



ALS Environmental

Client : SINCLAIR KNIGHT MERZ
Project : EN01669

Work Order : ES0501668
ALS Quote Reference : ----

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Issue Date : 17 Mar 2005

Matrix Type: WATER

Matrix Type: WATER								
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration	Actual Results		Recovery Limits	
					Sample Result	Spike Recovery MS	Low	High
EK061: Total Kjeldahl Nitrogen (TKN)								
EK061: Total Kjeldahl Nitrogen (TKN) - (QC Lot: 48939)								
Total Kjeldahl Nitrogen as N	ES0501581-001	Anonymous	0.1 mg/L	5.0	0.5	119	70	130
EP005: Total Organic Carbon (TOC)								
EP005: Total Organic Carbon (TOC) - (QC Lot: 49042)								
Total Organic Carbon	ES0501651-015	Anonymous	1 mg/L	100	<1	88.0	70	130
EP005: Total Organic Carbon (TOC) - (QC Lot: 49043)								
Total Organic Carbon	ES0501668-010	RINSATE 1	1 mg/L	100	<1	78.0	70	130
EP026: Chemical Oxygen Demand (COD)								
EP026: Chemical Oxygen Demand (COD) - (QC Lot: 50060)								
Chemical Oxygen Demand	ES0501646-001	Anonymous	5 mg/L	143	8	108	70	130
EP026: Chemical Oxygen Demand (COD) - (QC Lot: 50066)								
Chemical Oxygen Demand	ES0501668-010	RINSATE 1	5 mg/L	143	7	106	70	130
EP074A: Monocyclic Aromatic Hydrocarbons								
EP074A: Monocyclic Aromatic Hydrocarbons - (QC Lot: 50458)								
Benzene	ES0501662-006	Anonymous	5 µg/L	25	<5	106	70	130
Toluene			5 µg/L	25	38	100	70	130
EP074E: Halogenated Aliphatic Compounds								
EP074E: Halogenated Aliphatic Compounds - (QC Lot: 50458)								
1,1-Dichloroethene	ES0501662-006	Anonymous	5 µg/L	25	<5	91.1	70	130
Trichloroethene			5 µg/L	25	129	* Not Determined	70	130
EP074F: Halogenated Aromatic Compounds								
EP074F: Halogenated Aromatic Compounds - (QC Lot: 50458)								
Chlorobenzene	ES0501662-006	Anonymous	5 µg/L	25	<5	97.8	70	130
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 48804)								
C6 - C9 Fraction	ES0501638-002	Anonymous	20 µg/L	250	<20	98.5	80	120
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 50189)								
C6 - C9 Fraction	ES0501668-010	RINSATE 1	20 µg/L	250	<20	97.8	80	120
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 50459)								
C6 - C9 Fraction	ES0501662-007	Anonymous	20 µg/L	250	<20	106	80	120
EP080: BTEX								
EP080: BTEX - (QC Lot: 48804)								
Benzene	ES0501638-002	Anonymous	1 µg/L	25	<1	102	80	120



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Matrix Type: WATER					Actual Results		Recovery Limits	
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration	Sample Result	Spike Recovery	Low	High
						MS		
Toluene	ES0501638-002	Anonymous	2 µg/L	25	<2	104	80	120
Ethylbenzene			2 µg/L	25	<2	103	80	120
meta- & para-Xylene			2 µg/L	25	<2	99.4	80	120
ortho-Xylene			2 µg/L	25	<2	101	80	120
EP080: BTEX - (QC Lot: 50189)				µg/L	%	%	%	
Benzene	ES0501668-010	RINSATE 1	1 µg/L	25	<1	102	80	120
Toluene			2 µg/L	25	<2	96.4	80	120
Ethylbenzene			2 µg/L	25	<2	102	80	120
meta- & para-Xylene			2 µg/L	25	<2	100	80	120
ortho-Xylene			2 µg/L	25	<2	95.0	80	120
EP080: BTEX - (QC Lot: 50459)				µg/L	%	%	%	
Benzene	ES0501662-007	Anonymous	1 µg/L	25	<1	95.2	80	120
Toluene			2 µg/L	25	<2	94.2	80	120
Ethylbenzene			2 µg/L	25	<2	95.3	80	120
meta- & para-Xylene			2 µg/L	25	<2	93.8	80	120
ortho-Xylene			2 µg/L	25	<2	94.0	80	120



ALS Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Client	: SINCLAIR KNIGHT MERZ	Laboratory	: ALS Environmental Sydney	Page	: 1 of 10
Contact	: MS LOUSIE MACDONALD	Contact	: Greg Vogel	Work order	: ES0501668
Address	: P O BOX 164 ST LEONARDS NSW AUSTRALIA 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164	Amendment No.	: 1
Project	: EN01669	Quote number	: ---	Date received	: 4 Mar 2005
Order number	: - Not provided -	E-mail	: Greg.Vogel@alsenviro.com	Date issued	: 17 Mar 2005
C-O-C number	: - Not provided -	Telephone	: 61-2-87848555	No. of samples	
Site	: - Not provided -	Facsimile	: 61-2-87848500	Received	: 11
E-mail	: lmacdonald@skm.com.au			Analysed	: 11
Telephone	: (02) 9928-2100				
Facsimile	: (02) 9928-2272				

This Interpretive Quality Control Report was issued on 17 Mar 2005 for the ALS work order reference ES0501668 and supersedes any previous reports with this reference.

