APPENDIX A

Site Photograph: Lot 411 Kentucky Court, Jandakot.

Site Photograph: Lots 16 and 17 Tea Tree Close, Jandakot.

Site Photograph: Lot 102 Muriel Court, Jandakot.

Site Photograph: Lot 15 Muriel Court, Jandakot.

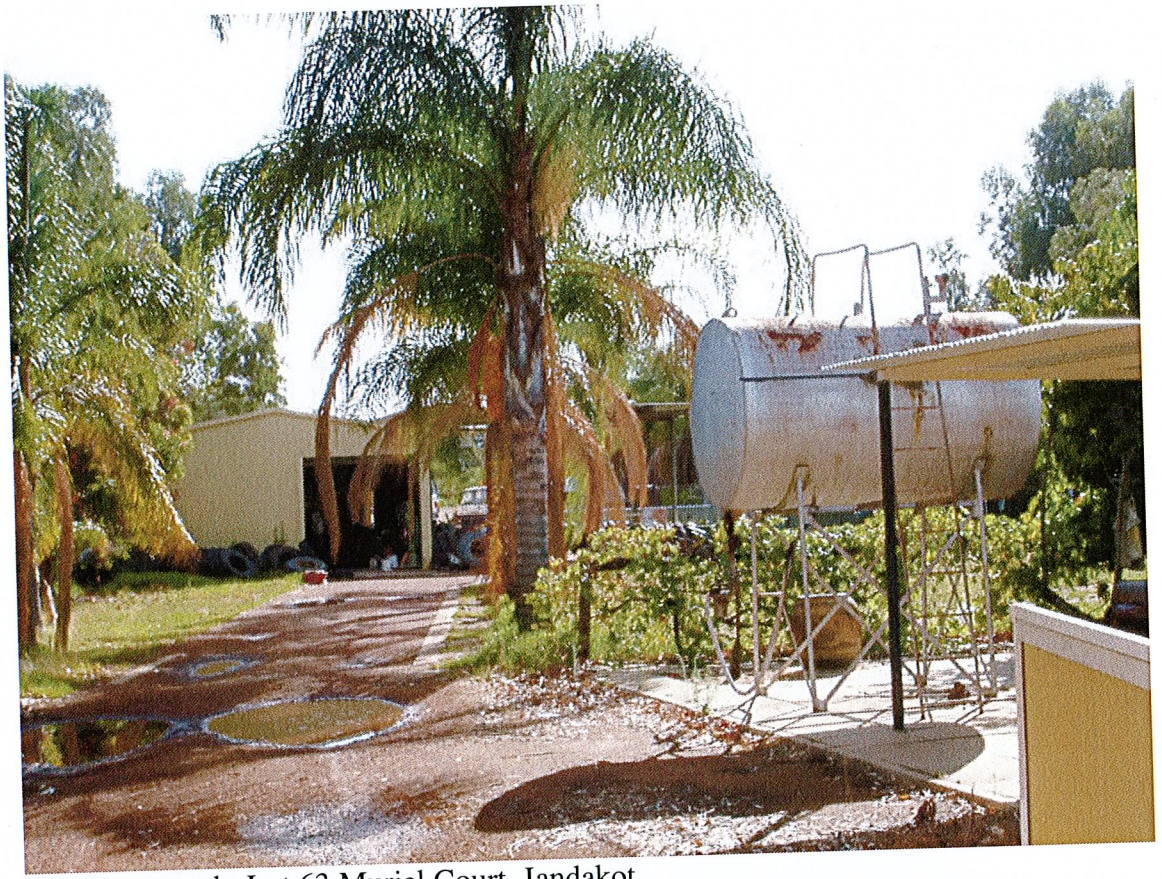
Site Photograph: Lot 101 Muriel Court, Jandakot.

Site Photograph: Lot 100 Muriel Court, Jandakot.

Site Photograph: Lot 21 Muriel Court, Jandakot.

Site Photograph: Lot 10 Muriel Court, Jandakot.

Site Photograph: Lot 61 Muriel Court, Jandakot.



Site Photograph: Lot 63 Muriel Court, Jandakot.

Site Photograph: Lot 63 Muriel Court, Jandakot.

APPENDIX B

City of **Cockburn**
ABN: 27 471 341 209
PO Box 1215, Bibra Lake DC,
Western Australia 6965

9 Coleville Crescent, Spearwood,
Western Australia 6163

Telephone (08) 9411 3444
Facsimile (08) 9411 3416

Wetlands to waves

Direct Indial: 9411 3589
Ref: 6003

19 January 2007

Attention: Gina Pemberton
Brown Geotechnical & Environmental
4/47 Monash Avenue
COMO WA 6152

RE: HEALTH SEARCH – LOTS 411, 102, 15, 101, 100, 21, 16, 17, 60, 61, 63 & 10 MURIEL COURT - JANDAKOT

Please be advised that your request for a search on the above properties with respect to current & historical environmental health issues; records of complaints, cleanup notices, buried waste, applications for installation of fuel tanks etc. has been completed. No issues were found in this regard.

Should you have any further queries, please contact Health Services on 9411 3589.

G Taylor

Gail Taylor
Health Services Clerical Officer

APPENDIX C

Department of Water
Government of Western Australia

FOI Ref number: DOW LR 30

FOI Coordinator: Gérard Fabien

Contact Number: 08 6364 6489

Ms Gina Pemberton
Brown Geotechnical and Environmental
4/47 Monash Avenue
COMO WA 6152

Dear Ms Pemberton

FREEDOM OF INFORMATION (FOI) APPLICATION NO: DOW LR 30
PROPERTY: AREA 19 NORTHLAKE ROAD, JANDAKOT

This letter refers to your FOI application requesting information about the above-mentioned premises.

The Department has conducted searches of relevant databases, using the description of the Properties contained in your application, and no documents have been located.

Please note there are one licence issued under the *Metropolitan Water Sewerage Supply and Drainage Act 1909* and not the *Rights in Water and Irrigation Act 1914 (RIWI Act)* this Property. The Property is located in a proclaimed groundwater area under the *RIWI Act* where groundwater from non artesian aquifer systems cannot be taken without a 5c licence to take water. Additional information relating to licensing is available on the Department's website at http://portal.water.wa.gov.au/portal/page/portal/LicensingWaterIndustryServices

The Property is located within a proclaimed surface water area (Murray River Catchment) under the *RIWI Act* hence licences/permits for surface water is also required, however GIS Viewer does not show a watercourse on the property.

If you wish to contest the decision in regard to access to the documents, you have a right to have the decision reviewed. Details of the review process are set out in the attached extract from the Act.

Yours sincerely

Gérard Fabien
FOI COORDINATOR
GOVERNMENT RELATIONS BRANCH

22 February 2007

Enc

168 St Georges Terrace Perth Western Australia 6000
PO Box K822 Perth Western Australia 6842
Telephone (08) 6364 7600 Facsimile (08) 6364 7601
www.water.wa.gov.au

APPENDIX D

Aerial Photograph: Area 19, Jandakot; 3 February 1948.

