



Environmental

CERTIFICATE OF ANALYSIS

Work Order : **EB1404148**
 Client : **QUEENSLAND DEPARTMENT OF ENVIRONMENT AND HERITAGE PROTECTION**
 Contact :
 Address :

TOOWOOMBA QLD, AUSTRALIA 4352

E-mail :
 Telephone : **+61 07**
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 Project : **Jenkyn Water Sampling**
 Order number :
 C-O-C number :
 Sampler :
 Site :
 Quote number : **BN/555/13**

Page : **1 of 10**
 Laboratory : **Environmental Division Brisbane**
 Contact : **Customer Services**
 Address : **2 Byth Street Stafford QLD Australia 4053**

E-mail : **Brisbane.Enviro.Services@alsglobal.com**
 Telephone :
 Facsimile :
 QC Level : **NEPM 2013 Schedule B(3) and ALS QCS3 requirement**

Date Samples Received : **20-FEB-2014**
 Issue Date : **28-FEB-2014**

No. of samples received : **5**
 No. of samples analysed : **5**

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Environmental

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Page : 2 of 10
Work Order : EB1404148
Client : QUEENSLAND DEPARTMENT OF ENVIRONMENT AND HERITAGE PROTECTION
Project : Jenkyn Water Sampling



General Comments

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

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

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

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

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^a = This result is computed from individual analyte detections at or above the level of reporting

- 2/ Accordance with ALS work instruction, membrane filtration results for EB1404148-01 and -04 are estimated, where there are overgrown non-typical colonies on the filtered membrane that may have inhibited the growth of the target organisms. It may be informative to record this fact.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- EP071: Particular sample EB1404107-001 shows poor duplicate results due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- EP071: Particular sample EB1404107-005 shows poor duplicate results due to possible sample heterogeneity. Insufficient sample for re-extraction.
- EP075 (PAH/Phenols) Spike recovery for particular sample has not been determined due to the presence of high level contaminants.
- Microbiological Comment: 1/ Accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (-) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- MW006 is ALS's internal code and is equivalent to AS4276.7.
- MW007 is ALS's internal code and is equivalent to AS4276.5.

NATA Accredited Laboratory 825



Accredited for compliance with
ISO/IEC 17025.

Signatories

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

1

Signatories

Position

Accreditation Category

Microbiology and Phycology Team Leader

Brisbane Microbiological

Senior Inorganic Chemist

Brisbane Inorganics

Senior Organic Chemist

Brisbane Organics

WORLD RECOGNISED
ACCREDITATION



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

Compound	CAS Number	LOR	Unit	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
EA005P: pH by PC Titrator		0.01	pH Unit	4.36	7.97	4.37	5.87	7.81
EA010P: Conductivity by PC Titrator		1	µS/cm	38	126	30	26	229
EA016: Non Marine - Estimated TDS Salinity		1	mg/L	25	82	20	17	149
EA065: Total Hardness as CaCO3		1	mg/L	<1	52	<1	2	20
ED037P: Alkalinity by PC Titrator		1	mg/L	<1	<1	<1	<1	<1
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	49	<1	4	48
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	49	<1	4	48
Total Alkalinity as CaCO3		1	mg/L	<1	49	<1	4	48
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA		1	mg/L	2	2	2	2	14
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2	2	2	2	14
ED045G: Chloride Discrete analyser		1	mg/L	2	2	1	3	31
Chloride	16887-00-6	1	mg/L	2	2	1	3	31
ED093F: Dissolved Major Cations		1	mg/L	<1	21	<1	1	3
Calcium	7440-70-2	1	mg/L	<1	21	<1	1	3
Magnesium	7439-95-4	1	mg/L	<1	<1	<1	<1	3
Sodium	7440-23-5	1	mg/L	1	1	<1	1	40
Potassium	7440-09-7	1	mg/L	<1	<1	<1	<1	3
EG020T: Total Metals by ICP-MS		0.001	mg/L	<0.001	<0.001	<0.001		
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001		
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	<0.05		
Barium	7440-39-3	0.001	mg/L	0.043	0.058	0.018		
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001		
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001		
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.005	<0.001		
Chromium	7440-47-3	0.001	mg/L	0.004	0.008	0.001		
Copper	7440-50-8	0.001	mg/L	0.069	0.030	0.247		
Manganese	7439-96-5	0.001	mg/L	0.039	0.147	0.024		
Nickel	7440-02-0	0.001	mg/L	<0.001	0.002	<0.001		
Lead	7439-92-1	0.001	mg/L	0.006	0.039	0.008		