This report contains the following information:

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



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Interpretive Quality Control Report - Analysis Holding Time

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

Matrix Type: WATER

Analysis Holding Time and Preservation

Method		Date Sampled	Extraction / Preparation		Pass?	Analysis	
Container / Client Sample ID(s)	Date extracted		Due for extraction	Date analysed		Due for analysis	Pass?
ED093F: Major Cations - Filtered							
Clear Plastic Bottle - Natural							
MW42D, MW37D,		3 Mar 2005	----	----	----	8 Mar 2005	31 Mar 2005
							Pass
Clear Plastic Bottle - Natural							
MW03D, MW38D, RINSATE 1,		3 Mar 2005	----	----	----	9 Mar 2005	31 Mar 2005
							Pass
EG020A-T: Total Metals by ICP-MS - Suite A							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
MW42D, MW37D, MW03D, MW38D, RINSATE 1,		3 Mar 2005	8 Mar 2005	30 Aug 2005	Pass	10 Mar 2005	30 Aug 2005
							Pass
EG035T: Total Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered							
MW42D, MW37D, MW03D, MW38D, RINSATE 1,		3 Mar 2005	----	----	----	10 Mar 2005	31 Mar 2005
							Pass
EG050G-T: Hexavalent Chromium by Discrete Analyser - Total							
Clear Plastic Bottle - Natural							
MW42D, MW37D, MW03D, MW38D, RINSATE 1,		3 Mar 2005	----	----	----	7 Mar 2005	4 Mar 2005
							Fail by 2 days
EK055G: Ammonia as N by Discrete analyser							
Clear Plastic Bottle - Sulphuric Acid							
MW42S, MW37S, MW36D, DUP4, RINSATE 2		3 Mar 2005	----	----	----	14 Mar 2005	31 Mar 2005
							Pass
K059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser							

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Analysis Holding Time and Preservation

Matrix Type: WATER

Method	Container / Client Sample ID(s)	Date Sampled	Extraction / Preparation		Pass?	Analysis	
			Date extracted	Due for extraction		Date analysed	Due for analysis
Container / Client Sample ID(s)							
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser - continued							
Clear Plastic Bottle - Natural							
MW42D,	MW42S,	3 Mar 2005	----	----	----	5 Mar 2005	Fail by 2 days
MW37D,	MW37S,						
MW03D,	MW36D,						
MW38D,	DUP4,						
RINSATE 1,	RINSATE 2						
EK061: Total Kjeldahl Nitrogen as N							
Clear Plastic Bottle - Sulphuric Acid							
MW42D,	MW42S,	3 Mar 2005	8 Mar 2005	31 Mar 2005	Pass	31 Mar 2005	Pass
MW37D,	MW37S,						
MW03D,	MW36D,						
MW38D,	DUP4,						
RINSATE 1,	RINSATE 2						
EP005: Total Organic Carbon							
Amber TOC Vial- Sulphuric Acid							
MW36D,	MW38D	2 Mar 2005	----	----	----	30 Mar 2005	Pass
Amber TOC Vial- Sulphuric Acid							
MW42D,	MW42S,	3 Mar 2005	----	----	----	31 Mar 2005	Pass
MW37D,	MW37S,						
MW03D,	DUP4,						
RINSATE 1,	RINSATE 2						
EP026: Chemical Oxygen Demand (COD)							
Clear Plastic Bottle - Sulphuric Acid							
MW42D,	MW42S,	3 Mar 2005	----	----	----	31 Mar 2005	Pass
MW37D,	MW37S,						
MW03D,	MW36D,						
MW38D,	DUP4,						
RINSATE 1,	RINSATE 2						
EP030: Biochemical Oxygen Demand (BOD)							
Clear Plastic Bottle - Natural							
MW42D,	MW42S,	3 Mar 2005	----	----	----	5 Mar 2005	Pass
MW37D,	MW37S,						
MW03D,	MW36D,						
MW38D,	DUP4,						
RINSATE 1,	RINSATE 2						
EP071: TPH - Semivolatile Fraction							
Amber Glass Bottle - Unpreserved							
MW42D,	MW42S,	3 Mar 2005	9 Mar 2005	10 Mar 2005	Pass	18 Apr 2005	Pass
MW37D,	MW37S,						
MW03D,	MW36D,						
MW38D,	DUP4,						
RINSATE 1,	RINSATE 2						
EP074: Volatile Organic Compounds							

