

Adani

Appendix B7 - Surface Water Lab Report



CDM Smith Australia P/L QLD
21 McLachlan Street
Fortitude Valley
QLD 4006

Attention: Hannah McColl-Wayne

Report **346646-W**
Client Reference B12705.04
Received Date Aug 02, 2012

Certificate of Analysis



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Client Sample ID			TO_SW1	TO_SW3	TO_SW6
Sample Matrix			Water	Water	Water
mgt-LabMark Sample No.			M12-Au01123	M12-Au01124	M12-Au01125
Date Sampled			Aug 01, 2012	Aug 01, 2012	Aug 01, 2012
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	-
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	-
TRH C10-C14 after Silica Cleanup (TPH)	0.05	mg/L	< 0.05	< 0.05	-
TRH C15-C28 after Silica Cleanup (TPH)	0.1	mg/L	< 0.1	< 0.1	-
TRH C29-C36 after Silica Cleanup (TPH)	0.1	mg/L	< 0.1	< 0.1	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	-
BTEX					
Benzene	0.001	mg/L	< 0.001	< 0.001	-
Toluene	0.001	mg/L	< 0.001	< 0.001	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	-
Total m+p-Xylenes	0.002	mg/L	< 0.002	< 0.002	-
Xylenes(ortho,meta and para)	0.003	mg/L	< 0.003	< 0.003	-
Fluorobenzene (surr.)	1	%	92	96	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *					
Naphthalene ^{N02}	0.02	mg/L	< 0.02	< 0.02	-
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	-
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	-
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	-
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	-
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	-
Anthracene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(a)anthracene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(b)fluoranthene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	-
Chrysene	0.001	mg/L	< 0.001	< 0.001	-
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.001	-
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	-



Client Sample ID			TO_SW1	TO_SW3	TO_SW6
Sample Matrix			Water	Water	Water
mgt-LabMark Sample No.			M12-Au01123	M12-Au01124	M12-Au01125
Date Sampled			Aug 01, 2012	Aug 01, 2012	Aug 01, 2012
Test/Reference	LOR	Unit			
Fluorene	0.001	mg/L	< 0.001	< 0.001	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	-
Naphthalene	0.001	mg/L	< 0.001	< 0.001	-
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	-
Pyrene	0.001	mg/L	< 0.001	< 0.001	-
Total PAH	0.001	mg/L	< 0.001	< 0.001	-
p-Terphenyl-d14 (surr.)	1	%	134	138	-
2-Fluorobiphenyl (surr.)	1	%	113	115	-
Ammonia (N)					
Ammonia (N)	0.01	mg/L	< 0.01	< 0.01	0.09
Ammonium Ion (N)					
Ammonium Ion (N)	0.01	mg/L	< 0.01	< 0.01	0.10
Chemical Oxygen Demand (COD)					
Chemical Oxygen Demand (COD)	5	mg/L	46	57	28
Chloride					
Chloride	1	mg/L	2400	1700	710
Chlorophyll a					
Chlorophyll a	5	ug/L	20	33	41
Conductivity					
Conductivity	10	uS/cm	8100	6100	3000
Nitrate (as N)					
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
Phosphate total (P)					
Phosphate total (P)	0.05	mg/L	< 0.05	0.10	0.27
Phosphorus filterable reactive (P)					
Phosphorus filterable reactive (P)	0.05	mg/L	< 0.05	< 0.05	0.08
Sulphate (S)					
Sulphate (S)	5	mg/L	150	100	34
Sulphide (S)					
Sulphide (S)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Suspended Solids					
Suspended Solids	1	mg/L	17	28	45
Total Dissolved Solids					
Total Dissolved Solids	10	mg/L	4000	3100	1500
Alkalinity					
Bicarbonate Alkalinity-mg CaCO3/L					
Bicarbonate Alkalinity-mg CaCO3/L	20	mg/L	170	160	290
Carbonate Alkalinity-mg CaCO3/L					
Carbonate Alkalinity-mg CaCO3/L	10	mg/L	< 10	< 10	11
Organic Nitrogen (as N)					
Ammonia (N)					
Ammonia (N)	0.01	mg/L	< 0.01	< 0.01	0.09
Organic Nitrogen (N)					
Organic Nitrogen (N)	0.2	mg/L	1.5	2.2	1.3
Total Kjeldahl Nitrogen (N)					
Total Kjeldahl Nitrogen (N)	0.2	mg/L	1.5	2.2	1.4
Total Nitrogen (as N)					
Nitrate & Nitrite (N)					
Nitrate & Nitrite (N)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Total Kjeldahl Nitrogen (N)					
Total Kjeldahl Nitrogen (N)	0.2	mg/L	1.5	2.2	1.4
Total Nitrogen (N)					
Total Nitrogen (N)	0.2	mg/L	1.5	2.2	1.4
Alkali Metals					
Calcium					
Calcium	0.5	mg/L	80	59	86
Magnesium					
Magnesium	0.5	mg/L	170	130	100
Potassium					
Potassium	0.5	mg/L	42	35	5.5
Sodium					
Sodium	0.5	mg/L	1300	1100	340
Heavy Metals					
Arsenic					
Arsenic	0.001	mg/L	0.004	0.005	0.001
Cadmium					
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Chromium					
Chromium	0.001	mg/L	< 0.001	0.002	0.002
Copper					
Copper	0.001	mg/L	0.002	0.003	0.002
Lead					
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001
Mercury					
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel					
Nickel	0.001	mg/L	0.007	0.003	0.002
Zinc					
Zinc	0.001	mg/L	0.006	0.008	0.046

Description	Testing Site	Extracted	Holding Time
mgt-LabMark Suite 7			
Polycyclic Aromatic Hydrocarbons - Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 03, 2012	7 Day
Metals M8 - Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury	Melbourne	Aug 02, 2012	28 Day
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * - Method: LM-LTM-ORG2010	Melbourne	Aug 03, 2012	7 Day
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - MGT 100A	Melbourne	Aug 03, 2012	7 Day
BTEX - Method: USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A	Melbourne	Aug 02, 2012	14 Day
Organic Nitrogen (as N) - Method: Organic Nitrogen (as N)	Melbourne	Aug 02, 2012	7 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Aug 07, 2012	7 Day
Sulphate (S) - Method: APHA 4500-SO4 (SO4 by Discrete Analyser)	Melbourne	Aug 02, 2012	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Aug 02, 2012	180 Day
Alkalinity - Method: APHA 2320 Alkalinity by Titration	Melbourne	Aug 02, 2012	14 Day
Conductivity - Method: APHA 2510 Conductivity by Direct Measurement	Melbourne	Aug 02, 2012	28 Day
Chloride - Method: APHA 4500-Cl (Cl by Discrete Analyser)	Melbourne	Aug 02, 2012	28 Day
Ammonia (N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Aug 02, 2012	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Aug 02, 2012	2 Day
Ammonium Ion (N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Aug 02, 2012	7 Day
Chemical Oxygen Demand (COD) - Method: APHA 5220 COD Open Reflux Method	Melbourne	Aug 02, 2012	28 Day
Chlorophyll a - Method: APHA Method 10200H	Melbourne	Aug 06, 2012	2 Day
Phosphate total (P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Aug 02, 2012	2 Day
Phosphorus filterable reactive (P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Aug 02, 2012	2 Day
Sulphide (S) - Method: APHA 4500-S C & D - Sulphide	Melbourne	Aug 02, 2012	7 Day
Suspended Solids - Method: APHA 2540D Total Suspended Solids	Melbourne	Aug 06, 2012	7 Day
Total Nitrogen (as N) - Method: Total Nitrogen (as N)	Melbourne	Aug 02, 2012	7 Day

Company Name: CDM Smith Australia P/L QLD
Address: 21 McLachlan Street
Fortitude Valley
QLD 4006

Client Job No.: B12705.04

Order No.: B12705.04
Report #: 346646
Phone: 07 3303 8775
Fax: 07 3828 6999

Received: Aug 2, 2012 8:20 AM
Due: Aug 9, 2012
Priority: 5 Day
Contact Name: Hannah McCall-Wayne

mgt-LabMark Client Manager: Cindi Guo

Sample Detail

Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	mgt-LabMark Suite 7	Total Recoverable Hydrocarbons	TRH (after Silica Gel cleanup)	Total Nitrogen (as N)	Organic Nitrogen (as N)	Metals M8	mgt-LabMark Suite 11	Suspended Solids	Sulphide (S)	Phosphorus filterable reactive (P)	Phosphate total (P)	Chlorophyll a	Chemical Oxygen Demand (COD)	Ammonium Ion (N)	% Moisture
TO_SW1	Aug 01, 2012		Water	M12-Au01123	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TO_SW3	Aug 01, 2012		Water	M12-Au01124	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TO_SW6	Aug 01, 2012		Water	M12-Au01125	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TO_SW1	Aug 01, 2012		Sediment	M12-Au01126	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TO_SW3	Aug 01, 2012		Sediment	M12-Au01127	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TO_SW6	Aug 01, 2012		Sediment	M12-Au01128	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Laboratory where analysis is conducted																			
Melbourne Laboratory - NATA Site # 1254 & 14271																			
Sydney Laboratory - NATA Site # 18217																			
Brisbane Laboratory - NATA Site # 20794																			
External Laboratory																			

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001)

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as an RPD

UNITS

mg/kg: milligrams per Kilogram

µg/L: micrograms per litre

ppb: Parts per billion

org/100mL: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/L: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

