	"	302
07/03185/9	BH97/8A	"	48
07/03185/11	BH04/10	"	493
07/03185/12	BH04/04	01/05/07	489
	Note: AOX was measured in the supernatant of settled samples		
	QC DATA		
	Detection Limit		*2µg/l*
	Blank		*< 2µg/l*
	Spiked Blank Recovery		*94%*
	Replicate: BH97/2D		*283*
	Replicate: BH04/10		*508*

Ian Wark Research Institute, University of South Australia, Mawson Lakes SA 5095
Tel: 61-8-8302 3130, Fax: 61-8-8302 3549, Email: george.levay@unisa.edu.au

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Scientific Analytical Services

ABN 72 002 765 795

Biological Accreditation Number 11085
Chemical Accreditation Number 11750

240 Donaldson Road
Rocklea Brisbane Qld 4106

Telephone 07 3403 2611
Facsimile 07 3403 2646

A unit of Brisbane City Council

SCIENTIFIC ANALYTICAL SERVICES LABORATORY REPORT

Attention:	Stewart Edwardes
Client:	Willawong Remediation Project Manager St Paul's Terrace Fortitude Valley
Job Name:	WWREM - Bore Run 3 Q4
Sampled By:	SAS Laboratory
Sampling Date:	01/05/2007
Sampling Method:	Grab
Sample Matrix:	Aqueous
Batch Number:	07/03186
Registration Date:	1 May 2007
Date of Report:	24 May 2007

AOX analysis performed by Levay & Co. Environmental Services. L&C-07-245.

49-Sch4 - Signa

Patti O'Shea
Supervising Chemist

49-Sch4 - Si

Bob Phillips
Supervising Microbiologist

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

NATA
ACCREDITED FOR TECHNICAL COMPETENCE
This document is issued in accordance with NATA's accreditation requirements.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 3 Q4

Batch Number: 07/03186
Report Date: 24/05/07

Method	Test	Units	07/03186/1 BH97/11S	07/03186/2 BH97/11D	07/03186/3 BH97/10S	07/03186/4 BH97/10D
Misc. *	Groundwater Level	cm	470	954	[NT]	558
F.002	pH - Field	pH Unit	4.2	6.1	[NT]	6.0
F.007	Conductivity - Field	uS/cm	15,000	3,900	[NT]	1,600
F.005	Temperature - Field	°C	21.1	21.5	[NT]	22.5
F.014	Redox Potential	mV	240	100	[NT]	74
F.007	Total Dissolved Salt Est.	mg/L	9,900	2,500	[NT]	1,000
1.603	Total Organic Carbon as C	mg/L	10	<5.0	[NT]	<5.0
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	0.63	0.80	[NT]	0.34
FIA.013	Total Nitrogen as N	mg/L	0.63	0.93	[NT]	0.42
FIA.010B	Nitrite+Nitrate as N	mg/L	<0.02	0.13	[NT]	0.082
FIA.008	Ammonia N	mg/L	0.069	0.34	[NT]	<0.06
FIA.109	Chloride	mg/L	5,700	1,100	[NT]	430
5.304F	Sulphur as SO4 (Soluble)	mg/L	43	54	[NT]	39
1.012	Total Alkalinity as CaCO3	mg/L	<1.0	86	[NT]	54
1.610	COD as O2	mg/L	55	12	[NT]	<5.0
1.604	BOD 5 days @ 20°C	mg/L	<5	<5	[NT]	<5
4.404	Faecal Coliforms (MF)	cfu/100mL	<10	30	[NT]	<10
FIA.011A	Ortho Phosphorus as P	mg/L	0.038	<0.02	[NT]	<0.02
FIA.011B	Total Phosphorus as P	mg/L	0.15	0.070	[NT]	0.096
5.304F	Cadmium (Soluble) as Cd	mg/L	0.001	<0.001	[NT]	<0.001
5.304F	Calcium (Soluble) as Ca	mg/L	23	16	[NT]	5.1
5.304F	Chromium (Soluble) as Cr	mg/L	0.003	0.002	[NT]	0.001
5.304F	Copper (Soluble) as Cu	mg/L	0.011	0.005	[NT]	0.003
5.304F	Iron (Soluble) as Fe	mg/L	14	1.8	[NT]	2.2
5.304F	Manganese (Soluble) as Mn	mg/L	0.43	0.40	[NT]	0.22
5.304F	Potassium (Soluble) as K	mg/L	15	6.2	[NT]	3.6
5.304F	Zinc (Soluble) as Zn	mg/L	0.27	0.089	[NT]	0.046
5.304F	Arsenic (Soluble) as As	mg/L	<0.01	<0.01	[NT]	<0.01
5.303F	Mercury (Soluble)	ug/L	<0.10	<0.10	[NT]	<0.10
5.304F	Lead (Soluble) as Pb	mg/L	<0.005	<0.005	[NT]	<0.005
5.304F	Nickel (Soluble) as Ni	mg/L	0.16	0.006	[NT]	0.006
5.304F	Sodium (Soluble) as Na	mg/L	2,400	610	[NT]	260

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Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 3 Q4

Batch Number: 07/03186
Report Date: 24/05/07

Method	Test	Units	07/03186/5 BH97/27	07/03186/6 BH97/9S	07/03186/7 BH97/9D	07/03186/8 BH242
Misc. *	Groundwater Level	cm	[NT]	408	436	274
F.002	pH - Field	pH Unit	[NT]	5.4	6.4	6.3
F.007	Conductivity - Field	uS/cm	[NT]	1,200	850	5,700
F.005	Temperature - Field	° C	[NT]	22.5	21.9	24.2
F.014	Redox Potential	mV	[NT]	160	44	200
F.007	Total Dissolved Salt Est.	mg/L	[NT]	770	540	3,600
1.603	Total Organic Carbon as C	mg/L	[NT]	12	<5.0	<5.0
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	[NT]	5.0	0.33	0.35
FIA.013	Total Nitrogen as N	mg/L	[NT]	33	0.33	0.35
FIA.010B	Nitrite+Nitrate as N	mg/L	[NT]	28	<0.02	<0.02
FIA.008	Ammonia N	mg/L	[NT]	1.1	0.14	0.068
FIA.109	Chloride	mg/L	[NT]	230	140	1,600
5.304F	Sulphur as SO4 (Soluble)	mg/L	[NT]	120	46	23
1.012	Total Alkalinity as $CaCO_3$	mg/L	[NT]	24	160	180
1.610	COD as O_2	mg/L	[NT]	22	<5.0	13
1.604	BOD 5 days @ 20°C	mg/L	[NT]	<5	<5	<5
4.404	Faecal Coliforms (MF)	cfu/100mL	[NT]	<10	<10	10
FIA.011A	Ortho Phosphorus as P	mg/L	[NT]	0.024	0.031	0.025
FIA.011B	Total Phosphorus as P	mg/L	[NT]	0.15	0.24	0.044
5.304F	Cadmium (Soluble) as Cd	mg/L	[NT]	<0.001	<0.001	0.001
5.304F	Calcium (Soluble) as Ca	mg/L	[NT]	3.4	3.3	11
5.304F	Chromium (Soluble) as Cr	mg/L	[NT]	0.001	<0.001	0.002
5.304F	Copper (Soluble) as Cu	mg/L	[NT]	0.003	0.003	0.007
5.304F	Iron (Soluble) as Fe	mg/L	[NT]	0.076	1.1	0.029
5.304F	Manganese (Soluble) as Mn	mg/L	[NT]	0.37	0.16	0.17
5.304F	Potassium (Soluble) as K	mg/L	[NT]	9.2	2.8	6.6
5.304F	Zinc (Soluble) as Zn	mg/L	[NT]	0.050	0.01	0.01
5.304F	Arsenic (Soluble) as As	mg/L	[NT]	<0.01	<0.01	<0.01
5.303F	Mercury (Soluble)	ug/L	[NT]	<0.10	<0.10	<0.10
5.304F	Lead (Soluble) as Pb	mg/L	[NT]	<0.005	<0.005	<0.005
5.304F	Nickel (Soluble) as Ni	mg/L	[NT]	0.032	0.004	0.012
5.304F	Sodium (Soluble) as Na	mg/L	[NT]	160	160	1,000