**Matrix Type: WATER**

Method		Date Sampled	Extraction / Preparation			Analysis	
			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis
Container / Client Sample ID(s)							Pass?
EP074: Volatile Organic Compounds - continued							
Amber VOC Vial - HCl							
MW42D,	MW42S,	3 Mar 2005	---	---	---	10 Mar 2005	17 Mar 2005
MW37D,	MW37S,						
MW03D,	MW36D,						
MW38D							Pass
EP075(SIM): PAH/Phenols (GC/MS - SIM)							
Amber Glass Bottle - Unpreserved							
DUP4,	RINSATE 1,	3 Mar 2005	9 Mar 2005	10 Mar 2005	Pass	11 Mar 2005	18 Apr 2005
RINSATE 2							Pass
EP075: Semivolatile Organic Compounds							
Amber Glass Bottle - Unpreserved							
MW42D,	MW42S,	3 Mar 2005	9 Mar 2005	10 Mar 2005	Pass	10 Mar 2005	18 Apr 2005
MW37D,	MW37S,						
MW03D,	MW36D,						
MW38D							Pass
EP080: TPH Volatiles/BTEX							
Amber VOC Vial - HCl							
TRIP SPIKE		3 Mar 2005	---	---	---	7 Mar 2005	17 Mar 2005
EP080: TPH Volatiles/BTEX							
Amber VOC Vial - HCl							
MW42D,	MW42S,	3 Mar 2005	---	---	---	10 Mar 2005	17 Mar 2005
MW37D,	MW37S,						
MW03D,	MW36D,						
MW38D,	DUP4,						
RINSATE 1,	RINSATE 2						Pass



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Interpretive Quality Control Report - Frequency of Quality Control Samples

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

Frequency of Quality Control Samples

Matrix Type: WATER

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Method		QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
ED093F: Major Cations - Filtered		5	39	12.8	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG020A-T: Total Metals by ICP-MS - Suite A		3	24	12.5	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS		4	40	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG050G-T: Hexavalent Chromium by Discrete Analyser - Total		1	10	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK055G: Ammonia as N by Discrete analyser		2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser		2	18	11.1	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061: Total Kjeldahl Nitrogen as N		2	19	10.5	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP005: Total Organic Carbon		3	29	10.3	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP026: Chemical Oxygen Demand (COD)		2	18	11.1	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP030: Biochemical Oxygen Demand (BOD)		3	17	17.6	13.3	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP074: Volatile Organic Compounds		2	11	18.2	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX		6	47	12.8	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)						
ED093F: Major Cations - Filtered		3	39	7.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG020A-T: Total Metals by ICP-MS - Suite A		2	24	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS		2	40	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG050G-T: Hexavalent Chromium by Discrete Analyser - Total		1	10	10.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK055G: Ammonia as N by Discrete analyser		1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser		1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061: Total Kjeldahl Nitrogen as N		1	19	5.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP005: Total Organic Carbon		2	29	6.9	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP026: Chemical Oxygen Demand (COD)		4	18	22.2	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP030: Biochemical Oxygen Demand (BOD)		2	17	11.8	6.7	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction		1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP074: Volatile Organic Compounds		1	11	9.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)		1	3	33.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075: Semivolatile Organic Compounds		1	11	9.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX		3	47	6.4	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement



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Frequency of Quality Control Samples

Matrix Type: WATER

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Method		QC	Regular	Actual	Expected	
Method Blanks (MB)						
ED093F: Major Cations - Filtered		3	39	7.7	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG020A-T: Total Metals by ICP-MS - Suite A		2	24	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS		2	40	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG050G-T: Hexavalent Chromium by Discrete Analyser - Total		1	10	10.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK055G: Ammonia as N by Discrete analyser		1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser		1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061: Total Kjeldahl Nitrogen as N		1	19	5.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP005: Total Organic Carbon		2	29	6.9	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP026: Chemical Oxygen Demand (COD)		2	18	11.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP030: Biochemical Oxygen Demand (BOD)		2	17	11.8	6.7	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction		1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP074: Volatile Organic Compounds		1	11	9.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)		1	3	33.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075: Semivolatile Organic Compounds		1	11	9.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX		3	47	6.4	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)						
EG020A-T: Total Metals by ICP-MS - Suite A		2	24	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG035T: Total Mercury by FIMS		2	40	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EG050G-T: Hexavalent Chromium by Discrete Analyser - Total		1	10	10.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK055G: Ammonia as N by Discrete analyser		1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK059G: Nitrite and Nitrate as N (NOx) by Discrete Analyser		1	18	5.6	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK061: Total Kjeldahl Nitrogen as N		1	19	5.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP005: Total Organic Carbon		2	29	6.9	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP026: Chemical Oxygen Demand (COD)		2	18	11.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP074: Volatile Organic Compounds		1	11	9.1	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX		3	47	6.4	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement