

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1328108</b>	<b>Page</b>	: 1 of 20
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: SYMPHONY MACGEN	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: symphony.macgen@erm.com	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	: +61 02 8584 8888	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	: +61 02 8584 8800	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	: Project Symphony	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: ----	<b>Date Samples Received</b>	: 20-DEC-2013
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 24-DEC-2013
<b>Sampler</b>	: SC, JG	<b>No. of samples received</b>	: 3
<b>Order number</b>	: 0224193	<b>No. of samples analysed</b>	: 3
<b>Quote number</b>	: SY/794/13		

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

This Quality Control Report contains the following information:

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



NATA 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

Ankit Joshi  
Celine Conceicao  
Phalak Inthaksone

#### Position

Inorganic Chemist  
Senior Spectroscopist  
Laboratory Manager - Organics

#### Accreditation Category

Sydney Inorganics  
Sydney Inorganics  
Sydney Organics



### **General Comments**

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

Where moisture determination has been 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.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
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  
RPD = Relative Percentage Difference  
# = Indicates failed QC



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>ED037P: Alkalinity by PC Titrator (QC Lot: 3225584)</b>									
ES1328012-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	32	32	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	32	32	0.0	0% - 20%
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 3225459)</b>									
ES1327914-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	24	24	0.0	0% - 20%
ES1328007-004	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	20	16	20.7	0% - 50%
<b>ED045G: Chloride Discrete analyser (QC Lot: 3225457)</b>									
ES1327806-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	3820	3820	0.0	0% - 20%
ES1328108-003	BY_MW29	ED045G: Chloride	16887-00-6	1	mg/L	650	644	0.9	0% - 20%
<b>ED093F: Dissolved Major Cations (QC Lot: 3225456)</b>									
ES1327806-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	15	15	0.0	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	234	233	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	2170	2210	1.6	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	16	16	0.0	0% - 50%
ES1328082-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	9	9	0.0	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	2	2	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	16	16	0.0	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	1	1	0.0	No Limit
<b>EG020T: Total Metals by ICP-MS (QC Lot: 3225838)</b>									
ES1327697-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.009	0.009	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.001	0.002	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.0	No Limit
ES1327798-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG020T: Total Metals by ICP-MS (QC Lot: 3225838) - continued</b>									
ES1327798-003	Anonymous	EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.003	0.001	65.2	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.317	0.311	1.9	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	0.001	0.002	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.315	0.295	6.5	0% - 20%
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG020A-T: Boron	7440-42-8	0.05	mg/L	0.11	0.10	0.0	No Limit		
<b>EG035F: Dissolved Mercury by FIMS (QC Lot: 3225615)</b>									
ES1327888-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327964-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3225995)</b>									
ES1327964-007	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3227202)</b>									
ES1328108-001	BR_MW01	EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	6.3	6.3	0.0	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.8	1.0	17.3	0% - 50%
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	24.1	24.6	2.3	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	6.3	6.4	0.0	0% - 20%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	16.7	16.5	1.3	0% - 20%
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	1.5	1.5	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	93.1	92.2	1.0	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	5.4	5.3	0.0	0% - 50%
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	226	223	1.3	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	104	105	0.7	0% - 20%
		EG094A-F: Titanium	7440-32-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	352	353	0.0	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	193	186	3.8	0% - 20%
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3225679)</b>									
ES1327963-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3225679) - continued</b>									
ES1327963-001	Anonymous	EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
ES1328108-002	R01_201213_JG	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit		
<b>EP074B: Oxygenated Compounds (QC Lot: 3225679)</b>									
ES1327963-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
ES1328108-002	R01_201213_JG	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
<b>EP074C: Sulfonated Compounds (QC Lot: 3225679)</b>									
ES1327963-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES1328108-002	R01_201213_JG	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
<b>EP074D: Fumigants (QC Lot: 3225679)</b>									
ES1327963-001	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES1328108-002	R01_201213_JG	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3225679)</b>									
ES1327963-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3225679) - continued</b>									
ES1327963-001	Anonymous	EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit		
ES1328108-002	R01_201213_JG	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3225679) - continued</b>									
ES1328108-002	R01_201213_JG	EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit		
<b>EP074F: Halogenated Aromatic Compounds (QC Lot: 3225679)</b>									
ES1327963-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES1328108-002	R01_201213_JG	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit		
<b>EP074G: Trihalomethanes (QC Lot: 3225679)</b>									
ES1327963-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES1328108-002	R01_201213_JG	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074H: Naphthalene (QC Lot: 3225679)</b>									
ES1327963-001	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
ES1328108-002	R01_201213_JG	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3226325)</b>									
ES1327964-001	Anonymous	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		ES1327964-004	Anonymous	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0
EP075(SIM): 2-Chlorophenol	95-57-8			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2-Nitrophenol	88-75-5			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4-Dimethylphenol	105-67-9			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4-Dichlorophenol	120-83-2			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,6-Dichlorophenol	87-65-0			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 3- & 4-Methylphenol	1319-77-3			2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5			2.0	µg/L	<2.0	<2.0	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3226325)</b>									
ES1327964-001	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit





Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3226325) - continued</b>									
ES1327964-001	Anonymous	EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
ES1327964-004	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3225680)</b>									
ES1327963-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1328108-002	R01_201213_JG	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3226324)</b>									
ES1327964-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
ES1327964-004	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3225680)</b>									
ES1327963-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1328108-002	R01_201213_JG	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3226324)</b>									
ES1327964-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
ES1327964-004	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit



Sub-Matrix: <b>WATER</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3225680)</b>									
ES1327963-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1328108-002	R01_201213_JG	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



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

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>ED037P: Alkalinity by PC Titrator (QCLot: 3225584)</b>									
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	----	200 mg/L	102	81	111	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3225459)</b>									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	103	86	122	
<b>ED045G: Chloride Discrete analyser (QCLot: 3225457)</b>									
ED045G: Chloride	16887-00-6	1	mg/L	<1	1000 mg/L	96.9	77	123	
<b>ED093F: Dissolved Major Cations (QCLot: 3225456)</b>									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	100	87	113	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	98.2	89	113	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	101	79	113	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	101	87	115	
<b>EG020T: Total Metals by ICP-MS (QCLot: 3225838)</b>									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	89.7	79	121	
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	102	76	120	
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	92.3	84	116	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	90.9	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.9	83	115	
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	92.8	84	116	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.8	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	90.0	85	115	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	96.4	83	115	
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	95.4	81	125	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.2	83	117	
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	94.4	84	114	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	89.8	76	118	
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.1 mg/L	95.5	73	127	
<b>EG020T: Total Metals by ICP-MS (QCLot: 3225839)</b>									
EG020B-T: Titanium	7440-32-6	0.01	mg/L	<0.01	0.1 mg/L	102	80	124	
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)</b>									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	106	78	114	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225995)</b>									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	94.2	77	115	
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)</b>									
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	105	75	129	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202) - continued</b>									
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	92.0	76	120	
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	98.5	74	130	
EG094A-F: Boron	7440-42-8	5	µg/L	<5	100 µg/L	111	79	129	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	102	78	112	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	91.2	71	123	
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	106	79	121	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	100	77	125	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	98.7	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	91.5	79	119	
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	100	69	127	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	106	72	128	
EG094A-F: Titanium	7440-32-6	1	µg/L	<1	10 µg/L	93.5	71	125	
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	94.1	78	116	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	84.2	76	134	
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3225679)</b>									
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	87.3	74	118	
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	92.5	75	121	
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	97.0	67	123	
EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	98.4	70	122	
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	98.7	69	123	
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	101	71	121	
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	95.4	70	122	
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	100	67	123	
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	102	62	126	
<b>EP074B: Oxygenated Compounds (QCLot: 3225679)</b>									
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	114	61.4	134	
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	112	73.6	130	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	108	61	139	
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	109	65	137	
<b>EP074C: Sulfonated Compounds (QCLot: 3225679)</b>									
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	114	72.8	127	
<b>EP074D: Fumigants (QCLot: 3225679)</b>									
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	110	61	119	
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	107	76	120	
EP074: cis-1,3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	95.5	62	120	
EP074: trans-1,3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	94.0	61	119	
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	93.4	69	117	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3225679)</b>									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3225679) - continued</b>									
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	104	60.6	138	
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	116	67.4	130	
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	127	69.4	129	
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	139	56	140	
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	120	63	135	
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	116	65	131	
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	113	69	123	
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	106	70.2	128	
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	110	71	119	
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	113	75	119	
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	106	77	117	
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	108	61	119	
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	109	73	119	
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	97.4	63	121	
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	110	78	122	
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	102	74	120	
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	108	74	118	
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	110	75	123	
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	105	79	121	
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	91.5	72	124	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	98.4	66	114	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	98.0	60	120	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	99.3	70.6	128	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	99.0	70	124	
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	105	74	128	
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	116	71.8	126	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	112	66.4	136	
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	118	58	132	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3225679)</b>									
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	99.1	80	118	
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	101	76	116	
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	108	71	121	
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	108	71	121	
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	107	74	120	
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	112	72	120	
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	106	77	117	
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	112	60	126	
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	99.6	67	125	
<b>EP074G: Trihalomethanes (QCLot: 3225679)</b>									



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074G: Trihalomethanes (QCLot: 3225679) - continued</b>									
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	111	76	118	
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	103	64	118	
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	89.3	65	115	
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	84.9	73.5	126	
<b>EP074H: Naphthalene (QCLot: 3225679)</b>									
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	98.7	61	125	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3226325)</b>									
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	41.0	24.5	61.9	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	65.4	63.8	110	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	65.6	55.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	59.3	42.5	114	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	70.4	62.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	76.5	59.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	74.1	59.3	122	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	71.7	64.3	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	85.4	63	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	77.1	58.7	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	70.9	50	108	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	# 105	8.7	95	
		2	µg/L	<2.0	----	----	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3226325)</b>									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	67.6	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	79.6	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	71.4	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	77.0	63.9	115	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3226325) - continued</b>									
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	76.3	62.6	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	75.8	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	83.6	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	80.7	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	84.5	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	82.1	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	79.8	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	86.1	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	82.5	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	74.0	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	75.2	61.2	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	5 µg/L	82.8	59.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225680)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	102	75	127	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3226324)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	98.1	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	115	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	99.4	62	120	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225680)</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	106	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3226324)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	92.7	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	109	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	111	67	127	
<b>EP080: BTEXN (QCLot: 3225680)</b>									



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP080: BTEXN (QCLot: 3225680) - continued</b>									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	101	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	102	65	129	
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	92.9	70	120	
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	93.8	69	121	
	106-42-3								
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	98.2	72	122	
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	103	70	124	

**Matrix Spike (MS) Report**

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

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%)	
				Low	High		
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3225459)</b>							
ES1327914-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	82.1	70	130
<b>ED045G: Chloride Discrete analyser (QCLot: 3225457)</b>							
ES1327806-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	# Not Determined	70	130
<b>EG020T: Total Metals by ICP-MS (QCLot: 3225838)</b>							
ES1327697-004	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	100	70	130
		EG020A-T: Beryllium	7440-41-7	1 mg/L	125	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	108	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	110	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	99.8	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	102	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	101	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	108	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	109	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	100	70	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	102	70	130
EG020A-T: Zinc	7440-66-6	1 mg/L	102	70	130		
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)</b>							
ES1327888-006	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	93.3	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225995)</b>							
ES1328108-002	R01_201213_JG	EG035T: Mercury	7439-97-6	0.010 mg/L	88.4	70	130





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)</b>							
ES1328108-003	BY_MW29	EG094A-F: Arsenic	7440-38-2	50 µg/L	119	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	104	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	89.9	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	110	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	70	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	124	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	116	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	83.0	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	118	70	130
EG094A-F: Vanadium	7440-62-2	50 µg/L	100	70	130		
EG094A-F: Zinc	7440-66-6	50 µg/L	124	70	130		
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3225679)</b>							
ES1327963-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	101	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	119	70	130
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3225679)</b>							
ES1327963-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	122	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3226325)</b>							
ES1327964-001	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	60.2	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	91.2	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	99.3	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	108	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	106	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3226325)</b>							
ES1327964-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	101	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	114	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225680)</b>							
ES1327963-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	123	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3226324)</b>							
ES1327964-001	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	118	74	150
		EP071: C15 - C28 Fraction	----	300 µg/L	106	77	153
		EP071: C29 - C36 Fraction	----	200 µg/L	107	67	153
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225680)</b>							
ES1327963-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	124	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3226324)</b>							
ES1327964-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	108	74	150



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report				
				Spike	Spike Recovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3226324) - continued</b>								
ES1327964-001	Anonymous	EP071: >C16 - C34 Fraction	----	350 µg/L	105	77	153	
		EP071: >C34 - C40 Fraction	----	150 µg/L	103	67	153	
<b>EP080: BTEXN (QCLot: 3225680)</b>								
ES1327963-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	99.6	70	130	
		EP080: Toluene	108-88-3	25 µg/L	101	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	104	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	105	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	109	70	130	
	EP080: Naphthalene	91-20-3		25 µg/L	108	70	130	

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
<b>ED045G: Chloride Discrete analyser (QCLot: 3225457)</b>										
ES1327806-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	# Not Determined	----	70	130	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3225459)</b>										
ES1327914-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	82.1	----	70	130	----	----
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)</b>										
ES1327888-006	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	93.3	----	70	130	----	----
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3225679)</b>										
ES1327963-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	101	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	119	----	70	130	----	----
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3225679)</b>										
ES1327963-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	122	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225680)</b>										
ES1327963-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	123	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225680)</b>										
ES1327963-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	124	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3225680)</b>										
ES1327963-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	99.6	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	101	----	70	130	----	----



Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EP080: BTEXN (QCLot: 3225680) - continued</b>										
ES1327963-001	Anonymous	EP080: Ethylbenzene	100-41-4	25 µg/L	104	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	105	----	70	130	----	----
		EP080: ortho-Xylene	95-47-6	25 µg/L	109	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	108	----	70	130	----	----
<b>EG020T: Total Metals by ICP-MS (QCLot: 3225838)</b>										
ES1327697-004	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	100	----	70	130	----	----
		EG020A-T: Beryllium	7440-41-7	1 mg/L	125	----	70	130	----	----
		EG020A-T: Barium	7440-39-3	1 mg/L	108	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	110	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1 mg/L	99.8	----	70	130	----	----
		EG020A-T: Cobalt	7440-48-4	1 mg/L	102	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	101	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	108	----	70	130	----	----
		EG020A-T: Manganese	7439-96-5	1 mg/L	109	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	100	----	70	130	----	----
		EG020A-T: Vanadium	7440-62-2	1 mg/L	102	----	70	130	----	----
EG020A-T: Zinc	7440-66-6	1 mg/L	102	----	70	130	----	----		
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225995)</b>										
ES1328108-002	R01_201213_JG	EG035T: Mercury	7439-97-6	0.010 mg/L	88.4	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3226324)</b>										
ES1327964-001	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	118	----	74	150	----	----
		EP071: C15 - C28 Fraction	----	300 µg/L	106	----	77	153	----	----
		EP071: C29 - C36 Fraction	----	200 µg/L	107	----	67	153	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3226324)</b>										
ES1327964-001	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	108	----	74	150	----	----
		EP071: >C16 - C34 Fraction	----	350 µg/L	105	----	77	153	----	----
		EP071: >C34 - C40 Fraction	----	150 µg/L	103	----	67	153	----	----
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3226325)</b>										
ES1327964-001	Anonymous	EP075(SIM): Phenol	108-95-2	20 µg/L	60.2	----	20	130	----	----
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	91.2	----	60	130	----	----
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	99.3	----	60	130	----	----
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	108	----	70	130	----	----
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	106	----	20	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3226325)</b>										
ES1327964-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	101	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	20 µg/L	114	----	70	130	----	----
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)</b>										



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report</i>						
<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Spike</i>	<i>Spike Recovery (%)</i>		<i>Recovery Limits (%)</i>		<i>RPDs (%)</i>	
				<i>Concentration</i>	<i>MS</i>	<i>MSD</i>	<i>Low</i>	<i>High</i>	<i>Value</i>	<i>Control Limit</i>
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202) - continued</b>										
ES1328108-003	BY_MW29	EG094A-F: Arsenic	7440-38-2	50 µg/L	119	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	104	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	89.9	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	110	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	124	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	116	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	83.0	----	70	130	----	----
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	118	----	70	130	----	----
		EG094A-F: Vanadium	7440-62-2	50 µg/L	100	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	124	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1328108</b>	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: SYMPHONY MACGEN	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: symphony.macgen@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 20-DEC-2013
C-O-C number	: ----	Issue Date	: 24-DEC-2013
Sampler	: SC, JG	No. of samples received	: 3
Order number	: 0224193	No. of samples analysed	: 3
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED037P: Alkalinity by PC Titrator</b>							
Clear Plastic Bottle - Natural (ED037-P) BR_MW01, BY_MW29	20-DEC-2013	---	03-JAN-2014	----	21-DEC-2013	03-JAN-2014	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>							
Clear Plastic Bottle - Natural (ED041G) BR_MW01, BY_MW29	20-DEC-2013	---	17-JAN-2014	----	21-DEC-2013	17-JAN-2014	✓
<b>ED045G: Chloride Discrete analyser</b>							
Clear Plastic Bottle - Natural (ED045G) BR_MW01, BY_MW29	20-DEC-2013	---	17-JAN-2014	----	21-DEC-2013	17-JAN-2014	✓
<b>ED093F: Dissolved Major Cations</b>							
Clear Plastic Bottle - Natural (ED093F) BR_MW01, BY_MW29	20-DEC-2013	---	27-DEC-2013	----	21-DEC-2013	27-DEC-2013	✓
<b>EG020T: Total Metals by ICP-MS</b>							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T) R01_201213_JG	20-DEC-2013	23-DEC-2013	18-JUN-2014	✓	23-DEC-2013	18-JUN-2014	✓
<b>EG020T: Total Metals by ICP-MS</b>							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020B-T) R01_201213_JG	20-DEC-2013	23-DEC-2013	18-JUN-2014	✓	23-DEC-2013	18-JUN-2014	✓
<b>EG035F: Dissolved Mercury by FIMS</b>							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) BR_MW01, BY_MW29	20-DEC-2013	---	17-JAN-2014	----	22-DEC-2013	17-JAN-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T) R01_201213_JG	20-DEC-2013	----	----	----	23-DEC-2013	17-JAN-2014	✓
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS</b>							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) BR_MW01, BY_MW29	20-DEC-2013	---	18-JUN-2014	----	23-DEC-2013	18-JUN-2014	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>							
Amber Glass Bottle - Unpreserved (EP071) BR_MW01, R01_201213_JG, BY_MW29	20-DEC-2013	23-DEC-2013	27-DEC-2013	✓	23-DEC-2013	01-FEB-2014	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP074D: Fumigants</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
<b>EP074F: Halogenated Aromatic Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
<b>EP074H: Naphthalene</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
<b>EP074B: Oxygenated Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
<b>EP074C: Sulfonated Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
<b>EP074G: Trihalomethanes</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	23-DEC-2013	27-DEC-2013	✓	23-DEC-2013	01-FEB-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	23-DEC-2013	27-DEC-2013	✓	23-DEC-2013	01-FEB-2014	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BR_MW01, BY_MW29	R01_201213_JG,	20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓





## Quality Control Parameter Frequency Compliance

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

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Alkalinity by PC Titrator	ED037-P	1	7	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	11	18.2	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Alkalinity by PC Titrator	ED037-P	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	5	20.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Chloride by Discrete Analyser	ED045G	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B	EG020B-T	1	5	20.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Method Blanks (MB) - Continued</b>							
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Chloride by Discrete Analyser	ED045G	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Alkalinity by PC Titrator	ED037-P	WATER	APHA 21st ed., 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Sulfate (Turbidimetric) as SO <sub>4</sub> <sup>2-</sup> by Discrete Analyser	ED041G	WATER	APHA 21st ed., 4500-SO <sub>4</sub> Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO <sub>4</sub> suspension is measured by a photometer and the SO <sub>4</sub> <sup>2-</sup> concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Chloride by Discrete Analyser	ED045G	WATER	APHA 21st ed., 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	Major Cations is determined based on APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises the 0.45um filtered sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)  Hardness parameters are calculated based on APHA 21st ed., 2340 B. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	APHA 21st Ed. 1030F. The Ionic Balance is calculated based on the major Anions and Cations. The major anions include Alkalinity, Chloride and Sulfate which determined by PCT and DA. The Cations are determined by Turbi SO4 by DA. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Volatile Organic Compounds	EP074	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Lab Acidification of Metals	EN80	WATER	USEPA Method 200.8
Lab Acidification of Dissolved Metals	EN80F	WATER	US EPA Method 200.8
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.



## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EP075(SIM)A: Phenolic Compounds	3851877-007	----	<b>Pentachlorophenol</b>	87-86-5	105 %	8.7-95%	<b>Recovery greater than upper control limit</b>
<b>Matrix Spike (MS) Recoveries</b>							
ED045G: Chloride Discrete analyser	ES1327806-001	Anonymous	<b>Chloride</b>	16887-00-6	Not Determined	----	<b>MS recovery not determined, background level greater than or equal to 4x spike level.</b>
EG094F: Dissolved Metals in Fresh Water by ORC-ICP	ES1328108-003	BY_MW29	<b>Manganese</b>	7439-96-5	Not Determined	----	<b>MS recovery not determined, background level greater than or equal to 4x spike level.</b>

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.

#### Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted</b>							
EP075(SIM)S: Phenolic Compound Surrogates	ES1328108-002	R01_201213_JG	<b>2.4.6-Tribromophenol</b>	118-79-6	13.3 %	17-125 %	<b>Recovery less than lower data quality objective</b>

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.



# CHAIN OF CUSTODY

ALS Laboratory  
please tick →

Environmental Division  
Sydney  
Work Order  
**ES1328110**

Rev  
ALS 5/1  
20/12  
19:00

CLIENT: <i>Macquarie generation</i>	TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date): <small>(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)</small>	FOR LABORATORY USE: Custody Seal Intact Free Ice / frozen in receipt? Random Sample 1 Other comment:
OFFICE: <i>Sydney</i>	<input checked="" type="checkbox"/> Non Standard or urgent TAT (List due date): <i>48 hr turn around</i>	
PROJECT: <i>Project Symphony</i>	ALS QUOTE NO.: <i>SY794/13</i>	
ORDER NUMBER: <i>0224193</i>	SITE: <i>BAYSWATER / LIDDELL</i>	
PROJECT MANAGER: <i>Joe Ferring</i>	CONTACT PH:	
SAMPLER: <i>JN</i>	SAMPLER MOBILE: <i>0405132 979</i>	RECEIVED BY: <i>J Hayre</i>
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	RECEIVED DATE/TIME: <i>3:20</i>
Email Reports to (will default to PM if no other addresses are listed): <i>Symphony-macquarie@em</i>	RELINQUISHED BY: <i>Julia Nardin</i>	RELINQUISHED DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed):	DATE/TIME: <i>19/12/13</i>	



Telephone : +61-2-8784 8555

### COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to extract Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered required).									
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE <small>(refer to codes below)</small>	TOTAL CONTAINERS	W-2 Metals <small>(As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)</small>	17 Metals <small>(As, Ba, Be, Bi, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Tl, Hg)</small>	Selenium <small>(Freshwater ORC)</small>	VOC Target Scan	PCB	PFOS/PFOA	W-24 TRHCs <small>(C40)/BTEX, PAH, Phenols</small>	<i>Metal (13)</i>	<i>likely contaminant levels, including for samples requiring specific CC</i>
→	BN-MW01	18.12.13/15:10	W		6							X	X	X
✓	1 BL-MW02	18.12.13/13:45			4	X			X	X	X	X		<i>insufficient water to run pres bottle please take from amber bottle.</i>
✓	2 BX-MW01	18.12.13/14:45			7	X			X	X	X	X		
✓	3 BF-MW09	19.12.13/17:07			7	X			X	X	X	X		
✓	4 BT-MW01	19.12.13/15:05			8	X			X	X	X	X		
✓	5 BO-MW01	19.12.13/11:06			9				X			X	X	X
✓	6 RO1-191213-JN	19.12.13			7	X			X			X	X	X
→	7 BN-MW02													
	8 2x trip blank													
	9 2x trip spike													
✓	10 BV-MOV	19/12/13	12-30											

received

received

detected

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; OHC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solids; B = Unpreserved Bag.

## Jacob Waugh

---

**From:** Loren Schiavon  
**Sent:** Monday, 23 December 2013 11:33 AM  
**To:** Jacob Waugh  
**Subject:** FW: Additional analysis ES1328110  
**Attachments:** ES1328110\_0\_SRN\_131221085546.pdf; ES1328110\_COC.PDF

**Importance:** High

Hi Jacob,

Can you please arrange to have analysis added to work order ES1328110 as per Clea's email below?

Thanks!

Kind Regards

**Loren Schiavon**

CLIENT SERVICES CO-ORDINATOR  
ALS | Environmental Division

277-289 Woodpark Road  
Smithfield NSW 2164 Australia

*How was your customer experience? Please send us your feedback*

*Please see our latest EnviroMail 68 - Sampling and Analysis Implications of the new NEPM - July 2013*

*EnviroMail 69 - Testing Requirements of the new NEPM - July 2013*

*EnviroMail 70 - Variation of Naphthalene by SVOC and VOC Methods in Water - July 2013*

T +61 2 8784 8555  
D +61 2 8784 8503  
F +61 2 8784 8500

[www.alsglobal.com](http://www.alsglobal.com)

Winner of the inaugural CARE Award 2011 - Sustainable Technology & Innovation:  
Reduction in Sample Volumes - Improving quality, safety, efficiency and sustainability in environmental practices



---

**From:** Clea Henderson [mailto:Clea.Henderson@erm.com]  
**Sent:** Monday, 23 December 2013 10:38 AM  
**To:** ALSEnviro Sydney  
**Cc:** Barbara Hanna; ERM Australia Project Symphony MacGen; Joseph Ferring  
**Subject:** Additional analysis ES1328110  
**Importance:** High



Can we please arrange for the following analysis to be added to the attached batch, on fast tat?

Sample 007 (BN\_MW02) should be analysed for:

- Dissolved metals (arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, manganese, nickel, lead, mercury, vanadium zinc plus boron, molybdenum, thallium and selenium)
- TRH/BTEX/PAH/PHENOLS
- VOCs
- Cations/Anions

Sample 010 (BV\_MW04) should be analysed for:

- Dissolved metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury and zinc)
- TRH/BTEX/PAH/PHENOLS
- VOCs
- PCBs

Many thanks,

Clea Henderson  
Chemical Engineer

Environmental Resources Management  
Level 3, Tower 3, 13-38 Siddeley Street,  
World Trade Centre, Docklands Victoria 3005

Tel: +61 3 8606 4188 (Direct)

Tel: +61 3 9696 8011 (switchboard)

Fax: +61 3 9696 8022

[www.erm.com](http://www.erm.com)

[clea.henderson@erm.com](mailto:clea.henderson@erm.com)

---

This electronic mail message may contain information which is (a) LEGALLY PRIVILEGED, PROPRIETARY IN NATURE, OR OTHERWISE PROTECTED BY LAW FROM DISCLOSURE, and (b) intended only for the use of the Addressee (s) names herein. If you are not the Addressee (s), or the person responsible for delivering this to the Addressee (s), you are hereby notified that reading, copying, or distributing this message is prohibited. If you have received this electronic mail message in error, please contact us immediately and take the steps necessary to delete the message completely from your computer system. Environmental Resources Management Australia Pty Ltd (ERM) has systems in place to encourage a virus free software environment, however we cannot be liable for any loss or damage, corruption or distortion of electronically transmitted information, or for any changes made to this information during transferral or after receipt by the client.

Please visit ERM's web site: <http://www.erm.com>

ALS Group: Click [here](#) to report this email as spam.



## Jacob Waugh

---

**From:** Clea Henderson <Clea.Henderson@erm.com>  
**Sent:** Tuesday, 24 December 2013 8:50 AM  
**To:** Jacob Waugh  
**Cc:** Loren Schiavon; ERM Australia Project Symphony MacGen  
**Subject:** RE: Additional analysis ES1328110

Hi Jacob,

Noted that that no metals bottle received for BL\_MW02.

Yes, my apologies. Sample 005 requires dissolved metals (arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, manganese, nickel, lead, mercury, vanadium zinc plus boron, molybdenum, thallium and selenium).

Thanks Jacob.

(Can you pls make sure you cc [symphony.macgen@erm.com](mailto:symphony.macgen@erm.com) for these projects?)

Clea Henderson  
Chemical Engineer

Environmental Resources Management  
Level 3, Tower 3, 13-38 Siddeley Street,  
World Trade Centre, Docklands Victoria 3005

Tel: +61 3 8606 4188 (Direct)  
Tel: +61 3 9696 8011 (switchboard)  
Fax: +61 3 9696 8022

[www.erm.com](http://www.erm.com)  
[clea.henderson@erm.com](mailto:clea.henderson@erm.com)

---

From: Jacob Waugh [mailto:Jacob.Waugh@alsglobal.com]  
Sent: Monday, December 23, 2013 5:58 PM  
To: Clea Henderson  
Cc: Loren Schiavon  
Subject: RE: Additional analysis ES1328110

Hi Clea,

Two other quick questions / issues with this batch:

ES1328110-001 (BL\_MW02) had no metals bottle received so no metals analysis has been added.  
ES1328110-005 (BQ\_MW01) should this sample also have boron, molybdenum, thallium and selenium added?

Thanks,  
**Jacob Waugh**

**Laboratory Co-ordinator**  
**ALS | Environmental Division**

277-289 Woodpark Road  
Smithfield NSW 2164 Australia

*How was your customer experience? [Please send us your feedback](#)*

[EnviroMail 68 - Sampling and Analysis Implications of the new NEPM - July 2013](#)

[EnviroMail 69 - Testing Requirements of the new NEPM - July 2013](#)

[EnviroMail 70 - Variation of Naphthalene by SVOC and VOC Methods in Water - July 2013](#)

[EnviroMail 71 - Cryptosporidium Infectivity - July 2013](#)

T +61 2 8784 8555

F +61 2 8784 8500

[www.alsglobal.com](http://www.alsglobal.com)

**Winner of the inaugural CARE Award 2011 - Sustainable Technology & Innovation:**

Reduction in Sample Volumes - Improving quality, safety, efficiency and sustainability in environmental practices



---

From: Clea Henderson [<mailto:Clea.Henderson@erm.com>]

Sent: Monday, 23 December 2013 10:38 AM

To: ALSEnviro Sydney

Cc: Barbara Hanna; ERM Australia Project Symphony MacGen; Joseph Ferring

Subject: Additional analysis ES1328110

Importance: High

Can we please arrange for the following analysis to be added to the attached batch, on fast tat?

Sample 007 (BN\_MW02) should be analysed for:

- Dissolved metals (arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, manganese, nickel, lead, mercury, vanadium zinc plus boron, molybdenum, thallium and selenium)
- TRH/BTEX/PAH/PHENOLS
- VOCs
- Cations/Anions

Sample 010 (BV\_MW04) should be analysed for:

- Dissolved metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury and zinc)
- TRH/BTEX/PAH/PHENOLS
- VOCs
- PCBs

Many thanks,

Clea Henderson  
Chemical Engineer

Environmental Resources Management  
Level 3, Tower 3, 13-38 Siddeley Street,  
World Trade Centre, Docklands Victoria 3005

Tel: +61 3 8606 4188 (Direct)

Tel: +61 3 9696 8011 (switchboard)

Fax: +61 3 9696 8022

---

This electronic mail message may contain information which is (a) LEGALLY PRIVILEGED, PROPRIETARY IN NATURE, OR OTHERWISE PROTECTED BY LAW FROM DISCLOSURE, and (b) intended only for the use of the Addressee (s) names herein. If you are not the Addressee (s), or the person responsible for delivering this to the Addressee (s), you are hereby notified that reading, copying, or distributing this message is prohibited. If you have received this electronic mail message in error, please contact us immediately and take the steps necessary to delete the message completely from your computer system. Environmental Resources Management Australia Pty Ltd (ERM) has systems in place to encourage a virus free software environment, however we cannot be liable for any loss or damage, corruption or distortion of electronically transmitted information, or for any changes made to this information during transferral or after receipt by the client.

Please visit ERM's web site: <http://www.erm.com>

ALS Group: Click [here](#) to report this email as spam.

\*\*\*\*\*

The information contained in this email is confidential. If the reader is not the intended recipient then you must notify the sender immediately by return email and then delete all copies of this email. You must not copy, distribute, print or otherwise use the information. Email may be stored by the Company to support operational activities. All information will be held in accordance with the Company's Privacy Policy which can be found on the Company's website - [www.alsglobal.com](http://www.alsglobal.com).

\*\*\*\*\*

---

This electronic mail message may contain information which is (a) LEGALLY PRIVILEGED, PROPRIETARY IN NATURE, OR OTHERWISE PROTECTED BY LAW FROM DISCLOSURE, and (b) intended only for the use of the Addressee (s) names herein. If you are not the Addressee (s), or the person responsible for delivering this to the Addressee (s), you are hereby notified that reading, copying, or distributing this message is prohibited. If you have received this electronic mail message in error, please contact us immediately and take the steps necessary to delete the message completely from your computer system. Environmental Resources Management Australia Pty Ltd (ERM) has systems in place to encourage a virus free software environment, however we cannot be liable for any loss or damage, corruption or distortion of electronically transmitted information, or for any changes made to this information during transferral or after receipt by the client.

Please visit ERM's web site: <http://www.erm.com>

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	<b>: ES1328110</b>		
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact Address</b>	<b>: MR JOSEPH FERRING GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b>	<b>Contact Address</b>	<b>: Barbara Hanna 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	<b>: Barbara.Hanna@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: Project Symphony</b>	<b>Page</b>	<b>: 1 of 3</b>
<b>Order number</b>	<b>: 0224193</b>	<b>Quote number</b>	<b>: ES2013ENVRES0369 (SY/794/13)</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>QC Level</b>	<b>: NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>		
<b>Sampler</b>	<b>: JW</b>		

#### Dates

<b>Date Samples Received</b>	<b>: 20-DEC-2013</b>	<b>Issue Date</b>	<b>: 24-DEC-2013 09:07</b>
<b>Client Requested Due Date</b>	<b>: 24-DEC-2013</b>	<b>Scheduled Reporting Date</b>	<b>: 30-DEC-2013</b>

#### Delivery Details

<b>Mode of Delivery</b>	<b>: Carrier</b>	<b>Temperature</b>	<b>: 4.4°C - Ice present</b>
<b>No. of coolers/boxes</b>	<b>: 1 HARD</b>	<b>No. of samples received</b>	<b>: 10</b>
<b>Security Seal</b>	<b>: Intact.</b>	<b>No. of samples analysed</b>	<b>: 10</b>

#### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- This is an updated SRA which indicates the new scheduled release date for this work order.
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Sample Trip Blank and Trip SPIke were received extra and will be analysed.**
- **Cations / Anions could not be analysed for sample " BN\_MW02 " ( ALS #7 ) as container was not supplied.**
- **Red bottle not received for sample BL\_MW02, unable to conduct metals analysis.**
- **Samples BN\_MW02 and BV\_M04 were received extra and placed on hold.**
- **Sample BN\_MW01 was not received.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG035F Dissolved Mercury by FIMS	WATER - EG035T Total Mercury by FIMS	WATER - EG094A-F Dissolved Metals in Fresh Water Suite A by	WATER - EG094A-T Total Metals in Fresh water Suite A by ORC-ICPMS	WATER - EG094B-F Dissolved Metals in fresh water Suite B by	WATER - EN055 - PG Ionic Balance by ED037P, ED041G, ED045G &	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP074 (water) Volatile Organic Compounds
ES1328110-001	18-DEC-2013 15:10	BL_MW02							✓	✓
ES1328110-002	18-DEC-2013 13:45	BX_MW01	✓		✓				✓	✓
ES1328110-003	19-DEC-2013 14:45	BF_MW09	✓		✓					✓
ES1328110-004	19-DEC-2013 17:07	BT_MW01	✓		✓				✓	✓
ES1328110-005	19-DEC-2013 15:05	BQ_MW01	✓		✓		✓	✓		✓
ES1328110-006	19-DEC-2013 11:06	R01_191213_JN		✓		✓				✓
ES1328110-007	19-DEC-2013 15:00	BN_MW02	✓		✓		✓			✓
ES1328110-010	19-DEC-2013 12:30	BV_MW04	✓		✓				✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP080 BTEXN	WATER - EP231 Perfluorooctyl Acids and Sulfonates by LC/MS/MS	WATER - NT-01 Major Cations (Ca, Mg, Na, K)	WATER - NT-02 Major Anions (Chloride, Sulphate, Alkalinity)	WATER - W-18 TRH(C6 - C9)/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1328110-001	18-DEC-2013 15:10	BL_MW02		✓				✓
ES1328110-002	18-DEC-2013 13:45	BX_MW01		✓				✓
ES1328110-003	19-DEC-2013 14:45	BF_MW09						✓
ES1328110-004	19-DEC-2013 17:07	BT_MW01						✓
ES1328110-005	19-DEC-2013 15:05	BQ_MW01			✓	✓		✓
ES1328110-006	19-DEC-2013 11:06	R01_191213_JN						✓
ES1328110-007	19-DEC-2013 15:00	BN_MW02						✓
ES1328110-008	[ 20-DEC-2013 ]	2 X TRIP BLANK					✓	
ES1328110-009	[ 20-DEC-2013 ]	2X TRIP SPIKE	✓					
ES1328110-010	19-DEC-2013 12:30	BV_MW04						✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## *Requested Deliverables*

### **MR JOSEPH FERRING**

- *AU Certificate of Analysis - NATA ( COA )	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC )	Email	joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	joseph.ferring@erm.com
- EDI Format - XTab ( XTAB )	Email	joseph.ferring@erm.com

### **SYMPHONY MACGEN**

- *AU Certificate of Analysis - NATA ( COA )	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) ( COC )	Email	symphony.macgen@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	symphony.macgen@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	symphony.macgen@erm.com
- EDI Format - XTab ( XTAB )	Email	symphony.macgen@erm.com

### **THE ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice ( INV )	Email	au.accounts@erm.com
-------------------------------	-------	---------------------

## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES1328110</b>	Page	: 1 of 15
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: 0224193		
C-O-C number	: ----	Date Samples Received	: 20-DEC-2013
Sampler	: JW	Issue Date	: 31-DEC-2013
Site	: ----		
Quote number	: SY/794/13	No. of samples received	: 10
		No. of samples analysed	: 10

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



## 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.

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

- **EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**
- **EP231: PFOA & PFOS results are reported as an aggregate of linear and branched isomers.**



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BL_MW02	BX_MW01	BF_MW09	BT_MW01	BQ_MW01
				18-DEC-2013 15:10	18-DEC-2013 13:45	19-DEC-2013 14:45	19-DEC-2013 17:07	19-DEC-2013 15:05
Compound	CAS Number	LOR	Unit	ES1328110-001	ES1328110-002	ES1328110-003	ES1328110-004	ES1328110-005
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	----	----	----	----	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	----	----	----	----	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	----	----	----	----	1450
Total Alkalinity as CaCO3	----	1	mg/L	----	----	----	----	1450
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	----	----	3280
<b>ED045G: Chloride Discrete analyser</b>								
Chloride	16887-00-6	1	mg/L	----	----	----	----	7500
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	----	----	----	----	30
Magnesium	7439-95-4	1	mg/L	----	----	----	----	32
Sodium	7440-23-5	1	mg/L	----	----	----	----	7360
Potassium	7440-09-7	1	mg/L	----	----	----	----	29
<b>EG035F: Dissolved Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	<0.0001	<0.0001	<0.0001
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS</b>								
Selenium	7782-49-2	0.2	µg/L	----	----	----	----	4.5
Arsenic	7440-38-2	0.2	µg/L	----	6.5	0.6	2.4	7.2
Barium	7440-39-3	0.5	µg/L	----	----	----	----	122
Beryllium	7440-41-7	0.1	µg/L	----	----	----	----	<0.1
Boron	7440-42-8	5	µg/L	----	----	----	----	214
Cadmium	7440-43-9	0.05	µg/L	----	0.26	<0.05	<0.05	0.23
Chromium	7440-47-3	0.2	µg/L	----	14.3	4.7	0.6	0.4
Cobalt	7440-48-4	0.1	µg/L	----	----	----	----	16.4
Copper	7440-50-8	0.5	µg/L	----	25.3	1.1	2.3	8.2
Lead	7439-92-1	0.1	µg/L	----	464	2.6	6.5	3.4
Manganese	7439-96-5	0.5	µg/L	----	----	----	----	358
Molybdenum	7439-98-7	0.1	µg/L	----	----	----	----	9.4
Nickel	7440-02-0	0.5	µg/L	----	150	2.2	4.5	44.1
Thallium	7440-28-0	0.02	µg/L	----	----	----	----	0.17
Vanadium	7440-62-2	0.2	µg/L	----	----	----	----	5.7
Zinc	7440-66-6	1	µg/L	----	119	28	49	123
<b>EN055: Ionic Balance</b>								



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				BL_MW02	BX_MW01	BF_MW09	BT_MW01	BQ_MW01
				18-DEC-2013 15:10	18-DEC-2013 13:45	19-DEC-2013 14:45	19-DEC-2013 17:07	19-DEC-2013 15:05
				ES1328110-001	ES1328110-002	ES1328110-003	ES1328110-004	ES1328110-005
Compound	CAS Number	LOR	Unit					
<b>EN055: Ionic Balance - Continued</b>								
Total Anions	----	0.01	meq/L	----	----	----	----	309
Total Cations	----	0.01	meq/L	----	----	----	----	325
Ionic Balance	----	0.01	%	----	----	----	----	2.52
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	----	<1	----
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Styrene	100-42-5	5	µg/L	<5	<5	<5	<5	<5
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	<5	<5	<5
1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	<5	<5	<5
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	<5	<5	<5
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5	<5	<5
<b>EP074B: Oxygenated Compounds</b>								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	<50	<50
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	<5	<5
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BL_MW02	BX_MW01	BF_MW09	BT_MW01	BQ_MW01
				18-DEC-2013 15:10	18-DEC-2013 13:45	19-DEC-2013 14:45	19-DEC-2013 17:07	19-DEC-2013 15:05
Compound	CAS Number	LOR	Unit	ES1328110-001	ES1328110-002	ES1328110-003	ES1328110-004	ES1328110-005
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BL_MW02	BX_MW01	BF_MW09	BT_MW01	BQ_MW01
				18-DEC-2013 15:10	18-DEC-2013 13:45	19-DEC-2013 14:45	19-DEC-2013 17:07	19-DEC-2013 15:05
Compound	CAS Number	LOR	Unit	ES1328110-001	ES1328110-002	ES1328110-003	ES1328110-004	ES1328110-005
<b>EP074F: Halogenated Aromatic Compounds - Continued</b>								
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
<b>EP074H: Naphthalene</b>								
Naphthalene	91-20-3	7	µg/L	<7	<7	<7	<7	<7
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	1.0	µg/L	<1.0	<b>31.3</b>	<1.0	<b>5.9</b>	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<b>18.2</b>	<2.0	<b>12.5</b>	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BL_MW02	BX_MW01	BF_MW09	BT_MW01	BQ_MW01
				18-DEC-2013 15:10	18-DEC-2013 13:45	19-DEC-2013 14:45	19-DEC-2013 17:07	19-DEC-2013 15:05
Compound	CAS Number	LOR	Unit	ES1328110-001	ES1328110-002	ES1328110-003	ES1328110-004	ES1328110-005
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<b>30</b>	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<b>70</b>	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<b>70</b>	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<b>30</b>	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<b>20</b>	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<b>2</b>	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<b>6</b>	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<b>8</b>	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
<b>EP231: Perfluorinated Compounds</b>								
PFOS	1763-23-1	0.02	µg/L	<0.02	<0.02	----	----	----
PFOA	335-67-1	0.02	µg/L	<0.02	<0.02	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BL_MW02	BX_MW01	BF_MW09	BT_MW01	BQ_MW01
				18-DEC-2013 15:10	18-DEC-2013 13:45	19-DEC-2013 14:45	19-DEC-2013 17:07	19-DEC-2013 15:05
Compound	CAS Number	LOR	Unit	ES1328110-001	ES1328110-002	ES1328110-003	ES1328110-004	ES1328110-005
<b>EP231: Perfluorinated Compounds - Continued</b>								
6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	<0.1	----	----	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	65.6	62.5	----	68.2	----
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	93.5	93.8	91.7	92.6	94.6
Toluene-D8	2037-26-5	0.1	%	120	125	122	122	128
4-Bromofluorobenzene	460-00-4	0.1	%	106	107	98.3	104	109
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	31.6	34.6	29.6	37.1	36.5
2-Chlorophenol-D4	93951-73-6	0.1	%	68.0	61.7	62.0	71.2	71.9
2,4,6-Tribromophenol	118-79-6	0.1	%	58.9	56.1	56.4	69.0	59.9
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	75.1	57.8	58.2	79.3	57.8
Anthracene-d10	1719-06-8	0.1	%	86.0	74.8	93.1	87.6	99.8
4-Terphenyl-d14	1718-51-0	0.1	%	87.9	75.2	96.5	90.6	99.9
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	101	101	93.7	100	102
Toluene-D8	2037-26-5	0.1	%	116	120	123	118	125
4-Bromofluorobenzene	460-00-4	0.1	%	118	118	112	115	120



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				R01_191213_JN	BN_MW02	2 X TRIP BLANK	2X TRIP SPIKE	BV_MW04
				19-DEC-2013 11:06	19-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	19-DEC-2013 12:30
Compound	CAS Number	LOR	Unit	ES1328110-006	ES1328110-007	ES1328110-008	ES1328110-009	ES1328110-010
<b>EG035F: Dissolved Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	----	----	<0.0001
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS</b>								
Selenium	7782-49-2	0.2	µg/L	----	1.3	----	----	----
Arsenic	7440-38-2	0.2	µg/L	----	10.0	----	----	4.2
Barium	7440-39-3	0.5	µg/L	----	23.0	----	----	----
Beryllium	7440-41-7	0.1	µg/L	----	<0.1	----	----	----
Boron	7440-42-8	5	µg/L	----	523	----	----	----
Cadmium	7440-43-9	0.05	µg/L	----	0.10	----	----	0.34
Chromium	7440-47-3	0.2	µg/L	----	0.2	----	----	14.3
Cobalt	7440-48-4	0.1	µg/L	----	46.6	----	----	----
Copper	7440-50-8	0.5	µg/L	----	2.3	----	----	6.9
Lead	7439-92-1	0.1	µg/L	----	0.1	----	----	45.7
Manganese	7439-96-5	0.5	µg/L	----	1200	----	----	----
Molybdenum	7439-98-7	0.1	µg/L	----	140	----	----	----
Nickel	7440-02-0	0.5	µg/L	----	106	----	----	68.7
Thallium	7440-28-0	0.02	µg/L	----	0.12	----	----	----
Vanadium	7440-62-2	0.2	µg/L	----	0.8	----	----	----
Zinc	7440-66-6	1	µg/L	----	23	----	----	157
<b>EG094T: Total metals in Fresh water by ORC-ICPMS</b>								
Arsenic	7440-38-2	0.2	µg/L	<0.2	----	----	----	----
Cadmium	7440-43-9	0.05	µg/L	<0.05	----	----	----	----
Chromium	7440-47-3	0.2	µg/L	<0.2	----	----	----	----
Copper	7440-50-8	0.5	µg/L	<0.5	----	----	----	----
Lead	7439-92-1	0.1	µg/L	<0.1	----	----	----	----
Nickel	7440-02-0	0.5	µg/L	<0.5	----	----	----	----
Zinc	7440-66-6	1	µg/L	<1	----	----	----	----
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	1	µg/L	----	----	----	----	<1
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Styrene	100-42-5	5	µg/L	<5	<5	----	----	<5
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	----	----	<5



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time	R01_191213_JN	BN_MW02	2 X TRIP BLANK	2X TRIP SPIKE	BV_MW04
	19-DEC-2013 11:06	19-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	19-DEC-2013 12:30
	ES1328110-006	ES1328110-007	ES1328110-008	ES1328110-009	ES1328110-010

Compound	CAS Number	LOR	Unit	ES1328110-006	ES1328110-007	ES1328110-008	ES1328110-009	ES1328110-010
<b>EP074A: Monocyclic Aromatic Hydrocarbons - Continued</b>								
n-Propylbenzene	103-65-1	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
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	----	----	<5
<b>EP074B: Oxygenated Compounds</b>								
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 (MBK)	591-78-6	50	µg/L	<50	<50	----	----	<50
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	----	----	<5
<b>EP074D: Fumigants</b>								
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
<b>EP074E: Halogenated Aliphatic Compounds</b>								
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-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	----	----	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	----	----	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	<5





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				R01_191213_JN	BN_MW02	2 X TRIP BLANK	2X TRIP SPIKE	BV_MW04
				19-DEC-2013 11:06	19-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	19-DEC-2013 12:30
Compound	CAS Number	LOR	Unit	ES1328110-006	ES1328110-007	ES1328110-008	ES1328110-009	ES1328110-010
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
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
Trichloroethene	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
1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	----	----	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	----	----	<5
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	----	----	<5
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	----	----	<5
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	----	----	<5
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	----	----	<5
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	----	----	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	----	----	<5
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	----	----	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	----	----	<5
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	----	----	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	----	----	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	----	----	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	----	----	<5
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	----	----	<5
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	----	----	<5
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	----	----	<5
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	----	----	<5
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	----	----	<5
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	5	µg/L	<5	<5	----	----	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	----	----	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	----	----	<5
Bromoform	75-25-2	5	µg/L	<5	<5	----	----	<5
<b>EP074H: Naphthalene</b>								
Naphthalene	91-20-3	7	µg/L	<7	<7	----	----	<7



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				R01_191213_JN	BN_MW02	2 X TRIP BLANK	2X TRIP SPIKE	BV_MW04
				19-DEC-2013 11:06	19-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	19-DEC-2013 12:30
Compound	CAS Number	LOR	Unit	ES1328110-006	ES1328110-007	ES1328110-008	ES1328110-009	ES1328110-010
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	----	----	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	<1.0
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	<1.0
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	<1.0
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	<1.0
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	<1.0
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	<1.0
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	<2.0
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<b>1.0</b>	----	----	<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	<b>1.8</b>	----	----	<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	<b>1.8</b>	----	----	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	<1.0
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	----	----	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.6	----	----	<0.6
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	<1.0
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<b>4.6</b>	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	----	----	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	<20
C10 - C14 Fraction	----	50	µg/L	<50	<b>370</b>	----	----	<50



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				R01_191213_JN	BN_MW02	2 X TRIP BLANK	2X TRIP SPIKE	BV_MW04
				19-DEC-2013 11:06	19-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	19-DEC-2013 12:30
Compound	CAS Number	LOR	Unit	ES1328110-006	ES1328110-007	ES1328110-008	ES1328110-009	ES1328110-010
<b>EP080/071: Total Petroleum Hydrocarbons - Continued</b>								
C15 - C28 Fraction	----	100	µg/L	<100	3420	----	----	<100
C29 - C36 Fraction	----	50	µg/L	<50	880	----	----	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	4670	----	----	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	720	----	----	<100
>C16 - C34 Fraction	----	100	µg/L	<100	3620	----	----	<100
>C34 - C40 Fraction	----	100	µg/L	<100	650	----	----	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	4990	----	----	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	720	----	----	<100
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	<1	13	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	13	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	12	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	12	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	13	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	25	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	63	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	16	<5
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	60.6
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	90.4	123	----	----	113
Toluene-D8	2037-26-5	0.1	%	118	115	----	----	105
4-Bromofluorobenzene	460-00-4	0.1	%	96.3	116	----	----	107
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	33.4	51.0	----	----	27.0
2-Chlorophenol-D4	93951-73-6	0.1	%	64.1	32.0	----	----	58.4
2,4,6-Tribromophenol	118-79-6	0.1	%	67.7	38.1	----	----	72.5
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	62.4	38.6	----	----	69.2



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sample ID	R01_191213_JN	BN_MW02	2 X TRIP BLANK	2X TRIP SPIKE	BV_MW04
Client sampling date / time	19-DEC-2013 11:06	19-DEC-2013 15:00	[20-DEC-2013]	[20-DEC-2013]	19-DEC-2013 12:30

Compound	CAS Number	LOR	Unit	ES1328110-006	ES1328110-007	ES1328110-008	ES1328110-009	ES1328110-010
<b>EP075(SIM)T: PAH Surrogates - Continued</b>								
Anthracene-d10	1719-06-8	0.1	%	91.6	46.4	----	----	63.6
4-Terphenyl-d14	1718-51-0	0.1	%	100	45.0	----	----	75.1
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	91.6	125	98.2	86.6	114
Toluene-D8	2037-26-5	0.1	%	118	113	100	97.1	103
4-Bromofluorobenzene	460-00-4	0.1	%	106	106	81.3	93.2	97.2



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	28.5	129
<b>EP074S: VOC Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	78.3	133.2
Toluene-D8	2037-26-5	79.1	128.9
4-Bromofluorobenzene	460-00-4	80.8	123.7
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

## QUALITY CONTROL REPORT

Work Order	: <b>ES1328110</b>	Page	: 1 of 30
Client	: <b>ENVIRO RESOURCES MANAGEMENT</b>	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 20-DEC-2013
C-O-C number	: ----	Issue Date	: 31-DEC-2013
Sampler	: JW	No. of samples received	: 10
Order number	: 0224193	No. of samples analysed	: 10
Quote number	: SY/794/13		

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

This Quality Control Report contains the following information:

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



## 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.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
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  
RPD = Relative Percentage Difference  
# = Indicates failed QC



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Lana Nguyen	Senior LCMS Chemist	Sydney Organics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics



### Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>ED037P: Alkalinity by PC Titrator (QC Lot: 3225584)</b>									
ES1328012-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	32	32	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	32	32	0.0	0% - 20%
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 3225459)</b>									
ES1327914-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	24	24	0.0	0% - 20%
ES1328007-004	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	20	16	20.7	0% - 50%
<b>ED045G: Chloride Discrete analyser (QC Lot: 3225457)</b>									
ES1327806-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	3820	3820	0.0	0% - 20%
ES1328108-003	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	650	644	0.9	0% - 20%
<b>ED093F: Dissolved Major Cations (QC Lot: 3225456)</b>									
ES1327806-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	15	15	0.0	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	234	233	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	2170	2210	1.6	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	16	16	0.0	0% - 50%
ES1328082-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	9	9	0.0	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	2	2	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	16	16	0.0	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	1	1	0.0	No Limit
<b>EG035F: Dissolved Mercury by FIMS (QC Lot: 3225615)</b>									
ES1327888-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1327964-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
<b>EG035F: Dissolved Mercury by FIMS (QC Lot: 3225616)</b>									
ES1328110-004	BT_MW01	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
<b>EG035F: Dissolved Mercury by FIMS (QC Lot: 3230341)</b>									
ES1328002-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3225995)</b>									
ES1327964-007	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3227202)</b>									
ES1328108-001	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.07	0.08	13.9	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	6.3	6.3	0.0	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.8	1.0	17.3	0% - 50%





Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3227202) - continued</b>									
ES1328108-001	Anonymous	EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	24.1	24.6	2.3	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	6.3	6.4	0.0	0% - 20%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	16.7	16.5	1.3	0% - 20%
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	1.5	1.5	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	93.1	92.2	1.0	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	5.4	5.3	0.0	0% - 50%
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	226	223	1.3	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	104	105	0.7	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	352	353	0.0	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	193	186	3.8	0% - 20%
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3231836)</b>									
ES1327568-001	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.11	0.11	0.0	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	20.5	20.8	1.5	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	0.5	0.5	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	1.2	1.1	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	61.0	60.2	1.3	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	6890	6610	4.1	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	14.0	14.0	0.0	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	7	7	0.0	No Limit
		EG094A-F: Boron	7440-42-8	5	µg/L	46	47	0.0	No Limit
ES1328110-010	BV_MW04	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.35	0.36	0.0	0% - 50%
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	0.34	0.34	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	2.9	3.2	8.6	0% - 20%
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	107	112	4.4	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	45.7	44.8	1.8	0% - 20%
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	2.3	2.1	7.3	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	4.2	4.1	3.8	0% - 20%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	14.3	14.4	0.8	0% - 20%
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	13.9	14.2	2.3	0% - 20%
		EG094A-F: Barium	7440-39-3	0.5	µg/L	21.2	20.5	3.0	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	6.9	7.0	0.0	0% - 50%
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	1690	1720	1.4	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	68.7	68.3	0.5	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	157	154	1.6	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3231836) - continued</b>									
ES1328110-010	BV_MW04	EG094A-F: Boron	7440-42-8	5	µg/L	126	135	7.0	0% - 20%
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3231837)</b>									
ES1327568-001	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
<b>EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3227093)</b>									
ES1327964-007	Anonymous	EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	1	0.0	No Limit		
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3225992)</b>									
ES1328110-001	BL_MW02	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3225683)</b>									
ES1328110-001	BL_MW02	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3229766)</b>									
ES1327988-002	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
ES1327988-003	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3229766) - continued</b>									
ES1327988-003	Anonymous	EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
<b>EP074B: Oxygenated Compounds (QC Lot: 3225683)</b>									
ES1328110-001	BL_MW02	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
<b>EP074B: Oxygenated Compounds (QC Lot: 3229766)</b>									
ES1327988-002	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
ES1327988-003	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
<b>EP074C: Sulfonated Compounds (QC Lot: 3225683)</b>									
ES1328110-001	BL_MW02	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
<b>EP074C: Sulfonated Compounds (QC Lot: 3229766)</b>									
ES1327988-002	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES1327988-003	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
<b>EP074D: Fumigants (QC Lot: 3225683)</b>									
ES1328110-001	BL_MW02	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
<b>EP074D: Fumigants (QC Lot: 3229766)</b>									
ES1327988-002	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES1327988-003	Anonymous	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3225683)</b>									
ES1328110-001	BL_MW02	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit		
EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit		
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit		
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3229766)</b>									
ES1327988-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3229766) - continued</b>									
ES1327988-002	Anonymous	EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit		
ES1327988-003	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3229766) - continued</b>									
ES1327988-003	Anonymous	EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
<b>EP074F: Halogenated Aromatic Compounds (QC Lot: 3225683)</b>									
ES1328110-001	BL_MW02	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit		
<b>EP074F: Halogenated Aromatic Compounds (QC Lot: 3229766)</b>									
ES1327988-002	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit		
ES1327988-003	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit		
<b>EP074G: Trihalomethanes (QC Lot: 3225683)</b>									
ES1328110-001	BL_MW02	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
<b>EP074G: Trihalomethanes (QC Lot: 3229766)</b>									
ES1327988-002	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074G: Trihalomethanes (QC Lot: 3229766) - continued</b>									
ES1327988-002	Anonymous	EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES1327988-003	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
<b>EP074H: Naphthalene (QC Lot: 3225683)</b>									
ES1328110-001	BL_MW02	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
<b>EP074H: Naphthalene (QC Lot: 3229766)</b>									
ES1327988-002	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
ES1327988-003	Anonymous	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 3225994)</b>									
ES1328110-004	BL_MW02	EP075(SIM): Phenol	108-95-2	1.0	µg/L	5.9	4.8	21.1	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2.0	µg/L	12.5	7.1	55.6	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	0.0	No Limit
		ES1328114-004	Anonymous	EP075(SIM): Phenol	108-95-2	1.0	µg/L	<1.0	<1.0
EP075(SIM): 2-Chlorophenol	95-57-8			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2-Methylphenol	95-48-7			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2-Nitrophenol	88-75-5			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4-Dimethylphenol	105-67-9			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4-Dichlorophenol	120-83-2			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,6-Dichlorophenol	87-65-0			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4			1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): 3- & 4-Methylphenol	1319-77-3			2.0	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM): Pentachlorophenol	87-86-5			2.0	µg/L	<2.0	<2.0	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3225994)</b>									
ES1328110-004	BL_MW02	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3225994) - continued</b>									
ES1328110-004	BL_MW02	EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
ES1328114-004	Anonymous	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.6	<0.6	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	0.0	No Limit
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	0.0	No Limit		
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	0.0	No Limit		
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3225681)</b>									
ES1327964-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1328114-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3225682)</b>									
ES1328110-001	BL_MW02	EP080: C6 - C9 Fraction	----	20	µg/L	30	30	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3225993)</b>									
ES1328110-004	BL_MW02	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
ES1328114-005	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3225993) - continued</b>									
ES1328114-005	Anonymous	EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3229767)</b>									
ES1327988-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1327988-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3225681)</b>									
ES1327964-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1328114-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3225682)</b>									
ES1328110-001	BL_MW02	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	30	30	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3225993)</b>									
ES1328110-004	BL_MW02	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
ES1328114-005	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3229767)</b>									
ES1327988-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1327988-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3225681)</b>									
ES1327964-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES1328114-004	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3225682)</b>									
ES1328110-001	BL_MW02	EP080: Benzene	71-43-2	1	µg/L	2	2	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	6	6	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080: BTEXN (QC Lot: 3225682) - continued</b>									
ES1328110-001	BL_MW02	EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
<b>EP080: BTEXN (QC Lot: 3229767)</b>									
ES1327988-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES1327988-003	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit		
EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit		
<b>EP231: Perfluorinated Compounds (QC Lot: 3225890)</b>									
ES1328110-001	BL_MW02	EP231: PFOS	1763-23-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231: PFOA	335-67-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	<0.1	0.0	No Limit



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

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>ED037P: Alkalinity by PC Titrator (QCLot: 3225584)</b>									
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	----	200 mg/L	102	81	111	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3225459)</b>									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	103	86	122	
<b>ED045G: Chloride Discrete analyser (QCLot: 3225457)</b>									
ED045G: Chloride	16887-00-6	1	mg/L	<1	1000 mg/L	96.9	77	123	
<b>ED093F: Dissolved Major Cations (QCLot: 3225456)</b>									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	100	87	113	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	98.2	89	113	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	101	79	113	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	101	87	115	
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)</b>									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	106	78	114	
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225616)</b>									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	106	78	114	
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3230341)</b>									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	94.9	78	114	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225995)</b>									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	94.2	77	115	
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)</b>									
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	105	75	129	
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	92.0	76	120	
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	98.5	74	130	
EG094A-F: Boron	7440-42-8	5	µg/L	<5	100 µg/L	111	79	129	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	102	78	112	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	91.2	71	123	
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	106	79	121	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	100	77	125	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	98.7	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	91.5	79	119	
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	100	69	127	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	106	72	128	
EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	106	71	121	
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	94.1	78	116	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202) - continued</b>									
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	84.2	76	134	
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3231836)</b>									
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	97.5	75	129	
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	100	76	120	
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	98.3	74	130	
EG094A-F: Boron	7440-42-8	5	µg/L	<5	10 µg/L	124	79	129	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	96.9	78	112	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	95.4	71	123	
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	104	79	121	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	93.9	77	125	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	91.9	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	97.5	79	119	
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	85.7	69	127	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	105	72	128	
EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	93.3	71	121	
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	98.5	78	116	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	101	76	134	
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3231837)</b>									
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	88.3	75	125	
<b>EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093)</b>									
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	88.8	81	125	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	93.5	77	111	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.8	78	126	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	100	78	126	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	93.9	75	123	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	91.1	82	124	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	88.9	75	129	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3225992)</b>									
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	79.6	61.6	107	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3227367)</b>									
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	85.5	61.6	107	
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3225683)</b>									
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	106	74	118	
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	98.3	75	121	
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	102	67	123	
EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	100	70	122	
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	98.4	69	123	
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	100	71	121	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3225683) - continued</b>									
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	101	70	122	
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	101	67	123	
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	95.2	62	126	
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3229766)</b>									
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	98.4	74	118	
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	104	75	121	
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	104	67	123	
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	104	70	122	
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	107	69	123	
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	103	71	121	
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	103	70	122	
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	107	67	123	
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	108	62	126	
<b>EP074B: Oxygenated Compounds (QCLot: 3225683)</b>									
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	90.9	61.4	134	
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	105	73.6	130	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	114	61	139	
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	116	65	137	
<b>EP074B: Oxygenated Compounds (QCLot: 3229766)</b>									
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	101	61.4	134	
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	105	73.6	130	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	104	61	139	
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	101	65	137	
<b>EP074C: Sulfonated Compounds (QCLot: 3225683)</b>									
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	91.6	72.8	127	
<b>EP074C: Sulfonated Compounds (QCLot: 3229766)</b>									
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	78.3	72.8	127	
<b>EP074D: Fumigants (QCLot: 3225683)</b>									
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	85.6	61	119	
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	99.3	76	120	
EP074: cis-1.3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	87.9	62	120	
EP074: trans-1.3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	85.9	61	119	
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	105	69	117	
<b>EP074D: Fumigants (QCLot: 3229766)</b>									
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	102	61	119	
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	108	76	120	
EP074: cis-1.3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	90.0	62	120	
EP074: trans-1.3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	86.1	61	119	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074D: Fumigants (QCLot: 3229766) - continued</b>									
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	102	69	117	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3225683)</b>									
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	69.0	60.6	138	
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	80.4	67.4	130	
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	70.0	69.4	129	
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	115	56	140	
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	102	63	135	
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	81.4	65	131	
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	98.4	69	123	
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	86.5	70.2	128	
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	101	71	119	
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	93.4	75	119	
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	103	77	117	
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	83.3	61	119	
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	97.3	73	119	
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	74.4	63	121	
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	86.6	78	122	
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	95.1	74	120	
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	96.4	74	118	
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	107	75	123	
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	106	79	121	
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	95.0	72	124	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	97.1	66	114	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	96.1	60	120	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	90.2	70.6	128	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	112	70	124	
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	101	74	128	
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	114	71.8	126	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	106	66.4	136	
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	93.5	58	132	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3229766)</b>									
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	79.1	60.6	138	
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	88.2	67.4	130	
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	113	69.4	129	
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	96.8	56	140	
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	99.2	63	135	
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	105	65	131	
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	104	69	123	
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	85.4	70.2	128	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3229766) - continued</b>									
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	103	71	119	
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	106	75	119	
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	104	77	117	
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	101	61	119	
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	109	73	119	
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	95.6	63	121	
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	113	78	122	
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	107	74	120	
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	106	74	118	
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	112	75	123	
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	110	79	121	
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	111	72	124	
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	92.0	66	114	
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	95.4	60	120	
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	91.9	70.6	128	
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	101	70	124	
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	112	74	128	
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	81.6	71.8	126	
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	83.6	66.4	136	
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	114	58	132	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3225683)</b>									
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	113	80	118	
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	113	76	116	
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	110	71	121	
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	108	71	121	
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	106	74	120	
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	109	72	120	
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	104	77	117	
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	106	60	126	
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	102	67	125	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3229766)</b>									
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	108	80	118	
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	104	76	116	
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	106	71	121	
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	106	71	121	
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	108	74	120	
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	110	72	120	
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	109	77	117	
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	108	60	126	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
				Result		LCS	Low	High	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3229766) - continued</b>									
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	113	67	125	
<b>EP074G: Trihalomethanes (QCLot: 3225683)</b>									
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	90.2	76	118	
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	83.4	64	118	
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	80.0	65	115	
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	86.8	73.5	126	
<b>EP074G: Trihalomethanes (QCLot: 3229766)</b>									
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	109	76	118	
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	93.5	64	118	
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	90.3	65	115	
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	92.8	73.5	126	
<b>EP074H: Naphthalene (QCLot: 3225683)</b>									
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	109	61	125	
<b>EP074H: Naphthalene (QCLot: 3229766)</b>									
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	113	61	125	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3225994)</b>									
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	46.1	24.5	61.9	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	91.2	63.8	110	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	72.3	55.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	71.4	42.5	114	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	70.5	62.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	97.4	59.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	82.2	59.3	122	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	78.7	64.3	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	108	63	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	84.6	58.7	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	87.5	50	108	
		1	µg/L	<1.0	----	----	----	----	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					LCS	Low	High	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3225994) - continued</b>								
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	# 118	8.7	95
		2	µg/L	<2.0	----	----	----	----
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3227366)</b>								
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	5 µg/L	36.7	24.5	61.9
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	5 µg/L	91.8	63.8	110
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	5 µg/L	70.8	55.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	10 µg/L	63.3	42.5	114
		2	µg/L	<2.0	----	----	----	----
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	5 µg/L	83.2	62.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	5 µg/L	73.0	59.9	112
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	5 µg/L	67.6	59.3	122
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	5 µg/L	75.5	64.3	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	5 µg/L	87.1	63	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	5 µg/L	71.2	58.7	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	5 µg/L	72.1	50	108
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	10 µg/L	75.9	8.7	95
		2	µg/L	<2.0	----	----	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3225994)</b>								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	70.8	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	87.4	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	76.2	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	86.5	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	93.0	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	91.7	64.3	116
		1	µg/L	<1.0	----	----	----	----



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3225994) - continued</b>									
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	103	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	102	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	91.7	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	95.8	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	97.3	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	86.4	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	95.6	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	76.9	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	77.1	61.2	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	5 µg/L	86.7	59.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3227366)</b>									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	64.7	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	72.3	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	63.4	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	72.0	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	70.8	62.6	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	70.3	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	75.8	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	75.2	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	79.9	64.1	117	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
				Result		LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3227366) - continued</b>									
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	81.1	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	82.5	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	90.8	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	80.0	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	81.4	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	79.3	61.2	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	5 µg/L	83.7	59.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225681)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	120	75	127	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225682)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	92.3	75	127	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225993)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	88.7	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	99.7	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	102	62	120	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3227365)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	98.3	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	98.8	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	100	62	120	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3229767)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	108	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225681)</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	122	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225682)</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	95.7	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225993)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	115	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	87.4	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	105	67	127	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3227365)</b>								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	107	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	87.9	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	91.9	67	127
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3229767)</b>								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	111	75	127
<b>EP080: BTEXN (QCLot: 3225681)</b>								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	122	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	113	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.6	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	95.5	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	97.0	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	108	70	124
<b>EP080: BTEXN (QCLot: 3225682)</b>								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	99.7	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	112	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	106	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	98.3	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	93.2	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	90.6	70	124
<b>EP080: BTEXN (QCLot: 3229767)</b>								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	107	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	106	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	100	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	101	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	102	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	115	70	124
<b>EP231: Perfluorinated Compounds (QCLot: 3225890)</b>								
EP231: PFOS	1763-23-1	0.02	µg/L	<0.02	0.25 µg/L	92.4	70	136
EP231: PFOA	335-67-1	0.02	µg/L	<0.02	0.25 µg/L	111	72	134
EP231: 6:2 Fluorotelomer Sulfonate (6:2 FtS)	27619-97-2	0.1	µg/L	<0.1	1.25 µg/L	92.0	61	145

**Matrix Spike (MS) Report**

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



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3225459)</b>							
ES1327914-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	82.1	70	130
<b>ED045G: Chloride Discrete analyser (QCLot: 3225457)</b>							
ES1327806-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	# Not Determined	70	130
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)</b>							
ES1327888-006	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	93.3	70	130
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225616)</b>							
ES1328110-005	BQ_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	80.8	70	130
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3230341)</b>							
ES1328002-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	81.6	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225995)</b>							
ES1328108-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	88.4	70	130
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)</b>							
ES1328108-003	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	119	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	104	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	89.9	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	110	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	70	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	124	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	116	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	83.0	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	118	70	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	100	70	130
EG094A-F: Zinc	7440-66-6	50 µg/L	124	70	130		
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3231836)</b>							
ES1327568-004	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	120	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	117	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	95.8	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	104	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	108	70	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	115	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	102	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	105	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3231836) - continued</b>							
ES1327568-004	Anonymous	EG094A-F: Nickel	7440-02-0	50 µg/L	111	70	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	109	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	108	70	130
<b>EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093)</b>							
ES1328110-006	R01_191213_JN	EG094A-T: Arsenic	7440-38-2	50 µg/L	107	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	117	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	123	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	125	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	125	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	110	70	130
		EG094A-T: Zinc	7440-66-6	50 µg/L	111	70	130
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3225992)</b>							
ES1328110-001	BL_MW02	EP066: Total Polychlorinated biphenyls	----	10 µg/L	88.0	70	130
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3225683)</b>							
ES1328110-001	BL_MW02	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	120	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	114	70	130
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3229766)</b>							
ES1327988-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	108	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	126	70	130
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3225683)</b>							
ES1328110-001	BL_MW02	EP074: Chlorobenzene	108-90-7	25 µg/L	122	70	130
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3229766)</b>							
ES1327988-002	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	124	70	130
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3225994)</b>							
ES1328110-004	BL_MW02	EP075(SIM): Phenol	108-95-2	20 µg/L	38.7	20	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	62.3	60	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	75.6	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	72.3	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	107	20	130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3225994)</b>							
ES1328110-004	BL_MW02	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.5	70	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	71.5	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225681)</b>							
ES1327964-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	126	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225682)</b>							
ES1328110-001	BL_MW02	EP080: C6 - C9 Fraction	----	325 µg/L	122	70	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225993)</b>								
ES1328110-004	BL_MW02	EP071: C10 - C14 Fraction	----	200 µg/L	102	74	150	
		EP071: C15 - C28 Fraction	----	300 µg/L	88.4	77	153	
		EP071: C29 - C36 Fraction	----	200 µg/L	98.4	67	153	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3229767)</b>								
ES1327988-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	124	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225681)</b>								
ES1327964-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225682)</b>								
ES1328110-001	BL_MW02	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	121	70	130	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225993)</b>								
ES1328110-004	BL_MW02	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	84.8	74	150	
		EP071: >C16 - C34 Fraction	----	350 µg/L	81.4	77	153	
		EP071: >C34 - C40 Fraction	----	150 µg/L	92.3	67	153	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3229767)</b>								
ES1327988-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	125	70	130	
<b>EP080: BTEXN (QCLot: 3225681)</b>								
ES1327964-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	104	70	130	
		EP080: Toluene	108-88-3	25 µg/L	102	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	92.3	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	89.8	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	93.6	70	130	
	EP080: Naphthalene	91-20-3	25 µg/L	92.8	70	130		
<b>EP080: BTEXN (QCLot: 3225682)</b>								
ES1328110-001	BL_MW02	EP080: Benzene	71-43-2	25 µg/L	106	70	130	
		EP080: Toluene	108-88-3	25 µg/L	125	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	113	70	130	
			106-42-3					
		EP080: ortho-Xylene	95-47-6	25 µg/L	107	70	130	
	EP080: Naphthalene	91-20-3	25 µg/L	91.1	70	130		
<b>EP080: BTEXN (QCLot: 3229767)</b>								
ES1327988-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	109	70	130	
		EP080: Toluene	108-88-3	25 µg/L	111	70	130	
		EP080: Ethylbenzene	100-41-4	25 µg/L	117	70	130	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	118	70	130	
			106-42-3					



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080: BTEXN (QCLot: 3229767) - continued</b>							
ES1327988-002	Anonymous	EP080: ortho-Xylene	95-47-6	25 µg/L	119	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	125	70	130
<b>EP231: Perfluorinated Compounds (QCLot: 3225890)</b>							
ES1328110-001	BL_MW02	EP231: PFOS	1763-23-1	0.25 µg/L	122	70	136
		EP231: PFOA	335-67-1	0.25 µg/L	126	72	134
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	112	61	145

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit	
<b>ED045G: Chloride Discrete analyser (QCLot: 3225457)</b>											
ES1327806-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	# Not Determined	----	70	130	----	----	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3225459)</b>											
ES1327914-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	82.1	----	70	130	----	----	
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225615)</b>											
ES1327888-006	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	93.3	----	70	130	----	----	
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225616)</b>											
ES1328110-005	BQ_MW01	EG035F: Mercury	7439-97-6	0.0100 mg/L	80.8	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225681)</b>											
ES1327964-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	126	----	70	130	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225681)</b>											
ES1327964-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	122	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3225681)</b>											
ES1327964-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	104	----	70	130	----	----	
		EP080: Toluene	108-88-3	25 µg/L	102	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	25 µg/L	92.3	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	89.8	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	25 µg/L	93.6	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	25 µg/L	92.8	----	70	130	----	----		
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225682)</b>											
ES1328110-001	BL_MW02	EP080: C6 - C9 Fraction	----	325 µg/L	122	----	70	130	----	----	





Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225682)</b>											
ES1328110-001	BL_MW02	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	121	----	70	130	----	----	
<b>EP080: BTEXN (QCLot: 3225682)</b>											
ES1328110-001	BL_MW02	EP080: Benzene	71-43-2	25 µg/L	106	----	70	130	----	----	
		EP080: Toluene	108-88-3	25 µg/L	125	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	25 µg/L	115	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	113	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	25 µg/L	107	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	25 µg/L	91.1	----	70	130	----	----	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3225683)</b>											
ES1328110-001	BL_MW02	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	120	----	70	130	----	----	
		EP074: Trichloroethene	79-01-6	25 µg/L	114	----	70	130	----	----	
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3225683)</b>											
ES1328110-001	BL_MW02	EP074: Chlorobenzene	108-90-7	25 µg/L	122	----	70	130	----	----	
<b>EP231: Perfluorinated Compounds (QCLot: 3225890)</b>											
ES1328110-001	BL_MW02	EP231: PFOS	1763-23-1	0.25 µg/L	122	----	70	136	----	----	
		EP231: PFOA	335-67-1	0.25 µg/L	126	----	72	134	----	----	
		EP231: 6:2 Fluorotelomer sulfonate (6:2 FtS)	27619-97-2	1.25 µg/L	112	----	61	145	----	----	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3225992)</b>											
ES1328110-001	BL_MW02	EP066: Total Polychlorinated biphenyls	----	10 µg/L	88.0	----	70	130	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3225993)</b>											
ES1328110-004	BL_MW02	EP071: C10 - C14 Fraction	----	200 µg/L	102	----	74	150	----	----	
		EP071: C15 - C28 Fraction	----	300 µg/L	88.4	----	77	153	----	----	
		EP071: C29 - C36 Fraction	----	200 µg/L	98.4	----	67	153	----	----	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3225993)</b>											
ES1328110-004	BL_MW02	EP071: >C10 - C16 Fraction	>C10_C16	250 µg/L	84.8	----	74	150	----	----	
		EP071: >C16 - C34 Fraction	----	350 µg/L	81.4	----	77	153	----	----	
		EP071: >C34 - C40 Fraction	----	150 µg/L	92.3	----	67	153	----	----	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3225994)</b>											
ES1328110-004	BL_MW02	EP075(SIM): Phenol	108-95-2	20 µg/L	38.7	----	20	130	----	----	
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	62.3	----	60	130	----	----	
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	75.6	----	60	130	----	----	
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	72.3	----	70	130	----	----	
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	107	----	20	130	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3225994)</b>											
ES1328110-004	BL_MW02	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	72.5	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	20 µg/L	71.5	----	70	130	----	----	



Sub-Matrix: WATER

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3225995)</b>										
ES1328108-002	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	88.4	----	70	130	----	----
<b>EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093)</b>										
ES1328110-006	R01_191213_JN	EG094A-T: Arsenic	7440-38-2	50 µg/L	107	----	70	130	----	----
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	117	----	70	130	----	----
		EG094A-T: Chromium	7440-47-3	50 µg/L	123	----	70	130	----	----
		EG094A-T: Copper	7440-50-8	50 µg/L	125	----	70	130	----	----
		EG094A-T: Lead	7439-92-1	50 µg/L	125	----	70	130	----	----
		EG094A-T: Nickel	7440-02-0	50 µg/L	110	----	70	130	----	----
		EG094A-T: Zinc	7440-66-6	50 µg/L	111	----	70	130	----	----
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)</b>										
ES1328108-003	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	119	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	104	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	89.9	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	110	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	124	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	116	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	83.0	----	70	130	----	----
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	118	----	70	130	----	----
		EG094A-F: Vanadium	7440-62-2	50 µg/L	100	----	70	130	----	----
EG094A-F: Zinc	7440-66-6	50 µg/L	124	----	70	130	----	----		
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3229766)</b>										
ES1327988-002	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	108	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	126	----	70	130	----	----
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3229766)</b>										
ES1327988-002	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	124	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3229767)</b>										
ES1327988-002	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	124	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3229767)</b>										
ES1327988-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	125	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3229767)</b>										
ES1327988-002	Anonymous	EP080: Benzene	71-43-2	25 µg/L	109	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	111	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	117	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	118	----	70	130	----	----



Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EP080: BTEXN (QCLot: 3229767) - continued</b>										
ES1327988-002	Anonymous	EP080: ortho-Xylene	95-47-6	25 µg/L	119	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	125	----	70	130	----	----
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3230341)</b>										
ES1328002-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	81.6	----	70	130	----	----
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3231836)</b>										
ES1327568-004	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	120	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	117	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	95.8	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	104	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	108	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	115	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	102	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	105	----	70	130	----	----
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	111	----	70	130	----	----
		EG094A-F: Vanadium	7440-62-2	50 µg/L	109	----	70	130	----	----
		EG094A-F: Zinc	7440-66-6	50 µg/L	108	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1328110</b>	Page	: 1 of 11
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 20-DEC-2013
C-O-C number	: ----	Issue Date	: 31-DEC-2013
Sampler	: JW	No. of samples received	: 10
Order number	: 0224193	No. of samples analysed	: 10
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>ED037P: Alkalinity by PC Titrator</b>							
Clear Plastic Bottle - Natural (ED037-P) BQ_MW01	19-DEC-2013	---	02-JAN-2014	----	21-DEC-2013	02-JAN-2014	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>							
Clear Plastic Bottle - Natural (ED041G) BQ_MW01	19-DEC-2013	---	16-JAN-2014	----	21-DEC-2013	16-JAN-2014	✓
<b>ED045G: Chloride Discrete analyser</b>							
Clear Plastic Bottle - Natural (ED045G) BQ_MW01	19-DEC-2013	---	16-JAN-2014	----	21-DEC-2013	16-JAN-2014	✓
<b>ED093F: Dissolved Major Cations</b>							
Clear Plastic Bottle - Natural (ED093F) BQ_MW01	19-DEC-2013	---	26-DEC-2013	----	21-DEC-2013	26-DEC-2013	✓
<b>EG035F: Dissolved Mercury by FIMS</b>							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) BX_MW01	18-DEC-2013	---	15-JAN-2014	----	22-DEC-2013	15-JAN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) BF_MW09, BT_MW01, BQ_MW01	19-DEC-2013	---	16-JAN-2014	----	22-DEC-2013	16-JAN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) BN_MW02, BV_MW04	19-DEC-2013	---	16-JAN-2014	----	27-DEC-2013	16-JAN-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T) R01_191213_JN	19-DEC-2013	----	----	----	23-DEC-2013	16-JAN-2014	✓
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS</b>							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) BX_MW01	18-DEC-2013	---	16-JUN-2014	----	23-DEC-2013	16-JUN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) BF_MW09, BT_MW01, BQ_MW01	19-DEC-2013	---	17-JUN-2014	----	23-DEC-2013	17-JUN-2014	✓
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) BN_MW02, BV_MW04	19-DEC-2013	---	17-JUN-2014	----	30-DEC-2013	17-JUN-2014	✓
<b>EG094T: Total metals in Fresh water by ORC-ICPMS</b>							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T) R01_191213_JN	19-DEC-2013	23-DEC-2013	17-JUN-2014	✓	23-DEC-2013	17-JUN-2014	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS</b>								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F) BQ_MW01, BN_MW02	19-DEC-2013	---	17-JUN-2014	----	30-DEC-2013	17-JUN-2014	✓	
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Amber Glass Bottle - Unpreserved (EP066) BL_MW02, BX_MW01	18-DEC-2013	23-DEC-2013	25-DEC-2013	✓	23-DEC-2013	01-FEB-2014	✓	
Amber Glass Bottle - Unpreserved (EP066) BT_MW01	19-DEC-2013	23-DEC-2013	26-DEC-2013	✓	23-DEC-2013	01-FEB-2014	✓	
Amber Glass Bottle - Unpreserved (EP066) BV_MW04	19-DEC-2013	26-DEC-2013	26-DEC-2013	✓	30-DEC-2013	08-FEB-2014	✓	
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
Amber Glass Bottle - Unpreserved (EP071) BL_MW02, BX_MW01	18-DEC-2013	23-DEC-2013	25-DEC-2013	✓	23-DEC-2013	01-FEB-2014	✓	
Amber Glass Bottle - Unpreserved (EP071) BF_MW09, BT_MW01, BQ_MW01, R01_191213_JN	19-DEC-2013	23-DEC-2013	26-DEC-2013	✓	23-DEC-2013	01-FEB-2014	✓	
Amber Glass Bottle - Unpreserved (EP071) BN_MW02, BV_MW04	19-DEC-2013	26-DEC-2013	26-DEC-2013	✓	30-DEC-2013	08-FEB-2014	✓	
<b>EP074D: Fumigants</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BL_MW02, BX_MW01	18-DEC-2013	22-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BF_MW09, BT_MW01, BQ_MW01, R01_191213_JN	19-DEC-2013	22-DEC-2013	02-JAN-2014	✓	22-DEC-2013	02-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BN_MW02, BV_MW04	19-DEC-2013	28-DEC-2013	02-JAN-2014	✓	28-DEC-2013	02-JAN-2014	✓	
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BL_MW02, BX_MW01	18-DEC-2013	22-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BF_MW09, BT_MW01, BQ_MW01, R01_191213_JN	19-DEC-2013	22-DEC-2013	02-JAN-2014	✓	22-DEC-2013	02-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BN_MW02, BV_MW04	19-DEC-2013	28-DEC-2013	02-JAN-2014	✓	28-DEC-2013	02-JAN-2014	✓	
<b>EP074F: Halogenated Aromatic Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BL_MW02, BX_MW01	18-DEC-2013	22-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BF_MW09, BT_MW01, BQ_MW01, R01_191213_JN	19-DEC-2013	22-DEC-2013	02-JAN-2014	✓	22-DEC-2013	02-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BN_MW02, BV_MW04	19-DEC-2013	28-DEC-2013	02-JAN-2014	✓	28-DEC-2013	02-JAN-2014	✓	



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BL_MW02, BX_MW01	18-DEC-2013	22-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BF_MW09, BT_MW01, BQ_MW01, R01_191213_JN	19-DEC-2013	22-DEC-2013	02-JAN-2014	✓	22-DEC-2013	02-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BN_MW02, BV_MW04	19-DEC-2013	28-DEC-2013	02-JAN-2014	✓	28-DEC-2013	02-JAN-2014	✓	
<b>EP074H: Naphthalene</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BL_MW02, BX_MW01	18-DEC-2013	22-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BF_MW09, BT_MW01, BQ_MW01, R01_191213_JN	19-DEC-2013	22-DEC-2013	02-JAN-2014	✓	22-DEC-2013	02-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BN_MW02, BV_MW04	19-DEC-2013	28-DEC-2013	02-JAN-2014	✓	28-DEC-2013	02-JAN-2014	✓	
<b>EP074B: Oxygenated Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BL_MW02, BX_MW01	18-DEC-2013	22-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BF_MW09, BT_MW01, BQ_MW01, R01_191213_JN	19-DEC-2013	22-DEC-2013	02-JAN-2014	✓	22-DEC-2013	02-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BN_MW02, BV_MW04	19-DEC-2013	28-DEC-2013	02-JAN-2014	✓	28-DEC-2013	02-JAN-2014	✓	
<b>EP074C: Sulfonated Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BL_MW02, BX_MW01	18-DEC-2013	22-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BF_MW09, BT_MW01, BQ_MW01, R01_191213_JN	19-DEC-2013	22-DEC-2013	02-JAN-2014	✓	22-DEC-2013	02-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BN_MW02, BV_MW04	19-DEC-2013	28-DEC-2013	02-JAN-2014	✓	28-DEC-2013	02-JAN-2014	✓	
<b>EP074G: Trihalomethanes</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BL_MW02, BX_MW01	18-DEC-2013	22-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BF_MW09, BT_MW01, BQ_MW01, R01_191213_JN	19-DEC-2013	22-DEC-2013	02-JAN-2014	✓	22-DEC-2013	02-JAN-2014	✓	
Amber VOC Vial - Sulfuric Acid (EP074) BN_MW02, BV_MW04	19-DEC-2013	28-DEC-2013	02-JAN-2014	✓	28-DEC-2013	02-JAN-2014	✓	



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP075(SIM)A: Phenolic Compounds</b>								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BL_MW02,	BX_MW01	18-DEC-2013	23-DEC-2013	25-DEC-2013	✓	23-DEC-2013	01-FEB-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) BF_MW09, BQ_MW01,	BT_MW01, R01_191213_JN	19-DEC-2013	23-DEC-2013	26-DEC-2013	✓	23-DEC-2013	01-FEB-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) BN_MW02,	BV_MW04	19-DEC-2013	26-DEC-2013	26-DEC-2013	✓	30-DEC-2013	08-FEB-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BL_MW02,	BX_MW01	18-DEC-2013	23-DEC-2013	25-DEC-2013	✓	23-DEC-2013	01-FEB-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) BF_MW09, BQ_MW01,	BT_MW01, R01_191213_JN	19-DEC-2013	23-DEC-2013	26-DEC-2013	✓	23-DEC-2013	01-FEB-2014	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) BN_MW02,	BV_MW04	19-DEC-2013	26-DEC-2013	26-DEC-2013	✓	30-DEC-2013	08-FEB-2014	✓
<b>EP080: BTEXN</b>								
Amber VOC Vial - Sulfuric Acid (EP080) BL_MW02,	BX_MW01	18-DEC-2013	22-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080) BF_MW09, BQ_MW01,	BT_MW01, R01_191213_JN	19-DEC-2013	22-DEC-2013	02-JAN-2014	✓	22-DEC-2013	02-JAN-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080) BN_MW02,	BV_MW04	19-DEC-2013	28-DEC-2013	02-JAN-2014	✓	28-DEC-2013	02-JAN-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080) 2 X TRIP BLANK,	2X TRIP SPIKE	20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
Amber VOC Vial - Sulfuric Acid (EP080) BL_MW02,	BX_MW01	18-DEC-2013	22-DEC-2013	01-JAN-2014	✓	22-DEC-2013	01-JAN-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080) BF_MW09, BQ_MW01,	BT_MW01, R01_191213_JN	19-DEC-2013	22-DEC-2013	02-JAN-2014	✓	22-DEC-2013	02-JAN-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080) BN_MW02,	BV_MW04	19-DEC-2013	28-DEC-2013	02-JAN-2014	✓	28-DEC-2013	02-JAN-2014	✓
Amber VOC Vial - Sulfuric Acid (EP080) 2 X TRIP BLANK		20-DEC-2013	22-DEC-2013	03-JAN-2014	✓	22-DEC-2013	03-JAN-2014	✓
<b>EP231: Perfluorinated Compounds</b>								
HDPE (no PTFE) (EP231) BL_MW02,	BX_MW01	18-DEC-2013	---	16-JUN-2014	----	23-DEC-2013	16-JUN-2014	✓





## Quality Control Parameter Frequency Compliance

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

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Alkalinity by PC Titrator	ED037-P	1	7	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	4	31	12.9	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	3	20	15.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	10	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	14	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	20.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	14	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	5	44	11.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	3	25	12.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Alkalinity by PC Titrator	ED037-P	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	3	31	9.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	20	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	16	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	6	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	16	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	3	44	6.8	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	25	8.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Chloride by Discrete Analyser	ED045G	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	3	31	9.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	20	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Method Blanks (MB) - Continued</b>							
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	16	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	6	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	16	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	3	44	6.8	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	25	8.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Chloride by Discrete Analyser	ED045G	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	3	31	9.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	20	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PFOS and PFOA	EP231	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	20.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	3	44	6.8	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	2	25	8.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Alkalinity by PC Titrator	ED037-P	WATER	APHA 21st ed., 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Sulfate (Turbidimetric) as SO <sub>4</sub> <sup>2-</sup> by Discrete Analyser	ED041G	WATER	APHA 21st ed., 4500-SO <sub>4</sub> Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO <sub>4</sub> suspension is measured by a photometer and the SO <sub>4</sub> <sup>2-</sup> concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Chloride by Discrete Analyser	ED045G	WATER	APHA 21st ed., 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	Major Cations is determined based on APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises the 0.45um filtered sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)  Hardness parameters are calculated based on APHA 21st ed., 2340 B. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)



Analytical Methods	Method	Matrix	Method Descriptions
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	APHA 21st Ed. 1030F. The Ionic Balance is calculated based on the major Anions and Cations. The major anions include Alkalinity, Chloride and Sulfate which determined by PCT and DA. The Cations are determined by Turbi SO4 by DA. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Volatile Organic Compounds	EP074	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PFOS and PFOA	EP231	WATER	In-house: Direct injection analysis of fresh and diluted saline waters. In order to meet standard reporting limits, saline waters may be adsorped onto a solid phase extraction medium, the salt washed out and the sample eluted for analysis. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM.

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	Modified USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Lab Acidification of Metals	EN80	WATER	USEPA Method 200.8
Lab Acidification of Dissolved Metals	EN80F	WATER	US EPA Method 200.8



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Laboratory Control Spike (LCS) Recoveries</b>							
EP075(SIM)A: Phenolic Compounds	3851465-011	----	<b>Pentachlorophenol</b>	87-86-5	118 %	8.7-95%	<b>Recovery greater than upper control limit</b>
<b>Matrix Spike (MS) Recoveries</b>							
ED045G: Chloride Discrete analyser	ES1327806-001	Anonymous	<b>Chloride</b>	16887-00-6	Not Determined	----	<b>MS recovery not determined, background level greater than or equal to 4x spike level.</b>
EG094F: Dissolved Metals in Fresh Water by ORC-ICP	ES1327568-004	Anonymous	<b>Manganese</b>	7439-96-5	Not Determined	----	<b>MS recovery not determined, background level greater than or equal to 4x spike level.</b>
EG094F: Dissolved Metals in Fresh Water by ORC-ICP	ES1328108-003	Anonymous	<b>Manganese</b>	7439-96-5	Not Determined	----	<b>MS recovery not determined, background level greater than or equal to 4x spike level.</b>

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.

#### Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted</b>							
EP075(SIM)S: Phenolic Compound Surrogates	ES1328110-007	BN_MW02	<b>Phenol-d6</b>	13127-88-3	51.0 %	10.0-44 %	<b>Recovery greater than upper data quality objective</b>

### Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.



CHAIN OF CUSTODY

ALS Laboratory  
Please tick →

(ERM)

CLIENT: McQuarrie Governance

OFFICE: Sydney

PROJECT: Project Symphony

ORDER NUMBER:

PROJECT MANAGER: JOC FENNIN

SAMPLER: S. Campbell & J. Grant

COC emailed to ALST? (YES / NO)

Comments to (will default to PM if no other addresses are listed): Symphony.mcgovernance.com

Email invoice to (will default to PM if no other addresses are listed):

Comments/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS:  Standard TAT (Use date date):  Non Standard or urgent TAT (Use date date):

ALS QUOTE NO.: SV73413

SITE: (BAYWATER) LIDELL

CONTACT PH: 0424 970 668

SAMPLER MOBILE: 0422 596 844

EDD FORMAT (or default):

REINQUISHED BY: Sam Campbell

DATE/TIME:

48hrs TAT

COC SEQUENCE NUMBER (circle)

1 2 3 4 5 6 7

RECEIVED BY: Sam

DATE/TIME: 20/12

FOR LABORATORY USE ONLY (Circle)

Cash Seal Intact? Yes No N/A

Free Ice / frozen ice lids present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

REINQUISHED BY: Sam

DATE/TIME: 19/10

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)	DATE / TIME	MATRIX	CONTAINER INFORMATION		ANALYSIS REQUIRED INCLUDING SURTS (NB. Some Codes must be listed to attract extra price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (acid filtered bottle required).							Additional Information		
				TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	W-2 Metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	17 Metals (As, Ba, Be, Cd, Co, Cr, Cu, Mn, Ni, Pb, V, Zn, B, Mo, Ti)	Selenium (Freshwater ORC)	VOC Target Scan	PCB	PFOS/PFOA	W-24 TRH (C6-C40)/BTEXN, PAH, Phenols		Cations/ anions	
	BR - MW05	19.12.13/1700	W		2	X									
	BR - MW06	19.12.13/1600	W		2	X									
	R01 - 191213-SC	19.12.13/1500	W		2	X									
	TS ⑧	19.12.13													OTEX
	TS ⑩														OTEX
	TS 13														OTEX + TAT
	TS 14														

Environmental Division  
Sydney

Work Order  
ES1328113



Telephone : + 61 2 8784 8555

\* Nitric Preserved Plastic: ORC - Nitric Preserved ORC; BR - Sodium Hydroxide ORC Preserved; S - Sodium Hydroxide Preserved Plastic; AG - Amber Glass Unpreserved; AP - Amalgam Unpreserved Plastic; IS - Iodine Preserved Plastic; VS - VOA Vol Soluble Preserved; AV - Airtight Unpreserved Vial Stop - Salivette Preserved Amber Glass; H - HCl Preserved Plastic; HS - HCl Preserved Speciation bottle; SP - Salivette Preserved Plastic; F - Formaldehyde Preserved Glass; E - Ethylene Glycol Preserved Plastic; AS - Plastic Bag 10 / Acid Sulphate Solids; B - Unpreserved Bag.

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

<b>Work Order</b>	<b>: ES1328113</b>		
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact Address</b>	<b>: MR JOSEPH FERRING GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b>	<b>Contact Address</b>	<b>: Barbara Hanna 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	<b>: Barbara.Hanna@alsglobal.com</b>
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: Project Symphony</b>	<b>Page</b>	<b>: 1 of 3</b>
<b>Order number</b>	<b>: ----</b>	<b>Quote number</b>	<b>: ES2013ENVRES0369 (SY/794/13)</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>QC Level</b>	<b>: NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>
<b>Site</b>	<b>: ----</b>		
<b>Sampler</b>	<b>: JG, SC</b>		

#### Dates

Date Samples Received	: 20-DEC-2013	Issue Date	: 20-DEC-2013 21:08
Client Requested Due Date	: 27-DEC-2013	Scheduled Reporting Date	: <b>27-DEC-2013</b>

#### Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.4°C - Ice present
No. of coolers/boxes	: 1 HARD	No. of samples received	: 7
Security Seal	: Intact.	No. of samples analysed	: 7

#### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.





### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exist.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG035F Dissolved Mercury by FIMS	WATER - EG035T Total Mercury by FIMS	WATER - EG094A-F Dissolved Metals in Fresh Water Suite	WATER - EG094A-T Total Metals in Fresh water Suite A by	WATER - EN055 - PG Ionic Balance by ED037P, ED041G.	WATER - EP074 (water) Volatile Organic Compounds	WATER - EP080 BTEXN	WATER - NT-01 Major Cations (Ca, Mg, Na, K)
ES1328113-001	19-DEC-2013 17:00	BR_MW05	✓		✓		✓	✓		✓
ES1328113-002	19-DEC-2013 16:00	BR_MW06	✓		✓		✓	✓		✓
ES1328113-003	19-DEC-2013 18:00	R01_191213_SC		✓		✓	✓	✓		✓
ES1328113-004	19-DEC-2013 15:00	TS 5							✓	
ES1328113-005	19-DEC-2013 15:00	TS 1							✓	

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - NT-02 Major Anions (Chloride, Sulphate,	WATER - W-18 TRH/C6 - C9/BTEXN	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1328113-001	19-DEC-2013 17:00	BR_MW05	✓		✓
ES1328113-002	19-DEC-2013 16:00	BR_MW06	✓		✓
ES1328113-003	19-DEC-2013 18:00	R01_191213_SC	✓		✓
ES1328113-006	19-DEC-2013 15:00	TB 13		✓	
ES1328113-007	19-DEC-2013 15:00	TB 14		✓	

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## *Requested Deliverables*

### **MR JOSEPH FERRING**

- *AU Certificate of Analysis - NATA ( COA )	Email	joseph.ferring@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	joseph.ferring@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	joseph.ferring@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	joseph.ferring@erm.com
- Chain of Custody (CoC) ( COC )	Email	joseph.ferring@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	joseph.ferring@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	joseph.ferring@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	joseph.ferring@erm.com
- EDI Format - XTab ( XTAB )	Email	joseph.ferring@erm.com

### **SYMPHONY MACGEN**

- *AU Certificate of Analysis - NATA ( COA )	Email	symphony.macgen@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	symphony.macgen@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	symphony.macgen@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	symphony.macgen@erm.com
- A4 - AU Tax Invoice ( INV )	Email	symphony.macgen@erm.com
- Chain of Custody (CoC) ( COC )	Email	symphony.macgen@erm.com
- EDI Format - ENMRG ( ENMRG )	Email	symphony.macgen@erm.com
- EDI Format - EQUIS V5 ERM ( EQUIS_V5_ERM )	Email	symphony.macgen@erm.com
- EDI Format - ESDAT ( ESDAT )	Email	symphony.macgen@erm.com

### **THE ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice ( INV )	Email	au.accounts@erm.com
-------------------------------	-------	---------------------

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1328113</b> <b>Client</b> : <b>ENVIRO RESOURCES MANAGEMENT</b> <b>Contact</b> : MR JOSEPH FERRING <b>Address</b> : GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007  <b>E-mail</b> : joseph.ferring@erm.com <b>Telephone</b> : +61 02 8584 8888 <b>Facsimile</b> : +61 02 8584 8800 <b>Project</b> : Project Symphony <b>Order number</b> : ---- <b>C-O-C number</b> : ---- <b>Sampler</b> : JG, SC <b>Site</b> : ----  <b>Quote number</b> : SY/794/13	<b>Page</b> : 1 of 10  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Barbara Hanna <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : Barbara.Hanna@alsglobal.com <b>Telephone</b> : +61 2 8784 8555 <b>Facsimile</b> : +61 2 8784 8555 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 20-DEC-2013 <b>Issue Date</b> : 27-DEC-2013  <b>No. of samples received</b> : 7 <b>No. of samples analysed</b> : 7
---	--

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics



---

### **General Comments**

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

Where moisture determination has been 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.