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Compound	CAS Number	LOR	Unit	Client sample ID				
				Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
EG020T: Total Metals by ICP-MS - Continued				19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30
Selenium	7782-49-2	0.01	mg/L	EB1404148-001	EB1404148-002	EB1404148-003	EB1404148-004	EB1404148-005
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01		
Zinc	7440-66-6	0.005	mg/L	0.965	2.46	0.306		
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001		
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	0.1
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.10	0.03	0.04		
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N		0.01	mg/L	<0.01	<0.01	<0.01		
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	1.64	1.22	0.87		
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N		0.01	mg/L	1.64	1.22	0.87		
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N		0.1	mg/L	0.5	0.9	0.3		
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
Total Nitrogen as N		0.1	mg/L	2.1	2.1	1.2		
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P		0.01	mg/L	0.02	0.05	0.06		
EN055: Ionic Balance								
Total Anions		0.01	meq/L	0.10	1.08	0.07	0.21	2.12
Total Cations		0.01	meq/L	0.04	1.09	<0.01	0.09	2.21
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	<5		
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5		
n-Propylbenzene	103-85-1	5	µg/L	<5	<5	<5		
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	<5		
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	<5		
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	<5		
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	<5		
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	<5		



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Compound	CAS Number	LOR	Unit	Client sample ID				
				Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
Client sampling date / time								
EP074A: Monocyclic Aromatic Hydrocarbons - Continued				19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5		
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50		
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50		
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50		
2-Hexanone (MIBK)	591-78-6	50	µg/L	<50	<50	<50		
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5		
EP074D: Fumigants								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5		
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5		
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5		
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5		
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5		
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50		
Chloromethane	74-87-3	50	µg/L	<50	<50	<50		
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50		
Bromomethane	74-83-9	50	µg/L	<50	<50	<50		
Chloroethane	75-00-3	50	µg/L	<50	<50	<50		
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50		
1,1-Dichloroethane	75-35-4	5	µg/L	<5	<5	<5		
Iodomethane	74-88-4	5	µg/L	<5	<5	<5		
trans-1,2-Dichloroethane	156-60-5	5	µg/L	<5	<5	<5		
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5		
cis-1,2-Dichloroethane	156-59-2	5	µg/L	<5	<5	<5		
1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5		
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5		
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5		
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5		
Trichloroethane	79-01-6	5	µg/L	<5	<5	<5		
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5		
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5		



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Compound	CAS Number	LOR	Unit	Client sample ID								
				Client sampling date / time	Tank 1	Tank 2	Tank 3	Tank 4	Tank 5			
EP074E: Halogenated Aliphatic Compounds - Continued												
1,3-Dichloropropane	142-28-9	5	µg/L	19-FEB-2014 11:30 EB1404148-001	<5	19-FEB-2014 11:30 EB1404148-002	<5	19-FEB-2014 11:30 EB1404148-003	<5	19-FEB-2014 11:30 EB1404148-004	<5	19-FEB-2014 11:30 EB1404148-005
Tetrachloroethene	127-18-4	5	µg/L		<5		<5					
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L		<5		<5					
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L		<5		<5					
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L		<5		<5					
1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L		<5		<5					
1,2,3-Trichloropropane	96-18-4	5	µg/L		<5		<5					
Pentachloroethane	76-01-7	5	µg/L		<5		<5					
1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L		<5		<5					
Hexachlorobutadiene	87-68-3	5	µg/L		<5		<5					
EP074F: Halogenated Aromatic Compounds												
Chlorobenzene	108-90-7	5	µg/L		<5		<5					
Bromobenzene	108-86-1	5	µg/L		<5		<5					
2-Chlorotoluene	95-49-8	5	µg/L		<5		<5					
4-Chlorotoluene	106-43-4	5	µg/L		<5		<5					
1,3-Dichlorobenzene	541-73-1	5	µg/L		<5		<5					
1,4-Dichlorobenzene	106-46-7	5	µg/L		<5		<5					
1,2-Dichlorobenzene	95-50-1	5	µg/L		<5		<5					
1,2,4-Trichlorobenzene	120-82-1	5	µg/L		<5		<5					
1,2,3-Trichlorobenzene	87-61-6	5	µg/L		<5		<5					
EP074G: Trihalomethanes												
Chloroform	67-66-3	5	µg/L		<5		<5					
Bromodichloromethane	75-27-4	5	µg/L		<5		<5					
Dibromochloromethane	124-48-1	5	µg/L		<5		<5					
Bromoform	75-25-2	5	µg/L		<5		<5					
EP076(SIM)A: Phenolic Compounds												
Phenol	108-95-2	1.0	µg/L		<1.0		<1.0					
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0		<1.0					
2-Methylphenol	95-48-7	1.0	µg/L		<1.0		<1.0					
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0		<2.0					
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0		<1.0					
2,4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0		<1.0					
2,4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0		<1.0					