TERMS

Dry:	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR:	Limit Of Reporting.
SPIKE:	Addition of the analyte to the sample and reported as percentage recovery.
RPD:	Relative Percent Difference between two Duplicate pieces of analysis.
LCS:	Laboratory Control Sample - reported as percent recovery.
CRM:	Certified Reference Material - reported as percent recovery.
Method Blank:	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate:	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate:	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate:	A second piece of analysis from a sample outside of the client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
APHA:	American Public Health Association
ASLP:	Australian Standard Leaching Procedure (AS4439.3)
TCLP:	Toxicity Characteristic Leaching Procedure
COC:	Chain Of Custody
SRA:	Sample Receipt Advice
CP:	Client Parent - QC was performed on samples pertaining to this report
NCP:	Non-Client Parent - QC was performed on samples not pertaining to this report, however QC is representative of the sequence or batch that client samples were analysed within

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample>
- Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions TRH C6-C36 - MGT 100A							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Total m+p-Xylenes	mg/L	< 0.002			0.002	Pass	
Xylenes(ortho.meta and para)	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * LM-LTM-ORG2010							
Naphthalene	mg/L	< 0.02			0.02	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons USEPA 8270 Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Ammonium Ion (N)	mg/L	< 0.01			0.01	Pass	
Chemical Oxygen Demand (COD)	mg/L	< 5			5	Pass	
Chloride	mg/L	< 1			1	Pass	
Chlorophyll a	ug/L	< 5			5	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (P)	mg/L	< 0.05			0.05	Pass	
Phosphorus filterable reactive (P)	mg/L	< 0.05			0.05	Pass	
Sulphate (S)	mg/L	< 5			5	Pass	
Sulphide (S)	mg/L	< 0.05			0.05	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Suspended Solids	mg/L	< 1	1	Pass	
Total Dissolved Solids	mg/L	< 10	10	Pass	
Method Blank					
Alkalinity APHA 2320 Alkalinity by Titration					
Bicarbonate Alkalinity-mg CaCO3/L	mg/L	< 20	20	Pass	
Carbonate Alkalinity-mg CaCO3/L	mg/L	< 10	10	Pass	
Method Blank					
Organic Nitrogen (as N) Organic Nitrogen (as N)					
Ammonia (N)	mg/L	< 0.01	0.01	Pass	
Method Blank					
Total Nitrogen (as N) Total Nitrogen (as N)					
Nitrate & Nitrite (N)	mg/L	< 0.05	0.05	Pass	
Total Kjeldahl Nitrogen (N)	mg/L	< 0.2	0.2	Pass	
Method Blank					
Alkali Metals USEPA 6010 Alkali Metals					
Calcium	mg/L	< 0.5	0.5	Pass	
Magnesium	mg/L	< 0.5	0.5	Pass	
Potassium	mg/L	< 0.5	0.5	Pass	
Sodium	mg/L	< 0.5	0.5	Pass	
Method Blank					
Metals M8 USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury					
Arsenic	mg/L	< 0.001	0.001	Pass	
Cadmium	mg/L	< 0.0002	0.0002	Pass	
Chromium	mg/L	< 0.001	0.001	Pass	
Copper	mg/L	< 0.001	0.001	Pass	
Lead	mg/L	< 0.001	0.001	Pass	
Mercury	mg/L	< 0.0001	0.0001	Pass	
Nickel	mg/L	< 0.001	0.001	Pass	
Zinc	mg/L	< 0.001	0.001	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 1999 NEPM Fractions TRH C6-C36 - MGT 100A					
TRH C6-C9	%	115	70-130	Pass	
TRH C10-C14	%	72	70-130	Pass	
LCS - % Recovery					
BTEX USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A					
Benzene	%	96	70-130	Pass	
Toluene	%	93	70-130	Pass	
Ethylbenzene	%	94	70-130	Pass	
Total m+p-Xylenes	%	97	70-130	Pass	
Xylenes(ortho.meta and para)	%	97	70-130	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * LM-LTM-ORG2010					
TRH C6-C10	%	115	70-130	Pass	
TRH >C10-C16	%	73	70-130	Pass	
LCS - % Recovery					
Polycyclic Aromatic Hydrocarbons USEPA 8270 Polycyclic Aromatic Hydrocarbons					
Acenaphthene	%	83	70-130	Pass	
Acenaphthylene	%	98	70-130	Pass	
Anthracene	%	90	70-130	Pass	
Benz(a)anthracene	%	107	70-130	Pass	
Benzo(a)pyrene	%	115	70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Benzo(b)fluoranthene	%	110	70-130	Pass			
Benzo(g,h,i)perylene	%	86	70-130	Pass			
Benzo(k)fluoranthene	%	88	70-130	Pass			
Chrysene	%	81	70-130	Pass			
Dibenz(a,h)anthracene	%	120	70-130	Pass			
Fluoranthene	%	90	70-130	Pass			
Fluorene	%	90	70-130	Pass			
Indeno(1.2.3-cd)pyrene	%	118	70-130	Pass			
Naphthalene	%	77	70-130	Pass			
Phenanthrene	%	85	70-130	Pass			
Pyrene	%	89	70-130	Pass			
LCS - % Recovery							
Chemical Oxygen Demand (COD)	%	86	70-130	Pass			
Chloride	%	102	70-130	Pass			
Nitrate (as N)	%	97	70-130	Pass			
Phosphate total (P)	%	88	70-130	Pass			
Sulphate (S)	%	108	70-130	Pass			
Suspended Solids	%	100	70-130	Pass			
LCS - % Recovery							
Organic Nitrogen (as N) Organic Nitrogen (as N)							
Ammonia (N)	%	95	70-130	Pass			
LCS - % Recovery							
Total Nitrogen (as N) Total Nitrogen (as N)							
Nitrate & Nitrite (N)	%	97	70-130	Pass			
Total Kjeldahl Nitrogen (N)	%	108	70-130	Pass			
LCS - % Recovery							
Alkali Metals USEPA 6010 Alkali Metals							
Calcium	%	100	70-130	Pass			
Magnesium	%	99	70-130	Pass			
Potassium	%	95	70-130	Pass			
Sodium	%	104	70-130	Pass			
LCS - % Recovery							
Metals M8 USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury							
Arsenic	%	107	80-120	Pass			
Cadmium	%	92	80-120	Pass			
Chromium	%	102	80-120	Pass			
Copper	%	105	80-120	Pass			
Lead	%	102	80-120	Pass			
Mercury	%	92	75-125	Pass			
Nickel	%	107	80-120	Pass			
Zinc	%	107	80-120	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1			
TRH C6-C9	M12-Au01005	NCP	%	112	70-130	Pass	
TRH C10-C14	M12-Au03128	NCP	%	90	70-130	Pass	
Spike - % Recovery							
BTEX				Result 1			
Benzene	M12-Au01005	NCP	%	88	70-130	Pass	
Toluene	M12-Au01005	NCP	%	91	70-130	Pass	
Ethylbenzene	M12-Au01005	NCP	%	93	70-130	Pass	
o-Xylene	M12-Au01005	NCP	%	98	70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Total m+p-Xylenes	M12-Au01005	NCP	%	96		70-130	Pass	
Xylenes(ortho.meta and para)	M12-Au01005	NCP	%	96		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1				
TRH C6-C10	M12-Au01005	NCP	%	112		70-130	Pass	
TRH >C10-C16	M12-Au03128	NCP	%	91		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M12-Au02293	NCP	%	81		70-130	Pass	
Acenaphthylene	M12-Au02293	NCP	%	86		70-130	Pass	
Anthracene	M12-Au02293	NCP	%	88		70-130	Pass	
Benz(a)anthracene	M12-Au02293	NCP	%	92		70-130	Pass	
Benzo(a)pyrene	M12-Au02293	NCP	%	116		70-130	Pass	
Benzo(b)fluoranthene	M12-Au02293	NCP	%	96		70-130	Pass	
Benzo(g,h,i)perylene	M12-Au02293	NCP	%	122		70-130	Pass	
Benzo(k)fluoranthene	M12-Au02293	NCP	%	84		70-130	Pass	
Chrysene	M12-Au02293	NCP	%	80		70-130	Pass	
Dibenz(a,h)anthracene	M12-Au02293	NCP	%	106		70-130	Pass	
Fluoranthene	M12-Au02293	NCP	%	79		70-130	Pass	
Fluorene	M12-Au02293	NCP	%	84		70-130	Pass	
Indeno(1.2.3-cd)pyrene	M12-Au02293	NCP	%	120		70-130	Pass	
Naphthalene	M12-Au02293	NCP	%	74		70-130	Pass	
Phenanthrene	M12-Au02293	NCP	%	86		70-130	Pass	
Pyrene	M12-Au02293	NCP	%	80		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chemical Oxygen Demand (COD)	M12-Au01107	NCP	%	88		70-130	Pass	
Chloride	M12-JI24918	NCP	%	82		70-130	Pass	
Nitrate (as N)	M12-Au01337	NCP	%	102		70-130	Pass	
Phosphate total (P)	M12-Au01192	NCP	%	97		70-130	Pass	
Phosphorus filterable reactive (P)	B12-Au00478	NCP	%	98		70-130	Pass	
Sulphate (S)	M12-JI24918	NCP	%	99		70-130	Pass	
Spike - % Recovery								
Organic Nitrogen (as N)				Result 1				
Ammonia (N)	M12-Au01337	NCP	%	99		70-130	Pass	
Spike - % Recovery								
Total Nitrogen (as N)				Result 1				
Nitrate & Nitrite (N)	M12-Au01337	NCP	%	102		70-130	Pass	
Total Kjeldahl Nitrogen (N)	M12-Au00461	NCP	%	83		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M12-Au01130	NCP	%	112		70-130	Pass	
Magnesium	M12-Au01130	NCP	%	108		70-130	Pass	
Potassium	M12-Au01130	NCP	%	101		70-130	Pass	
Sodium	M12-Au01130	NCP	%	109		70-130	Pass	
Spike - % Recovery								
Metals M8				Result 1				
Arsenic	M12-Au01192	NCP	%	105		75-125	Pass	
Cadmium	M12-Au01282	NCP	%	80		75-125	Pass	
Chromium	M12-Au01282	NCP	%	87		75-125	Pass	
Copper	M12-Au01192	NCP	%	90		75-125	Pass	
Lead	M12-Au01282	NCP	%	98		75-125	Pass	
Mercury	M12-Au01283	NCP	%	108		70-130	Pass	
Nickel	M12-Au01282	NCP	%	88		75-125	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Zinc	M12-Au01192	NCP	%	79			75-125	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M12-Au01123	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M12-Au01192	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M12-Au01192	NCP	mg/L	< 0.1	< 0.1	16	30%	Pass	
TRH C29-C36	M12-Au01192	NCP	mg/L	< 0.1	< 0.1	3.0	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M12-Au01123	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M12-Au01123	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M12-Au01123	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
o-Xylene	M12-Au01123	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Total m+p-Xylenes	M12-Au01123	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Xylenes(ortho.meta and para)	M12-Au01123	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
Naphthalene	M12-Au01123	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C6-C10	M12-Au01123	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	M12-Au01192	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M12-Au01192	NCP	mg/L	< 0.1	< 0.1	3.0	30%	Pass	
TRH >C34-C40	M12-Au01192	NCP	mg/L	< 0.1	< 0.1	15	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b)fluoranthene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g,h,i)perylene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a,h)anthracene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	M12-Au02291	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chemical Oxygen Demand (COD)	M12-Au01107	NCP	mg/L	27	26	4.0	30%	Pass	
Chloride	M12-JI24918	NCP	mg/L	< 1	< 1	100	30%	Fail	Q15
Nitrate (as N)	M12-Au01374	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Phosphate total (P)	M12-Au01192	NCP	mg/L	0.070	0.067	5.0	30%	Pass	
Phosphorus filterable reactive (P)	B12-Au00478	NCP	mg/L	< 0.05	< 0.05	40	30%	Fail	Q15
Sulphate (S)	B12-Au00478	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Suspended Solids	M12-Au01273	NCP	mg/L	25	25	2.0	30%	Pass	
Total Dissolved Solids	M12-Au00819	NCP	mg/L	6400	6400	1.0	30%	Pass	
Duplicate									
Alkalinity				Result 1	Result 2	RPD			
Bicarbonate Alkalinity-mg CaCO3/L	M12-Au01123	CP	mg/L	170	180	5.0	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Alkalinity				Result 1	Result 2	RPD			
Carbonate Alkalinity-mg CaCO3/L	M12-Au01123	CP	mg/L	< 10	< 10	<1	30%	Pass	
Duplicate									
Organic Nitrogen (as N)				Result 1	Result 2	RPD			
Ammonia (N)	M12-Au01374	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Total Nitrogen (as N)				Result 1	Result 2	RPD			
Nitrate & Nitrite (N)	M12-Au01374	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Total Kjeldahl Nitrogen (N)	M12-Au00461	NCP	mg/L	0.22	< 0.2	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M12-Ma13376	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Magnesium	M12-Ma13376	NCP	mg/L	< 0.5	< 0.5	100	30%	Fail	Q15
Potassium	M12-Ma13376	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Sodium	M12-Ma13376	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	M12-Au01192	NCP	mg/L	< 0.001	< 0.001	13	30%	Pass	
Cadmium	M12-Au01282	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M12-Au01282	NCP	mg/L	0.0020	0.0019	5.0	30%	Pass	
Copper	M12-Au01282	NCP	mg/L	1.1	1.0	8.0	30%	Pass	
Lead	M12-Au01282	NCP	mg/L	0.024	0.025	3.0	30%	Pass	
Mercury	M12-Au01283	NCP	mg/L	< 0.0001	< 0.0001	100	30%	Fail	Q15
Nickel	M12-Au01282	NCP	mg/L	0.025	0.025	<1	30%	Pass	
Zinc	M12-Au01192	NCP	mg/L	0.11	0.11	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Sulphide (S)	M12-Au01124	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chlorophyll a	M12-Au01125	CP	ug/L	41	33	21	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q15	The RPD reported passes mgt-LabMark's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Cindi Guo	Client Services
Carroll Lee	Senior Analyst-Volatile (VIC)
Emily Rosenberg	Senior Analyst-Metal (VIC)
Mary Makarios	Senior Analyst-Inorganic (VIC)
Stacey Jenkins	Senior Analyst-Organic (VIC)