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

- **EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.**



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BR_MW05	BR_MW06	R01_191213_SC	TS 5	TS 1
				19-DEC-2013 17:00	19-DEC-2013 16:00	19-DEC-2013 18:00	19-DEC-2013 15:00	19-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1328113-001	ES1328113-002	ES1328113-003	ES1328113-004	ES1328113-005
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	25	<1	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	483	546	<1	----	----
Total Alkalinity as CaCO3	----	1	mg/L	508	546	<1	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	132	201	<1	----	----
<b>ED045G: Chloride Discrete analyser</b>								
Chloride	16887-00-6	1	mg/L	613	476	<1	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	12	46	<1	----	----
Magnesium	7439-95-4	1	mg/L	14	56	<1	----	----
Sodium	7440-23-5	1	mg/L	598	444	<1	----	----
Potassium	7440-09-7	1	mg/L	4	4	<1	----	----
<b>EG035F: Dissolved Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	----	----	<0.0001	----	----
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS</b>								
Arsenic	7440-38-2	0.2	µg/L	5.7	5.6	----	----	----
Barium	7440-39-3	0.5	µg/L	184	340	----	----	----
Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	----	----	----
Boron	7440-42-8	5	µg/L	49	114	----	----	----
Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	----	----	----
Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	----	----	----
Cobalt	7440-48-4	0.1	µg/L	3.4	0.3	----	----	----
Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	----	----	----
Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	----	----	----
Manganese	7439-96-5	0.5	µg/L	526	70.9	----	----	----
Molybdenum	7439-98-7	0.1	µg/L	5.7	15.0	----	----	----
Nickel	7440-02-0	0.5	µg/L	23.3	2.3	----	----	----
Thallium	7440-28-0	0.02	µg/L	<0.02	<0.02	----	----	----
Vanadium	7440-62-2	0.2	µg/L	0.6	2.5	----	----	----
Zinc	7440-66-6	1	µg/L	15	6	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BR_MW05	BR_MW06	R01_191213_SC	TS 5	TS 1
				19-DEC-2013 17:00	19-DEC-2013 16:00	19-DEC-2013 18:00	19-DEC-2013 15:00	19-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1328113-001	ES1328113-002	ES1328113-003	ES1328113-004	ES1328113-005
<b>EG094T: Total metals in Fresh water by ORC-ICPMS</b>								
Arsenic	7440-38-2	0.2	µg/L	----	----	<0.2	----	----
Barium	7440-39-3	0.5	µg/L	----	----	<0.5	----	----
Beryllium	7440-41-7	0.1	µg/L	----	----	<0.1	----	----
Boron	7440-42-8	5	µg/L	----	----	<5	----	----
Cadmium	7440-43-9	0.05	µg/L	----	----	<0.05	----	----
Chromium	7440-47-3	0.2	µg/L	----	----	<0.2	----	----
Cobalt	7440-48-4	0.1	µg/L	----	----	<0.1	----	----
Copper	7440-50-8	0.5	µg/L	----	----	<0.5	----	----
Lead	7439-92-1	0.1	µg/L	----	----	<0.1	----	----
Manganese	7439-96-5	0.5	µg/L	----	----	<0.5	----	----
Molybdenum	7439-98-7	0.1	µg/L	----	----	<0.1	----	----
Nickel	7440-02-0	0.5	µg/L	----	----	<0.5	----	----
Thallium	7440-28-0	0.02	µg/L	----	----	<0.02	----	----
Vanadium	7440-62-2	0.2	µg/L	----	----	<0.2	----	----
Zinc	7440-66-6	1	µg/L	----	----	<1	----	----
<b>EN055: Ionic Balance</b>								
Total Anions	----	0.01	meq/L	<b>30.2</b>	<b>28.5</b>	<0.01	----	----
Total Cations	----	0.01	meq/L	<b>27.9</b>	<b>26.3</b>	<0.01	----	----
Ionic Balance	----	0.01	%	<b>4.04</b>	<b>4.04</b>	----	----	----
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Styrene	100-42-5	5	µg/L	<5	<5	<5	----	----
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5	----	----
n-Propylbenzene	103-65-1	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	----	----
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5	----	----
<b>EP074B: Oxygenated Compounds</b>								
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	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BR_MW05	BR_MW06	R01_191213_SC	TS 5	TS 1
				19-DEC-2013 17:00	19-DEC-2013 16:00	19-DEC-2013 18:00	19-DEC-2013 15:00	19-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1328113-001	ES1328113-002	ES1328113-003	ES1328113-004	ES1328113-005
<b>EP074B: Oxygenated Compounds - Continued</b>								
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	----	----
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	----	----
<b>EP074D: Fumigants</b>								
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	----	----
<b>EP074E: Halogenated Aliphatic Compounds</b>								
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-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	----	----
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	----	----
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	----	----
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	----	----
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	----	----
1,1,1-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	----	----
Trichloroethene	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	----	----
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	----	----
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	----	----
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	----	----
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BR_MW05	BR_MW06	R01_191213_SC	TS 5	TS 1
				19-DEC-2013 17:00	19-DEC-2013 16:00	19-DEC-2013 18:00	19-DEC-2013 15:00	19-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1328113-001	ES1328113-002	ES1328113-003	ES1328113-004	ES1328113-005
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	----	----
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	----	----
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	----	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	----	----
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	----	----
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	----	----
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	----	----
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	----	----
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	----	----
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	----	----
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	----	----
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	----	----
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	----	----
Bromoform	75-25-2	5	µg/L	<5	<5	<5	----	----
<b>EP074H: Naphthalene</b>								
Naphthalene	91-20-3	7	µg/L	<7	<7	<7	----	----
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BR_MW05	BR_MW06	R01_191213_SC	TS 5	TS 1
				19-DEC-2013 17:00	19-DEC-2013 16:00	19-DEC-2013 18:00	19-DEC-2013 15:00	19-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1328113-001	ES1328113-002	ES1328113-003	ES1328113-004	ES1328113-005
<b>EP075(SIM)A: Phenolic Compounds - Continued</b>								
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	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
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	<b>1.2</b>	<1.0	<1.0	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<b>1.2</b>	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	----	----
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<b>680</b>	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<b>190</b>	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<b>870</b>	<50	<50	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
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	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	<b>770</b>	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	<b>110</b>	<100	<100	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				BR_MW05	BR_MW06	R01_191213_SC	TS 5	TS 1
				19-DEC-2013 17:00	19-DEC-2013 16:00	19-DEC-2013 18:00	19-DEC-2013 15:00	19-DEC-2013 15:00
Compound	CAS Number	LOR	Unit	ES1328113-001	ES1328113-002	ES1328113-003	ES1328113-004	ES1328113-005
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 - Continued</b>								
^ >C10 - C40 Fraction (sum)	----	100	µg/L	880	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	<1	15	17
Toluene	108-88-3	2	µg/L	<2	<2	<2	15	16
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	14	18
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	14	18
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	15	18
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	29	36
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	73	87
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	16	18
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	122	113	110	----	----
Toluene-D8	2037-26-5	0.1	%	115	110	107	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	104	102	98.3	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	25.7	24.6	26.0	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	68.5	70.3	76.4	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	80.7	86.9	92.5	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	80.7	83.8	88.4	----	----
Anthracene-d10	1719-06-8	0.1	%	69.4	72.3	76.7	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	76.8	80.7	86.6	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	132	122	118	113	134
Toluene-D8	2037-26-5	0.1	%	124	119	116	129	117
4-Bromofluorobenzene	460-00-4	0.1	%	108	107	104	125	127



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				TB 13	TB 14	---	---	---
				19-DEC-2013 15:00	19-DEC-2013 15:00	---	---	---
				ES1328113-006	ES1328113-007	---	---	---
Compound	CAS Number	LOR	Unit					
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	---	20	µg/L	<20	<20	---	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	---	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	---	---	---
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	---	---	---
Toluene	108-88-3	2	µg/L	<2	<2	---	---	---
Ethylbenzene	100-41-4	2	µg/L	<2	<2	---	---	---
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	---	---	---
ortho-Xylene	95-47-6	2	µg/L	<2	<2	---	---	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	---	---	---
^ Sum of BTEX	---	1	µg/L	<1	<1	---	---	---
Naphthalene	91-20-3	5	µg/L	<5	<5	---	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	135	131	---	---	---
Toluene-D8	2037-26-5	0.1	%	122	116	---	---	---
4-Bromofluorobenzene	460-00-4	0.1	%	108	106	---	---	---



## Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP074S: VOC Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	78.3	133.2
Toluene-D8	2037-26-5	79.1	128.9
4-Bromofluorobenzene	460-00-4	80.8	123.7
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1328113</b>	<b>Page</b>	: 1 of 15
<b>Client</b>	<b>: ENVIRO RESOURCES MANAGEMENT</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	<b>: MR JOSEPH FERRING</b>	<b>Contact</b>	: Barbara Hanna
<b>Address</b>	<b>: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007</b>	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	<b>: joseph.ferring@erm.com</b>	<b>E-mail</b>	: Barbara.Hanna@alsglobal.com
<b>Telephone</b>	<b>: +61 02 8584 8888</b>	<b>Telephone</b>	: +61 2 8784 8555
<b>Facsimile</b>	<b>: +61 02 8584 8800</b>	<b>Facsimile</b>	: +61 2 8784 8555
<b>Project</b>	<b>: Project Symphony</b>	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	<b>: ----</b>	<b>Date Samples Received</b>	: 20-DEC-2013
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	: 27-DEC-2013
<b>Sampler</b>	<b>: JG, SC</b>	<b>No. of samples received</b>	: 7
<b>Order number</b>	<b>: ----</b>	<b>No. of samples analysed</b>	: 7
<b>Quote number</b>	<b>: SY/794/13</b>		

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

This Quality Control Report contains the following information:

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



NATA 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

Celine Conceicao  
Hoa Nguyen  
Phalak Inthaksone

#### Position

Senior Spectroscopist  
Senior Inorganic Chemist  
Laboratory Manager - Organics

#### Accreditation Category

Sydney Inorganics  
Sydney Inorganics  
Sydney Organics



### **General Comments**

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

Where moisture determination has been 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.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
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  
RPD = Relative Percentage Difference  
# = Indicates failed QC



### Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>ED037P: Alkalinity by PC Titrator (QC Lot: 3225584)</b>									
ES1328012-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	32	32	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	32	32	0.0	0% - 20%
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 3225459)</b>									
ES1327914-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	24	24	0.0	0% - 20%
ES1328007-004	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	20	16	20.7	0% - 50%
<b>ED045G: Chloride Discrete analyser (QC Lot: 3225457)</b>									
ES1327806-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	3820	3820	0.0	0% - 20%
ES1328108-003	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	650	644	0.9	0% - 20%
<b>ED093F: Dissolved Major Cations (QC Lot: 3225456)</b>									
ES1327806-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	15	15	0.0	0% - 50%
		ED093F: Magnesium	7439-95-4	1	mg/L	234	233	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	2170	2210	1.6	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	16	16	0.0	0% - 50%
ES1328082-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	9	9	0.0	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	2	2	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	16	16	0.0	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	1	1	0.0	No Limit
<b>EG035F: Dissolved Mercury by FIMS (QC Lot: 3225841)</b>									
ES1327798-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3226042)</b>									
ES1327628-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	0.0139	0.0138	0.0	0% - 20%
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3227202)</b>									
ES1328108-001	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.07	0.08	13.9	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	6.3	6.3	0.0	0% - 20%
		EG094A-F: Lead	7439-92-1	0.1	µg/L	0.8	1.0	17.3	0% - 50%
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	24.1	24.6	2.3	0% - 20%
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	6.3	6.4	0.0	0% - 20%
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	16.7	16.5	1.3	0% - 20%
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	1.5	1.5	0.0	No Limit
		EG094A-F: Barium	7440-39-3	0.5	µg/L	93.1	92.2	1.0	0% - 20%
		EG094A-F: Copper	7440-50-8	0.5	µg/L	5.4	5.3	0.0	0% - 50%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 3227202) - continued</b>									
ES1328108-001	Anonymous	EG094A-F: Manganese	7439-96-5	0.5	µg/L	226	223	1.3	0% - 20%
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	104	105	0.7	0% - 20%
		EG094A-F: Zinc	7440-66-6	1	µg/L	352	353	0.0	0% - 20%
		EG094A-F: Boron	7440-42-8	5	µg/L	193	186	3.8	0% - 20%
<b>EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 3227093)</b>									
ES1327964-007	Anonymous	EG094A-T: Thallium	7440-28-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	<1	1	0.0	No Limit
EG094A-T: Boron	7440-42-8	5	µg/L	<5	<5	0.0	No Limit		
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3227199)</b>									
ES1328113-001	BR_MW05	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit		
<b>EP074B: Oxygenated Compounds (QC Lot: 3227199)</b>									
ES1328113-001	BR_MW05	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
<b>EP074C: Sulfonated Compounds (QC Lot: 3227199)</b>									
ES1328113-001	BR_MW05	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
<b>EP074D: Fumigants (QC Lot: 3227199)</b>									
ES1328113-001	BR_MW05	EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit





Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074D: Fumigants (QC Lot: 3227199) - continued</b>									
ES1328113-001	BR_MW05	EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 3227199)</b>									
ES1328113-001	BR_MW05	EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit		
EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit		
EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit		
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit		
<b>EP074F: Halogenated Aromatic Compounds (QC Lot: 3227199)</b>									
ES1328113-001	BR_MW05	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP074F: Halogenated Aromatic Compounds (QC Lot: 3227199) - continued</b>										
ES1328113-001	BR_MW05	EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit	
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit	
		EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit	
<b>EP074G: Trihalomethanes (QC Lot: 3227199)</b>										
ES1328113-001	BR_MW05	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit	
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit	
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit	
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit	
<b>EP074H: Naphthalene (QC Lot: 3227199)</b>										
ES1328113-001	BR_MW05	EP074: Naphthalene	91-20-3	7	µg/L	<7	<7	0.0	No Limit	
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3227200)</b>										
ES1328113-001	BR_MW05	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3227200)</b>										
ES1328113-001	BR_MW05	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit	
<b>EP080: BTEXN (QC Lot: 3227200)</b>										
ES1328113-001	BR_MW05	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit	



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

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

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>ED037P: Alkalinity by PC Titrator (QCLot: 3225584)</b>									
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	----	200 mg/L	102	81	111	
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3225459)</b>									
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	103	86	122	
<b>ED045G: Chloride Discrete analyser (QCLot: 3225457)</b>									
ED045G: Chloride	16887-00-6	1	mg/L	<1	1000 mg/L	96.9	77	123	
<b>ED093F: Dissolved Major Cations (QCLot: 3225456)</b>									
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	100	87	113	
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	98.2	89	113	
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	101	79	113	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	101	87	115	
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225841)</b>									
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	89.0	78	114	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3226042)</b>									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	86.1	77	115	
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)</b>									
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	105	75	129	
EG094A-F: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	92.0	76	120	
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	98.5	74	130	
EG094A-F: Boron	7440-42-8	5	µg/L	<5	100 µg/L	111	79	129	
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	102	78	112	
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	91.2	71	123	
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	106	79	121	
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	100	77	125	
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	98.7	74	118	
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	91.5	79	119	
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	100	69	127	
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	106	72	128	
EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	106	71	121	
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	94.1	78	116	
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	84.2	76	134	
<b>EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093)</b>									
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	88.8	81	125	
EG094A-T: Barium	7440-39-3	0.5	µg/L	<0.5	10 µg/L	87.1	81	117	
EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	107	71	127	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093) - continued</b>									
EG094A-T: Boron	7440-42-8	5	µg/L	<5	10 µg/L	104	70	130	
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	93.5	77	111	
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	99.8	78	126	
EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	91.4	78	126	
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	100	78	126	
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	93.9	75	123	
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	98.1	81	121	
EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	94.4	77	127	
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	91.1	82	124	
EG094A-T: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	77.9	71	125	
EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	94.1	82	118	
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	88.9	75	129	
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3227199)</b>									
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	92.5	74	118	
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	96.1	75	121	
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	89.9	67	123	
EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	92.6	70	122	
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	94.1	69	123	
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	94.4	71	121	
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	91.5	70	122	
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	94.0	67	123	
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	93.7	62	126	
<b>EP074B: Oxygenated Compounds (QCLot: 3227199)</b>									
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	105	61.4	134	
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	97.1	73.6	130	
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	105	61	139	
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	104	65	137	
<b>EP074C: Sulfonated Compounds (QCLot: 3227199)</b>									
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	110	72.8	127	
<b>EP074D: Fumigants (QCLot: 3227199)</b>									
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	106	61	119	
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	99.2	76	120	
EP074: cis-1,3-Dichloropropylene	10061-01-5	10	µg/L	<10	10 µg/L	94.0	62	120	
EP074: trans-1,3-Dichloropropylene	10061-02-6	10	µg/L	<10	10 µg/L	95.6	61	119	
EP074: 1,2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	98.7	69	117	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3227199)</b>									
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	120	60.6	138	
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	119	67.4	130	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike	Spike Recovery (%)	Recovery Limits (%)	
					Concentration	LCS	Low	High
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3227199) - continued</b>								
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	119	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	140	56	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	124	63	135
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	114	65	131
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	103	69	123
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	105	70.2	128
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	108	71	119
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	111	75	119
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	102	77	117
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	102	61	119
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	100	73	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	92.5	63	121
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	109	78	122
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	98.7	74	120
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	107	74	118
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	104	75	123
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	107	79	121
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	90.8	72	124
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	97.8	66	114
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	97.5	60	120
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	90.7	70.6	128
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	103	70	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	103	74	128
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	116	71.8	126
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	105	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	110	58	132
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3227199)</b>								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	101	80	118
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	101	76	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	101	71	121
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	103	71	121
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	102	74	120
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	102	72	120
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	100	77	117
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	104	60	126
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	102	67	125
<b>EP074G: Trihalomethanes (QCLot: 3227199)</b>								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	104	76	118
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	105	64	118