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 3 Q4

Batch Number: 07/03186
Report Date: 24/05/07

Method	Test	Units	07/03186/9 BH97/6S	07/03186/10 BH97/6D	07/03186/11 BH97/17	07/03186/12 BH97/5S
Misc. *	Groundwater Level	cm	351	[NT]	352	[NT]
F.002	pH - Field	pH Unit	6.6	[NT]	5.9	[NT]
F.007	Conductivity - Field	uS/cm	8,100	[NT]	1,000	[NT]
F.005	Temperature - Field	° C	23.0	[NT]	23.7	[NT]
F.014	Redox Potential	mV	210	[NT]	130	[NT]
F.007	Total Dissolved Salt Est.	mg/L	5,200	[NT]	670	[NT]
1.603	Total Organic Carbon as C	mg/L	86	[NT]	26	[NT]
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	140	[NT]	9.1	[NT]
FIA.013	Total Nitrogen as N	mg/L	140	[NT]	9.2	[NT]
FIA.010B	Nitrite+Nitrate as N	mg/L	0.052	[NT]	0.17	[NT]
FIA.008	Ammonia N	mg/L	120	[NT]	7.7	[NT]
FIA.109	Chloride	mg/L	1,700	[NT]	100	[NT]
5.304F	Sulphur as SO4 (Soluble)	mg/L	270	[NT]	200	[NT]
1.012	Total Alkalinity as $CaCO_3$	mg/L	1,900	[NT]	120	[NT]
1.610	COD as O_2	mg/L	340	[NT]	70	[NT]
1.604	BOD 5 days @ 20°C	mg/L	<5	[NT]	<5	[NT]
4.404	Faecal Coliforms (MF)	cfu/100mL	<10	[NT]	<10	[NT]
FIA.011A	Ortho Phosphorus as P	mg/L	<0.02	[NT]	<0.02	[NT]
FIA.011B	Total Phosphorus as P	mg/L	0.055	[NT]	0.40	[NT]
5.304F	Cadmium (Soluble) as Cd	mg/L	<0.001	[NT]	<0.001	[NT]
5.304F	Calcium (Soluble) as Ca	mg/L	4.1	[NT]	0.6	[NT]
5.304F	Chromium (Soluble) as Cr	mg/L	0.001	[NT]	0.002	[NT]
5.304F	Copper (Soluble) as Cu	mg/L	0.009	[NT]	0.003	[NT]
5.304F	Iron (Soluble) as Fe	mg/L	0.14	[NT]	0.49	[NT]
5.304F	Manganese (Soluble) as Mn	mg/L	0.12	[NT]	0.092	[NT]
5.304F	Potassium (Soluble) as K	mg/L	48	[NT]	6.3	[NT]
5.304F	Zinc (Soluble) as Zn	mg/L	0.008	[NT]	0.035	[NT]
5.304F	Arsenic (Soluble) as As	mg/L	<0.01	[NT]	<0.01	[NT]
5.303F	Mercury (Soluble)	ug/L	<0.10	[NT]	<0.10	[NT]
5.304F	Lead (Soluble) as Pb	mg/L	<0.005	[NT]	<0.005	[NT]
5.304F	Nickel (Soluble) as Ni	mg/L	0.01	[NT]	0.01	[NT]
5.304F	Sodium (Soluble) as Na	mg/L	1,000	[NT]	140	[NT]

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

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Release

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 3 Q4

Batch Number: 07/03186
Report Date: 24/05/07

Method	Test	Units	07/03186/13 BH97/5D	07/03186/14 BH97/15
Misc. *	Groundwater Level	cm	632	[NT]
F.002	pH - Field	pH Unit	5.5	[NT]
F.007	Conductivity - Field	uS/cm	3,900	[NT]
F.005	Temperature - Field	°C	22.2	[NT]
F.014	Redox Potential	mV	160	[NT]
F.007	Total Dissolved Salt Est.	mg/L	2,500	[NT]
1.603	Total Organic Carbon as C	mg/L	<5.0	[NT]
FIA.013	Total Kjeldahl Nitrogen as N Calculated	mg/L	0.47	[NT]
FIA.013	Total Nitrogen as N	mg/L	0.47	[NT]
FIA.010B	Nitrite+Nitrate as N	mg/L	<0.02	[NT]
FIA.008	Ammonia N	mg/L	0.27	[NT]
FIA.109	Chloride	mg/L	1,200	[NT]
5.304F	Sulphur as SO4 (Soluble)	mg/L	21	[NT]
1.012	Total Alkalinity as CaCO3	mg/L	49	[NT]
1.610	COD as O2	mg/L	11	[NT]
1.604	BOD 5 days @ 20°C	mg/L	<5	[NT]
4.404	Faecal Coliforms (MF)	cfu/100mL	1,100	[NT]
FIA.011A	Ortho Phosphorus as P	mg/L	0.023	[NT]
FIA.011B	Total Phosphorus as P	mg/L	0.067	[NT]
5.304F	Cadmium (Soluble) as Cd	mg/L	<0.001	[NT]
5.304F	Calcium (Soluble) as Ca	mg/L	6.3	[NT]
5.304F	Chromium (Soluble) as Cr	mg/L	0.003	[NT]
5.304F	Copper (Soluble) as Cu	mg/L	0.003	[NT]
5.304F	Iron (Soluble) as Fe	mg/L	0.61	[NT]
5.304F	Manganese (Soluble) as Mn	mg/L	0.27	[NT]
5.304F	Potassium (Soluble) as K	mg/L	6.5	[NT]
5.304F	Zinc (Soluble) as Zn	mg/L	0.19	[NT]
5.304F	Arsenic (Soluble) as As	mg/L	<0.01	[NT]
5.303F	Mercury (Soluble)	ug/L	<0.10	[NT]
5.304F	Lead (Soluble) as Pb	mg/L	<0.005	[NT]
5.304F	Nickel (Soluble) as Ni	mg/L	0.030	[NT]
5.304F	Sodium (Soluble) as Na	mg/L	660	[NT]

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 3 Q4

Batch Number: 07/03186
Report Date: 24/05/07

Method	Test	Units	07/03186/1 BH97/11S	07/03186/2 BH97/11D	07/03186/3 BH97/10S	07/03186/4 BH97/10D
External	ALS Batch No.	Text	EB0704792	[NR]	[NR]	[NR]
External	Total Cyanide	mg/L	Complete	Complete	[NT]	Complete
External	AOX	ug/L	500	74	[NT]	66
External	Total Phenols	mg/L	Complete	Complete	[NT]	Complete
External	OC/OP/PCB	Text	Complete	Complete	[NT]	Complete
External	PAH/Phenols/Phthalate Esters	Text	Complete	Complete	[NT]	Complete
5.270	C6-C9 Fraction	ug/L	<10	<10	[NT]	<10
5.270	C10-C14 Fraction	ug/L	<50	<50	[NT]	<50
5.270	C15-C28 Fraction	ug/L	150	97	[NT]	<50
5.270	C29-C36 Fraction	ug/L	<50	<50	[NT]	<50
5.261	Benzene	ug/L	<1.0	<1.0	[NT]	<1.0
5.261	Toluene	ug/L	<2.0	<2.0	[NT]	<2.0
5.261	Ethyl Benzene	ug/L	<1.0	<1.0	[NT]	<1.0
5.261	meta & para-Xylene	ug/L	<2.0	<2.0	[NT]	<2.0
5.261	ortho-Xylene	ug/L	<1.0	<1.0	[NT]	<1.0
5.261	1.2.4-Trimethylbenzene	ug/L	<1.0	<1.0	[NT]	<1.0
5.261	1.3.5-Trimethylbenzene	ug/L	<1.0	<1.0	[NT]	<1.0

Method	Test	Units	07/03186/5 BH97/27	07/03186/6 BH97/9S	07/03186/7 BH97/9D	07/03186/8 BH242
External	Total Cyanide	mg/L	[NT]	Complete	Complete	Complete
External	AOX	ug/L	[NT]	85	26	202
External	Total Phenols	mg/L	[NT]	Complete	Complete	Complete
External	OC/OP/PCB	Text	[NT]	[NR]	[NR]	Complete
External	PAH/Phenols/Phthalate Esters	Text	[NT]	[NR]	[NR]	Complete
5.270	C6-C9 Fraction	ug/L	[NT]	[NR]	[NR]	<10
5.270	C10-C14 Fraction	ug/L	[NT]	[NR]	[NR]	<50
5.270	C15-C28 Fraction	ug/L	[NT]	[NR]	[NR]	<50
5.270	C29-C36 Fraction	ug/L	[NT]	[NR]	[NR]	<50
5.261	Benzene	ug/L	[NT]	[NR]	[NR]	<1.0
5.261	Toluene	ug/L	[NT]	[NR]	[NR]	<2.0
5.261	Ethyl Benzene	ug/L	[NT]	[NR]	[NR]	<1.0
5.261	meta & para-Xylene	ug/L	[NT]	[NR]	[NR]	<2.0
5.261	ortho-Xylene	ug/L	[NT]	[NR]	[NR]	<1.0
5.261	1.2.4-Trimethylbenzene	ug/L	[NT]	[NR]	[NR]	<1.0
5.261	1.3.5-Trimethylbenzene	ug/L	[NT]	[NR]	[NR]	<1.0
5.270	C6-C9 Fraction	ug/L	[NR]	<10	<10	[NR]
5.270	C10-C14 Fraction	ug/L	[NR]	<50	<50	[NR]
5.270	C15-C28 Fraction	ug/L	[NR]	<50	<50	[NR]
5.270	C29-C36 Fraction	ug/L	[NR]	<50	<50	[NR]