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Compound	CAS Number	LOR	Unit	Client sample ID				
				Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
Client sampling date / time				19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30
				EB1404148-001	EB1404148-002	EB1404148-003	EB1404148-004	EB1404148-005
EP075(SIM)A: Phenolic Compounds - Continued								
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	.....	.....
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Benzol(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Benzol(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Benzol(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	.....	.....
Indeno(1,2,3,cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Benzol(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	.....	.....
Sum of polycyclic aromatic hydrocarbons	.....	0.5	µg/L	<0.5	<0.5	<0.5	.....	.....
Benzo(a)pyrene TEQ (zero)	.....	0.5	µg/L	<0.5	<0.5	<0.5	.....	.....
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	.....	20	µg/L	<20	<20	<20	.....	.....
C10 - C14 Fraction	.....	50	µg/L	<50	<50	<50	.....	.....
C15 - C28 Fraction	.....	100	µg/L	<100	<100	<100	.....	.....
C29 - C36 Fraction	.....	50	µg/L	<50	<50	<50	.....	.....
C10 - C36 Fraction (sum)	.....	50	µg/L	<50	<50	<50	.....	.....
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	.....	.....
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	.....	.....



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Compound	CAS Number	LOR	Unit	Client sample ID				
				Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
				Client sampling date / time				
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued				19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30	19-FEB-2014 11:30
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100		
>C16 - C34 Fraction		100	µg/L	<100	<100	<100		
>C34 - C40 Fraction		100	µg/L	<100	<100	<100		
>C10 - C40 Fraction (sum)		100	µg/L	<100	<100	<100		
>C10 - C16 Fraction minus Naphthalene (F2)		100	µg/L	<100	<100	<100		
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1		
Toluene	108-88-3	2	µg/L	<2	<2	<2		
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2		
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2		
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2		
∧ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2		
∧ Sum of BTEX		1	µg/L	<1	<1	<1		
Naphthalene	91-20-3	5	µg/L	<5	<5	<5		
MW006: Faecal Coliforms & E.coli by MIF								
Faecal Coliforms		1	CFU/100mL	~400	260	14	14	90
<i>Escherichia coli</i>		1	CFU/100mL	~400	260	14	14	90
MW007: Coliforms by MF								
Coliforms		1	CFU/100mL	~2700	640	660	~3200	7000
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17080-07-0	0.1	%	101	127	110		
Toluene-D8	2037-26-5	0.1	%	84.8	108	94.8		
4-Bromofluorobenzene	460-00-4	0.1	%	81.4	104	93.2		
EP075(SIMS): Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	43.4	36.0	44.7		
2-Chlorophenol-D4	93951-73-6	0.1	%	84.8	91.1	91.1		
2,4,6-Tribromophenol	118-79-6	0.1	%	58.6	80.0	79.8		
EP075(SIM) T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	124	102	121		
Anthracene-d10	1719-06-8	0.1	%	110	112	125		
4-Terphenyl-d14	1718-51-0	0.1	%	100	109	137		
EP080S: TPH(V)/BTEX Surrogates								



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Compound	CAS Number	LOR	Unit	Client sample ID				
				Tank 1	Tank 2	Tank 3	Tank 4	Tank 5
EP080S: TPH(V)/BTEX Surrogates - Continued								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	19-FEB-2014 11:30 EB1404148-001	19-FEB-2014 11:30 EB1404148-002	19-FEB-2014 11:30 EB1404148-003	19-FEB-2014 11:30 EB1404148-004	19-FEB-2014 11:30 EB1404148-005
Toluene-D8	2037-26-5	0.1	%	94.3	120	110		
4-Bromofluorobenzene	460-00-4	0.1	%	92.8	117	94.6		
				89.7	115	95.1		