Aerial Photograph: Area 19, Jandakot; 6 November 1953.

Aerial Photograph: Area 19, Jandakot; 11 March 1965.

Aerial Photograph: Area 19, Jandakot; 11 June 1975.

Aerial Photograph: Area 19, Jandakot; 20 April 1985.

Aerial Photograph: Area 19, Jandakot; 6 January 1995.

Aerial Photograph: Area 19, Jandakot; 17 December 2005.

APPENDIX E

BOREHOLE NUMBER MB01

Ace Environmental Pty Ltd

CLIENT Landowner group 2

PROJECT NAME Development Area 19

PROJECT NUMBER J07030

PROJECT LOCATION Jandakot

DATE STARTED 4/4/07 COMPLETED 4/4/07

R.L. SURFACE ___ DATUM ___

DRILLING CONTRACTOR G.S Drilling

SLOPE 90° BEARING ---

EQUIPMENT Drilling Rig

HOLE LOCATION 115 854985E 32 120901S MGA

HOLE SIZE 100mm

LOGGED BY TW CHECKED BY GP

NOTES ___

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
			0.5		SP	SAND: Loose, coarse, dark grey, moist, roots to 1m		
			1.0			medium dense and medium grained below 1.0m		
			1.5					
			2.0			dense below 1.8m		
	▼		2.5			pale grey, wet below 2.5m		
			3.0					
			3.5					
			4.0					
			4.5			Borehole MB01 terminated at 4.5m		
			5.0					
			5.5					

BOREHOLE / TEST PIT LOGS.GPJ GINT STD AUSTRALIA.GDT 20/1/08

BOREHOLE NUMBER MB02

Ace Environmental Pty Ltd

CLIENT Landowner group 2

PROJECT NAME Development Area 19

PROJECT NUMBER J07030

PROJECT LOCATION Jandakot

DATE STARTED 4/4/07 COMPLETED 4/4/07

R.L. SURFACE ____ DATUM ____

DRILLING CONTRACTOR G S Drilling

SLOPE 90° BEARING ---

EQUIPMENT Drilling Rig

HOLE LOCATION 115.853617E 32.123196S MGA

HOLE SIZE 100mm

LOGGED BY TW CHECKED BY GP

NOTES ____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
			0.5		SP	SAND: Dense, fine to medium, grey, moist, trace rootlets		
			1.0					
			1.5			brown below 1.6m		
	▼		2.0			grey brown, wet below 2.0m		
			2.5					
			3.0					
			3.5					
			4.0			Borehole MB02 terminated at 4m		
			4.5					
			5.0					
			5.5					

BOREHOLE NUMBER MB03

Ace Ace Environmental Pty Ltd

CLIENT Landowner group 2
PROJECT NAME Development Area 19
PROJECT NUMBER J07030
PROJECT LOCATION Jandakot

DATE STARTED 4/4/07 COMPLETED 4/4/07
R.L. SURFACE
DATUM
DRILLING CONTRACTOR G.S Drilling
SLOPE 90°
BEARING ---
EQUIPMENT Drilling Rig
HOLE LOCATION 115.852894E 32.118617S MGA
HOLE SIZE 100mm
LOGGED BY TW
CHECKED BY GP
NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
			0			TOPSOIL: Medium dense, medium, dark grey with many rootlets to 1.1m		
			0.5			SAND: Medium dense, medium grained, grey, moist		
			1.0					
			1.5			dense below 1.5m		
			2.0					
			2.5					
			3.0			paler grey, wet below 3.0m		
	▼		3.5					
			4.0					
			4.5					
			5.0					
			5.5			Borehole MB03 terminated at 5.5m		

BOREHOLE NUMBER MB04

Ace | Ace Environmental Pty Ltd

CLIENT Landowner group 2 | PROJECT NAME Development Area 19

PROJECT NUMBER J07030 | PROJECT LOCATION Jandakot

DATE STARTED 4/4/07 | COMPLETED 4/4/07 | R.L. SURFACE | DATUM

DRILLING CONTRACTOR G.S Drilling | SLOPE 90° | BEARING ---

EQUIPMENT Drilling Rig | HOLE LOCATION 115.852417E 32.117212S MGA

HOLE SIZE 100mm | LOGGED BY TW | CHECKED BY GP

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
			0.0			TOPSOIL. Medium dense, fine to medium, dark grey rootlets, dry		
			0.5			SAND: Medium dense, medium grained, light grey trace silt, moist		
			1.0			dense below 1.2m		
			1.5					
			2.0					
			2.5					
	▼		3.0			paler grey, wet below 2.8m		
			3.5					
			4.0					
			4.5					
			5.0			Borehole MB04 terminated at 5m		
			5.5					

BOREHOLE NUMBER MB05

Ace Environmental Pty Ltd

CLIENT Landowner group 2

PROJECT NAME Development Area 19

PROJECT NUMBER J07030

PROJECT LOCATION Jandakot

DATE STARTED 4/4/07 COMPLETED 4/4/07

R.L. SURFACE ____ DATUM ____

DRILLING CONTRACTOR G.S Drilling

SLOPE 90° BEARING ---

EQUIPMENT Drilling Rig

HOLE LOCATION 116.853599E 32.117122S MGA

HOLE SIZE 100mm

LOGGED BY TW CHECKED BY GP

NOTES ____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
			0			TOPSOIL. Medium dense, medium, dark grey, rootlets, dry		
					SP	SAND: Medium dense, medium grained, grey, trace silt, moist		
			0.5					
			1.0			dense below 1 2m		
			1.5					
			2.0					
			2.5					
			3.0					
	▼					pale grey, wet below 3 3m		
			3.5					
			4.0					
			4.5					
			5.0					
			5.5			Borehole MB05 terminated at 5 5m		

BOREHOLE / TEST PIT LOGS GPJ GINT STD AUSTRALIA GDT 20/1/08

BOREHOLE NUMBER MB06

Ace Environmental Pty Ltd

CLIENT Landowner group 2
PROJECT NAME Development Area 19
PROJECT NUMBER J07030
PROJECT LOCATION Jandakot
DATE STARTED 4/4/07 COMPLETED 4/4/07
R.L. SURFACE
DATUM
SLOPE 90°
BEARING ---
DRILLING CONTRACTOR G S Drilling
HOLE LOCATION 115.850562E 32.118043S MGA
EQUIPMENT Drilling Rig
LOGGED BY TW
CHECKED BY GP
HOLE SIZE 100mm
NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
			0.0			TOPSOIL. Medium dense, medium grained, grey, trace rootlets, dry		
			0.5		SP	SAND. Medium dense, medium grained, light grey, trace silt, moist		
			1.0					
			1.5					
			2.0					
			2.5			dense below 2.4m		
			3.0					
	▼		3.5			paler grey, wet below 3.4m		
			4.0					
			4.5					
			5.0					
			5.5			Borehole MB06 terminated at 5.5m		

Groundwater Field Parameters

Job Number: J07030 **Sampling Point:** MB01

Project: Area 19	**Purging Date:** 31 Oct 2007
Site Location: Jandakot	**Sampling Date:** 31 Oct 2007
MGA Grid Coordinates (WGS 84)	Well depth from TOC (m): 4.50
	Depth to groundwater from TOC (m): 1.906
Easting	Depth to be purged (m): 2.5
Northing	

Purging Information

Purge 5 casing volumes or until dry

1 casing volume = 2L/m for wells of 50mm ID

1 casing volume = 8 L/m for wells of 100mm ID

Method pump type: subm ○ bailer ✓ GrundfosMP1 ○	One purge volume: 5 litres
Tubing material: HDPE ○ PVC ✓ S/Steel ○	No. of times purged: 5
Start time (2400hr):	Total purge volume: 25 litres

Field Results While Purging

	pH	Conductivity (mS.cm)	Redox (mV)	DO (ppm)	Temp. °C
After 1 purge volume	5.91	390	-132	2.04	19.1
After 4 purge volumes	5.90	363	-131	2.27	18.9
After 5 purge volumes	5.96	375	-126	2.15	20.7
Extra if required					
Extra if required					

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled

Are the field results acceptable to allow sampling? (circle one) Yes No (No: suspend additional purge data)

Sampling Details

Method pump type: waterra ○ bailer ✓ GrundfosMP1 ○	
Tubing material: HDPE ○ PVC ✓ S/Steel ○	
Is there a hydrocarbon sheen? Yes (No)	
Odour: a slight hydrocarbon odour	
Colour:	
Turbidity: L M H	

Analysis Required (tick if yes)

TPH	Ammonia
BTEx	SVOCs
VOCs	Other
Cyanide	Other
PAHs	Other
Metals (see dustpan form for list)	

Weather Conditions

Rain	Temperature °C	Cloud cover	%

Other comments and observations:

Sampler's name: Gina Pemberton Signature: Gina Pemberton

APPENDIX F

Groundwater Field Parameters

Job Number: J07030 **Sampling Point:** MB02

Project: Area 19	**Purging Date:** 31/10/07
Site Location: Jandakot	**Sampling Date:** 31/10/07
MGA Grid Coordinates (WGS 84)	Well depth from TOC (m): 4m
	Depth to groundwater from TOC (m): 2.701
Easting	Depth to be purged (m): 1.5
Northing	

Purging Information

Purge 5 casing volumes or until dry

1 casing volume = 2L/m for wells of 50mm ID

1 casing volume = 8 L/m for wells of 100mm ID

Method pump/type submersible ○ bailer ✓ GrundfosMP1 ○	One purge volume 3 litres
Tubing material HDPE ○ PVC ✓ S.Steel ○	No. of times purged 5
Start time (2400hr):	Total purge volume 15 litres

Field Results While Purging

	pH	Conductivity (mS.cm)	Redox (mV)	DO (ppm)	Temp. °C
After 1 purge volume	5.70	1375	-106	2.23	19.8
After 4 purge volumes	5.80	1388	-121	2.20	19.8
After 5 purge volumes	5.78	1390	-122	2.09	19.9
Extra if required					
Extra if required					

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled.

Are the field results acceptable to allow sampling? (circle one) (Yes) No (If No, append additional purge data.)

Sampling Details

Method pump/type Mastersa ○ bailer ✓ GrundfosMP ○	
Tubing material HDPE ○ PVC ✓ S.Steel ○	
Is there a hydrocarbon sheen? Yes (No)	
Odour no smell	
Colour	
Turbidity L M H	

Analysis Required (tick if yes)

TPH	Ammonia
BTEX	S.VOCs
VOCs	Other
Cyanide	Other
PAHs	Other
Metals (see bottle form for list)	

Weather Conditions

Rain	Temperature °C	Cloud cover	%

Other comments and observations:

Sampled by name: Gina Pemberton Signature: Gina Pemberton

Groundwater Field Parameters

Job Number: J07030 **Sampling Point:** MB03

Project: Area 19	**Purging Date:** 31/10/07
Site Location: Jandakot	**Sampling Date:** 31/10/07
MGA Grid Coordinates (WGS 84	Well depth from TOC (m): 5.5
Easting:	Depth to groundwater from TOC (m): 2.514
Northing:	Depth to be purged (m): 2

Purging Information

Purge 5 casing volumes or until dry
1 casing volume = 2L/m for wells of 50mm ID
1 casing volume = 8 L/m for wells of 100mm ID

Method pump/type submers ○ bailer ✓ GrundfosMP1 ○	One purge volume 4 litres
Tubing material HDPE ○ PVC ✓ S/Steel ○	No. of times purged 5
Start time (2400hr):	Total purge volume 20 litres

Field Results While Purging

	pH	Conductivity (mS.cm)	Redox (mV)	DO (ppm)	Temp. °C
After 1 purge volume	6.48	972	-140	1.87	19.9
After 4 purge volumes	6.46	993	-137	2.06	19.6
After 5 purge volumes	6.45	936	-139	1.94	20.1
Extra if required					
Extra if required					

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity, and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled.

Are the field results acceptable to allow sampling? (circle one) (Yes) No (No, append additional purge data)

Sampling Details

Method pump/type submers ○ bailer ✓ GrundfosMP ○
Tubing material HDPE ○ PVC ✓ S/Steel ○
Is there any hydrocarbon sheen? Yes (No)
Odour no smell
Odour
Turbidity L M H

Analysis Required (tick if yes)

TPH	Ammonia
BTEX	SVOCs
VOCs	Oil
Cyanide	Other
PAHs	Other
Metals (see dustpan form for list)	

Weather Conditions

Rain Temperature °C Cloud cover %

General comments and observations

Sampler's name: Gina Pemberton Signature: Gina Pemberton

Groundwater Field Parameters

Job Number: J07030 **Sampling Point:** MB04

Project: Area 19	**Purging Date:** 31/10/07
Site Location: Jandakot	**Sampling Date:** 31/10/07
MGA Grid Coordinates (WGS 84)	Well depth from TOC (m) 5m
Easting	Depth to groundwater from TOC (m) 2.190
Northing	Depth to be purged (m) 3

Purging Information

Purge 5 casing volumes or until 'dry'
1 casing volume = 2L/m for wells of 50mm ID
1 casing volume = 8 L/m for wells of 100mm ID

Method pump type submO bailer ✓ GrundfosMP1 O	One purge volume 6 litres
Tubing material HDPE O PVC ✓ S/Steel O	No. of times purged 5
Start time (2400hr)	Total purge volume 30 litres

Field Results While Purging

	pH	Conductivity (mS.cm)	Redox (mV)	DO (ppm)	Temp. °C
After 1 purge volume	5.94	279	-128	2.16	19.5
After 4 purge volumes	5.91	390	-126	1.88	21.0
After 5 purge volumes	5.92	391	-128	1.74	20.9
Extra if required					
Extra if required					

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity, and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled

Are the field results acceptable to allow sampling? (circle one) (Yes) No *No, append additional purge data

Sampling Details

Method pump type Mat'ls O bailer ✓ GrundfosMP1 O
Tubing material HDPE O PVC ✓ S/Stee O
Smells and dissolved oxygen? Yes (No)
Odour no smell
Colour
Turbidity L M H

Analysis Required (tick if yes)

TPH	Ammonia
BTEX	SVOCs
VOCs	Other
Cyanide	Other
PAHs	Other
Metals (see dustbox form for list)	

Weather Conditions

Rain Temperature °C Cloud cover %

Other comments and observations

Sampled by name Gina Pemberton Signature Gina Pemberton

Groundwater Field Parameters

Job Number: J07030 **Sampling Point:** MB05

Project: Area 19	**Purging Date:** 31/10/07
Site Location: Jandakot	**Sampling Date:** 31/10/07
MGA Grid Coordinates (WGS 84	Well depth from TOC (m) 5.5
Easting	Depth to groundwater from TOC (m) 2.775
Northing	Depth to be purged (m) 2

Purging Information

Purge 5 casing volumes or until dry

1 casing volume = 2L/m for wells of 50mm I.D

1 casing volume = 8 L/m for wells of 100mm I.D

Method pump/bailer submersible ○ bailer ✓ GrundfosMP1 ○	One purge volume 4 litres
Tubing material HDPE ○ PVC ✓ SiSteel ○	No. of times purged 5
Start time (2400hrs)	Total purge volume 20 litres

Field Results While Purging

	pH	Conductivity (mS.cm)	Redox (mV)	DO (ppm)	Temp. °C
After 1 purge volume	6.05	394	-55	2.08	21.0
After 4 purge volumes	5.92	388	-65	1.90	20.6
After 5 purge volumes	5.88	383	-94	1.42	21.6
Extra if required					
Extra if required					

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled

Are the field results acceptable to allow sampling? (circle one) (Yes) No (You should add additional purge data)

Sampling Details

Method pump/bailer waterra ○ bailer ✓ GrundfosMP ○	
Tubing material HDPE ○ PVC ✓ SiSteel ○	
Is there a hydrocarbon sheen? Yes (No)	
Odour no smell	
Colour	
Turbidity L M H	

Analysis Required (tick if yes)

TPH	Ammonia
BTEX	SVOCs
VOCs	Br
Cyanide	Other
PAHs	Other
Metals (see custody form for list)	

Weather Conditions

Rain Temperature °C Cloud cover %

Other comments and observations

Sampler's name Gina Pemberton Signature Gina Pemberton

Groundwater Field Parameters

Job Number: J07030 **Sampling Point:** MB06

Project: Area 19	**Purging Date:** 31/10/07
Site Location: Jandakot	**Sampling Date:** 31/10/07
MGA Grid Coordinates (WGS 84	Well depth from TOC (m) 5.5
Easting	Depth to groundwater from TOC (m) 1.413
Northing	Depth to be purged (m) 4

Purging Information

Purge 5 casing volumes or until dry

1 casing volume = 2L/m for wells of 50mm ID

1 casing volume = 8 L/m for wells of 100mm ID

Method pump/type submersible ○ bailer ✓ GrundfosMP1 ○	One purge volume 8 litres
Tubing material HDPE ○ PVC ✓ S.Steel ○	No. of times purged 5
Start time (2400hr)	Total purge volume 40 litres

Field Results While Purging

	pH	Conductivity (mS.cm)	Redox (mV)	DO (ppm)	Temp. °C
After 1 purge volume	6.06	450	79	2.34	18.3
After 4 purge volumes	5.47	362	20	1.93	18.8
After 5 purge volumes	5.95	464	-8	1.70	18.9
Extra if required	5.95	465	-10	1.62	18.9
Extra if required					

Measurements for pH should be within 0.1 pH units and measurements for conductivity, salinity, and dissolved oxygen should be within 10% and temperature within 0.5 °C before the well is sampled

Are the field results acceptable to allow sampling? please circle (Yes) No (No: record additional purge data)

Sampling Details

Method pump/type submersible ○ bailer ✓ GrundfosMP1 ○

Tubing material HDPE ○ PVC ✓ S.Steel ○

Is there a hydrocarbon sheen? Yes (No)

Odour no smell

Odour

Turbidity - M H

Analysis Required (tick if yes)

TPH	Ammonia
BTEX	SVOCs
VOCs	Other
Cyanide	Other
PAHs	Other
Metals (see custody form for list)	

Weather Conditions

Rain Temperature °C Cloud cover %

Other comments and observations

Sampler's name Gina Pemberton Signature Gina Pemberton

APPENDIX G

Table 1 – Groundwater Analytical Results: Dissolved Metals

Sample Identification Number	Sample Date	QA Sample Type	Metals							
			Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
Units			mg/L							
Assessment Criteria										
Adopted Investigation Levels			0.1	0.01	0.1	0.2	2.0	0.2	2.0	0.002
Analytical Results										
MB01	31/10/2007		<0.001	0.0002	<0.001	<0.001	<0.001	0.001	0.023	<0.0001
MB02	31/10/2007		0.003	0.0002	<0.001	0.003	0.001	0.006	0.006	<0.0001
MB03	31/10/2007		0.002	0.0001	<0.001	0.002	<0.001	0.001	0.017	<0.0001
MB04	31/10/2007		<0.001	0.0002	<0.001	0.003	0.003	0.002	0.020	<0.0001
MB05	31/10/2007		<0.001	0.0004	<0.001	0.002	<0.001	0.002	0.019	<0.0001
MB06	31/10/2007		0.002	0.0002	<0.001	<0.001	<0.001	0.002	0.014	<0.0001

Table 2 – Total Petroleum Hydrocarbons and BTEX

Sample Name	Sample Date	Total Petroleum Hydrocarbons & BTEX								
		C6 – C9 Fraction	C10 – C14 Fraction	C15 – C28 Fraction	C29 – C36 Fraction	Benzene	Toluene	Ethylbenzene	Meta- & para-Xylene	Ortho-Xylene
MB01	31/10/2007	<20	60	400	100	<1	<2	<2	<2	<2
MB02	31/10/2007	<20	<50	<100	70	<1	<2	<2	<2	<2
MB03	31/10/2007	<20	<50	<100	<50	<1	<2	<2	<2	<2
MB04	31/10/2007	<20	<50	<100	<50	<1	<2	<2	<2	<2
MB05	31/10/2007	<20	<50	<100	<50	<1	<2	<2	<2	<2
MB06	31/10/2007	<20	<50	<100	<50	<1	<2	<2	<2	<2

Table 3a – Groundwater Analytical Results: Organophosphorus Pesticides (Ultra-trace)

Sample Name	Sample Date	Organochlorine Pesticides (µg/L)											
		Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimenthoate	Ethion	Fenamiphos	Fenthion
MB01	31/10/2007	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MB02	31/10/2007	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MB03	31/10/2007	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MB04	31/10/2007	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MB05	31/10/2007	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MB06	31/10/2007	<0.10	<0.10	<0.10	<0.050	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