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

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Release

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 3 Q4

Batch Number: 07/03186
Report Date: 24/05/07

Method	Test	Units	07/03186/5 BH97/27	07/03186/6 BH97/9S	07/03186/7 BH97/9D	07/03186/8 BH242
5.261	Benzene	ug/L	[NR]	<1.0	<1.0	[NR]
5.261	Toluene	ug/L	[NR]	<2.0	<2.0	[NR]
5.261	Ethyl Benzene	ug/L	[NR]	<1.0	<1.0	[NR]
5.261	meta & para-Xylene	ug/L	[NR]	<2.0	<2.0	[NR]
5.261	ortho-Xylene	ug/L	[NR]	<1.0	<1.0	[NR]
5.261	1.2.4-Trimethylbenzene	ug/L	[NR]	<1.0	<1.0	[NR]
5.261	1.3.5-Trimethylbenzene	ug/L	[NR]	<1.0	<1.0	[NR]
Method	**Test**	**Units**	**07/03186/9 BH97/6S**	**07/03186/10 BH97/6D**	**07/03186/11 BH97/17**	**07/03186/12 BH97/5S**
External	Total Cyanide	mg/L	Complete	[NT]	Complete	[NT]
External	AOX	ug/L	202	[NT]	55	[NT]
External	Total Phenols	mg/L	Complete	[NT]	Complete	[NT]
External	OC/OP/PCB	Text	[NR]	[NR]	Complete	[NR]
External	PAH/Phenols/Phthalate Esters	Text	[NR]	[NR]	Complete	[NR]
5.270	C6-C9 Fraction	ug/L	[NR]	[NR]	<10	[NR]
5.270	C10-C14 Fraction	ug/L	[NR]	[NR]	<50	[NR]
5.270	C15-C28 Fraction	ug/L	[NR]	[NR]	470	[NR]
5.270	C29-C36 Fraction	ug/L	[NR]	[NR]	<50	[NR]
5.261	Benzene	ug/L	[NR]	[NR]	<1.0	[NR]
5.261	Toluene	ug/L	[NR]	[NR]	<2.0	[NR]
5.261	Ethyl Benzene	ug/L	[NR]	[NR]	<1.0	[NR]
5.261	meta & para-Xylene	ug/L	[NR]	[NR]	<2.0	[NR]
5.261	ortho-Xylene	ug/L	[NR]	[NR]	<1.0	[NR]
5.261	1.2.4-Trimethylbenzene	ug/L	[NR]	[NR]	<1.0	[NR]
5.261	1.3.5-Trimethylbenzene	ug/L	[NR]	[NR]	<1.0	[NR]
5.270	C6-C9 Fraction	ug/L	<10	[NT]	[NR]	[NR]
5.270	C10-C14 Fraction	ug/L	<50	[NT]	[NR]	[NR]
5.270	C15-C28 Fraction	ug/L	<50	[NT]	[NR]	[NR]
5.270	C29-C36 Fraction	ug/L	<50	[NT]	[NR]	[NR]
5.261	Benzene	ug/L	<1.0	[NT]	[NR]	[NR]
5.261	Toluene	ug/L	<2.0	[NT]	[NR]	[NR]
5.261	Ethyl Benzene	ug/L	<1.0	[NT]	[NR]	[NR]
5.261	meta & para-Xylene	ug/L	<2.0	[NT]	[NR]	[NR]
5.261	ortho-Xylene	ug/L	<1.0	[NT]	[NR]	[NR]
5.261	1.2.4-Trimethylbenzene	ug/L	1.1	[NT]	[NR]	[NR]
5.261	1.3.5-Trimethylbenzene	ug/L	<1.0	[NT]	[NR]	[NR]

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

Client: Willawong Remediation Project Manager
Job Name: WWREM - Bore Run 3 Q4

Batch Number: 07/03186
Report Date: 24/05/07

Method	Test	Units	07/03186/13 BH97/5D	07/03186/14 BH97/15
External	Total Cyanide	mg/L	Complete	[NT]
External	AOX	ug/L	81	[NT]
External	Total Phenols	mg/L	Complete	[NT]

[ND] - Not Detected [NR] - Not Required [NT] - Not Tested

Please note that for samples not collected by SAS Laboratory, the above results refer only to the samples tested, and not to the batches from which they were drawn.

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Scientific Analytical Services

ABN 72 002 765 795

Biological Accreditation Number 11085
Chemical Accreditation Number 11750

240 Donaldson Road
Rocklea Brisbane Qld 4106

Telephone 07 3403 2611
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A unit of Brisbane City Council

SCIENTIFIC ANALYTICAL SERVICES LABORATORY

Report Name: Quality Control Report ICP sw04-05
Batch Number: 07/04996
Date of Report: 18 May 2007

Method	Test	Units	Replicate	Replicate	Spike	Spike
5.304	Aluminium	%	[ND]	3.6	[NR]	[NR]
5.304	Arsenic	%	[ND]	[ND]	105.4	104.2
5.304	Barium	%	0.4	1.2	98.8	98.2
5.304	Calcium	%	1.6	0.7	[NR]	[NR]
5.304	Cadmium	%	[ND]	17.5	100.1	98.5
5.304	Chromium	%	13.3	[ND]	103.6	105.2
5.304	Copper	%	19.0	[ND]	102.7	106.1
5.304	Iron	%	0.3	0.2	[NR]	[NR]
5.304	Potassium	%	2.2	12.6	[NR]	[NR]
5.304	Magnesium	%	1.4	0.4	[NR]	[NR]
5.304	Manganese	%	0.8	1.2	100.2	99.3
5.304	Sodium	%	0.4	0.3	[NR]	[NR]
5.304	Nickel	%	22.3	0.3	97.5	96.1
5.304	Lead	%	[ND]	[ND]	100.7	100.6
5.304	Zinc	%	3.9	0.2	106.3	103.7

[ND] - Not Detected [NR] - Not Required [NT] - Not Tested

Analyst: John Bratt

Control Limits for Replicates: 10% for values > 20xDL, 25% for values < 20xDL.
Control Limit for Spike Recovery 80% - 120%
*Sample background > 10x spike concentration.

ALS Environmental

CERTIFICATE OF ANALYSIS

Client	: BRISBANE CITY COUNCIL	Laboratory	: Environmental Division Brisbane
Contact	: MR BOB GRAY	Contact	: Tim Kilminster
Address	: ANALYTICAL SERVICES SECTION-240 DONALDSON ROAD ROCKLEA QLD AUSTRALIA 4106	Address	: 32 Shand Street Stafford QLD Australia 4053
E-mail	: Bob.Gray@brisbane.qld.gov.au	E-mail	: Services.Brisbane@alsenviro.com
Telephone	: 34032622	Telephone	: 61-7-3243 7222
Facsimile	: 34032646	Facsimile	: 61-7-3243 7259
Project	: WW0205-1	Quote number	: BN/281a/05
Order number	: - Not provided -		
C-O-C number	: - Not provided -		
Site	: - Not provided -		

Page	: 1 of 11		
Work Order	: EB0704792		
Date received	: 2 May 2007		
Date issued	: 20 May 2007		
No. of samples	- Received	: 9	
	Analysed	: 9	

ALSE - Excellence In Analytical Testing

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

Signatory	Position	Department
Carsten Emrich	Senior Organic Chemist	Organics - NATA 825 (818 - Brisbane)
Kim McCabe	Senior Inorganic Chemist	Inorganics - NATA 825 (818 - Brisbane)
Stephen Hislop	Senior Inorganic Chemist	Inorganics - NATA 825 (818 - Brisbane)

NATA Accredited Laboratory 825

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

Accredited for compliance with ISO/IEC 17025.

WORLD RECOGNISED ACCREDITATION

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ALS Environmental

Comments

This report for the ALSE reference EB0704792 supersedes any previous reports with this reference. Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

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

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

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

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03186/1 BH97/11S	07/03186/2 BH97/11D	07/03186/4 BH97/10D	07/03186/6 BH97/9S	07/03186/7 BH97/9D
				Sample Matrix Type / Description: WATER	WATER	WATER	WATER	WATER
				Sample Date / Time: 1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00
				Laboratory Sample ID: EB0704792-001	EB0704792-002	EB0704792-003	EB0704792-004	EB0704792-005
EK026: Total Cyanide								
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	<0.004	<0.004	<0.004
EP035: Phenols (Total)								
Phenols (Total)		0.05	mg/L	0.56	<0.05	0.11	0.30	<0.05
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		1	µg/L	<1	<1	<1	---	---
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	<0.5	---	---
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	<0.5	---	---
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	<0.5	---	---
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	<0.5	---	---
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	---	---
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
4,4'-DDT	50-29-3	2	µg/L	<2	<2	<2	---	---
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Methoxychlor	72-43-5	2	µg/L	<2	<2	<2	---	---
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Monocrotophos	6923-22-4	2	µg/L	<2	<2	<2	---	---
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Parathion-methyl	298-00-0	2	µg/L	<2	<2	<2	---	---
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	---	---

Release

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03186/1 BH97/11S	07/03186/2 BH97/11D	07/03186/4 BH97/10D	07/03186/6 BH97/9S	07/03186/7 BH97/9D
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00
Laboratory Sample ID:				EB0704792-001	EB0704792-002	EB0704792-003	EB0704792-004	EB0704792-005
EP068B: Organophosphorus Pesticides (OP)								
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Parathion	56-38-2	2	µg/L	<2	<2	<2	---	---
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	<0.5	---	---
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	---	---
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	---	---
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	---	---
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	---	---
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	---	---
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	---	---
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	---	---
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	---	---
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	---	---
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	---	---
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	---	---
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	---	---

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03186/1 BH97/11S	07/03186/2 BH97/11D	07/03186/4 BH97/10D	07/03186/6 BH97/9S	07/03186/7 BH97/9D
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER	WATER
Sample Date / Time:				1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00
Laboratory Sample ID:				EB0704792-001	EB0704792-002	EB0704792-003	EB0704792-004	EB0704792-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	---	---
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	---	---
EP075C: Phthalate Esters								
Dimethyl phthalate	131-11-3	2	µg/L	<2	<2	<2	---	---
Diethyl phthalate	84-66-2	2	µg/L	<2	<2	<2	---	---
Di-n-butyl phthalate	84-74-2	2	µg/L	<2	<2	<2	---	---
Butyl benzyl phthalate	85-68-7	2	µg/L	<2	<2	<2	---	---
bis(2-ethylhexyl) phthalate	117-81-7	20	µg/L	<20	60	40	---	---
Di-n-octylphthalate	117-84-0	2	µg/L	<2	<2	<2	---	---
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	59.4	90.0	98.6	---	---
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	43.4	72.2	82.2	---	---
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	39.2	74.6	86.5	---	---
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	27.7	31.4	37.6	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	57.7	74.9	90.4	---	---
2.4.6-Tribromophenol	118-79-6	0.1	%	57.3	99.6	122	---	---
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	50.7	79.5	97.7	---	---
Anthracene-d10	1719-06-8	0.1	%	44.7	63.8	91.6	---	---
4-Terphenyl-d14	1718-51-0	0.1	%	56.9	82.1	119	---	---
EP075S: Acid Extractable Surrogates								
2-Fluorophenol	367-12-4	0.1	%	44.9	53.3	63.8	---	---
Phenol-d6	13127-88-3	0.1	%	28.4	32.7	39.0	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	51.6	68.4	83.7	---	---
2.4.6-Tribromophenol	118-79-6	0.1	%	52.4	82.2	107	---	---
EP075T: Base/Neutral Extractable Surrogates								
Nitrobenzene-D5	4165-60-0	0.1	%	53.3	79.2	96.0	---	---
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	45.7	71.8	82.9	---	---
2-Fluorobiphenyl	321-60-8	0.1	%	52.0	78.2	100	---	---
Anthracene-d10	1719-06-8	0.1	%	48.7	77.6	97.5	---	---

A Campbell Brothers Limited Company

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03186/1 BH97/11S	07/03186/2 BH97/11D	07/03186/4 BH97/10D	07/03186/6 BH97/9S	07/03186/7 BH97/9D
				Sample Matrix Type / Description: WATER	WATER	WATER	WATER	WATER
				Sample Date / Time: 1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00
				Laboratory Sample ID: EB0704792-001	EB0704792-002	EB0704792-003	EB0704792-004	EB0704792-005
EP075T: Base/Neutral Extractable Surrogates								
4-Terphenyl-d14	1718-51-0	0.1	%	49.8	80.4	102	---	---

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03186/8 BH242	07/03186/9 BH97/6S	07/03186/11 BH97/17	07/03186/13 BH97/5D
				Sample Matrix Type / Description: WATER	WATER	WATER	WATER
				Sample Date / Time: 1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00
				Laboratory Sample ID: EB0704792-006	EB0704792-007	EB0704792-008	EB0704792-009
EK026: Total Cyanide							
Total Cyanide	57-12-5	0.004	mg/L	<0.004	<0.004	0.032	<0.004
EP035: Phenols (Total)							
Phenols (Total)		0.05	mg/L	<0.05	0.60	0.67	0.38
EP066: Polychlorinated Biphenyls (PCB)							
Total Polychlorinated biphenyls		1	µg/L	<1	---	<1	---
EP068A: Organochlorine Pesticides (OC)							
alpha-BHC	319-84-6	0.5	µg/L	<0.5	---	<0.5	---
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	---	<0.5	---
beta-BHC	319-85-7	0.5	µg/L	<0.5	---	<0.5	---
gamma-BHC	58-89-9	0.5	µg/L	<0.5	---	<0.5	---
delta-BHC	319-86-8	0.5	µg/L	<0.5	---	<0.5	---
Heptachlor	76-44-8	0.5	µg/L	<0.5	---	<0.5	---
Aldrin	309-00-2	0.5	µg/L	<0.5	---	<0.5	---
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	---	<0.5	---
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	---	<0.5	---
alpha-Endosulfan	959-98-8	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	---
beta-Endosulfan	33213-65-9	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	---
Endosulfan sulfate	1031-07-8	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	---
Methoxychlor	72-43-5	2	µg/L	<2	---	<2	---
EP068B: Organophosphorus Pesticides (OP)							
Dichlorvos	62-73-7	0.5	µg/L	<0.5	---	<0.5	---
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	---	<0.5	---
Monocrotophos	6923-22-4	2	µg/L	<2	---	<2	---
Dimethoate	60-51-5	0.5	µg/L	<0.5	---	<0.5	---
Diazinon	333-41-5	0.5	µg/L	<0.5	---	<0.5	---
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	---	<0.5	---
Parathion-methyl	298-00-0	2	µg/L	<2	---	<2	---
Malathion	121-75-5	0.5	µg/L	<0.5	---	<0.5	---

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Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03186/8 BH242	07/03186/9 BH97/6S	07/0318611 BH97/17	07/03186/13 BH97/5D
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER
Sample Date / Time:				1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00
Laboratory Sample ID:				EB0704792-006	EB0704792-007	EB0704792-008	EB0704792-009
EP068B: Organophosphorus Pesticides (OP)							
Ferthion	55-38-9	0.5	µg/L	<0.5	---	<0.5	---
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	---	<0.5	---
Parathion	56-38-2	2	µg/L	<2	---	<2	---
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	---	<0.5	---
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	---	<0.5	---
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	---	<0.5	---
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	---	<0.5	---
Prothiofos	34643-46-4	0.5	µg/L	<0.5	---	<0.5	---
Ethion	563-12-2	0.5	µg/L	<0.5	---	<0.5	---
Carbophenothion	786-19-6	0.5	µg/L	<0.5	---	<0.5	---
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	---	<0.5	---
EP075(SIM)A: Phenolic Compounds							
Phenol	108-95-2	1.0	µg/L	<1.0	---	<1.0	---
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	---	<1.0	---
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	---	<1.0	---
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	---	<2.0	---
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	---	<1.0	---
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	---	<1.0	---
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	---	<1.0	---
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	---	<1.0	---
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	<1.0	---	<1.0	---
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	---	<1.0	---
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	---	<1.0	---
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	---	<2.0	---
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	---
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	---	<1.0	---

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ALS Environmental

Analytical Results

Analyte	CAS number	LOR	Units	Client Sample ID: 07/03186/8 BH242	07/03186/9 BH97/6S	07/0318611 BH97/17	07/03186/13 BH97/5D
Sample Matrix Type / Description:				WATER	WATER	WATER	WATER
Sample Date / Time:				1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00
Laboratory Sample ID:				EB0704792-006	EB0704792-007	EB0704792-008	EB0704792-009
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
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	---
EP075C: Phthalate Esters							
Dimethyl phthalate	131-11-3	2	µg/L	<2	---	<2	---
Diethyl phthalate	84-66-2	2	µg/L	<2	---	<2	---
Di-n-butyl phthalate	84-74-2	2	µg/L	<2	---	<2	---
Butyl benzyl phthalate	85-68-7	2	µg/L	<2	---	<2	---
bis(2-ethylhexyl) phthalate	117-81-7	20	µg/L	30	---	<20	---
Di-n-octylphthalate	117-84-0	2	µg/L	<2	---	<2	---
EP066S: PCB Surrogate							
Decachlorobiphenyl	2051-24-3	0.1	%	92.4	---	98.8	---
EP068S: Organochlorine Pesticide Surrogate							
Dibromo-DDE	21655-73-2	0.1	%	78.6	---	81.5	---
EP068T: Organophosphorus Pesticide Surrogate							
DEF	78-48-8	0.1	%	81.3	---	85.6	---
EP075(SIM)S: Phenolic Compound Surrogates							
Phenol-d6	13127-88-3	0.1	%	34.0	---	33.0	---
2-Chlorophenol-D4	93951-73-6	0.1	%	84.3	---	81.1	---
2.4.6-Tribromophenol	118-79-6	0.1	%	114	---	118	---
EP075(SIM)T: PAH Surrogates							
2-Fluorobiphenyl	321-60-8	0.1	%	91.1	---	92.0	---
Anthracene-d10	1719-06-8	0.1	%	86.2	---	84.4	---
4-Terphenyl-d14	1718-51-0	0.1	%	110	---	111	---
EP076S: Acid Extractable Surrogates							
2-Fluorophenol	367-12-4	0.1	%	57.8	---	56.9	---
Phenol-d6	13127-88-3	0.1	%	35.7	---	34.1	---
2-Chlorophenol-D4	93951-73-6	0.1	%	77.6	---	75.1	---
2.4.6-Tribromophenol	118-79-6	0.1	%	101	---	103	---
EP075T: Base/Neutral Extractable Surrogates							
Nitrobenzene-D5	4165-60-0	0.1	%	89.0	---	87.9	---
1.2-Dichlorobenzene-D4	2199-69-1	0.1	%	80.9	---	79.6	---
2-Fluorobiphenyl	321-60-8	0.1	%	94.9	---	93.5	---
Anthracene-d10	1719-06-8	0.1	%	91.2	---	92.0	---

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ALS Environmental

Analytical Results

	Client Sample ID :	07/03186/8 BH242	07/03186/9 BH97/6S	07/03186/11 BH97/17	07/03186/13 BH97/5D	
	Sample Matrix Type / Description :	WATER	WATER	WATER	WATER	
	Sample Date / Time :	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	1 May 2007 15:00	
	Laboratory Sample ID :					
Analyte / CAS number / LOR / Units		EB0704792-006	EB0704792-007	EB0704792-008	EB0704792-009	
EP075T: Base/Neutral Extractable Surrogates						
4-Terphenyl-d14 / 1718-51-0 / 0.1 %		99.9	---	99.9	---	

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ALS Environmental

Surrogate Control Limits

Matrix Type: WATER - Surrogate Control Limits

Method name	Analyte name	Surrogate Control Limits: Lower Limit	Upper Limit
EP066: Polychlorinated Biphenyls (PCB)			
EP066S: PCB Surrogate	Decachlorobiphenyl	10	164
EP068: Pesticides			
EP068S: Organochlorine Pesticide Surrogate	Dibromo-DDE	10	136
EP068T: Organophosphorus Pesticide Surrogate	DEF	10	110
EP075: Semivolatile Organic Compounds			
EP075S: Acid Extractable Surrogates	2-Fluorophenol	21	100
	Phenol-d6	10	94
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	10	123
EP075T: Base/Neutral Extractable Surrogates	Nitrobenzene-D5	35	114
	1,2-Dichlorobenzene-D4	32	129
	2-Fluorobiphenyl	43	116
	Anthracene-d10	27	133
	4-Terphenyl-d14	33	141
EP075(SIM): PAH/Phenols (GC/MS - SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	10	94
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	10	123
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	43	116
	Anthracene-d10	27	133
	4-Terphenyl-d14	33	141

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LEVAY & CO. ENVIRONMENTAL SERVICES
Water Quality, Water Treatment and Environmental Pollution Research Laboratories

Job No. L&C-07-245

14th May, 2007

Brisbane Water,
SAS Laboratory,
Attn. Ms. Patti O'Shea.
Supervising Chemist Environmental Laboratory 2,
240 Donaldson Road,
Rocklea. QLD. 4106.

Dear Patti,

REPORT

RE: MEASUREMENT OF HALOGENATED ORGANICS
Purchase Order No. H64806 RQ
Request No. WW0305-3

I refer to your request regarding AOX analysis of aqueous samples received on the 4th May, 2007.

The results are now attached.

Yours sincerely,

49-Sch4 - Signature

George Levay
Managing Director

Enc.

Ian Wark Research Institute
University of South Australia, Mawson Lakes Campus, Mawson Lakes SA 5095, Australia

Tel. 61-8-8302 3130, Fax. 61-8-8302 3549, Email: george.levay@unisa.edu.au

LEVAY & CO. ENVIRONMENTAL SERVICES
Water Quality, Water Treatment and Environmental Pollution Research Laboratories

Job No. L&C-07-245

BRISBANE WATER
SAS Laboratory
Purchase Order No. H64806 RQ
Request No. WW0305-3

Batch No.	Sample Description	Sample Date	AOX (µg/l)
	AOX Analysis		
	WW Bore Run 3		
07/03186/1	BH97/11S	01/05/07	500
07/03186/2	BH97/11D	"	74
07/03186/4	BH97/10D	"	66
07/03186/6	BH97/9S	"	85
07/03186/7	BH97/9D	"	26
07/03186/8	BH242	"	202
07/03186/9	BH97/6S	"	202
07/03186/11	BH97/17	"	55
07/03186/13	BH97/5D	01/05/07	81
	Note: AOX was measured in the supernatant of settled samples		
	QC DATA		
	Detection Limit		*2µg/l*
	Blank		*< 2µg/l*
	Spiked Blank Recovery		*102%*
	Replicate: BH97/11S		*486*

Ian Wark Research Institute, University of South Australia, Mawson Lakes SA 5095
Tel: 61-8-8302 3130, Fax: 61-8-8302 3549, Email: george.levay@unisa.edu.au

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23/10/07
Noted

49-Sch4 - Signat

Willawong

Environmental Monitoring
Round 38
September 2007

DRAFT
Not to be released
REVIEW

MEMORANDUM

Brisbane City

Brisbane Water

Scientific Analytical Services
240 Donaldson Road
Rocklea Q 4106

Enquiries: 07 3403 2611
Fax: 07 3403 2646

Chemist in Charge, Bob Gray, 3403 2614
Environmental 1, Sue Mole, 3403 2619
Environmental 2, Patti O'Shea, 3403 2622
Microbiology, Bob Phillips, 3403 2612

To:	**Geotechnical and Environmental Services**	Date:	**12 October 2007**
Attn:	**Steward Edwardes, Willawong Remediation Project Manager**		
CC:			
From:	R.B. Gray, Chemist In Charge, Scientific Analytical Services		
Re:	**WILLAWONG ENVIRONMENTAL MONITORING – ROUND 38**		

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The thirty-eighth round of monitoring for the above project was carried out between 3 and 14 September 2007.

Rainfall (measured at BLR 736 (Blunder Creek, Inala Gauging station) for June and August was above the long-term average, but July rainfall was almost negligible at 2mm for the month.

Month	**Rainfall (mm)** At BLR736 Blunder Ck Inala	**Mean Rainfall** (measured at Brisbane Airport)
June	109	71.2
July	2	62.6
August	90	42.7

The monitoring program for the Willawong Remediation Project currently concentrates primarily on measurement of components leaving the site, by sampling the bores located around the perimeter of the site. The only exceptions to this are the south-west corner, which is of particular interest because of sulfolane and thiolane and other organic compounds existing in the groundwater, and the central region. The collection of sediment samples along Oxley and Blunder Creeks, as well as the Southern Sedimentation Basin, has resumed.

Multi-parameter Field Analysers were employed in the determination of field results for pH, conductivity, temperature, dissolved oxygen and redox potential.

Blunder and Oxley Creeks

Physical / Inorganic Analysis

pH values in the creeks were slightly acidic to slightly alkaline, between pH 6.6 and 7.2. Brisbane City Council's Water Quality Objectives for fresh water incorporate a desirable pH range of 6.5-8.5. Flow in the creeks has improved after the winter rainfall events..

Winter rain has resulted in water being present at all locations in both creeks. Conductivity values for Blunder Creek were quite low and indicate negligible intrusion of high salinity leachate from the landfill. DOE15 in Oxley Creek returned the highest conductivity result of 610µS/cm as a result of sand extraction activities in the area.