Surrogate Control Limits

Sub-Matrix: WATER

Compound	CAS Number	Recovery Limits (%)	
		Low	High
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66.1	137.9
Toluene-D8	2037-26-5	79.2	119.6
4-Bromofluorobenzene	460-00-4	74.2	118
EP075(SIMS): Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10.0	71.9
2-Chlorophenol-D4	93951-73-6	28.8	130.2
2,4,6-Tribromophenol	118-79-6	19.3	180.8
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	13.9	146.1
Anthracene-d10	1719-06-8	34.6	137.4
4-Terphenyl-d14	1718-51-0	36.2	154.2
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	66.1	137.9
Toluene-D8	2037-26-5	79.2	119.6
4-Bromofluorobenzene	460-00-4	74.2	118.0



Environmental

CERTIFICATE OF ANALYSIS

Work Order : **EB1416415**
Client : **DIVSTRAT PTY LTD**
Contract :
Address :

Page : 1 of 5
Laboratory : Environmental Division Brisbane
Contact : Customer Services
Address : 2 Byth Street Stafford QLD Australia 4053

43

E-mail :
Telephone :
Facsimile :
Project : **D5140626**
Order number : **D5140624**
C-O-C number :
Sampler : **JOHN POLGLASE**
Site :

E-mail : Brisbane.Enviro.Services@alsglobal.com
Telephone :
Facsimile :
QC Level : **NEPM 2013 Schedule B(3) and ALS QCS3 requirement**
Date Samples Received : **07-JUL-2014**
Issue Date : **14-JUL-2014**

Quote number : **BN/552/14**

No. of samples received : **2**
No. of samples analysed : **2**

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory 825
Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
	Senior Inorganic Chemist	Brisbane Inorganics

Environmental



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Page : 2 of 5
Work Order : EB1416415
Client : DIVSTRAT PTY LTD
Project : D5140626



General Comments

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

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

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

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

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Compound	CAS Number	LOR	Unit	%	Client sample ID		Client sampling date / time			
					140626-3S	EB1416415-002	06-JUL-2014 15:30			
EA055: Moisture Content										
Moisture Content (dried @ 103°C)					77.9					
EG005T: Total Metals by ICP-AES										
Aluminium	7429-90-5	50	mg/kg		10900					
Boron	7440-42-8	50	mg/kg		<50					
Iron	7439-89-6	50	mg/kg		20200					
EG020T: Total Metals by ICP-MS										
Arsenic	7440-38-2	0.1	mg/kg		2.9					
Selenium	7782-49-2	1	mg/kg		1					
Silver	7440-22-4	0.1	mg/kg		0.5					
Barium	7440-39-3	0.1	mg/kg		41.1					
Thallium	7440-28-0	0.1	mg/kg		<0.1					
Beryllium	7440-41-7	0.1	mg/kg		0.3					
Cadmium	7440-43-9	0.1	mg/kg		<0.1					
Bismuth	7440-69-9	0.1	mg/kg		0.3					
Cobalt	7440-48-4	0.1	mg/kg		3.2					
Chromium	7440-47-3	0.1	mg/kg		38.5					
Copper	7440-50-8	0.1	mg/kg		682					
Thorium	7440-29-1	0.1	mg/kg		1.2					
Manganese	7439-96-5	0.1	mg/kg		120					
Strontium	7440-24-6	0.1	mg/kg		6.5					
Molybdenum	7439-98-7	0.1	mg/kg		0.8					
Nickel	7440-02-0	0.1	mg/kg		8.4					
Lead	7439-92-1	0.1	mg/kg		163					
Antimony	7440-36-0	0.1	mg/kg		0.6					
Uranium	7440-61-1	0.1	mg/kg		0.4					
Zinc	7440-66-6	0.5	mg/kg		98.2					
Lithium	7439-93-2	0.1	mg/kg		2.8					
Vanadium	7440-62-2	1	mg/kg		41					
Tin	7440-31-5	0.1	mg/kg		23.2					
EG035T: Total Recoverable Mercury by FIMS										
Mercury	7439-97-6	0.1	mg/kg		0.3					