Table 3b – Groundwater Analytical Results: Organophosphorus Pesticides (Ultra-trace)

Sample Name	Sample Date	Organochlorine Pesticides (µg/L)						
		Malathion	Azinphos Methyl	Monocrotophos	Parathion	Parathion-methyl	Pirimphos-ethyl	Prothiofos
MB01	31/10/2007	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MB02	31/10/2007	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MB03	31/10/2007	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MB04	31/10/2007	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MB05	31/10/2007	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MB06	31/10/2007	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

Table 5 – Groundwater Analytical Results: Organochlorine Pesticides - Water

	Sample Name					
	MB01	MB02	MB03	MB04	MB05	MB06
	Sample Date					
	31/10/2007	31/10/2007	31/10/2007	31/10/2007	31/10/2007	31/10/2007
Organochlorine Pesticides (µg/L)						
Aldrin	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
alpha-BHC	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
beta-BHC	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
delta-BHC	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
4.4' – DDD	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
4.4' – DDE	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
4.4' – DDT	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
DDT (total)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Dieldrin	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
alpha-Endosulfan	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
beta-Endosulfan	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endosulfan sulfate	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endosulfan	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin aldehyde	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin ketone	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Heptachlor	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor epoxide	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobenzene (HCB)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
gamma-BHC	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
cis-Chlordane	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
trans-Chlordane	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total Chlordane	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

APPENDIX H

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EP0705200**	Page	: 1 of 8
Client	: **ACE ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: MS GINA PEMBERTON	Contact	: Michael Sharp
Address	: SHOP 17/2 SOUTH WESTERN HIGHWAY ARMADALE WA AUSTRALIA 6112	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: gina@aceenvironmental.com.au	E-mail	: Shaun.Crabb@alsenviro.com
Telephone	: +61 08 9497 5000	Telephone	: +61-8-9209 7655
Facsimile	: ----	Facsimile	: +61-8-9209 7600
Project	: J07030	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 02-NOV-2007
C-O-C number	: ----	Issue Date	: 21-NOV-2007
Sampler	: G.P	No. of samples received	: 7
Site	: ----	No. of samples analysed	: 7
Quote number	: EN-062-07		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ashwini Sharma	Inorganics Co-ordinator	Inorganics
Celine Conceicao	Spectroscopist	Inorganics
PHALAK INTHAKESONE	Organics Co-ordinator	Organics
Shuk Hui Li	Senior Chemist - Organics	Perth Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been preformed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID	MB01	MB02	MB03	MB04	MB05
				Client sampling date / time	31-OCT-2007 15:00	31-OCT-2007 15:00	31-OCT-2007 15:00	31-OCT-2007 15:00	31-OCT-2007 15:00
					EP0705200-001	EP0705200-002	EP0705200-003	EP0705200-004	EP0705200-005
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.003	0.002	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L		0.0002	0.0002	0.0001	0.0002	0.0004
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		<0.001	0.003	0.002	0.003	0.002
Lead	7439-92-1	0.001	mg/L		<0.001	0.001	<0.001	0.003	<0.001
Nickel	7440-02-0	0.001	mg/L		0.001	0.006	0.001	0.002	0.002
Zinc	7440-66-6	0.005	mg/L		0.023	0.024	0.017	0.020	0.019
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	---	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	---	50	µg/L		60	<50	<50	<50	<50
C15 - C28 Fraction	---	100	µg/L		400	<100	<100	<100	<100
C29 - C36 Fraction	---	50	µg/L		100	70	<50	<50	<50
EP080: BTEX									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
EP130A: Organophosphorus Pesticides (Ultra-trace)									
Bromophos-ethyl	4824-78-6	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Carbophenothion	786-19-6	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Chlorfenvinphos (Z)	470-90-8	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Chlorpyrifos	2921-88-2	0.050	µg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Chlorpyrifos-methyl	5598-13-0	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Demeton-S-methyl	919-86-8	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Diazinon	333-41-5	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Dichlorvos	62-73-7	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Dimethoate	60-51-5	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Ethion	563-12-2	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Fenamiphos	22224-92-6	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Fenthion	55-38-9	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Malathion	121-75-5	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Azinphos Methyl	86-50-0	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Monocrotophos	6923-22-4	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Parathion	56-38-2	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10
Parathion-methyl	298-00-0	0.10	µg/L		<0.10	<0.10	<0.10	<0.10	<0.10

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MB01	MB02	MB03	MB04	MB05
				Client sampling date / time: 31-OCT-2007 15:00	31-OCT-2007 15:00	31-OCT-2007 15:00	31-OCT-2007 15:00	31-OCT-2007 15:00
				EP0705200-001	EP0705200-002	EP0705200-003	EP0705200-004	EP0705200-005
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
Pirimphos-ethyl	23505-41-1	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
Prothiofos	34643-46-4	0.10	µg/L	<0.10	<0.10	<0.10	<0.10	<0.10
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
alpha-BHC	319-84-6	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
beta-BHC	319-85-7	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
delta-BHC	319-86-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4'-DDD	72-54-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4'-DDE	72-55-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
4.4'-DDT	50-29-3	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
^ DDT (total)	---	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Dieldrin	60-57-1	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
alpha-Endosulfan	959-98-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
beta-Endosulfan	33213-65-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Endosulfan sulfate	1031-07-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
^ Endosulfan (sum)	115-29-7	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin	72-20-8	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin aldehyde	7421-93-4	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Endrin ketone	53494-70-5	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Heptachlor	76-44-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor epoxide	1024-57-3	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobenzene (HCB)	118-74-1	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
gamma-BHC	58-89-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	72-43-5	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
cis-Chlordane	5103-71-9	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
trans-Chlordane	5103-74-2	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
^ Total Chlordane (sum)	---	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	106	104	103	110	105
Toluene-D8	2037-26-5	0.1	%	103	104	103	101	102
4-Bromofluorobenzene	460-00-4	0.1	%	92.9	92.8	95.9	88.9	93.8
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	111	94.2	72.4	59.1	65.4
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	68.4	75.9	55.6	54.4	77.6

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MB06	QA1	----	----	----
				Client sampling date / time: 31-OCT-2007 15:00	31-OCT-2007 15:00	---	---	---
				EP0705200-006	EP0705200-007	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	<0.001	---	---	---
Cadmium	7440-43-9	0.0001	mg/L	**0.0002**	**0.0002**	---	---	---
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	---	---	---
Copper	7440-50-8	0.001	mg/L	<0.001	**0.002**	---	---	---
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	---	---	---
Nickel	7440-02-0	0.001	mg/L	**0.002**	**0.002**	---	---	---
Zinc	7440-66-6	0.005	mg/L	**0.014**	**0.027**	---	---	---
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	---	---	---
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	---	20	µg/L	<20	<20	---	---	---
C10 - C14 Fraction	---	50	µg/L	<50	**100**	---	---	---
C15 - C28 Fraction	---	100	µg/L	<100	**600**	---	---	---
C29 - C36 Fraction	---	50	µg/L	<50	**140**	---	---	---
EP080: BTEX								
Benzene	71-43-2	1	µg/L	<1	<1	---	---	---
Toluene	108-88-3	2	µg/L	<2	<2	---	---	---
Ethylbenzene	100-41-4	2	µg/L	<2	<2	---	---	---
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	---	---	---
ortho-Xylene	95-47-6	2	µg/L	<2	<2	---	---	---
EP130A: Organophosphorus Pesticides (Ultra-trace)								
Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	<0.10	---	---	---
Carbophenothion	786-19-6	0.10	µg/L	<0.10	<0.10	---	---	---
Chlorfenvinphos (Z)	470-90-8	0.10	µg/L	<0.10	<0.10	---	---	---
Chlorpyrifos	2921-88-2	0.050	µg/L	<0.050	<0.050	---	---	---
Chlorpyrifos-methyl	5598-13-0	0.10	µg/L	<0.10	<0.10	---	---	---
Demeton-S-methyl	919-86-8	0.10	µg/L	<0.10	<0.10	---	---	---
Diazinon	333-41-5	0.10	µg/L	<0.10	<0.10	---	---	---
Dichlorvos	62-73-7	0.10	µg/L	<0.10	<0.10	---	---	---
Dimethoate	60-51-5	0.10	µg/L	<0.10	<0.10	---	---	---
Ethion	563-12-2	0.10	µg/L	<0.10	<0.10	---	---	---
Fenamiphos	22224-92-6	0.10	µg/L	<0.10	<0.10	---	---	---
Fenthion	55-38-9	0.10	µg/L	<0.10	<0.10	---	---	---
Malathion	121-75-5	0.10	µg/L	<0.10	<0.10	---	---	---
Azinphos Methyl	86-50-0	0.10	µg/L	<0.10	<0.10	---	---	---
Monocrotophos	6923-22-4	0.10	µg/L	<0.10	<0.10	---	---	---
Parathion	56-38-2	0.10	µg/L	<0.10	<0.10	---	---	---
Parathion-methyl	298-00-0	0.10	µg/L	<0.10	<0.10	---	---	---

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: MB06	QA1	----	----	----
				Client sampling date / time: 31-OCT-2007 15:00	31-OCT-2007 15:00	---	---	---
				EP0705200-006	EP0705200-007	----	----	----
EP130A: Organophosphorus Pesticides (Ultra-trace) - Continued								
Pirimphos-ethyl	23505-41-1	0.10	µg/L	<0.10	<0.10	---	---	---
Prothiofos	34643-46-4	0.10	µg/L	<0.10	<0.10	---	---	---
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.010	µg/L	<0.010	<0.010	---	---	---
alpha-BHC	319-84-6	0.010	µg/L	<0.010	<0.010	---	---	---
beta-BHC	319-85-7	0.010	µg/L	<0.010	<0.010	---	---	---
delta-BHC	319-86-8	0.010	µg/L	<0.010	<0.010	---	---	---
4.4'-DDD	72-54-8	0.010	µg/L	<0.010	<0.010	---	---	---
4.4'-DDE	72-55-9	0.010	µg/L	<0.010	<0.010	---	---	---
4.4'-DDT	50-29-3	0.010	µg/L	<0.010	<0.010	---	---	---
^ DDT (total)	---	0.010	µg/L	<0.010	<0.010	---	---	---
Dieldrin	60-57-1	0.010	µg/L	<0.010	<0.010	---	---	---
alpha-Endosulfan	959-98-8	0.010	µg/L	<0.010	<0.010	---	---	---
beta-Endosulfan	33213-65-9	0.010	µg/L	<0.010	<0.010	---	---	---
Endosulfan sulfate	1031-07-8	0.010	µg/L	<0.010	<0.010	---	---	---
^ Endosulfan (sum)	115-29-7	0.010	µg/L	<0.010	<0.010	---	---	---
Endrin	72-20-8	0.010	µg/L	<0.010	<0.010	---	---	---
Endrin aldehyde	7421-93-4	0.010	µg/L	<0.010	<0.010	---	---	---
Endrin ketone	53494-70-5	0.010	µg/L	<0.010	<0.010	---	---	---
Heptachlor	76-44-8	0.005	µg/L	<0.005	<0.005	---	---	---
Heptachlor epoxide	1024-57-3	0.010	µg/L	<0.010	<0.010	---	---	---
Hexachlorobenzene (HCB)	118-74-1	0.010	µg/L	<0.010	<0.010	---	---	---
gamma-BHC	58-89-9	0.010	µg/L	<0.010	<0.010	---	---	---
Methoxychlor	72-43-5	0.010	µg/L	<0.010	<0.010	---	---	---
cis-Chlordane	5103-71-9	0.010	µg/L	<0.010	<0.010	---	---	---
trans-Chlordane	5103-74-2	0.010	µg/L	<0.010	<0.010	---	---	---
^ Total Chlordane (sum)	---	0.010	µg/L	<0.010	<0.010	---	---	---
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	**111**	**108**	---	---	---
Toluene-D8	2037-26-5	0.1	%	**103**	**105**	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	**92.4**	**94.5**	---	---	---
EP130S: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	**62.6**	**45.9**	---	---	---
EP131S: OC Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	**69.1**	**58.7**	---	---	---

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	70.0	130
Toluene-D8	2037-26-5	70.0	130
4-Bromofluorobenzene	460-00-4	70.0	130
EP130S: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	32	136.4
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **EP0705200**	Page	: 1 of 9
Client	: **ACE ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: MS GINA PEMBERTON	Contact	: Michael Sharp
Address	: SHOP 17/2 SOUTH WESTERN HIGHWAY ARMADALE WA AUSTRALIA 6112	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: gina@aceenvironmental.com.au	E-mail	: Shaun.Crabb@alsenviro.com
Telephone	: +61 08 9497 5000	Telephone	: +61-8-9209 7655
Facsimile	: ----	Facsimile	: +61-8-9209 7600
Project	: J07030	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 02-NOV-2007
Sampler	: G.P	Issue Date	: 21-NOV-2007
Order number	: ----		
		No. of samples received	: 7
Quote number	: EN-062-07	No. of samples analysed	: 7

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ashwini Sharma	Inorganics Co-ordinator	Inorganics
Celine Conceicao	Spectroscopist	Inorganics
PHALAK INTHAKESONE	Organics Co-ordinator	Organics
Shuk Hui Li	Senior Chemist - Organics	Perth Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been preformed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting. Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 531440)									
EP0705200-001		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.023	0.023	0.0	No Limit
EP0705201-004		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035F: Dissolved Mercury by FIMS (QC Lot: 528260)									
EB0712792-013		EG035F: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP0705200-006		EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 528877)									
EP0705030-001		EP071: C10 - C14 Fraction	---	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP071: C15 - C28 Fraction	---	100	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP071: C29 - C36 Fraction	---	50	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 533833)									
EP0705167-001		EP080: C6 - C9 Fraction	---	20	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP0705171-005		EP080: C6 - C9 Fraction	---	20	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP080: BTEX (QC Lot: 533833)									
EP0705167-001		EP080: Benzene	71-43-2	1	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Ethylbenzene	100-41-4	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: ortho-Xylene	95-47-6	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP0705171-005		EP080: Benzene	71-43-2	1	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Ethylbenzene	100-41-4	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEX (QC Lot: 533833) - continued									
EP0705171-005		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: ortho-Xylene	95-47-6	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous

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

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

		Method Blank (MB) Report			Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 531440)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	114	70	130
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.7	70	130
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	107	70	130
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.7	70	130
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	104	70	130
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.8	70	130
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	103	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 528260)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	106	80.5	117
EP080/071: Total Petroleum Hydrocarbons (QCLot: 528877)								
EP071: C10 - C14 Fraction	---	50	µg/L	<50	400 µg/L	70.6	44.5	122
EP071: C15 - C28 Fraction	---	100	µg/L	<100	400 µg/L	89.0	55.1	143
EP071: C29 - C36 Fraction	---	50	µg/L	<50	400 µg/L	88.8	53.6	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 533833)								
EP080: C6 - C9 Fraction	---	20	µg/L	<20	320 µg/L	108	74.2	142
EP080: BTEX (QCLot: 533833)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	97.5	72.6	122
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	98.6	71.1	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	98.0	71.9	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	94.0	72.3	122
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	97.8	72.3	121
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 528413)								
EP130: Bromophos-ethyl	4824-78-6	0.10	µg/L	<0.10	1.0 µg/L	78.2	35.4	143
EP130: Carbophenothion	786-19-6	0.10	µg/L	<0.10	1.0 µg/L	77.5	5.13	171
EP130: Chlorfenvinphos (Z)	470-90-8	0.10	µg/L	<0.10	0.9 µg/L	86.1	44.6	155
EP130: Chlorpyrifos	2921-88-2	0.050	µg/L	<0.050	1.0 µg/L	82.5	38.5	145
EP130: Chlorpyrifos-methyl	5598-13-0	0.10	µg/L	<0.10	1.0 µg/L	86.1	40.3	135
EP130: Demeton-S-methyl	919-86-8	0.10	µg/L	<0.10	1.0 µg/L	83.3	20.7	178
EP130: Diazinon	333-41-5	0.10	µg/L	<0.10	1.0 µg/L	84.6	38.7	146
EP130: Dichlorvos	62-73-7	0.10	µg/L	<0.10	1.0 µg/L	97.7	18.4	151

Sub-Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) Report			
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP130A: Organophosphorus Pesticides (Ultra-trace) (QCLot: 528413) - continued								
EP130: Dimethoate	60-51-5	0.10	µg/L	<0.10	1.0 µg/L	71.9	27.4	131
EP130: Ethion	563-12-2	0.10	µg/L	<0.10	1.0 µg/L	77.0	36.1	147
EP130: Fenamiphos	22224-92-6	0.10	µg/L	<0.10	1.0 µg/L	62.6	4.43	168
EP130: Fenthion	55-38-9	0.10	µg/L	<0.10	1.0 µg/L	82.1	23.2	145
EP130: Malathion	121-75-5	0.10	µg/L	<0.10	1.0 µg/L	82.2	40.7	136
EP130: Azinphos Methyl	86-50-0	0.10	µg/L	<0.10	1.0 µg/L	75.5	1.35	163
EP130: Monocrotophos	6923-22-4	0.10	µg/L	<0.10	1.0 µg/L	12.0	10	86.3
EP130: Parathion	56-38-2	0.10	µg/L	<0.10	1.0 µg/L	83.8	35.5	141
EP130: Parathion-methyl	298-00-0	0.10	µg/L	<0.10	1.0 µg/L	87.0	31.1	144
EP130: Pirimphos-ethyl	23505-41-1	0.10	µg/L	<0.10	1.0 µg/L	72.2	38.9	142
EP130: Prothiofos	34643-46-4	0.10	µg/L	<0.10	1.0 µg/L	80.0	40	138
EP131A: Organochlorine Pesticides (QCLot: 528412)								
EP131A: Aldrin	309-00-2	0.010	µg/L	<0.010	0.1 µg/L	78.3	35.8	139
EP131A: alpha-BHC	319-84-6	0.010	µg/L	<0.010	0.1 µg/L	64.0	19.7	153
EP131A: beta-BHC	319-85-7	0.010	µg/L	<0.010	0.1 µg/L	80.8	43.8	136
EP131A: delta-BHC	319-86-8	0.010	µg/L	<0.010	0.1 µg/L	78.6	37.4	144
EP131A: 4.4'-DDD	72-54-8	0.010	µg/L	<0.010	0.1 µg/L	85.0	37.5	145
EP131A: 4.4'-DDE	72-55-9	0.010	µg/L	<0.010	0.1 µg/L	81.5	30.5	146
EP131A: 4.4'-DDT	50-29-3	0.010	µg/L	<0.010	0.1 µg/L	86.8	31	151
EP131A: DDT (total)	---	0.010	µg/L	<0.010	---	---	---	---
EP131A: Dieldrin	60-57-1	0.010	µg/L	<0.010	0.1 µg/L	87.2	34.4	145
EP131A: alpha-Endosulfan	959-98-8	0.010	µg/L	<0.010	0.1 µg/L	76.5	30.2	141
EP131A: beta-Endosulfan	33213-65-9	0.010	µg/L	<0.010	0.1 µg/L	91.9	30.3	148
EP131A: Endosulfan sulfate	1031-07-8	0.010	µg/L	<0.010	0.1 µg/L	83.6	19.1	150
EP131A: Endosulfan (sum)	115-29-7	0.010	µg/L	<0.010	---	---	---	---
EP131A: Endrin	72-20-8	0.010	µg/L	<0.010	0.1 µg/L	105	13	165
EP131A: Endrin aldehyde	7421-93-4	0.010	µg/L	<0.010	0.1 µg/L	74.9	28.3	134
EP131A: Endrin ketone	53494-70-5	0.010	µg/L	<0.010	0.1 µg/L	76.1	15.1	146
EP131A: Heptachlor	76-44-8	0.005	µg/L	<0.005	0.1 µg/L	76.4	33.2	148
EP131A: Heptachlor epoxide	1024-57-3	0.010	µg/L	<0.010	0.1 µg/L	74.6	36	143
EP131A: Hexachlorobenzene (HCB)	118-74-1	0.010	µg/L	<0.010	0.1 µg/L	62.6	14	146
EP131A: gamma-BHC	58-89-9	0.010	µg/L	<0.010	0.1 µg/L	67.2	27.2	147
EP131A: Methoxychlor	72-43-5	0.010	µg/L	<0.010	0.1 µg/L	82.6	34.4	150
EP131A: cis-Chlordane	5103-71-9	0.010	µg/L	<0.010	0.1 µg/L	78.6	15.4	152

Sub-Matrix: **WATER**

Method: Compound	CAS Number	Method Blank (MB) Report			Laboratory Control Spike (LCS) Report			
		LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EP131A: Organochlorine Pesticides (QCLot: 528412) - continued								
EP131A: trans-Chlordane	5103-74-2	0.010	µg/L	<0.010	0.1 µg/L	81.0	45.1	140
EP131A: Total Chlordane (sum)	---	0.010	µg/L	<0.010	---	---	---	---

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 531440)							
EP0705200-001	MB01	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	108	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	101	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	106	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	101	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	104	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	99.0	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	103	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 528260)							
EB0712792-013	Anonymous	EG035F: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP080/071: Total Petroleum Hydrocarbons (QCLot: 533833)							
EP0705167-006	Anonymous	EP080: C6 - C9 Fraction	---	Anonymous	Anonymous	Anonymous	Anonymous
EP080: BTEX (QCLot: 533833)							
EP0705167-006	Anonymous	EP080: Benzene	71-43-2	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **EP0705200**	Page	: 1 of 6
Client	: ACE ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Perth
Contact	: MS GINA PEMBERTON	Contact	: Michael Sharp
Address	: SHOP 17/2 SOUTH WESTERN HIGHWAY ARMADALE WA AUSTRALIA 6112	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: gina@aceenvironmental.com.au	E-mail	: Shaun.Crabb@alsenviro.com
Telephone	: +61 08 9497 5000	Telephone	: +61-8-9209 7655
Facsimile	: ----	Facsimile	: +61-8-9209 7600
Project	: J07030	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 02-NOV-2007
Sampler	: G.P	Issue Date	: 21-NOV-2007
Order number	: ----		
		No. of samples received	: 7
Quote number	: EN-062-07	No. of samples analysed	: 7

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

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

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Filtered; Lab-acidified MB01, MB02, MB03, MB04, MB05, MB06, QA1	**31-OCT-2007**	---	---	---	**12-NOV-2007**	28-APR-2008	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Filtered; Lab-acidified MB01, MB02, MB03, MB04, MB05, MB06, QA1	**31-OCT-2007**	---	---	---	**12-NOV-2007**	28-NOV-2007	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved MB01, MB02, MB03, MB04, MB05, MB06, QA1	**31-OCT-2007**	**07-NOV-2007**	07-NOV-2007	✓	**08-NOV-2007**	18-DEC-2007	✓
Amber VOC Vial - HCl or NaHSO4 MB01, MB02, MB03, MB04, MB05, MB06, QA1	**31-OCT-2007**	---	---	---	**14-NOV-2007**	14-NOV-2007	✓
EP080: BTEX							
Amber VOC Vial - HCl or NaHSO4 MB01, MB02, MB03, MB04, MB05, MB06, QA1	**31-OCT-2007**	---	---	---	**14-NOV-2007**	14-NOV-2007	✓

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP130A: Organophosphorus Pesticides (Ultra-trace)							
Amber Glass Bottle - Unpreserved							
MB01, MB02, MB03, MB04, MB05, MB06, QA1	**31-OCT-2007**	**07-NOV-2007**	07-NOV-2007	✓	**13-NOV-2007**	18-DEC-2007	✓
EP131A: Organochlorine Pesticides							
Amber Glass Bottle - Unpreserved							
MB01, MB02, MB03, MB04, MB05, MB06, QA1	**31-OCT-2007**	**07-NOV-2007**	07-NOV-2007	✓	**13-NOV-2007**	18-DEC-2007	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Matrix: **WATER**

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
Analytical Methods		QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	10.0	×	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organochlorine Pesticides (Ultra-trace)	EP131A	1	11	9.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organophosphorus Pesticides (Ultra-trace)	EP130	1	8	12.5	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organochlorine Pesticides (Ultra-trace)	EP131A	1	11	9.1	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organophosphorus Pesticides (Ultra-trace)	EP130	1	8	12.5	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	5.0	5.0	✓	ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Organophosphorus Pesticides (Ultra-trace)	EP130	WATER	USEPA Method 3640 (GPC cleanup), 8141 (GC/FPD - Capillary Column) This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Organochlorine Pesticides (Ultra-trace)	EP131A	WATER	USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/uECD/uECD). This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Sep. Funnel Extraction of Liquids (Ultra-trace pesticides.)	ORG14-UTP	WATER	USEPA 3510 Samples are extracted into dichloromethane, concentrated and exchanged into an apporpriate solvent for GPC and florisil cleanup as required. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- **No Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
TPH - Semivolatile Fraction	1	19	5.3	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: Ace Environmental P/L
ADDRESS / OFFICE: Shop 17/2 South Western Highway, Armadale
PROJECT MANAGER (PM): Gina Pemberton
PROJECT ID: J07030
SITE:
P.O. NO:
RESULTS REQUIRED (Date): 5 days
QUOTE NO: EN/062/07

SAMPLER: G. Pemberton
MOBILE: 0439 948 545
PHONE: (08) 94975000
EMAIL REPORT TO: gina@aceenvironmental.com.au
EMAIL INVOICE TO (if different to report): Same as above

Australian Laboratory Services Pty Ltd

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

Notes e.g. Highly contaminated samples
e.g. "High PAHs expected"
Extra volume for QC or trace LORs etc

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Container Type / Code	Total bottles	W-5	W-5 ultra trace OC/OPs
1	MB01	W	31/10			5	✓	✓
2	MB02	↓	↓			↓	✓	✓
3	MB03						✓	✓
4	MB04						✓	✓
5	MB05						✓	✓
6	MB06						✓	✓
7	QA1						✓	✓

Environmental Division
Perth
Work Order
EP0705200

Telephone : +61-8-9209 7655

NB: Std 8 HMs in W-5, please do dissolved metals only. Not field filtered.

RELINQUISHED BY
Name: G. Pemberton
Of: Ace
Name
Of
Date: 2/11/07
Time: 1:00PM
Date
Time

RECEIVED BY
Name: Mike Jones
Of: ALSE
Name:
Of
Date: 2/11/07
Time: 13:32
Date
Time

METHOD OF SHIPMENT
Con' Note No:
Transport Co

Water Container Codes: P = Unpreserved Plastic, N = Nitric Preserved Plastic, ORC = Nitric Preserved ORC, SH = Sodium Hydroxide/Cd Preserved, S = Sodium Hydroxide Preserved Plastic, AG = Amber Glass Unpreserved,
V = VOA Vial HCl Preserved, VS = VOA Vial Sulphuric Preserved, SG = Sulfuric Preserved Amber Glass, H = HCl preserved Plastic, HS = HCl preserved Speciation bottle, SP = Sulfuric Preserved Plastic, F = Formaldehyde Preserved Glass,
Z = Zinc Acetate Preserved Bottle, E = EDTA Preserved Bottles, ST = Sterile Bottle, ASS = Plastic Bag for Acid Sulphate Soils, B = Unpreserved Bag

AUSTRALIAN LABORATORY SERVICES P/L