Glenn Jackson

Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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CDM Smith Australia P/L QLD
21 McLachlan Street
Fortitude Valley
QLD 4006

Attention: Hannah McColl-Wayne

Report **346993-W**
Client Reference B12705.04
Received Date Aug 04, 2012

Certificate of Analysis



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Client Sample ID			TO_SW2	TO_SW4	TO_SW5
Sample Matrix			Water	Water	Water
mgt-LabMark Sample No.			M12-Au03414	M12-Au03415	M12-Au03416
Date Sampled			Aug 02, 2012	Aug 02, 2012	Aug 02, 2012
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	-
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	-
TRH C10-C14 after Silica Cleanup (TPH)	0.05	mg/L	< 0.05	< 0.05	-
TRH C15-C28 after Silica Cleanup (TPH)	0.1	mg/L	< 0.1	< 0.1	-
TRH C29-C36 after Silica Cleanup (TPH)	0.1	mg/L	< 0.1	< 0.1	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	-
BTEX					
Benzene	0.001	mg/L	< 0.001	< 0.001	-
Toluene	0.001	mg/L	< 0.001	< 0.001	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	-
Total m+p-Xylenes	0.002	mg/L	< 0.002	< 0.002	-
Xylenes(ortho,meta and para)	0.003	mg/L	< 0.003	< 0.003	-
Fluorobenzene (surr.)	1	%	68	80	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *					
Naphthalene ^{N02}	0.02	mg/L	< 0.02	< 0.02	-
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	-
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	-
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	-
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	-
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	-
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	-
Anthracene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(a)anthracene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(b)fluoranthene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.001	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	-
Chrysene	0.001	mg/L	< 0.001	< 0.001	-
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.001	-
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	-



Client Sample ID			TO_SW2	TO_SW4	TO_SW5
Sample Matrix			Water	Water	Water
mgt-LabMark Sample No.			M12-Au03414	M12-Au03415	M12-Au03416
Date Sampled			Aug 02, 2012	Aug 02, 2012	Aug 02, 2012
Test/Reference	LOR	Unit			
Fluorene	0.001	mg/L	< 0.001	< 0.001	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	-
Naphthalene	0.001	mg/L	< 0.001	< 0.001	-
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	-
Pyrene	0.001	mg/L	< 0.001	< 0.001	-
Total PAH	0.001	mg/L	< 0.001	< 0.001	-
p-Terphenyl-d14 (surr.)	1	%	123	103	-
2-Fluorobiphenyl (surr.)	1	%	120	97	-
Ammonia (N)					
Ammonia (N)	0.01	mg/L	0.01	0.09	< 0.01
Ammonium Ion (N)	0.01	mg/L	0.01	0.10	< 0.01
Chemical Oxygen Demand (COD)	5	mg/L	39	17	< 5
Chloride	1	mg/L	1500	740	440
Chlorophyll a	5	ug/L	20	79	< 5
Conductivity	10	uS/cm	5600	3300	2100
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02
Phosphate total (P)	0.05	mg/L	< 0.05	0.58	0.22
Phosphorus filterable reactive (P)	0.05	mg/L	< 0.05	0.19	< 0.05
Sulphate (S)	5	mg/L	91	40	11
Sulphide (S)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Suspended Solids	1	mg/L	13	26	3.0
Total Dissolved Solids	10	mg/L	2600	1600	940
Alkalinity					
Bicarbonate Alkalinity-mg CaCO3/L	20	mg/L	150	250	340
Carbonate Alkalinity-mg CaCO3/L	10	mg/L	< 10	36	13
Organic Nitrogen (as N)					
Ammonia (N)	0.01	mg/L	0.01	0.09	< 0.01
Organic Nitrogen (N)	0.2	mg/L	2	1.3	< 0.2
Total Kjeldahl Nitrogen (N)	0.2	mg/L	2.0	1.4	< 0.2
Total Nitrogen (as N)					
Nitrate & Nitrite (N)	0.05	mg/L	< 0.05	< 0.05	< 0.05
Total Kjeldahl Nitrogen (N)	0.2	mg/L	2.0	1.4	< 0.2
Total Nitrogen (N)	0.2	mg/L	2	1.4	< 0.2
Alkali Metals					
Calcium	0.5	mg/L	54	90	100
Magnesium	0.5	mg/L	120	100	96
Potassium	0.5	mg/L	32	7.1	1.6
Sodium	0.5	mg/L	1000	390	160
Heavy Metals					
Arsenic	0.001	mg/L	0.013	0.002	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.012	0.001	< 0.001
Copper	0.001	mg/L	0.011	0.005	0.001
Lead	0.001	mg/L	0.002	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	0.007	0.003	0.001
Zinc	0.001	mg/L	0.066	0.024	0.004