The upstream and downstream locations DOEB1 and DOEB4 were the only Blunder Creek samples to return unsatisfactory dissolved oxygen readings of 4.9mg/L and 2.4mg/L respectively. The Oxley Creek sites DOE14 and DOE15 also returned low readings of 5mg/L and 4mg/L respectively. A dissolved oxygen concentration of 5mg/L is generally accepted as the minimum concentration desirable for maintenance of a viable aquatic ecosystem.

The historically turbid DOE14 again returned the highest suspended solids result, with 27mg/L being recorded.

Some very low cadmium concentrations (0.0001-0.0002mg/L) were returned for a number of Blunder Creek sites (CMPS&F5, DOEB4, WR1 and WR3 and DOE14 in Oxley Creek. Apart from these results and some zinc in the range 0.006-0.014mg/L, metals concentrations in the creeks were not significant.

Ammonia nitrogen concentrations in both creeks continued to be very low in comparison with historical data, with all locations returning low concentrations in the range 0.009mg/L (DOEB4) to 0.051mg/L (DOE15). Oxidised nitrogen (NO_2+NO_3 N) was highest in Oxley Creek at DOE15 (0.12mg/L), with the highest Blunder Creek result being 0.059mg/L at DOEB1.

No cyanide was detected in either creek above the limit of reporting of 0.004mg/L.

Microbiological Analysis

Microbial quality of water in both creeks remains surprisingly good, with the downstream DOEB4 in Blunder Creek (faecal coliforms 170cfu/100mL) being the only location to exceed the guideline for primary contact (swimming) of 150cfu/100mL. Results at the other locations ranged from <10cfu/100mL at CMPF&S4 to 70cfu/100mL at DOE15 in Oxley Creek.

Sediment Samples

No location reported results outside the range for the NEPC Guideline on the Investigation Levels for Soil and Groundwater (1999).

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Metal	Background Range mg/kg	Maximum Recorded mg/kg
Arsenic	1-50	5.1 (SW5)
Barium	100-3000	200 (SW2)
Cadmium	1-3	<1
Chromium	5-1000	28 (SW2)
Cobalt	1-40	19 (SW2)
Copper	2-100	20 (SW2)
Lead	2 - 200	20 (Southern Sed Basin)
Mercury	0.03-1.0	<0.1
Nickel	5-500	24 (SW2)
Selenium	Not listed	<5 (SW2)
Zinc	10-300	69 (DOEB4)

Groundwater Samples

An odour of sulfolane or thiolane was reported on pumpout of BH17S and analysis of the sample collected was approved. None was detected in that sample.

The following locations yielded little or no sample, or were buried or damaged:
BH214 – buried under new northern drain construction
BH6 – buried
BH01/07S – sample point buried
BH04/09B – dry, no sample
BH97/20S – dry, no sample
BH01/09D – damaged bore, no sample
BH97/5S – limited sample available
BH97/7 – bore damaged, no sample
BH04/01
BH01/01
BH01/03S
BH01/03D
BH02/01

Physical / Inorganic analysis

pH values for borewaters varied between an acidic pH 3.3 (BH04/03) and pH 6.7 (BH17S). High salinity continued to be a feature of many of the bores. Two of the newest bores recorded the highest conductivities: BH04/05 (23,000µS/cm) and BH04/09A (16,000µS/cm) and also BH02/02 (17,000µS/cm). Redox potentials varied widely, from +370mV at BH04/03 to -94.7mV at BH17S.

The newest (central) bores returned the highest values for ammonia nitrogen, with BH04/09A the highest at 270mg/L, followed by BH04/10 at 200mg/L. These and other results indicate a considerable concentration of leachate present in the centre of the site. Of the older bores, BH17S returned the highest result of 250mg/L.

High oxidised nitrogen (NO_2 + NO_3) results were reported at BH04/10 (55mg/L) and BH97/14S at 34mg/L. These results are consistent with previous results from these locations.

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The highest total organic carbon concentrations occur in the centre of the site at BH04/08 and BH04/09A.

Four locations, BH04/09A, BH17D, BH12 and BH04/10, returned total cyanide results just above the limit of reporting of 0.004mg/L. For reference, the Australian Drinking Water Guideline value for cyanide is 0.08mg/L.

The highest arsenic result of 0.05mg/L was recorded for BH04/09A. Many of the bores returned results between the limit of reporting (0.001mg/L) and 0.005mg/L.

Cobalt has historically been found at relatively high concentrations at this site, with concentrations ranging up to 0.19mg/L at BH4A on this occasion.

The new bores were again prominent in copper results, with BH04/05 reporting 0.097mg/L, 0.083mg/L at BH04/10 and BH8A the highest of the older bores at 0.02mg/L.

Highest lead results were returned for BH01/02S (0.046mg/L) and BH04/05 (0.027mg/L).

The highest nickel concentrations were obtained for BH4A(0.20mg/L) and BH04/05 (0.15mg/L).

The very high results for zinc returned for BH04/05 in rounds 31, 32, and 33, remain consistent, with 7.5mg/L being reported on this occasion. BH4A also returned a high result of 0.57mg/L.

Organics Analysis

The range of organics targeted for this program is limited to include only the following components of interest:

Benzene
1,4 Dichlorobenzene
2,4 Dichlorophenol
2,6 Dichlorophenol
Endosulfan 1 (alpha Endosulfan)
Endosulfan 2 (beta Endosulfan)
Sulfolane (selected SW corner locations)
Thiolane (selected SW corner locations)

BH04/05 is again noteworthy in having the highest benzene concentration of 20µg/L, with BH04/08 close at 18µg/L.

1,4 dichlorobenzene was measured at significant concentrations in new bores BH04/09A (35.6µg/L) and BH04/10 (20.6µg/L).

The 2,4 dichlorophenol concentration for BH04/05 was again well above the limit of reporting at 157µg/L and BH01/07D returned the next lowest result of 4.7µg/L. These locations also returned the highest results for 2,6 dichlorophenol of 99µg/L and 3.8µg/L respectively.

Alpha and beta endosulfan were not detected above the limit of reporting in any bore.

The highest results for sulfolane were obtained at BH97/2S (29.2mg/L) and BH04/07

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(22.8mg/L). Thiolane was extremely high at BH04/09A, at 24,400µg/L.

Data Management

Data from this and preceding Rounds have been entered into the SiteMan database for future interrogation.

Please advise if you have any queries regarding this project or if we can be of further assistance.

Regards

49-Sch4 - Signature

Bob Gray
Attachments - graphs, site maps

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Gary O'Connor

From: Greg McPherson [Greg.McPherson@brisbane.qld.gov.au]
Sent: Friday, 14 September 2007 10:35 AM
To: Greg O'Brien
Cc: Gary O'Connor
Subject: SMP for area 4

Attachments: Willawong_A4_SMP_01_07_07.pdf

Willawong_A4_SMP
_01_07_07.pdf ...

Greg,

As discussed please find attached an electronic version of the draft SMP for Willawong Area 4.

Following a further telephone conversation with Greg Swain from Lloyd Consulting this morning I intend compiling an "information pack" which includes all relevent validation reports and other information related to contamination management for area 4 including specific information related to various aspects of the bus depot civil works design.

Greg has undertaken to forward this pack on to you under the cover of a letter from Lloyd Consulting.

Regards,

Greg McPherson
****
Senior Environmental Engineer
Environmental Management Team
Water & Environment, CITY DESIGN

(302) 74724

****
This message has passed through an insecure network.
Please direct all enquiries to the message author.
****

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DRAFT SITE MANAGEMENT PLAN (SMP) – AREA 4 WILLAWONG

DATE: 1 July 2007

RPD Lot 1 on RP29831, Lot 6 on RP149220 and Lot 1 on RP56082 (Proposed Lot 5)

1.0 SUMMARY OF CONTAMINATION

Contamination investigation and assessment work identified that Willawong Area 4 (proposed Lot 5) was historically used for liquid waste treatment and the disposal of drums containing heavy metal waste and laboratory and pharmaceutical wastes.

Low levels of metals and hydrocarbons exceeding Environmental Investigation Levels (EIL, EPA, 1998) have been identified within the site.

The following maximum contaminant concentrations have been reported in soils at the site:

Arsenic	32 mg/kg
Cadmium	113 mg/kg
Total Chromium	1270 mg/kg
Copper	822 mg/kg
Lead	5920 mg/kg
Total Mercury	11.4 mg/kg
Nickel	153 mg/kg
Zinc	6080 mg/kg
TPH	
C_6-C_9 fraction	
C_{10}-C_{14} fraction	5,830 mg/kg
C_{15}-C_{28} fraction	19,000 mg/kg
C_{29}-C_{36} fraction	16,500 mg/kg

The following maximum contaminant concentrations have been reported in groundwater at, or in the immediate vicinity, of the site:

Cadmium	114 µg/L
Copper	26.19 µg/L
Lead	121 µg/L
Nickel	284 µg/L
Zinc	1103 µg/L
TPH	
C_{10}-C_{14} fraction	3,400 µg/L
C_{15}-C_{28} fraction	5,490 µg/L
C_{29}-C_{36} fraction	5,250 µg/L
Ammonia	1,400µg/L
Total N	48,926µg/L
Total P	5,497µg/L

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2.0 OBJECTIVES OF THE SMP

The purpose of this SMP is to manage contamination on the site in a manner that protects human health and the environment.