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

140626-3L

Client sampling date / time

06-JUL-2014 15:30

CAS Number

EB1416415-001

EG0201 : Total Metals by ICP-MS

Compound	CAS Number	LOR	Unit	Result	...	...	...	...	...
Aluminium	7429-90-5	0.01	mg/L	0.02	...	...	...	...	...
Dysprosium	7429-91-6	0.001	mg/L	<0.001	...	...	...	...	...
Silver	7440-22-4	0.001	mg/L	<0.001	...	...	...	...	...
Arsenic	7440-38-2	0.001	mg/L	<0.001	...	...	...	...	...
Bismuth	7440-68-9	0.001	mg/L	<0.001	...	...	...	...	...
Erbium	7440-52-0	0.001	mg/L	<0.001	...	...	...	...	...
Boron	7440-42-8	0.05	mg/L	<0.05	...	...	...	...	...
Europium	7440-53-1	0.001	mg/L	<0.001	...	...	...	...	...
Strontium	7440-24-6	0.001	mg/L	0.005	...	...	...	...	...
Barium	7440-39-3	0.001	mg/L	0.011	...	...	...	...	...
Gadolinium	7440-54-2	0.001	mg/L	<0.001	...	...	...	...	...
Titanium	7440-32-6	0.01	mg/L	<0.01	...	...	...	...	...
Beryllium	7440-41-7	0.001	mg/L	<0.001	...	...	...	...	...
Gallium	7440-55-3	0.001	mg/L	<0.001	...	...	...	...	...
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	...	...	...	...	...
Hafnium	7440-58-6	0.01	mg/L	<0.01	...	...	...	...	...
Tellurium	22541-49-7	0.005	mg/L	<0.005	...	...	...	...	...
Cobalt	7440-48-4	0.001	mg/L	<0.001	...	...	...	...	...
Holmium	7440-60-0	0.001	mg/L	<0.001	...	...	...	...	...
Uranium	7440-61-1	0.001	mg/L	<0.001	...	...	...	...	...
Caesium	7440-46-2	0.001	mg/L	<0.001	...	...	...	...	...
Chromium	7440-47-3	0.001	mg/L	<0.001	...	...	...	...	...
Indium	7440-74-6	0.001	mg/L	<0.001	...	...	...	...	...
Copper	7440-50-8	0.001	mg/L	0.118	...	...	...	...	...
Lanthanum	7439-91-0	0.001	mg/L	<0.001	...	...	...	...	...
Rubidium	7440-17-7	0.001	mg/L	<0.001	...	...	...	...	...
Lithium	7439-93-2	0.001	mg/L	<0.001	...	...	...	...	...
Lutetium	7439-94-3	0.001	mg/L	<0.001	...	...	...	...	...
Thorium	7440-29-1	0.001	mg/L	<0.001	...	...	...	...	...
Cerium	7440-45-1	0.001	mg/L	<0.001	...	...	...	...	...
Manganese	7439-96-5	0.001	mg/L	0.007	...	...	...	...	...
Neodymium	7440-00-8	0.001	mg/L	<0.001	...	...	...	...	...
Molybdenum	7439-98-7	0.001	mg/L	<0.001	...	...	...	...	...
Praseodymium	7440-10-0	0.001	mg/L	<0.001	...	...	...	...	...



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Compound	CAS Number	LOR	Unit	Client sample ID	
				140626-3L	06-JUL-2014 15:30
EG020T - Total Metals by ICP-MS - Continued					
Nickel	7440-02-0	0.001	mg/L	<0.001	
Samarium	7440-19-9	0.001	mg/L	<0.001	
Lead	7439-92-1	0.001	mg/L	0.003	
Terbium	7440-27-9	0.001	mg/L	<0.001	
Antimony	7440-36-0	0.001	mg/L	<0.001	
Thulium	7440-30-4	0.001	mg/L	<0.001	
Selenium	7782-49-2	0.01	mg/L	<0.01	
Ytterbium	7440-64-4	0.001	mg/L	<0.001	
Tin	7440-31-5	0.001	mg/L	<0.001	
Yttrium	7440-65-5	0.001	mg/L	<0.001	
Thallium	7440-28-0	0.001	mg/L	<0.001	
Zirconium	7440-67-7	0.005	mg/L	<0.005	
Vanadium	7440-62-2	0.01	mg/L	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.155	
Iron	7439-89-6	0.05	mg/L	<0.05	
EG035T - Total Recoverable Mercury by FIMS					
Mercury	7439-97-6	0.0001	mg/L	<0.0001	