Description	Testing Site	Extracted	Holding Time
mgt-LabMark Suite 7			
Polycyclic Aromatic Hydrocarbons - Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 06, 2012	7 Day
Metals M8 - Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury	Melbourne	Aug 06, 2012	28 Day
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * - Method: LM-LTM-ORG2010	Melbourne	Aug 06, 2012	7 Day
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - MGT 100A	Melbourne	Aug 06, 2012	7 Day
BTEX - Method: USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A	Melbourne	Aug 06, 2012	14 Day
Organic Nitrogen (as N) - Method: Organic Nitrogen (as N)	Melbourne	Aug 04, 2012	7 Day
Total Dissolved Solids - Method: APHA 2540C Total Dissolved Solids	Melbourne	Aug 09, 2012	7 Day
Sulphate (S) - Method: APHA 4500-SO4 (SO4 by Discrete Analyser)	Melbourne	Aug 06, 2012	28 Day
Alkali Metals - Method: USEPA 6010 Alkali Metals	Melbourne	Aug 04, 2012	180 Day
Alkalinity - Method: APHA 2320 Alkalinity by Titration	Melbourne	Aug 06, 2012	14 Day
Conductivity - Method: APHA 2510 Conductivity by Direct Measurement	Melbourne	Aug 08, 2012	28 Day
Chloride - Method: APHA 4500-Cl (Cl by Discrete Analyser)	Melbourne	Aug 06, 2012	28 Day
Ammonia (N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Aug 04, 2012	28 Day
Nitrate (as N) - Method: APHA 4500-NO3 Nitrate Nitrogen by FIA	Melbourne	Aug 04, 2012	2 Day
Ammonium Ion (N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Aug 04, 2012	7 Day
Chemical Oxygen Demand (COD) - Method: APHA 5220 COD Open Reflux Method	Melbourne	Aug 06, 2012	28 Day
Chlorophyll a - Method: APHA Method 10200H	Melbourne	Aug 06, 2012	2 Day
Phosphate total (P) - Method: APHA 4500-P E. Phosphorous	Melbourne	Aug 04, 2012	2 Day
Phosphorus filterable reactive (P) - Method: APHA 4500-P Phosphate (filterable reactive)	Melbourne	Aug 06, 2012	2 Day
Sulphide (S) - Method: APHA 4500-S C & D - Sulphide	Melbourne	Aug 04, 2012	7 Day
Suspended Solids - Method: APHA 2540D Total Suspended Solids	Melbourne	Aug 04, 2012	7 Day
Total Nitrogen (as N) - Method: Total Nitrogen (as N)	Melbourne	Aug 04, 2012	7 Day

Company Name: CDM Smith Australia P/L QLD
Address: 21 McLachlan Street
Fortitude Valley
QLD 4006

Client Job No.: B12705.04

Order No.: B12705.04
Report #: 346993
Phone: 07 3303 8775
Fax: 07 3828 6999

Received: Aug 4, 2012 9:22 AM
Due: Aug 13, 2012
Priority: 5 Day
Contact Name: Hannah McColl-Wayne

mgt-LabMark Client Manager: Cindi Guo

Sample Detail

Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	mgt-LabMark Suite 7	TRH (after Silica Gel cleanup)	Total Nitrogen (as N)	Organic Nitrogen (as N)	Metals M8	mgt-LabMark Suite 11	Suspended Solids	Sulphide (S)	Phosphorus filterable reactive (P)	Phosphate total (P)	Chlorophyll a	Chemical Oxygen Demand (COD)	Ammonium Ion (N)	% Moisture	
Laboratory where analysis is conducted																			
Melbourne Laboratory - NATA Site # 1254 & 14271																			
Sydney Laboratory - NATA Site # 18217																			
Brisbane Laboratory - NATA Site # 20794																			
External Laboratory																			
TO_SW2	Aug 02, 2012		Water	M12-Au03414		X	X	X		X	X	X	X		X	X	X		
TO_SW4	Aug 02, 2012		Water	M12-Au03415		X	X	X		X	X	X	X		X	X	X		
TO_SW5	Aug 02, 2012		Water	M12-Au03416		X	X	X		X	X	X	X		X	X	X		
TO_SW2	Aug 02, 2012		Sediment	M12-Au03417		X												X	
TO_SW4	Aug 02, 2012		Sediment	M12-Au03418		X												X	
TO_SW5	Aug 02, 2012		Sediment	M12-Au03419		X												X	

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001)

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as an RPD

UNITS

mg/kg: milligrams per Kilogram

µg/L: micrograms per litre

ppb: Parts per billion

org/100mL: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/L: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

TERMS

Dry:	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR:	Limit Of Reporting.
SPIKE:	Addition of the analyte to the sample and reported as percentage recovery.
RPD:	Relative Percent Difference between two Duplicate pieces of analysis.
LCS:	Laboratory Control Sample - reported as percent recovery.
CRM:	Certified Reference Material - reported as percent recovery.
Method Blank:	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate:	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate:	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate:	A second piece of analysis from a sample outside of the client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
APHA:	American Public Health Association
ASLP:	Australian Standard Leaching Procedure (AS4439.3)
TCLP:	Toxicity Characteristic Leaching Procedure
COC:	Chain Of Custody
SRA:	Sample Receipt Advice
CP:	Client Parent - QC was performed on samples pertaining to this report
NCP:	Non-Client Parent - QC was performed on samples not pertaining to this report, however QC is representative of the sequence or batch that client samples were analysed within