3.0 ACHIEVEMENT AND MAINTENANCE OF OBJECTIVES

3.1 *Responsibility.* The owner of the land (as defined in the *Environmental Protection Act 1994*) is to ensure that this SMP and any variations approved or required by the administering authority are complied with. The obligations and conditions set out in this SMP bind the owner, from time to time, of the land.

3.2 *Site Use.*

Area of proposed bus depot (Part of proposed Lot 5)
The area detailed on Figure 1 and defined by the meets and bounds survey below is suitable for commercial/industrial land use subject to compliance with the provisions of this site management plan.

The commercial/industrial development site area (Bus Depot Area) being described as part of Proposed Lot 5 is defined by the following meets and bounds:

Commencing at a point being the south west corner of Proposed Lot 5 and thence bounded by lines:

BEARING	17°14'45"	FOR A DISTANCE OF	267.932m
BEARING	15°48'58"	FOR A DISTANCE OF	9.805m
BEARING	107°14'11"	FOR A DISTANCE OF	204.200m
BEARING	197°14'11"	FOR A DISTANCE OF	286.591m
BEARING	259°40'0"	FOR A DISTANCE OF	38.095m
BEARING	284°42'33"	FOR A DISTANCE OF	123.325m
BEARING	5°27'25"	FOR A DISTANCE OF	27.643m
BEARING	293°56'32"	FOR A DISTANCE OF	41.668m

To the point of commencement and containing an area of 61,053 square metres more or less.

Area of proposed road reserve
The area detailed on Figure 2 and defined by the meets and bounds survey below is suitable for use as a road reserve and associated infrastructure subject to compliance with the provisions of this site management plan.

The road reserve area is defined by the following meets and bounds:

Commencing at a point being the north east corner of Proposed Lot 5 and thence bounded by lines:

BEARING	174°59'0"	FOR A DISTANCE OF	24.010m

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BEARING	258°45'7"	FOR A DISTANCE OF	165.200m
BEARING	247°17'43"	FOR A DISTANCE OF	3.485m
BEARING	224°22'56"	FOR A DISTANCE OF	3.485m
BEARING	201°28'8"	FOR A DISTANCE OF	3.485m
BEARING	190°0'44"	FOR A DISTANCE OF	150.418m
BEARING	193°37'28"	FOR A DISTANCE OF	32.241m
BEARING	197°14'11"	FOR A DISTANCE OF	213.941m
BEARING	192°36'47"	FOR A DISTANCE OF	5.763m
BEARING	183°21'58"	FOR A DISTANCE OF	5.763m
BEARING	174°7'9"	FOR A DISTANCE OF	5.763m
BEARING	164°52'20"	FOR A DISTANCE OF	5.763m
BEARING	155°37'32"	FOR A DISTANCE OF	5.763m
BEARING	146°22'43"	FOR A DISTANCE OF	5.763m
BEARING	141°45'18"	FOR A DISTANCE OF	4.968m
BEARING	164°54'35"	FOR A DISTANCE OF	9.936m
BEARING	188°3'52"	FOR A DISTANCE OF	22.910m
BEARING	259°40'0"	FOR A DISTANCE OF	57.589m
BEARING	17°14'11"	FOR A DISTANCE OF	287.758m
BEARING	15°25'50"	FOR A DISTANCE OF	30.807m
BEARING	11°49'6"	FOR A DISTANCE OF	30.807m
BEARING	10°0'44"	FOR A DISTANCE OF	160.437m
BEARING	86°20'33"	FOR A DISTANCE OF	23.156m
BEARING	78°45'7"	FOR A DISTANCE OF	164.519m

To the point of commencement and containing an area of 16,654 square metres more or less.

Balance of Proposed Lot 5

The Remainder of proposed Lot 5 is suitable for commercial/industrial land use subject to input into and approval of site infrastructure design and construction methods by an appropriately qualified and experienced person as defined under Section 381 of the EP Act.

3.3 *Provision of SMP to Appropriate Persons.* The owner must provide all persons involved in building design and planning and all contractors and lessees conducting building and/or excavation works with a copy of the SMP prior to the commencement of works. All persons occupying or working on the site must comply with the requirements of the SMP.

3.4 *Surface Capping and Protective Barriers.*

Area of proposed bus depot
A capping layer consisting of a concrete slab or bitumen/asphalt paving on a minimum of 200mm of compacted gravel base or compacted clay fill to a minimum depth of 450mm or other equivalent cover is to be maintained over the bus depot area to maintain a barrier between potentially contaminated soil and site users.

The integrity of the capping material is to be maintained to prevent/minimise erosion of capping layers.

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Area of proposed road reserve
A capping layer consisting of a concrete slab or bitumen/asphalt paving on a minimum of 200mm of compacted gravel base or compacted clay fill to a minimum depth of 450mm or other equivalent cover is to be maintained over the road reserve area to maintain a barrier between potentially contaminated soil and site users.

The integrity of the capping material is to be maintained to prevent/minimise erosion of capping layers.

Balance of Lot 5
A capping layer consisting of a concrete slab or bitumen/asphalt paving on a minimum of 200mm of compacted gravel base or compacted clay fill to a minimum depth of 450mm or other equivalent cover is to be maintained over the balance of Lot 5 to maintain a barrier between potentially contaminated soil and site users.

The integrity of the capping material is to be maintained to prevent/minimise erosion of capping layers.

3.5 *Service Trenches.* Where service trenches extend to within 450mm of the original ground surface level, the trench must be over-excavated in order to provide for a minimum of 450mm of uncontaminated fill material separating the service from the original ground surface level. Alternatively, the trench must be completely lined with impermeable material such as Geosynthetic Clay Liner (GCL), HDPE liner or an equivalent material.

3.6 Bioretention Swale Design
Where bioretention swales are included in the bus depot design the base of the swale will be lined using either a 300mm layer of compacted clay with a permeability less than 1×10^{-9}m/s, a geothynthetic clay liner (GCL) or a HDPE liner with equivalent or lower permeability. Where trees are planted in swales a minimum depth of growing medium suitable for the particular tree species will be provided.

3.7 Tree Planting. Where trees are required tree trenches are proposed. These trenches will be constructed in a manner that ensures a 500mm separation layer from the base of any tree trenches to the original ground surface is maintained. The existing cap will be removed to allow for tree planting trenches. Tree trenches will be 1500mm deep and the design profile will be 400mm of topsoil underlain by 1.1m of clean fill material.

3.8 General Garden Beds. In cases where planting of shallow rooted species only is proposed the profile of the garden beds for establishment of such species will be sufficient to ensure a 500mm separation layer from the anticipated rooting depth to the original ground surface is maintained.

3.9 *Underground Storage Tanks.* In the case that underground storage tanks are installed on site for water storage purposes, such tanks will be constructed of concrete or other impermeable material. Any excavation conducted for the installation of underground water storage tanks, or for any other purpose, shall be undertaken in accordance with sections 3.10 to 3.13 below.

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3.10 Soil Excavation and Removal. Any soil excavated on the site must be assessed for contaminants of concern to determine if the material is contaminated and to identify appropriate management and disposal/re-use options.

Representative sampling and analysis of soil from excavations below the original ground surface must be managed by a suitably qualified and experienced person in accordance with Section 381 of the *Environmental Protection Act 1994* (EP Act). Contaminated soil must not be removed off-site without a disposal permit in accordance with Section 424 of the EP Act.

3.11 *Unexpected Contamination.* If during any site earthworks or excavation, offensive or noxious odours and/or evidence of waste or contamination not previously detected are observed, site works are to cease in that area and action taken to immediately prevent or minimise environmental harm. The administering authority is to be notified in writing within two (2) business days of detection and advised of any remedial action undertaken.

Any remedial action is to be developed by an appropriately qualified and experienced person in accordance with Section 381 of the EP Act.

3.12 *General Environmental Protection.* All earthworks are to be undertaken in accordance with general environmental protection measures to avoid unwanted migration and deposition of soil. These measures include the control of dust, noise, stormwater runoff, sediment, erosion, spillage from haulage trucks and odour releases involving the handling or movement of contaminated material. The use of groundwater at the site must not occur unless an investigation provides information that the ground water at the site is suitable for the proposed use and the EPA gives written consent for such use to occur.

3.13 Workplace Health and Safety. A Workplace Health and Safety Plan (WH&S plan), which conforms to the requirements of the *Workplace Health and Safety Act 1995* is to be developed for any site excavation works in contaminated areas. The WH&S plan must specifically address contaminants of concern.

4.0 MONITORING AND REPORTING

Records are to be kept of all inspections, any soil excavation in contaminated areas, disposal permits and site management plan compliance for review by the administering authority from time to time. A biennial inspection is to be undertaken to ensure that capping and protective barriers remain in sound condition at all times in accordance with section 3.4.

All monitoring and reporting is to be conducted by a member of a prescribed organisation with relevant qualifications and experience according to Section 381 of the Environmental Protection Act 1994.

This Site Management Plan (SMP) has been developed to manage site contamination risks present at the issue date. Subsequent uses of the site may result in the need to review the plan.

This SMP makes reference to plan attachments that are available from the Administering Authority if required.

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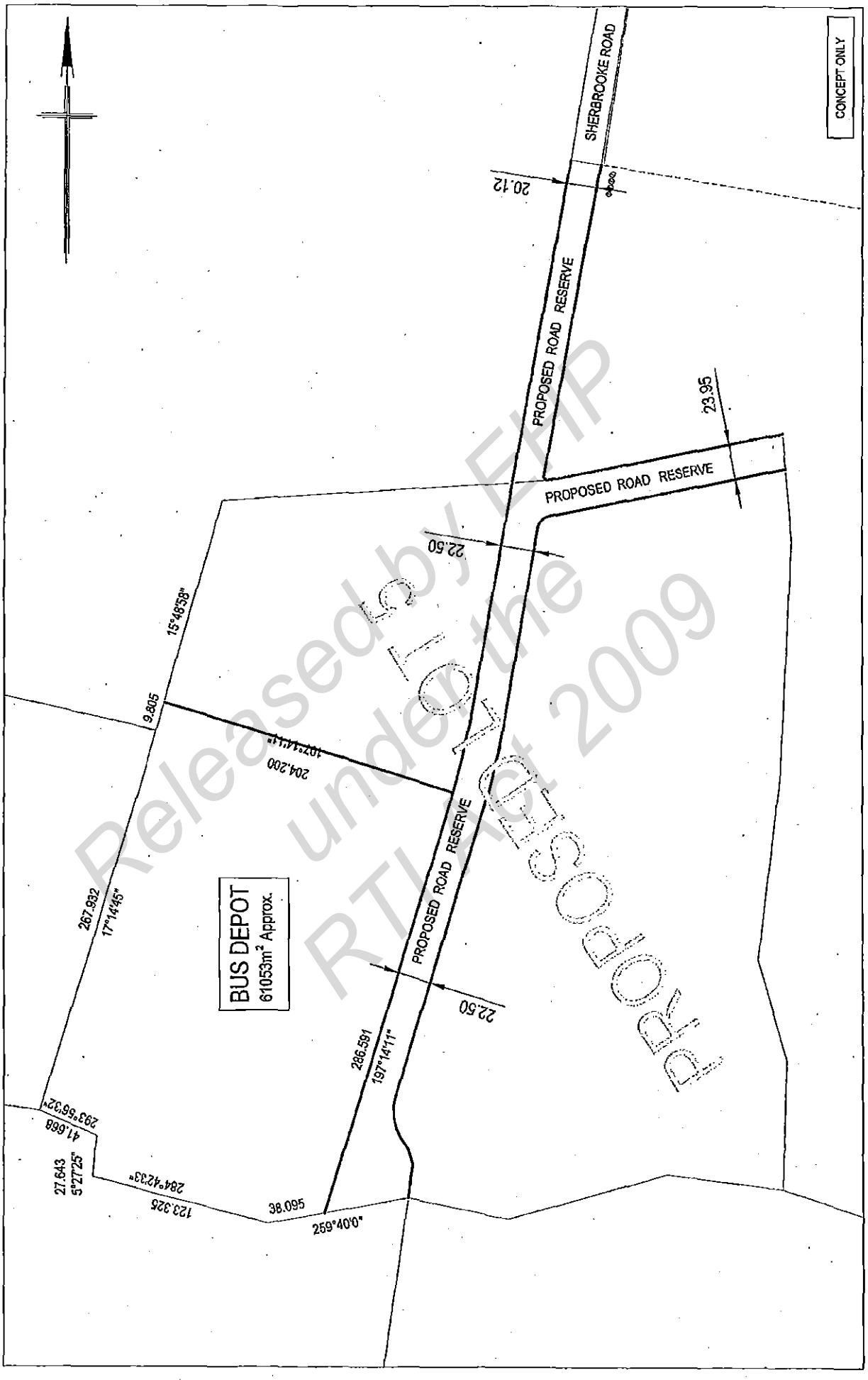

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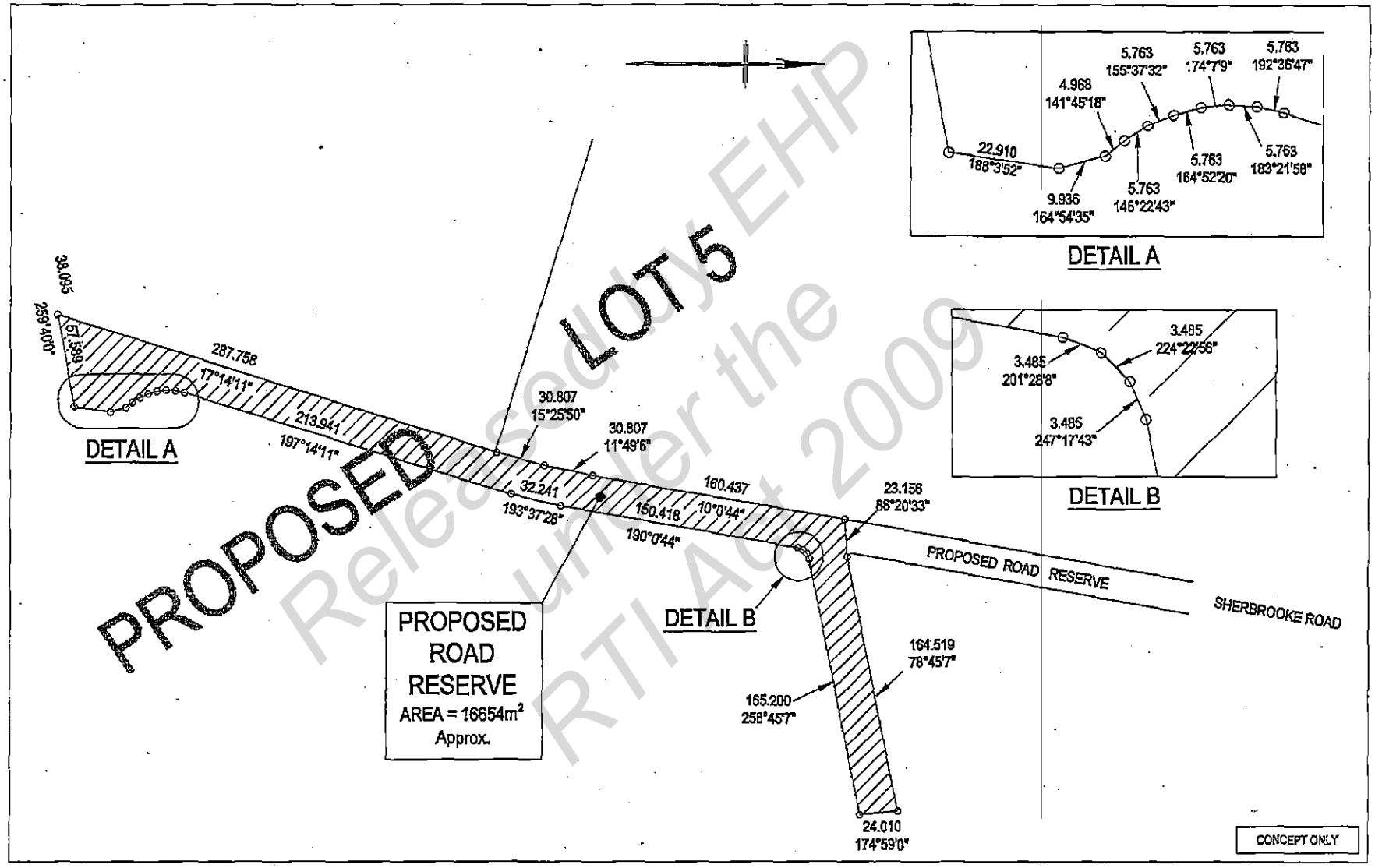

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