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample>
- Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions TRH C6-C36 - MGT 100A							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Total m+p-Xylenes	mg/L	< 0.002			0.002	Pass	
Xylenes(ortho.meta and para)	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * LM-LTM-ORG2010							
Naphthalene	mg/L	< 0.02			0.02	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons USEPA 8270 Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Ammonia (N)							
Ammonia (N)	mg/L	< 0.01			0.01	Pass	
Ammonium Ion (N)							
Ammonium Ion (N)	mg/L	< 0.01			0.01	Pass	
Chemical Oxygen Demand (COD)							
Chemical Oxygen Demand (COD)	mg/L	< 5			5	Pass	
Chloride							
Chloride	mg/L	< 1			1	Pass	
Chlorophyll a							
Chlorophyll a	ug/L	< 5			5	Pass	
Nitrate (as N)							
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (P)							
Phosphate total (P)	mg/L	< 0.05			0.05	Pass	
Phosphorus filterable reactive (P)							
Phosphorus filterable reactive (P)	mg/L	< 0.05			0.05	Pass	
Sulphate (S)							
Sulphate (S)	mg/L	< 5			5	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Sulphide (S)	mg/L	< 0.05		0.05	Pass	
Suspended Solids	mg/L	< 1		1	Pass	
Total Dissolved Solids	mg/L	< 10		10	Pass	
Method Blank						
Alkalinity APHA 2320 Alkalinity by Titration						
Bicarbonate Alkalinity-mg CaCO3/L	mg/L	< 20		20	Pass	
Carbonate Alkalinity-mg CaCO3/L	mg/L	< 10		10	Pass	
Method Blank						
Total Nitrogen (as N) Total Nitrogen (as N)						
Nitrate & Nitrite (N)	mg/L	< 0.05		0.05	Pass	
Total Kjeldahl Nitrogen (N)	mg/L	< 0.2		0.2	Pass	
Method Blank						
Alkali Metals USEPA 6010 Alkali Metals						
Calcium	mg/L	< 0.5		0.5	Pass	
Magnesium	mg/L	< 0.5		0.5	Pass	
Potassium	mg/L	< 0.5		0.5	Pass	
Sodium	mg/L	< 0.5		0.5	Pass	
Method Blank						
Metals M8 USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury						
Arsenic	mg/L	< 0.001		0.001	Pass	
Cadmium	mg/L	< 0.0002		0.0002	Pass	
Chromium	mg/L	< 0.001		0.001	Pass	
Copper	mg/L	< 0.001		0.001	Pass	
Lead	mg/L	< 0.001		0.001	Pass	
Mercury	mg/L	< 0.0001		0.0001	Pass	
Nickel	mg/L	< 0.001		0.001	Pass	
Zinc	mg/L	< 0.001		0.001	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions TRH C6-C36 - MGT 100A						
TRH C6-C9	%	97		70-130	Pass	
TRH C10-C14	%	101		70-130	Pass	
LCS - % Recovery						
BTEX USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A						
Benzene	%	114		70-130	Pass	
Toluene	%	115		70-130	Pass	
Ethylbenzene	%	109		70-130	Pass	
Total m+p-Xylenes	%	116		70-130	Pass	
Xylenes(ortho.meta and para)	%	113		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * LM-LTM-ORG2010						
TRH C6-C10	%	97		70-130	Pass	
TRH >C10-C16	%	102		70-130	Pass	
LCS - % Recovery						
Polycyclic Aromatic Hydrocarbons USEPA 8270 Polycyclic Aromatic Hydrocarbons						
Acenaphthene	%	96		70-130	Pass	
Acenaphthylene	%	107		70-130	Pass	
Anthracene	%	109		70-130	Pass	
Benz(a)anthracene	%	97		70-130	Pass	
Benzo(a)pyrene	%	126		70-130	Pass	
Benzo(b)fluoranthene	%	79		70-130	Pass	
Benzo(g,h,i)perylene	%	126		70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Benzo(k)fluoranthene	%	97	70-130	Pass			
Chrysene	%	95	70-130	Pass			
Dibenz(a,h)anthracene	%	126	70-130	Pass			
Fluoranthene	%	89	70-130	Pass			
Fluorene	%	102	70-130	Pass			
Indeno(1.2.3-cd)pyrene	%	130	70-130	Pass			
Naphthalene	%	86	70-130	Pass			
Phenanthrene	%	103	70-130	Pass			
Pyrene	%	88	70-130	Pass			
LCS - % Recovery							
Chemical Oxygen Demand (COD)	%	101	70-130	Pass			
Chloride	%	97	70-130	Pass			
Nitrate (as N)	%	92	70-130	Pass			
Phosphate total (P)	%	108	70-130	Pass			
Sulphate (S)	%	105	70-130	Pass			
Suspended Solids	%	96	70-130	Pass			
LCS - % Recovery							
Organic Nitrogen (as N) Organic Nitrogen (as N)							
Ammonia (N)	%	100	70-130	Pass			
LCS - % Recovery							
Total Nitrogen (as N) Total Nitrogen (as N)							
Nitrate & Nitrite (N)	%	92	70-130	Pass			
Total Kjeldahl Nitrogen (N)	%	108	70-130	Pass			
LCS - % Recovery							
Alkali Metals USEPA 6010 Alkali Metals							
Calcium	%	102	70-130	Pass			
Magnesium	%	106	70-130	Pass			
Potassium	%	94	70-130	Pass			
Sodium	%	104	70-130	Pass			
LCS - % Recovery							
Metals M8 USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury							
Arsenic	%	104	80-120	Pass			
Cadmium	%	93	80-120	Pass			
Chromium	%	101	80-120	Pass			
Copper	%	97	80-120	Pass			
Lead	%	98	80-120	Pass			
Mercury	%	89	75-125	Pass			
Nickel	%	97	80-120	Pass			
Zinc	%	99	80-120	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1			
TRH C6-C9	M12-Au02965	NCP	%	114	70-130	Pass	
TRH C10-C14	M12-Au05918	NCP	%	129	70-130	Pass	
Spike - % Recovery							
BTEX				Result 1			
Benzene	M12-Au03606	NCP	%	103	70-130	Pass	
Toluene	M12-Au03606	NCP	%	104	70-130	Pass	
Ethylbenzene	M12-Au03606	NCP	%	107	70-130	Pass	
o-Xylene	M12-Au03606	NCP	%	107	70-130	Pass	
Total m+p-Xylenes	M12-Au03606	NCP	%	111	70-130	Pass	
Xylenes(ortho.meta and para)	M12-Au03606	NCP	%	110	70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1				
TRH C6-C10	M12-Au03606	NCP	%	92		70-130	Pass	
TRH >C10-C16	M12-Au05918	NCP	%	130		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M12-Au03603	NCP	%	95		70-130	Pass	
Acenaphthylene	M12-Au03603	NCP	%	106		70-130	Pass	
Anthracene	M12-Au03603	NCP	%	104		70-130	Pass	
Benz(a)anthracene	M12-Au03603	NCP	%	105		70-130	Pass	
Benzo(a)pyrene	M12-Au03603	NCP	%	118		70-130	Pass	
Benzo(b)fluoranthene	M12-Au03603	NCP	%	87		70-130	Pass	
Benzo(g,h,i)perylene	M12-Au03603	NCP	%	128		70-130	Pass	
Benzo(k)fluoranthene	M12-Au03603	NCP	%	102		70-130	Pass	
Chrysene	M12-Au03603	NCP	%	102		70-130	Pass	
Dibenz(a,h)anthracene	M12-Au03603	NCP	%	125		70-130	Pass	
Fluoranthene	M12-Au03603	NCP	%	94		70-130	Pass	
Fluorene	M12-Au03603	NCP	%	99		70-130	Pass	
Indeno(1,2,3-cd)pyrene	M12-Au03603	NCP	%	124		70-130	Pass	
Naphthalene	M12-Au03603	NCP	%	87		70-130	Pass	
Phenanthrene	M12-Au03603	NCP	%	98		70-130	Pass	
Pyrene	M12-Au03603	NCP	%	95		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chemical Oxygen Demand (COD)	B12-Au01131	NCP	%	85		70-130	Pass	
Phosphorus filterable reactive (P)	M12-Au01971	NCP	%	84		70-130	Pass	
Sulphate (S)	M12-Au03414	CP	%	99		70-130	Pass	
Spike - % Recovery								
Total Nitrogen (as N)				Result 1				
Total Kjeldahl Nitrogen (N)	M12-Au03767	NCP	%	108		70-130	Pass	
Spike - % Recovery								
Alkali Metals				Result 1				
Calcium	M12-Au03414	CP	%	105		70-130	Pass	
Magnesium	M12-Au03414	CP	%	107		70-130	Pass	
Potassium	M12-Au03414	CP	%	97		70-130	Pass	
Sodium	M12-Au03414	CP	%	115		70-130	Pass	
Spike - % Recovery								
Metals M8				Result 1				
Arsenic	M12-Au03609	NCP	%	100		75-125	Pass	
Cadmium	M12-Au03609	NCP	%	93		75-125	Pass	
Chromium	M12-Au03609	NCP	%	97		75-125	Pass	
Copper	M12-Au03609	NCP	%	90		75-125	Pass	
Lead	M12-Au03609	NCP	%	95		75-125	Pass	
Mercury	M12-Au03124	NCP	%	88		70-130	Pass	
Nickel	M12-Au03609	NCP	%	91		75-125	Pass	
Zinc	M12-Au03609	NCP	%	97		75-125	Pass	
Spike - % Recovery								
				Result 1				
Chloride	M12-Au03415	CP	%	106		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (N)	M12-Au03416	CP	%	95		70-130	Pass	
Nitrate (as N)	M12-Au03416	CP	%	83		70-130	Pass	
Phosphate total (P)	M12-Au03416	CP	%	102		70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Nitrogen (as N)				Result 1					
Nitrate & Nitrite (N)	M12-Au03416	CP	%	83			70-130	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M12-Au02917	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M12-Au04878	NCP	mg/L	< 0.05	0.060	70	30%	Fail	Q15
TRH C15-C28	M12-Au04878	NCP	mg/L	0.40	0.50	20	30%	Pass	
TRH C29-C36	M12-Au04878	NCP	mg/L	< 0.1	0.10	22	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M12-Au02917	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M12-Au02917	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M12-Au02917	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
o-Xylene	M12-Au02917	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Total m+p-Xylenes	M12-Au02917	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Xylenes(ortho.meta and para)	M12-Au02917	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
Naphthalene	M12-Au02917	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C6-C10	M12-Au02917	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	M12-Au04878	NCP	mg/L	0.13	0.17	27	30%	Pass	
TRH >C16-C34	M12-Au04878	NCP	mg/L	0.40	0.50	22	30%	Pass	
TRH >C34-C40	M12-Au04878	NCP	mg/L	0.10	0.10	15	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b)fluoranthene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g,h,i)perylene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a,h)anthracene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	M12-Au03602	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chemical Oxygen Demand (COD)	M12-Au03001	NCP	mg/L	120000	110000	13	30%	Pass	
Chloride	M12-Au03414	CP	mg/L	1500	1500	<1	30%	Pass	
Chlorophyll a	M12-Au01125	NCP	ug/L	41	33	21	30%	Pass	
Phosphate total (P)	M12-Au03414	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Phosphorus filterable reactive (P)	M12-Au03414	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Sulphate (S)	M12-Au03414	CP	mg/L	91	91	<1	30%	Pass	
Sulphide (S)	M12-Au04442	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Suspended Solids	M12-Au06325	NCP	mg/L	260	250	3.0	30%	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Alkalinity				Result 1	Result 2	RPD			
Bicarbonate Alkalinity-mg CaCO ₃ /L	M12-Au03139	NCP	mg/L	570	580	1.0	30%	Pass	
Carbonate Alkalinity-mg CaCO ₃ /L	M12-Au03139	NCP	mg/L	< 10	< 10	< 1	30%	Pass	
Duplicate									
Total Nitrogen (as N)				Result 1	Result 2	RPD			
Total Kjeldahl Nitrogen (N)	M12-Au03767	NCP	mg/L	< 0.2	< 0.2	< 1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	M12-Au03414	CP	mg/L	54	52	4.0	30%	Pass	
Magnesium	M12-Au03414	CP	mg/L	120	120	3.0	30%	Pass	
Potassium	M12-Au03414	CP	mg/L	32	31	6.0	30%	Pass	
Sodium	M12-Au03414	CP	mg/L	1000	980	3.0	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	M12-Au03609	NCP	mg/L	< 0.001	< 0.001	< 1	30%	Pass	
Cadmium	M12-Au03609	NCP	mg/L	< 0.0002	< 0.0002	< 1	30%	Pass	
Chromium	M12-Au03609	NCP	mg/L	< 0.001	< 0.001	< 1	30%	Pass	
Copper	M12-Au03609	NCP	mg/L	< 0.001	< 0.001	< 1	30%	Pass	
Lead	M12-Au03609	NCP	mg/L	< 0.001	< 0.001	< 1	30%	Pass	
Mercury	M12-Au03123	NCP	mg/L	< 0.0001	< 0.0001	100	30%	Fail	Q15
Nickel	M12-Au03609	NCP	mg/L	< 0.001	< 0.001	< 1	30%	Pass	
Zinc	M12-Au03609	NCP	mg/L	< 0.001	< 0.001	< 1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M12-Au03415	CP	mg/L	740	740	1.0	30%	Pass	
Phosphorus filterable reactive (P)	M12-Au03415	CP	mg/L	0.19	0.19	1.7	30%	Pass	
Sulphate (S)	M12-Au03415	CP	mg/L	40	39	< 1	30%	Pass	
Total Dissolved Solids	M12-Au03415	CP	mg/L	1600	1600	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (N)	M12-Au03416	CP	mg/L	< 0.01	< 0.01	< 1	30%	Pass	
Chloride	M12-Au03416	CP	mg/L	440	440	< 1	30%	Pass	
Nitrate (as N)	M12-Au03416	CP	mg/L	< 0.02	< 0.02	6.0	30%	Pass	
Phosphate total (P)	M12-Au03416	CP	mg/L	0.22	0.22	< 1	30%	Pass	
Phosphorus filterable reactive (P)	M12-Au03416	CP	mg/L	< 0.05	< 0.05	< 1	30%	Pass	
Sulphate (S)	M12-Au03416	CP	mg/L	11	11	< 1	30%	Pass	
Duplicate									
Total Nitrogen (as N)				Result 1	Result 2	RPD			
Nitrate & Nitrite (N)	M12-Au03416	CP	mg/L	< 0.05	< 0.05	9.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q15	The RPD reported passes mgt-LabMark's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Cindi Guo	Client Services
Carroll Lee	Senior Analyst-Volatile (VIC)
Emily Rosenberg	Senior Analyst-Metal (VIC)
Mary Makarios	Senior Analyst-Inorganic (VIC)
Stacey Jenkins	Senior Analyst-Organic (VIC)



Glenn Jackson

Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

mgt-LabMark shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall mgt-LabMark be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

CDM Smith Australia P/L QLD
21 McLachlan Street
Fortitude Valley
QLD 4006

Attention: Hannah McColl-Wayne

Report **346646-S**
Client Reference B12705.04
Received Date Aug 02, 2012

Certificate of Analysis



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Client Sample ID			TO_SW1	TO_SW3	TO_SW6
Sample Matrix			Sediment	Sediment	Sediment
mgt-LabMark Sample No.			M12-Au01126	M12-Au01127	M12-Au01128
Date Sampled			Aug 01, 2012	Aug 01, 2012	Aug 01, 2012
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	-
TRH C10-C14 after Silica Cleanup (TPH)	20	mg/kg	< 20	< 20	-
TRH C15-C28 after Silica Cleanup (TPH)	50	mg/kg	< 50	< 50	-
TRH C29-C36 after Silica Cleanup (TPH)	50	mg/kg	< 50	< 50	-
TRH C15-C28	50	mg/kg	< 50	< 50	-
TRH C29-C36	50	mg/kg	< 50	< 50	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	-
BTEX					
Benzene	0.05	mg/kg	< 0.05	< 0.05	-
Toluene	0.05	mg/kg	< 0.05	< 0.05	-
Ethylbenzene	0.05	mg/kg	< 0.05	< 0.05	-
o-Xylene	0.05	mg/kg	< 0.05	< 0.05	-
Total m+p-Xylenes	0.10	mg/kg	< 0.1	< 0.1	-
Xylenes(ortho,meta and para)	0.15	mg/kg	< 0.15	< 0.15	-
Fluorobenzene (surr.)	1	%	88	85	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	-
TRH >C10-C16	50	mg/kg	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-
Anthracene	0.05	mg/kg	< 0.05	< 0.05	-
Benzo(a)anthracene	0.05	mg/kg	< 0.05	< 0.05	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(b)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-
Chrysene	0.05	mg/kg	< 0.05	< 0.05	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-

Client Sample ID			TO_SW1	TO_SW3	TO_SW6
Sample Matrix			Sediment	Sediment	Sediment
mgt-LabMark Sample No.			M12-Au01126	M12-Au01127	M12-Au01128
Date Sampled			Aug 01, 2012	Aug 01, 2012	Aug 01, 2012
Test/Reference	LOR	Unit			
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-
Naphthalene	0.05	mg/kg	< 0.05	< 0.05	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-
Total PAH	0.5	mg/kg	< 0.5	< 0.5	-
p-Terphenyl-d14 (surr.)	1	%	115	84	-
2-Fluorobiphenyl (surr.)	1	%	100	83	-
Ammonia (N)					
	5	mg/kg	< 5	< 5	5.1
% Moisture					
	0.1	%	28	31	29
Heavy Metals					
Arsenic	2	mg/kg	4.3	8.7	2.2
Cadmium	1	mg/kg	< 1	< 1	< 1
Chromium	5	mg/kg	13	25	33
Copper	5	mg/kg	6.9	11	22
Lead	5	mg/kg	< 5	< 5	8.0
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.5	9.5	13
Zinc	5	mg/kg	17	19	19

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Holding Time
mgt-LabMark Suite 7			
Polycyclic Aromatic Hydrocarbons - Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 02, 2012	14 Day
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * - Method: LM-LTM-ORG2010	Melbourne	Aug 02, 2012	14 Day
Metals M8 - Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury	Melbourne	Aug 02, 2012	28 Day
BTEX - Method: USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A	Melbourne	Aug 02, 2012	14 Day
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - MGT 100A	Melbourne	Aug 02, 2012	14 Day
Ammonia (N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Aug 02, 2012	7 Day
% Moisture - Method: Method 102 - ANZECC - % Moisture	Melbourne	Aug 02, 2012	14 Day

Company Name: CDM Smith Australia P/L QLD
Address: 21 McLachlan Street
Fortitude Valley
QLD 4006

Client Job No.: B12705.04

Order No.: B12705.04
Report #: 346646
Phone: 07 3303 8775
Fax: 07 3828 6999

Received: Aug 2, 2012 8:20 AM
Due: Aug 9, 2012
Priority: 5 Day
Contact Name: Hannah McCall-Wayne

mgt-LabMark Client Manager: Cindi Guo

Sample Detail

Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	mgt-LabMark Suite 7	Total Recoverable Hydrocarbons	TRH (after Silica Gel cleanup)	Total Nitrogen (as N)	Organic Nitrogen (as N)	Metals M8	mgt-LabMark Suite 11	Suspended Solids	Sulphide (S)	Phosphorus filterable reactive (P)	Phosphate total (P)	Chlorophyll a	Chemical Oxygen Demand (COD)	Ammonium Ion (N)	% Moisture
TO_SW1	Aug 01, 2012		Water	M12-Au01123	X	X	X	X	X		X	X	X	X	X	X	X	X	X
TO_SW3	Aug 01, 2012		Water	M12-Au01124	X	X	X	X	X		X	X	X	X	X	X	X	X	X
TO_SW6	Aug 01, 2012		Water	M12-Au01125	X	X	X	X	X		X	X	X	X	X	X	X	X	X
TO_SW1	Aug 01, 2012		Sediment	M12-Au01126	X	X	X	X	X		X	X	X	X	X	X	X	X	X
TO_SW3	Aug 01, 2012		Sediment	M12-Au01127	X	X	X	X	X		X	X	X	X	X	X	X	X	X
TO_SW6	Aug 01, 2012		Sediment	M12-Au01128	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Laboratory where analysis is conducted																			
Melbourne Laboratory - NATA Site # 1254 & 14271																			
Sydney Laboratory - NATA Site # 18217																			
Brisbane Laboratory - NATA Site # 20794																			
External Laboratory																			

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001)

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as an RPD

UNITS

mg/kg: milligrams per kilogram

µg/L: micrograms per litre

ppb: Parts per billion

org/100mL: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/L: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

TERMS

Dry:	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR:	Limit Of Reporting.
SPIKE:	Addition of the analyte to the sample and reported as percentage recovery.
RPD:	Relative Percent Difference between two Duplicate pieces of analysis.
LCS:	Laboratory Control Sample - reported as percent recovery.
CRM:	Certified Reference Material - reported as percent recovery.
Method Blank:	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate:	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate:	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate:	A second piece of analysis from a sample outside of the client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
APHA:	American Public Health Association
ASLP:	Australian Standard Leaching Procedure (AS4439.3)
TCLP:	Toxicity Characteristic Leaching Procedure
COC:	Chain Of Custody
SRA:	Sample Receipt Advice
CP:	Client Parent - QC was performed on samples pertaining to this report
NCP:	Non-Client Parent - QC was performed on samples not pertaining to this report, however QC is representative of the sequence or batch that client samples were analysed within

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample
- Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions TRH C6-C36 - MGT 100A							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A							
Benzene	mg/kg	< 0.05			0.05	Pass	
Toluene	mg/kg	< 0.05			0.05	Pass	
Ethylbenzene	mg/kg	< 0.05			0.05	Pass	
o-Xylene	mg/kg	< 0.05			0.05	Pass	
Total m+p-Xylenes	mg/kg	< 0.1			0.10	Pass	
Xylenes(ortho.meta and para)	mg/kg	< 0.15			0.15	Pass	
Method Blank							
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * LM-LTM-ORG2010							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons USEPA 8270 Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.05			0.05	Pass	
Benz(a)anthracene	mg/kg	< 0.05			0.05	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.05			0.05	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.05			0.05	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Ammonia (N)	mg/kg	< 5			5	Pass	
Method Blank							
Metals M8 USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 1			1	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code	
Nickel	mg/kg	< 5		5	Pass		
Zinc	mg/kg	< 5		5	Pass		
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions TRH C6-C36 - MGT 100A							
TRH C6-C9	%	112		70-130	Pass		
TRH C10-C14	%	98		70-130	Pass		
LCS - % Recovery							
BTEX USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A							
Benzene	%	100		70-130	Pass		
Toluene	%	96		70-130	Pass		
Ethylbenzene	%	90		70-130	Pass		
Total m+p-Xylenes	%	92		70-130	Pass		
Xylenes(ortho.meta and para)	%	92		70-130	Pass		
LCS - % Recovery							
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * LM-LTM-ORG2010							
TRH C6-C10	%	112		70-130	Pass		
TRH >C10-C16	%	102		70-130	Pass		
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons USEPA 8270 Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	100		70-130	Pass		
Acenaphthylene	%	108		70-130	Pass		
Anthracene	%	105		70-130	Pass		
Benz(a)anthracene	%	107		70-130	Pass		
Benzo(a)pyrene	%	124		70-130	Pass		
Benzo(b)fluoranthene	%	98		70-130	Pass		
Benzo(g,h,i)perylene	%	92		70-130	Pass		
Benzo(k)fluoranthene	%	121		70-130	Pass		
Chrysene	%	107		70-130	Pass		
Dibenz(a,h)anthracene	%	105		70-130	Pass		
Fluoranthene	%	96		70-130	Pass		
Fluorene	%	101		70-130	Pass		
Indeno(1.2.3-cd)pyrene	%	104		70-130	Pass		
Naphthalene	%	105		70-130	Pass		
Phenanthrene	%	97		70-130	Pass		
Pyrene	%	97		70-130	Pass		
LCS - % Recovery							
Ammonia (N)	%	112		70-130	Pass		
LCS - % Recovery							
Metals M8 USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury							
Arsenic	%	92		80-120	Pass		
Cadmium	%	94		80-120	Pass		
Chromium	%	102		80-120	Pass		
Copper	%	103		80-120	Pass		
Lead	%	100		80-120	Pass		
Mercury	%	93		75-125	Pass		
Nickel	%	102		80-120	Pass		
Zinc	%	96		80-120	Pass		
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M12-Au01110	NCP	%	102		70-130	Pass	
TRH C10-C14	M12-Au00343	NCP	%	89		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M12-Au01110	NCP	%	85		70-130	Pass	
Toluene	M12-Au01110	NCP	%	85		70-130	Pass	
Ethylbenzene	M12-Au01110	NCP	%	84		70-130	Pass	
o-Xylene	M12-Au01110	NCP	%	86		70-130	Pass	
Total m+p-Xylenes	M12-Au01110	NCP	%	85		70-130	Pass	
Xylenes(ortho.meta and para)	M12-Au01110	NCP	%	85		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1				
TRH C6-C10	M12-Au01110	NCP	%	102		70-130	Pass	
TRH >C10-C16	M12-Au00343	NCP	%	91		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M12-Au01341	NCP	%	76		70-130	Pass	
Acenaphthylene	M12-Au01341	NCP	%	81		70-130	Pass	
Anthracene	M12-Au01341	NCP	%	84		70-130	Pass	
Benz(a)anthracene	M12-Au01341	NCP	%	80		70-130	Pass	
Benzo(a)pyrene	M12-Au01341	NCP	%	90		70-130	Pass	
Benzo(b)fluoranthene	M12-Au01341	NCP	%	72		70-130	Pass	
Benzo(g,h,i)perylene	M12-Au01341	NCP	%	81		70-130	Pass	
Benzo(k)fluoranthene	M12-Au01341	NCP	%	82		70-130	Pass	
Chrysene	M12-Au01341	NCP	%	74		70-130	Pass	
Dibenz(a,h)anthracene	M12-Au01341	NCP	%	92		70-130	Pass	
Fluoranthene	M12-Au01341	NCP	%	72		70-130	Pass	
Fluorene	M12-Au01341	NCP	%	80		70-130	Pass	
Indeno(1,2,3-cd)pyrene	M12-Au01341	NCP	%	92		70-130	Pass	
Naphthalene	M12-Au01341	NCP	%	76		70-130	Pass	
Phenanthrene	M12-Au01341	NCP	%	83		70-130	Pass	
Pyrene	M12-Au01341	NCP	%	70		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (N)	M12-Au01126	CP	%	88		70-130	Pass	
Spike - % Recovery								
Metals M8				Result 1				
Arsenic	M12-Au01003	NCP	%	94		75-125	Pass	
Cadmium	M12-Au01003	NCP	%	93		75-125	Pass	
Chromium	M12-Au01003	NCP	%	81		75-125	Pass	
Copper	M12-Au01003	NCP	%	107		75-125	Pass	
Lead	M12-Au01003	NCP	%	80		75-125	Pass	
Mercury	M12-Au01137	NCP	%	83		70-130	Pass	
Nickel	M12-Au01003	NCP	%	76		75-125	Pass	
Zinc	M12-Au00999	NCP	%	75		75-125	Pass	
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M12-Au01110	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C10-C14	M12-Au00343	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	M12-Au00343	NCP	mg/kg	53	52	1.9	30%	Pass
TRH C29-C36	M12-Au00343	NCP	mg/kg	81	86	6.1	30%	Pass



Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M12-Au01110	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toluene	M12-Au01110	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Ethylbenzene	M12-Au01110	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
o-Xylene	M12-Au01110	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Total m+p-Xylenes	M12-Au01110	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes(ortho.meta and para)	M12-Au01110	NCP	mg/kg	< 0.15	< 0.15	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
Naphthalene	M12-Au01110	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M12-Au01110	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	M12-Au00343	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M12-Au00343	NCP	mg/kg	120	120	1.3	30%	Pass	
TRH >C34-C40	M12-Au00343	NCP	mg/kg	< 100	< 100	16	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b)fluoranthene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g,h,i)perylene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a,h)anthracene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M12-Au01341	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (N)	M12-Au01126	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	M12-Au01003	NCP	mg/kg	8.2	8.3	2.0	30%	Pass	
Cadmium	M12-Au01003	NCP	mg/kg	< 0.4	< 0.4	20	30%	Pass	
Chromium	M12-Au01003	NCP	mg/kg	19	20	9.0	30%	Pass	
Copper	M12-Au01003	NCP	mg/kg	7.0	7.7	10	30%	Pass	
Lead	M12-Au01003	NCP	mg/kg	8.7	7.6	2.0	30%	Pass	
Mercury	M12-Au01137	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M12-Au01003	NCP	mg/kg	9.5	9.1	5.0	30%	Pass	
Zinc	M12-Au01003	NCP	mg/kg	18	16	10	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Authorised By

Cindi Guo	Client Services
Carroll Lee	Senior Analyst-Volatile (VIC)
Emily Rosenberg	Senior Analyst-Metal (VIC)
Mary Makarios	Senior Analyst-Inorganic (VIC)
Stacey Jenkins	Senior Analyst-Organic (VIC)



Glenn Jackson

Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

mgt-LabMark shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall mgt-LabMark be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

CDM Smith Australia P/L QLD
21 McLachlan Street
Fortitude Valley
QLD 4006

Attention: Hannah McColl-Wayne

Report **346993-S**
Client Reference B12705.04
Received Date Aug 04, 2012

Certificate of Analysis



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Client Sample ID			TO_SW2	TO_SW4	TO_SW5
Sample Matrix			Sediment	Sediment	Sediment
mgt-LabMark Sample No.			M12-Au03417	M12-Au03418	M12-Au03419
Date Sampled			Aug 02, 2012	Aug 02, 2012	Aug 02, 2012
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	-
TRH C10-C14 after Silica Cleanup (TPH)	20	mg/kg	< 20	< 20	-
TRH C15-C28 after Silica Cleanup (TPH)	50	mg/kg	< 50	< 50	-
TRH C29-C36 after Silica Cleanup (TPH)	50	mg/kg	< 50	< 50	-
TRH C15-C28	50	mg/kg	< 50	< 50	-
TRH C29-C36	50	mg/kg	< 50	< 50	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	-
BTEX					
Benzene	0.05	mg/kg	< 0.05	< 0.05	-
Toluene	0.05	mg/kg	0.23	< 0.05	-
Ethylbenzene	0.05	mg/kg	< 0.05	< 0.05	-
o-Xylene	0.05	mg/kg	< 0.05	< 0.05	-
Total m+p-Xylenes	0.10	mg/kg	< 0.1	< 0.1	-
Xylenes(ortho.meta and para)	0.15	mg/kg	< 0.15	< 0.15	-
Fluorobenzene (surr.)	1	%	81	93	-
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	-
TRH >C10-C16	50	mg/kg	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(b)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-

Client Sample ID			TO_SW2	TO_SW4	TO_SW5
Sample Matrix			Sediment	Sediment	Sediment
mgt-LabMark Sample No.			M12-Au03417	M12-Au03418	M12-Au03419
Date Sampled			Aug 02, 2012	Aug 02, 2012	Aug 02, 2012
Test/Reference	LOR	Unit			
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-
Total PAH	0.5	mg/kg	< 0.5	< 0.5	-
p-Terphenyl-d14 (surr.)	1	%	70	117	-
2-Fluorobiphenyl (surr.)	1	%	93	114	-
Ammonia (N)					
	5	mg/kg	36	27	< 5
% Moisture					
	0.1	%	66	48	29
Heavy Metals					
Arsenic	2	mg/kg	22	2.1	< 2
Cadmium	1	mg/kg	< 1	< 1	< 1
Chromium	5	mg/kg	100	44	38
Copper	5	mg/kg	55	30	15
Lead	5	mg/kg	21	11	8.1
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	36	15	10
Zinc	5	mg/kg	86	33	15

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

Description	Testing Site	Extracted	Holding Time
mgt-LabMark Suite 7			
Polycyclic Aromatic Hydrocarbons - Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 07, 2012	14 Day
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * - Method: LM-LTM-ORG2010	Melbourne	Aug 07, 2012	14 Day
Metals M8 - Method: USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury	Melbourne	Aug 07, 2012	28 Day
BTEX - Method: USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A	Melbourne	Aug 06, 2012	14 Day
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - MGT 100A	Melbourne	Aug 07, 2012	14 Day
Ammonia (N) - Method: APHA 4500-NH3 Ammonia Nitrogen by FIA	Melbourne	Aug 07, 2012	7 Day
% Moisture - Method: Method 102 - ANZECC - % Moisture	Melbourne	Aug 07, 2012	14 Day

Company Name: CDM Smith Australia P/L QLD
Address: 21 McLachlan Street
Fortitude Valley
QLD 4006

Client Job No.: B12705.04

Order No.: B12705.04
Report #: 346993
Phone: 07 3303 8775
Fax: 07 3828 6999

Received: Aug 4, 2012 9:22 AM
Due: Aug 13, 2012
Priority: 5 Day
Contact Name: Hannah McCall-Wayne

mgt-LabMark Client Manager: Cindi Guo

Sample Detail

Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	% Moisture	Ammonium Ion (N)	Chemical Oxygen Demand (COD)	Chlorophyll a	Phosphate total (P)	Phosphorus filterable reactive (P)	Sulphide (S)	Suspended Solids	mgt-LabMark Suite 11	Metals M8	Organic Nitrogen (as N)	Total Nitrogen (as N)	TRH (after Silica Gel cleanup)	mgt-LabMark Suite 7
Laboratory where analysis is conducted																		
Melbourne Laboratory - NATA Site # 1254 & 14271																		
Sydney Laboratory - NATA Site # 18217																		
Brisbane Laboratory - NATA Site # 20794																		
External Laboratory																		
TO_SW2	Aug 02, 2012		Water	M12-Au03414	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TO_SW4	Aug 02, 2012		Water	M12-Au03415		X	X	X	X	X	X	X	X		X	X	X	
TO_SW5	Aug 02, 2012		Water	M12-Au03416		X	X	X	X	X	X	X	X		X	X	X	
TO_SW2	Aug 02, 2012		Sediment	M12-Au03417														
TO_SW4	Aug 02, 2012		Sediment	M12-Au03418														
TO_SW5	Aug 02, 2012		Sediment	M12-Au03419										X				

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- All soil results are reported on a dry basis, unless otherwise stated.
- Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001)

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as an RPD

UNITS

mg/kg: milligrams per Kilogram

µg/L: micrograms per litre

ppb: Parts per billion

org/100mL: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/L: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

TERMS

Dry:	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR:	Limit Of Reporting.
SPIKE:	Addition of the analyte to the sample and reported as percentage recovery.
RPD:	Relative Percent Difference between two Duplicate pieces of analysis.
LCS:	Laboratory Control Sample - reported as percent recovery.
CRM:	Certified Reference Material - reported as percent recovery.
Method Blank:	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate:	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate:	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate:	A second piece of analysis from a sample outside of the client's batch of samples but run within the laboratory batch of analysis.
Batch SPIKE:	Spike recovery reported on a sample from outside of the client's batch of samples but run within the laboratory batch of analysis.
USEPA:	U.S Environmental Protection Agency
APHA:	American Public Health Association
ASLP:	Australian Standard Leaching Procedure (AS4439.3)
TCLP:	Toxicity Characteristic Leaching Procedure
COC:	Chain Of Custody
SRA:	Sample Receipt Advice
CP:	Client Parent - QC was performed on samples pertaining to this report
NCP:	Non-Client Parent - QC was performed on samples not pertaining to this report, however QC is representative of the sequence or batch that client samples were analysed within

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample>
- Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data below the LOR with a positive RPD - eg: LOR 0.1, Result A = <0.1 (raw data is 0.02) & Result B = <0.1 (raw data is 0.03) resulting in a RPD of 40% calculated from the raw data.

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions TRH C6-C36 - MGT 100A							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A							
Benzene	mg/kg	< 0.05			0.05	Pass	
Toluene	mg/kg	< 0.05			0.05	Pass	
Ethylbenzene	mg/kg	< 0.05			0.05	Pass	
o-Xylene	mg/kg	< 0.05			0.05	Pass	
Total m+p-Xylenes	mg/kg	< 0.1			0.10	Pass	
Xylenes(ortho.meta and para)	mg/kg	< 0.15			0.15	Pass	
Method Blank							
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * LM-LTM-ORG2010							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons USEPA 8270 Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Ammonia (N)							
Ammonia (N)	mg/kg	< 5			5	Pass	
Method Blank							
Metals M8 USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 1			1	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Nickel	mg/kg	< 5	5	Pass			
Zinc	mg/kg	< 5	5	Pass			
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions TRH C6-C36 - MGT 100A							
TRH C6-C9	%	108	70-130	Pass			
TRH C10-C14	%	89	70-130	Pass			
LCS - % Recovery							
BTEX USEPA 8260 - MGT 350A Monocyclic Aromatic Hydrocarbons and MGT 100A							
Benzene	%	101	70-130	Pass			
Toluene	%	88	70-130	Pass			
Ethylbenzene	%	89	70-130	Pass			
Total m+p-Xylenes	%	87	70-130	Pass			
Xylenes(ortho.meta and para)	%	87	70-130	Pass			
LCS - % Recovery							
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions * LM-LTM-ORG2010							
TRH C6-C10	%	108	70-130	Pass			
TRH >C10-C16	%	93	70-130	Pass			
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons USEPA 8270 Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	106	70-130	Pass			
Acenaphthylene	%	115	70-130	Pass			
Anthracene	%	110	70-130	Pass			
Benz(a)anthracene	%	110	70-130	Pass			
Benzo(a)pyrene	%	104	70-130	Pass			
Benzo(b)fluoranthene	%	104	70-130	Pass			
Benzo(g,h,i)perylene	%	129	70-130	Pass			
Benzo(k)fluoranthene	%	121	70-130	Pass			
Chrysene	%	112	70-130	Pass			
Dibenz(a,h)anthracene	%	101	70-130	Pass			
Fluoranthene	%	76	70-130	Pass			
Fluorene	%	111	70-130	Pass			
Indeno(1.2.3-cd)pyrene	%	107	70-130	Pass			
Naphthalene	%	101	70-130	Pass			
Phenanthrene	%	122	70-130	Pass			
Pyrene	%	78	70-130	Pass			
LCS - % Recovery							
Ammonia (N)	%	115	70-130	Pass			
LCS - % Recovery							
Metals M8 USEPA 6010/6020 Heavy Metals & USEPA 7470/71 Mercury							
Arsenic	%	93	80-120	Pass			
Cadmium	%	98	80-120	Pass			
Chromium	%	103	80-120	Pass			
Copper	%	105	80-120	Pass			
Lead	%	101	80-120	Pass			
Mercury	%	99	75-125	Pass			
Nickel	%	103	80-120	Pass			
Zinc	%	110	80-120	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							



Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M12-Au03417	CP	%	111		70-130	Pass	
TRH C10-C14	M12-Au03417	CP	%	86		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M12-Au03417	CP	%	98		70-130	Pass	
Toluene	M12-Au03417	CP	%	90		70-130	Pass	
Ethylbenzene	M12-Au03417	CP	%	94		70-130	Pass	
o-Xylene	M12-Au03417	CP	%	92		70-130	Pass	
Total m+p-Xylenes	M12-Au03417	CP	%	90		70-130	Pass	
Xylenes(ortho.meta and para)	M12-Au03417	CP	%	90		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1				
TRH C6-C10	M12-Au03417	CP	%	111		70-130	Pass	
TRH >C10-C16	M12-Au03417	CP	%	95		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M12-Au08809	NCP	%	116		70-130	Pass	
Acenaphthylene	M12-Au08809	NCP	%	126		70-130	Pass	
Anthracene	M12-Au08809	NCP	%	111		70-130	Pass	
Benz(a)anthracene	M12-Au08809	NCP	%	110		70-130	Pass	
Benzo(a)pyrene	M12-Au08809	NCP	%	108		70-130	Pass	
Benzo(b)fluoranthene	M12-Au08809	NCP	%	108		70-130	Pass	
Benzo(g,h,i)perylene	M12-Au08809	NCP	%	112		70-130	Pass	
Benzo(k)fluoranthene	M12-Au08809	NCP	%	120		70-130	Pass	
Chrysene	M12-Au08809	NCP	%	104		70-130	Pass	
Dibenz(a,h)anthracene	M12-Au08809	NCP	%	107		70-130	Pass	
Fluoranthene	M12-Au08809	NCP	%	89		70-130	Pass	
Fluorene	M12-Au08809	NCP	%	125		70-130	Pass	
Indeno(1,2,3-cd)pyrene	M12-Au08809	NCP	%	104		70-130	Pass	
Naphthalene	M12-Au08809	NCP	%	112		70-130	Pass	
Phenanthrene	M12-Au08809	NCP	%	120		70-130	Pass	
Pyrene	M12-Au08809	NCP	%	93		70-130	Pass	
Spike - % Recovery								
				Result 1				
Ammonia (N)	M12-Au04469	NCP	%	102		70-130	Pass	
Spike - % Recovery								
Metals M8				Result 1				
Arsenic	M12-Au03417	CP	%	77		75-125	Pass	
Cadmium	M12-Au03417	CP	%	81		75-125	Pass	
Chromium	M12-Au03417	CP	%	100		75-125	Pass	
Copper	M12-Au03417	CP	%	101		75-125	Pass	
Lead	M12-Au03417	CP	%	78		75-125	Pass	
Mercury	M12-Au04522	NCP	%	94		70-130	Pass	
Nickel	M12-Au03417	CP	%	82		75-125	Pass	
Zinc	M12-Au03417	CP	%	107		75-125	Pass	
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M12-Au03417	CP	mg/kg	< 20	< 20	6.0	30%	Pass
TRH C10-C14	M12-Au03417	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	M12-Au03417	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	M12-Au03417	CP	mg/kg	< 50	< 50	<1	30%	Pass



Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M12-Au03417	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toluene	M12-Au03417	CP	mg/kg	0.23	0.22	6.0	30%	Pass	
Ethylbenzene	M12-Au03417	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
o-Xylene	M12-Au03417	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Total m+p-Xylenes	M12-Au03417	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes(ortho.meta and para)	M12-Au03417	CP	mg/kg	< 0.15	< 0.15	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - Draft 2010 NEPM Fractions *				Result 1	Result 2	RPD			
Naphthalene	M12-Au03417	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M12-Au03417	CP	mg/kg	< 20	< 20	6.0	30%	Pass	
TRH >C10-C16	M12-Au03417	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M12-Au03417	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M12-Au03417	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b)fluoranthene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g,h,i)perylene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a,h)anthracene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M12-Au07961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (N)	M12-Au04469	NCP	mg/kg	< 5	< 5	12	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	M12-Au03417	CP	mg/kg	22	22	4.0	30%	Pass	
Cadmium	M12-Au03417	CP	mg/kg	< 1	< 1	6.0	30%	Pass	
Chromium	M12-Au03417	CP	mg/kg	100	99	5.0	30%	Pass	
Copper	M12-Au03417	CP	mg/kg	55	53	4.0	30%	Pass	
Lead	M12-Au03417	CP	mg/kg	21	21	1.0	30%	Pass	
Mercury	M12-Au03417	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M12-Au03417	CP	mg/kg	36	35	2.0	30%	Pass	
Zinc	M12-Au03417	CP	mg/kg	86	81	5.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Authorised By

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Carroll Lee	Senior Analyst-Volatile (VIC)
Emily Rosenberg	Senior Analyst-Metal (VIC)
Mary Makarios	Senior Analyst-Inorganic (VIC)
Stacey Jenkins	Senior Analyst-Organic (VIC)



Glenn Jackson

Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

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