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP074G: Trihalomethanes (QCLot: 3227199) - continued</b>									
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	93.1	65	115	
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	91.6	73.5	126	
<b>EP074H: Naphthalene (QCLot: 3227199)</b>									
EP074: Naphthalene	91-20-3	7	µg/L	<7	10 µg/L	96.4	61	125	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 3227335)</b>									
EP075(SIM): Phenol	108-95-2	0.2	µg/L	----	20 µg/L	35.6	24.5	61.9	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L	----	20 µg/L	76.7	63.8	110	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L	----	20 µg/L	73.0	55.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L	----	40 µg/L	66.1	42.5	114	
		2	µg/L	<2.0	----	----	----	----	
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L	----	20 µg/L	74.8	62.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.2	µg/L	----	20 µg/L	75.3	59.9	112	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.2	µg/L	----	20 µg/L	74.4	59.3	122	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.2	µg/L	----	20 µg/L	78.5	64.3	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L	----	20 µg/L	75.2	63	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.2	µg/L	----	20 µg/L	72.2	58.7	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.2	µg/L	----	20 µg/L	71.6	50	108	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L	----	40 µg/L	50.1	8.7	95	
		2	µg/L	<2.0	----	----	----	----	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3227335)</b>									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	20 µg/L	78.0	58.6	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	20 µg/L	84.8	63.6	114	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	20 µg/L	78.7	62.2	113	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	20 µg/L	83.6	63.9	115	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	20 µg/L	83.9	62.6	116	
		1	µg/L	<1.0	----	----	----	----	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Recovery Limits (%)	
					Concentration	LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3227335) - continued</b>									
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	20 µg/L	84.1	64.3	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	20 µg/L	86.8	63.6	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	20 µg/L	86.9	63.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	20 µg/L	88.2	64.1	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	20 µg/L	86.4	62.5	116	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	20 µg/L	89.2	61.7	119	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	20 µg/L	88.7	61.7	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	20 µg/L	84.8	63.3	117	
		0.5	µg/L	<0.5	----	----	----	----	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	20 µg/L	70.8	59.9	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	20 µg/L	73.2	61.2	117	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	20 µg/L	69.8	59.1	118	
		1	µg/L	<1.0	----	----	----	----	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3227200)</b>									
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	88.6	75	127	
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3227334)</b>									
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	93.1	59	129	
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	101	71	131	
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	86.7	62	120	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3227200)</b>									
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	88.9	75	127	
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3227334)</b>									
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	91.6	58.9	131	
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	99.2	73.9	138	
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----	
		50	µg/L	----	1500 µg/L	77.2	67	127	
<b>EP080: BTEXN (QCLot: 3227200)</b>									
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	99.4	70	124	
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	102	65	129	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
<b>EP080: BTEXN (QCLot: 3227200) - continued</b>								
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	95.6	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	90.7	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	92.9	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	89.6	70	124

### Matrix Spike (MS) Report

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

Sub-Matrix: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Recovery Limits (%)	
				Low	High		
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3225459)</b>							
ES1327914-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	82.1	70	130
<b>ED045G: Chloride Discrete analyser (QCLot: 3225457)</b>							
ES1327806-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	# Not Determined	70	130
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225841)</b>							
ES1327798-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	80.5	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3226042)</b>							
ES1327798-001	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	89.8	70	130
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)</b>							
ES1328108-003	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	119	70	130
		EG094A-F: Barium	7440-39-3	50 µg/L	104	70	130
		EG094A-F: Beryllium	7440-41-7	50 µg/L	89.9	70	130
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	110	70	130
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	70	130
		EG094A-F: Cobalt	7440-48-4	50 µg/L	124	70	130
		EG094A-F: Copper	7440-50-8	50 µg/L	116	70	130
		EG094A-F: Lead	7439-92-1	50 µg/L	83.0	70	130
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	70	130
		EG094A-F: Nickel	7440-02-0	50 µg/L	118	70	130
		EG094A-F: Vanadium	7440-62-2	50 µg/L	100	70	130
		EG094A-F: Zinc	7440-66-6	50 µg/L	124	70	130
<b>EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093)</b>							
ES1328110-006	Anonymous						





Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093) - continued</b>							
ES1328110-006	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	107	70	130
		EG094A-T: Barium	7440-39-3	50 µg/L	109	70	130
		EG094A-T: Beryllium	7440-41-7	50 µg/L	117	70	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	117	70	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	123	70	130
		EG094A-T: Cobalt	7440-48-4	50 µg/L	112	70	130
		EG094A-T: Copper	7440-50-8	50 µg/L	125	70	130
		EG094A-T: Lead	7439-92-1	50 µg/L	125	70	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	125	70	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	110	70	130
		EG094A-T: Vanadium	7440-62-2	50 µg/L	116	70	130
EG094A-T: Zinc	7440-66-6	50 µg/L	111	70	130		
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3227199)</b>							
ES1328113-001	BR_MW05	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	118	70	130
		EP074: Trichloroethene	79-01-6	25 µg/L	118	70	130
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3227199)</b>							
ES1328113-001	BR_MW05	EP074: Chlorobenzene	108-90-7	25 µg/L	121	70	130
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3227200)</b>							
ES1328113-001	BR_MW05	EP080: C6 - C9 Fraction	----	325 µg/L	115	70	130
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3227200)</b>							
ES1328113-001	BR_MW05	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	114	70	130
<b>EP080: BTEXN (QCLot: 3227200)</b>							
ES1328113-001	BR_MW05	EP080: Benzene	71-43-2	25 µg/L	106	70	130
		EP080: Toluene	108-88-3	25 µg/L	108	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	102	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	105	70	130
		EP080: ortho-Xylene	106-42-3	25 µg/L	106	70	130
		EP080: Naphthalene	95-47-6	25 µg/L	106	70	130
			91-20-3	25 µg/L	98.2	70	130

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit



Sub-Matrix: WATER					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	MS		MSD	Low	High	Value	Control Limit
<b>ED045G: Chloride Discrete analyser (QCLot: 3225457)</b>										
ES1327806-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	# Not Determined	----	70	130	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3225459)</b>										
ES1327914-008	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	82.1	----	70	130	----	----
<b>EG035F: Dissolved Mercury by FIMS (QCLot: 3225841)</b>										
ES1327798-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	80.5	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3226042)</b>										
ES1327798-001	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	89.8	----	70	130	----	----
<b>EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 3227093)</b>										
ES1328110-006	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	107	----	70	130	----	----
		EG094A-T: Barium	7440-39-3	50 µg/L	109	----	70	130	----	----
		EG094A-T: Beryllium	7440-41-7	50 µg/L	117	----	70	130	----	----
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	117	----	70	130	----	----
		EG094A-T: Chromium	7440-47-3	50 µg/L	123	----	70	130	----	----
		EG094A-T: Cobalt	7440-48-4	50 µg/L	112	----	70	130	----	----
		EG094A-T: Copper	7440-50-8	50 µg/L	125	----	70	130	----	----
		EG094A-T: Lead	7439-92-1	50 µg/L	125	----	70	130	----	----
		EG094A-T: Manganese	7439-96-5	50 µg/L	125	----	70	130	----	----
		EG094A-T: Nickel	7440-02-0	50 µg/L	110	----	70	130	----	----
		EG094A-T: Vanadium	7440-62-2	50 µg/L	116	----	70	130	----	----
EG094A-T: Zinc	7440-66-6	50 µg/L	111	----	70	130	----	----		
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 3227199)</b>										
ES1328113-001	BR_MW05	EP074: 1,1-Dichloroethene	75-35-4	25 µg/L	118	----	70	130	----	----
		EP074: Trichloroethene	79-01-6	25 µg/L	118	----	70	130	----	----
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 3227199)</b>										
ES1328113-001	BR_MW05	EP074: Chlorobenzene	108-90-7	25 µg/L	121	----	70	130	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 3227200)</b>										
ES1328113-001	BR_MW05	EP080: C6 - C9 Fraction	----	325 µg/L	115	----	70	130	----	----
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3227200)</b>										
ES1328113-001	BR_MW05	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	114	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3227200)</b>										
ES1328113-001	BR_MW05	EP080: Benzene	71-43-2	25 µg/L	106	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	108	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	102	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	105	----	70	130	----	----
		EP080: ortho-Xylene	106-42-3	25 µg/L	106	----	70	130	----	----
		EP080: Naphthalene	95-47-6	25 µg/L	106	----	70	130	----	----
		EP080: Naphthalene	91-20-3	25 µg/L	98.2	----	70	130	----	----



Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 3227202)</b>										
ES1328108-003	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	119	----	70	130	----	----
		EG094A-F: Barium	7440-39-3	50 µg/L	104	----	70	130	----	----
		EG094A-F: Beryllium	7440-41-7	50 µg/L	89.9	----	70	130	----	----
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	110	----	70	130	----	----
		EG094A-F: Chromium	7440-47-3	50 µg/L	93.6	----	70	130	----	----
		EG094A-F: Cobalt	7440-48-4	50 µg/L	124	----	70	130	----	----
		EG094A-F: Copper	7440-50-8	50 µg/L	116	----	70	130	----	----
		EG094A-F: Lead	7439-92-1	50 µg/L	83.0	----	70	130	----	----
		EG094A-F: Manganese	7439-96-5	50 µg/L	# Not Determined	----	70	130	----	----
		EG094A-F: Nickel	7440-02-0	50 µg/L	118	----	70	130	----	----
		EG094A-F: Vanadium	7440-62-2	50 µg/L	100	----	70	130	----	----
EG094A-F: Zinc	7440-66-6	50 µg/L	124	----	70	130	----	----		

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1328113</b>	Page	: 1 of 9
Client	: ENVIRO RESOURCES MANAGEMENT	Laboratory	: Environmental Division Sydney
Contact	: MR JOSEPH FERRING	Contact	: Barbara Hanna
Address	: GROUND FLOOR 33 SAUNDERS STREET, PYRMONT NSW 2009 LOCKED BAG 24 BROADWAY NSW, AUSTRALIA 2007	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: joseph.ferring@erm.com	E-mail	: Barbara.Hanna@alsglobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61 2 8784 8555
Project	: Project Symphony	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 20-DEC-2013
C-O-C number	: ----	Issue Date	: 27-DEC-2013
Sampler	: JG, SC	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 7
Quote number	: SY/794/13		

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

This Interpretive Quality Control Report contains the following information:

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



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with recommended holding times (USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>ED037P: Alkalinity by PC Titrator</b>								
Clear Plastic Bottle - Natural (ED037-P) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	---	02-JAN-2014	----	21-DEC-2013	02-JAN-2014	✓
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Clear Plastic Bottle - Natural (ED041G) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	---	16-JAN-2014	----	21-DEC-2013	16-JAN-2014	✓
<b>ED045G: Chloride Discrete analyser</b>								
Clear Plastic Bottle - Natural (ED045G) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	---	16-JAN-2014	----	21-DEC-2013	16-JAN-2014	✓
<b>ED093F: Dissolved Major Cations</b>								
Clear Plastic Bottle - Natural (ED093F) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	---	26-DEC-2013	----	21-DEC-2013	26-DEC-2013	✓
<b>EG035F: Dissolved Mercury by FIMS</b>								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) BR_MW05,	BR_MW06	19-DEC-2013	---	16-JAN-2014	----	23-DEC-2013	16-JAN-2014	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T) R01_191213_SC		19-DEC-2013	----	----	----	23-DEC-2013	16-JAN-2014	✓
<b>EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS</b>								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094A-F) BR_MW05,	BR_MW06	19-DEC-2013	---	17-JUN-2014	----	23-DEC-2013	17-JUN-2014	✓
<b>EG094T: Total metals in Fresh water by ORC-ICPMS</b>								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094A-T) R01_191213_SC		19-DEC-2013	23-DEC-2013	17-JUN-2014	✓	23-DEC-2013	17-JUN-2014	✓
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013</b>								
Amber Glass Bottle - Unpreserved (EP071) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	24-DEC-2013	26-DEC-2013	✓	24-DEC-2013	02-FEB-2014	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP074D: Fumigants</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	23-DEC-2013	02-JAN-2014	✓	23-DEC-2013	02-JAN-2014	✓
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	23-DEC-2013	02-JAN-2014	✓	23-DEC-2013	02-JAN-2014	✓
<b>EP074F: Halogenated Aromatic Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	23-DEC-2013	02-JAN-2014	✓	23-DEC-2013	02-JAN-2014	✓
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	23-DEC-2013	02-JAN-2014	✓	23-DEC-2013	02-JAN-2014	✓
<b>EP074H: Naphthalene</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	23-DEC-2013	02-JAN-2014	✓	23-DEC-2013	02-JAN-2014	✓
<b>EP074B: Oxygenated Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	23-DEC-2013	02-JAN-2014	✓	23-DEC-2013	02-JAN-2014	✓
<b>EP074C: Sulfonated Compounds</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	23-DEC-2013	02-JAN-2014	✓	23-DEC-2013	02-JAN-2014	✓
<b>EP074G: Trihalomethanes</b>								
Amber VOC Vial - Sulfuric Acid (EP074) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	23-DEC-2013	02-JAN-2014	✓	23-DEC-2013	02-JAN-2014	✓
<b>EP075(SIM)A: Phenolic Compounds</b>								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	24-DEC-2013	26-DEC-2013	✓	24-DEC-2013	02-FEB-2014	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Amber Glass Bottle - Unpreserved (EP075(SIM)) BR_MW05, R01_191213_SC	BR_MW06,	19-DEC-2013	24-DEC-2013	26-DEC-2013	✓	24-DEC-2013	02-FEB-2014	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP080: BTEXN</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BR_MW05, R01_191213_SC, TS 1, TB 14	BR_MW06, TS 5, TB 13,	19-DEC-2013	23-DEC-2013	02-JAN-2014	✓	23-DEC-2013	02-JAN-2014	✓
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
<b>Amber VOC Vial - Sulfuric Acid (EP080)</b> BR_MW05, R01_191213_SC, TB 14	BR_MW06, TB 13,	19-DEC-2013	23-DEC-2013	02-JAN-2014	✓	23-DEC-2013	02-JAN-2014	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Alkalinity by PC Titrator	ED037-P	1	7	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	7	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	4	25.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	7	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Alkalinity by PC Titrator	ED037-P	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Chloride by Discrete Analyser	ED045G	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							





Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Matrix Spikes (MS) - Continued</b>							
Chloride by Discrete Analyser	ED045G	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	4	25.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds	EP074	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Alkalinity by PC Titrator	ED037-P	WATER	APHA 21st ed., 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Sulfate (Turbidimetric) as SO <sub>4</sub> <sup>2-</sup> by Discrete Analyser	ED041G	WATER	APHA 21st ed., 4500-SO <sub>4</sub> Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO <sub>4</sub> suspension is measured by a photometer and the SO <sub>4</sub> <sup>2-</sup> concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Chloride by Discrete Analyser	ED045G	WATER	APHA 21st ed., 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	Major Cations is determined based on APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises the 0.45um filtered sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)  Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)  Hardness parameters are calculated based on APHA 21st ed., 2340 B. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)



Analytical Methods	Method	Matrix	Method Descriptions
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	APHA 21st ed., 3125; USEPA SW846 - 6020 Samples are 0.45 um filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	APHA 21st Ed. 1030F. The Ionic Balance is calculated based on the major Anions and Cations. The major anions include Alkalinity, Chloride and Sulfate which determined by PCT and DA. The Cations are determined by Turbi SO4 by DA. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH - Semivolatle Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Volatile Organic Compounds	EP074	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals - ORC	EN25-ORC	WATER	Modified USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2)
Lab Acidification of Metals	EN80	WATER	USEPA Method 200.8
Lab Acidification of Dissolved Metals	EN80F	WATER	US EPA Method 200.8
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.



## Summary of Outliers

### Outliers : Quality Control Samples

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

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
ED045G: Chloride Discrete analyser	ES1327806-001	Anonymous	Chloride	16887-00-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG094F: Dissolved Metals in Fresh Water by ORC-ICP	ES1328108-003	Anonymous	Manganese	7439-96-5	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

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

#### Regular Sample Surrogates

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

### Outliers : Analysis Holding Time Compliance

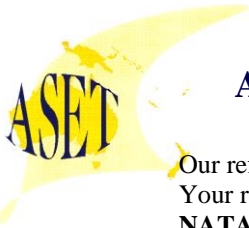
This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.



Our ref: ASET36450/ 39630-1 / 1 - 16  
Your ref: ES1326238  
**NATA Accreditation No: 14484**

14 January 2014

Australian Laboratory Services Pty Ltd  
277 – 284 Woodpark Road  
Smithfield NSW 2164

**Attn: Ms Nanthini Coilparampil**

Dear Nanthini,

**Asbestos Identification**

This report presents the results of sixteen samples, forwarded by Australian Laboratory Services Pty Ltd on 6 December 2013, for analysis for asbestos.

**1.Introduction:**Sixteen samples forwarded were examined and analysed for the presence of asbestos.

**2. Methods :** The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method ( **Safer Environment Method 1 and Australian Standards AS 4964 - 2004 and WA/ NEPM Guidelines**)

This report is consistent with the analytical procedures and reporting recommendations in the Western Australia/ NEPM Guidelines for the Assessment Remediation and Management of Asbestos in contaminated sites.

**3. Results :** **Sample No. 3. ASET36450 / 39630-1 / 3. ES1326238 - 003 - BQ\_SV24\_0.0.**  
Approx dimensions 7.0 cm x 7.0 cm x 4.5 cm  
The sample consisted of a mixture of soil, stones, fibres<sup>^</sup>, plant matter, fragments of plaster, cement and brick.

**Chrysotile (Approximate weight= 0.043g) asbestos and Amosite (Approximate weight= 0.011g) asbestos detected.**

**Approximate total weight of asbestos (=AF=loose fibres) = 0.054g**

**Approximate total weight of soil = 295.0g**

**Approximate w/w % = 0.02%**

**Sample No. 4. ASET36450 / 39630-1 / 4. ES1326238 - 004 - BQ\_SV25\_0.0.**

Approx dimensions 7.1 cm x 6.5 cm x 4.2 cm

The sample consisted of a mixture of soil, stones, fibres<sup>^</sup>, plant matter, fragments of plaster, cement and brick.

**Chrysotile<sup>^</sup> (Estimated approximate weight= 0.032g) asbestos detected.**

**Estimated approximate total weight of asbestos (=AF=loose fibres) = 0.032g**

**Approximate total weight of soil = 315.0g**

**Estimated approximate w/w % = 0.01%**

**Sample No. 5. ASET36450 / 39630-1 / 5. ES1326238 - 005 - BQ\_SV26\_0.0.**

Approx dimensions 6.8 cm x 6.8 cm x 4.3 cm

The sample consisted of a mixture of soil, stones, fibres<sup>^</sup>, plant matter and fragments of plaster.

**Chrysotile<sup>^</sup> (Estimated approximate weight= 0.031g) asbestos detected.**

**Estimated approximate total weight of asbestos (=AF=loose fibres) = 0.031g**

**Approximate total weight of soil = 220.0g**

**Estimated approximate w/w % = 0.014%**



**Sample No. 6. ASET36450 / 39630-1 / 6. ES1326238 - 006 - BQ\_SV27 - 0.0.**

Approx dimensions 7.0 cm x 6.5 cm x 4.1 cm

The sample consisted of a mixture of soil, stones, fibres<sup>^</sup>, plant matter, fragments of plaster and cement.

**Chrysotile<sup>^</sup> (Estimated approximate weight= 0.028g) asbestos and Amosite (Estimated approximate weight= 0.003g) detected.**

**Estimated approximate total weight of asbestos (=AF=loose fibres) = 0.031g**

**Approximate total weight of soil = 258.0g**

**Estimated approximate w/w % = 0.01%**

**Sample No. 7. ASET36450 / 39630-1 / 7. ES1326238 - 007 - BQ\_SV28\_0.0.**

Approx dimensions 7.2 cm x 7.1 cm x 4.1 cm

The sample consisted of a mixture of clayish soil, stones, fibres<sup>^</sup>, plant matter and fragments of plaster.

**Chrysotile<sup>^</sup> (Estimated approximate weight= 0.018g) asbestos detected.**

**Estimated approximate total weight of asbestos (=AF=loose fibres) = 0.018g**

**Approximate total weight of soil = 295.0g**

**Estimated approximate w/w % = 0.006%**

**Sample No. 11. ASET36450 / 39630-1 / 11. ES1326238 - 011 - BQ\_SV06\_0.0.**

Approx dimensions 6.6 cm x 6.6 cm x 5.0 cm

The sample consisted of a mixture of clayish soil, stones, fibres<sup>^</sup> and plant matter.

**Chrysotile<sup>^</sup> (Approximate weight= 0.0009g) asbestos detected.**

**Approximate total weight of asbestos (=AF=loose fibres) = 0.0009g**

**Approximate total weight of soil = 320.0g**

**Approximate w/w % = 0.0003%**

**Sample No. 13. ASET36450 / 39630-1 / 13. ES1326238 - 013 - BQ\_SV08\_0.0.**

Approx dimensions 7.5 cm x 7.5 cm x 5.0 cm

The sample consisted of a mixture of soil, stones, fibres<sup>^</sup>, plant matter, fragments of plaster, cement and brick.

**Chrysotile<sup>^</sup> (Estimated approximate weight= 0.0065g) asbestos and Amosite<sup>^</sup> (Estimated approximate weight= 0.0004g) asbestos detected.**

**Estimated approximate total weight of asbestos (=AF=loose fibres) = 0.0069g**

**Approximate total weight of soil = 360.0g**

**Estimated approximate w/w % = 0.002%**

**Sample No. 14. ASET36450 / 39630-1 / 14. ES1326238 - 014 - BQ\_SV09\_0.0.**

Approx dimensions 7.5 cm x 7.4 cm x 5.2 cm

The sample consisted of a mixture of soil, stones, fibres<sup>^</sup>, plant matter, fragments of plaster and brick.

**Chrysotile<sup>^</sup> (Approximate weight= 0.005g) asbestos detected.**

**Approximate total weight of asbestos (=AF=loose fibres) = 0.005g**

**Approximate total weight of soil = 313.0g**

**Approximate w/w % = 0.002%**

**Sample No. 15. ASET36450 / 39630-1 / 15. ES1326238 - 015 - BQ\_SV10\_0.0.**

Approx dimensions 7.8 cm x 7.5 cm x 5.0 cm

The sample consisted of a mixture of soil, stones, fibres<sup>^</sup>, plant matter, fragments of plaster, cement and brick.

**Chrysotile<sup>^</sup> (Approximate weight= 0.0038g) asbestos detected.**

**Approximate total weight of asbestos (=AF=loose fibres) = 0.0038g**

**Approximate total weight of soil = 365.0g**

**Approximate w/w % = 0.001%**

**Sample No. 20. ASET36450 / 39630-1 / 20. ES1326238 - 020 - BQ\_SV15\_0.0.**

Approx dimensions 7.0 cm x 7.0 cm x 5.0 cm

The sample consisted of a mixture of soil, stones, fibres<sup>^</sup>, plant matter, fragments of plaster and brick.

**Chrysotile<sup>^</sup> (Estimated approximate weight= 0.03g) asbestos detected.**

**Estimated approximate total weight of asbestos (=AF=loose fibres) = 0.03g**

**Approximate total weight of soil = 376.0g**

**Estimated approximate w/w % = 0.008%**

**Sample No. 21. ASET36450 / 39630-1 / 21. ES1326238 - 021 - BQ\_SV16\_0.0.**

Approx dimensions 8.0 cm x 7.5 cm x 4.6 cm

The sample consisted of a mixture of soil, stones, fibres<sup>^</sup>, plant matter and fragments of plaster.

**Chrysotile<sup>^</sup> (Estimated approximate weight= 0.65g) asbestos detected.**

**Estimated approximate total weight of asbestos (=AF=loose fibres) = 0.65g**

**Approximate total weight of soil = 362.0g**

**Estimated approximate w/w % = 0.2%**

**Sample No. 22. ASET36450 / 39630-1 / 22. ES1326238 - 022 - BQ\_SV17\_0.0.**

Approx dimensions 8.0 cm x 7.8 cm x 5.0 cm

The sample consisted of a mixture of soil, stones, plant matter, fibres<sup>^</sup>, fragments of plaster and brick.

**Chrysotile<sup>^</sup> (Estimated approximate weight= 0.048g) asbestos detected.**

**Estimated approximate total weight of asbestos (=AF=loose fibres) = 0.048g**

**Approximate total weight of soil = 601.0g**

**Estimated approximate w/w % = 0.008%**

**Sample No. 23. ASET36450 / 39630-1 / 23. ES1326238 - 023 - BQ\_SV18\_0.0.**

Approx dimensions 8.1 cm x 8.0 cm x 4.0 cm

The sample consisted of a mixture of soil, stones, plant matter, fibres<sup>^</sup>, fragments of plaster, bitumen and brick.

**Chrysotile<sup>^</sup> (Approximate weight= 0.036g) asbestos detected.**

**Approximate total weight of asbestos (=AF=loose fibres) = 0.036g**

**Approximate total weight of soil = 460.0g**

**Approximate w/w % = 0.008%**

**Sample No. 24. ASET36450 / 39630-1 / 24. ES1326238 - 024 - BQ\_SV19\_0.0.**

Approx dimensions 8.0 cm x 8.0 cm x 4.5 cm

The sample consisted of a mixture of soil, stones, plant matter, fibres<sup>^</sup>, fragments of plaster and brick.

**Chrysotile<sup>^</sup> (Approximate weight= 0.018g) asbestos detected.**

**Estimated approximate total weight of asbestos (=AF=loose fibres) = 0.018g**

**Approximate total weight of soil = 462.0g**

**Estimated approximate w/w % = 0.004%**

**Sample No. 25. ASET36450 / 39630-1 / 25. ES1326238 - 025 - BQ\_SV20\_0.0.**

Approx dimensions 8.1 cm x 8.0 cm x 4.6 cm

The sample consisted of a mixture of soil, stones, plant matter, fibres<sup>^</sup>, fragments of plaster and brick.

**Chrysotile<sup>^</sup> (Estimated approximate weight= 0.016g) asbestos detected.**

**Estimated approximate total weight of asbestos (=AF=loose fibres) = 0.016g**

**Approximate total weight of soil = 490.0g**

**Estimated approximate w/w % = 0.003%**



**Sample No. 26. ASET36450 / 39630-1 / 26. ES1326238 - 026 - BQ\_SV21\_0.0.**

Approx dimensions 8.0 cm x 8.0 cm x 5.0 cm

The sample consisted of a mixture of soil, stones, fibres<sup>^</sup>, plant matter, fragments of plaster, cement and brick.

**Chrysotile<sup>^</sup> (Estimated approximate weight= 0.076g) asbestos detected.**

**Estimated approximate total weight of asbestos (=AF=loose fibres) = 0.076g**

**Approximate total weight of soil = 630.0g**

**Estimated approximate w/w % = 0.01%**

Analysed and reported by,



**Nisansala Maddage. BSc(Hons)  
Environmental Scientist/Approved Identifier  
Approved Signatory**



**This document is issued in accordance with NATA's Accreditation requirements. Accredited for compliance with ISO/IEC 17025.**

*The approx; weights given above can be used only as a guide. They do not represent absolute weights of each kind of asbestos as it is impossible to extract all loose fibres from soil and other asbestos containing building material samples using this method. However above figures may be used as closest approximations to the exact values in each case. Estimation and/ or reporting of asbestos fibre weights in asbestos containing materials and soil is out of the Scope of the NATA Accreditation. NATA Accreditation only covers the qualitative part of the results reported.*

**ACM - Asbestos Containing Material - Products or materials that contain asbestos in an inert bound matrix such as cement or resin. Here taken to be sound material, even as fragments and not fitting through a 7mm X 7 mm sieve.**

**AF -Includes asbestos free fibres, small fibre bundles and also ACM fragments that pass through a 7mm X 7 mm sieve.**

**FA -Friable asbestos material such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products.**

**<sup>^</sup> denotes loose fibres of relevant asbestos types detected in soil/dust.**

**All samples indicating "No asbestos detected" are assumed to be less than 0.001 % unless the actual approximate weight is given.**



Annex I

## EIL & UCL Calculations

A	B	C	D	E	F	G	H	I	J	K	L	
1			<b>General UCL Statistics for Full Data Sets</b>									
2	<b>User Selected Options</b>											
3	From File		WorkSheet.wst									
4	Full Precision		OFF									
5	Confidence Coefficient		95%									
6	Number of Bootstrap Operations		2000									
7												
8												
9	<b>C0</b>											
10												
11	<b>General Statistics</b>											
12	Number of Valid Observations				26		Number of Distinct Observations				22	
13	Number of Missing Values				1							
14												
15	<b>Raw Statistics</b>					<b>Log-transformed Statistics</b>						
16			Minimum		36				Minimum of Log Data		3.584	
17			Maximum		2800				Maximum of Log Data		7.937	
18			Mean		334.6				Mean of log Data		4.828	
19			Median		87				SD of log Data		1.191	
20			SD		661.8							
21			Coefficient of Variation		1.978							
22			Skewness		2.925							
23												
24	<b>Relevant UCL Statistics</b>											
25	<b>Normal Distribution Test</b>					<b>Lognormal Distribution Test</b>						
26			Shapiro Wilk Test Statistic		0.496				Shapiro Wilk Test Statistic		0.79	
27			Shapiro Wilk Critical Value		0.92				Shapiro Wilk Critical Value		0.92	
28	<b>Data not Normal at 5% Significance Level</b>					<b>Data not Lognormal at 5% Significance Level</b>						
29												
30	<b>Assuming Normal Distribution</b>					<b>Assuming Lognormal Distribution</b>						
31			95% Student's-t UCL		556.3				95% H-UCL		490.7	
32	<b>95% UCLs (Adjusted for Skewness)</b>					95% Chebyshev (MVUE) UCL						535.4
33			95% Adjusted-CLT UCL (Chen-1995)		627.6				97.5% Chebyshev (MVUE) UCL		661.9	
34			95% Modified-t UCL (Johnson-1978)		568.7				99% Chebyshev (MVUE) UCL		910.2	
35												
36	<b>Gamma Distribution Test</b>					<b>Data Distribution</b>						
37			k star (bias corrected)		0.578		<b>Data do not follow a Discernable Distribution (0.05)</b>					
38			Theta Star		579.2							
39			MLE of Mean		334.6							
40			MLE of Standard Deviation		440.2							
41			nu star		30.04							
42			Approximate Chi Square Value (.05)		18.52		<b>Nonparametric Statistics</b>					
43			Adjusted Level of Significance		0.0398				95% CLT UCL		548.1	
44			Adjusted Chi Square Value		17.93				95% Jackknife UCL		556.3	
45									95% Standard Bootstrap UCL		538.3	
46			Anderson-Darling Test Statistic		3.706				95% Bootstrap-t UCL		898	
47			Anderson-Darling 5% Critical Value		0.796				95% Hall's Bootstrap UCL		716.7	
48			Kolmogorov-Smirnov Test Statistic		0.352				95% Percentile Bootstrap UCL		565.3	
49			Kolmogorov-Smirnov 5% Critical Value		0.18				95% BCA Bootstrap UCL		631.3	
50	<b>Data not Gamma Distributed at 5% Significance Level</b>					95% Chebyshev(Mean, Sd) UCL						900.3
51						97.5% Chebyshev(Mean, Sd) UCL						1145
52	<b>Assuming Gamma Distribution</b>					99% Chebyshev(Mean, Sd) UCL						1626
53			95% Approximate Gamma UCL		542.6							
54			95% Adjusted Gamma UCL		560.7							
55												
56	<b>Potential UCL to Use</b>					Use 95% Chebyshev (Mean, Sd) UCL						900.3
57												
58	<b>Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.</b>											
59	<b>These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)</b>											
60	<b>and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.</b>											
61												

<b>Inputs</b>	
<b>Select contaminant from list below</b>	
Zn	
<b>Below needed to calculate fresh and aged ACLs</b>	
<b>Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)</b>	
8.3	
<b>Enter soil pH (calcium chloride method) (values from 1 to 14)</b>	
6.5	
<b>Below needed to calculate fresh and aged ABCs</b>	
<b>Measured background concentration (mg/kg). Leave blank if no measured value</b>	
53	
<b>or for fresh ABCs only</b>	
<b>Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration</b>	
<b>or for aged ABCs only</b>	
<b>Enter State (or closest State)</b>	
<b>Enter traffic volume (high or low)</b>	

<b>Outputs</b>		
<b>Land use</b>	<b>Zn soil-specific EILs</b>	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
<b>National parks and areas of high conservation value</b>	85	130
<b>Urban residential and open public spaces</b>	190	400
<b>Commercial and industrial</b>	270	590

Inputs	
Select contaminant from list below	
Zn	
Below needed to calculate fresh and aged ACLs	
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)	
28	
Enter soil pH (calcium chloride method) (values from 1 to 14)	
8.3	
Below needed to calculate fresh and aged ABCs	
Measured background concentration (mg/kg). Leave blank if no measured value	
53	
or for fresh ABCs only	
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration	
or for aged ABCs only	
Enter State (or closest State)	
Enter traffic volume (high or low)	

Outputs		
Land use	Zn soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	140	250
Urban residential and open public spaces	400	960
Commercial and industrial	610	1500

<b>Inputs</b>	
Select contaminant from list below	
Cr III	
Below needed to calculate fresh and aged ACLs	
Enter % clay (values from 0 to 100%)	
5	
Below needed to calculate fresh and aged ABCs	
Measured background concentration (mg/kg). Leave blank if no measured value	
20	
or for fresh ABCs only	
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration	
or for aged ABCs only	
Enter State (or closest State)	
Enter traffic volume (high or low)	

<b>Outputs</b>		
Land use	Cr III soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	60	120
Urban residential and open public spaces	150	340
Commercial and industrial	230	550

Inputs	
Select contaminant from list below	
Cu	
Below needed to calculate fresh and aged ACLs	
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)	
19	
Enter soil pH (calcium chloride method) (values from 1 to 14)	
7.1	
Enter organic carbon content (%OC) (values from 0 to 50%)	
0.66	
Below needed to calculate fresh and aged ABCs	
Measured background concentration (mg/kg). Leave blank if no measured value	
15	
or for fresh ABCs only	
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration	
or for aged ABCs only	
Enter State (or closest State)	
Enter traffic volume (high or low)	

Outputs		
Land use	Cu soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	65	85
Urban residential and open public spaces	120	220
Commercial and industrial	180	320

Inputs	
Select contaminant from list below	
Ni	
Below needed to calculate fresh and aged ACLs	
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)	
19	
Below needed to calculate fresh and aged ABCs	
Measured background concentration (mg/kg). Leave blank if no measured value	
14	
or for fresh ABCs only	
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration	
or for aged ABCs only	
Enter State (or closest State)	
Enter traffic volume (high or low)	

Outputs		
Land use	Ni soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	25	60
Urban residential and open public spaces	95	270
Commercial and industrial	170	450

Inputs	
Select contaminant from list below	
Zn	
Below needed to calculate fresh and aged ACLs	
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)	
19	
Enter soil pH (calcium chloride method) (values from 1 to 14)	
7.1	
Below needed to calculate fresh and aged ABCs	
Measured background concentration (mg/kg). Leave blank if no measured value	
53	
or for fresh ABCs only	
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration	
or for aged ABCs only	
Enter State (or closest State)	
Enter traffic volume (high or low)	

Outputs		
Land use	Zn soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	120	200
Urban residential and open public spaces	310	720
Commercial and industrial	460	1100



Annex J

# Survey Data

MONITORING WELL NAME	MGA EAST	MGA NORTH	AHD CASING LEVEL	AHD SURFACE LEVEL
BA-MW01	307644.32	6412540.21	183.23	182.30
BA-MW03	307568.71	6412789.35	175.12	174.29
BB-MW01	305818.49	6412858.20	171.46	170.74
BB-MW02	305776.79	6412842.75	173.57	172.85
BB-MW03	306070.01	6412314.50	193.14	192.43
BB-MW04	306380.83	6412496.14	197.11	196.30
BB-MW05	305643.82	6413017.92	165.07	164.43
BC-MW05	307394.23	6413149.07	199.04	198.35
BE-MW01	307590.74	6414362.08	166.05	164.91
BE-MW02	307602.75	6414655.90	163.56	162.76
BE-MW03	307604.02	6414937.80	162.51	161.63
BE-MW04	307374.72	6415132.98	159.87	159.27
BE-MW05	307334.54	6415094.44	159.94	159.25
BE-MW06	307255.41	6415016.55	159.95	159.29
BE-MW07	307181.97	6414944.34	159.90	159.30
BE-MW08	307089.54	6414840.90	160.54	159.99
BF-MW01	309174.32	6419560.69	137.98	137.26
BF-MW02	309150.82	6419502.22	139.37	139.45
BF-MW03	309241.56	6419426.25	138.66	138.79
BF-MW05	316247.41	6411377.60	92.05	92.18
BF-MW09	303943.88	6415287.86	224.11	223.50
BG-MW01	307551.80	6414055.29	170.03	170.15
BG-MW02	307486.78	6414076.75	169.78	169.92
BG-MW03	307471.04	6414114.27	170.11	170.19
BG-MW04	307492.54	6414181.96	170.24	170.38
BG-MW05	307536.81	6414174.91	170.14	170.31
BG-MW06	307569.45	6414129.72	171.55	171.65
BG-MW07	307602.18	6414071.74	176.03	176.11
BH-MW01	307374.58	6413794.19	180.08	180.19
BH-MW02	307419.74	6413742.89	180.17	180.30
BH-MW03	307503.51	6413630.90	179.86	179.96
BH-MW04	307586.06	6413690.09	179.83	179.98
BH-MW05	306821.78	6414074.68	180.84	180.25
BH-MW06	306773.02	6414045.06	181.02	180.34
BH-MW07	306640.87	6414054.68	179.98	180.06
BH-MW08	306622.38	6414142.37	179.82	179.99
BI-MW01	307382.15	6414012.19	179.83	179.94
BI-MW02	307405.82	6413958.30	179.83	179.91
BI-MW03	307447.61	6413982.63	180.00	180.06
BK-MW04	306882.69	6415193.35	167.48	166.53
BL-MW01	307221.96	6413683.81	180.16	180.32
BL-MW02	307144.82	6413715.67	179.96	180.04
BL-MW03	307099.83	6413800.01	179.95	180.04
BL-MW04	307121.00	6413733.12	179.95	180.04
BL-MW05	306797.43	6413877.23	180.24	180.31
BL-MW06	306895.56	6413830.41	179.91	179.99
BM-MW03	306429.68	6413150.53	184.35	183.61
BM-MW05	306436.82	6413112.32	185.39	184.72

MONITORING WELL NAME	MGA EAST	MGA NORTH	AHD CASING LEVEL	AHD SURFACE LEVEL
BM-MW07	306724.96	6413143.79	195.49	194.74
BN-MW02	306994.06	6412287.34	192.45	192.54
BN-MW03	306952.15	6412310.66	196.39	195.94
BO-MW01	306661.36	6412009.75	180.28	179.62
BO-MW02	306145.43	6411734.36	159.09	158.32
BO-MW03	306138.73	6411591.75	154.71	153.93
BO-MW04	306369.21	6411605.23	156.28	155.58
BO-MW05	306611.93	6411591.96	160.69	159.87
BP-MW01	307345.66	6414242.72	169.00	169.08
BP-MW02	307346.60	6414260.78	169.22	169.30
BP-MW03	307332.78	6414248.16	169.08	169.18
BP-MW04	307321.56	6414304.82	169.91	169.26
BP-MW05	307346.75	6414293.33	169.67	169.00
BP-MW06	307316.39	6414279.46	169.36	169.47
BQ-MW01	307649.05	6413541.82	189.40	189.49
BQ-MW02	308930.29	6412190.16	149.19	148.55
BQ-MW03	308672.00	6412351.44	158.82	158.11
BQ-MW04	308369.49	6412458.45	179.31	178.75
BQ-MW05	308651.00	6412518.66	175.49	174.74
BQ-MW07	309050.06	6412627.68	177.74	177.00
BQ-MW08	309199.50	6412914.85	152.36	151.80
BQ-MW10	308378.32	6413806.14	156.82	156.31
BQ-MW11	309895.58	6412998.54	128.64	127.92
BQ-MW13	308942.36	6413730.17	174.43	173.51
BQ-MW14	308529.09	6414183.09	141.91	141.38
BR-MW01	315228.07	6411563.66	105.56	104.96
BR-MW05	317776.22	6406598.34	66.23	65.52
BR-MW06	316944.61	6409453.05	80.39	79.73
BT-MW01	303125.66	6405992.86	92.62	91.91
BU-MW01	307624.80	6413887.01	179.73	179.85
BU-MW02	307630.44	6413853.29	180.43	179.75
BU-MW03	307642.36	6413879.50	180.49	179.73
BV-MW01	306779.84	6414221.87	180.04	180.16
BV-MW04	307290.33	6414035.09	180.13	180.24
BV-MW06	307299.03	6414054.30	180.11	180.20
BV-MW07	306708.01	6413880.16	179.90	179.97
BV-MW08	307432.85	6413863.90	180.05	180.16
BV-MW09	307532.01	6413833.56	179.79	179.91
BV-MW10	307629.47	6413812.45	177.64	177.79
BV-MW11	307287.99	6413553.39	179.98	180.05
BV-MW12	307352.94	6413542.68	180.03	180.12
BV-MW13	307330.67	6413616.91	180.18	180.26
BX-MW01	306527.74	6413510.13	200.19	199.28
BX-MW03	306958.18	6413443.45	193.26	192.67
BY-MW12	304071.60	6407884.89	128.73	128.09
BY-MW21	308231.44	6414617.23	145.99	145.12
BY-MW23	310125.41	6420632.98	142.62	142.03
BY-MW24	310506.51	6419280.62	140.17	139.48

MONITORING WELL NAME	MGA EAST	MGA NORTH	AHD CASING LEVEL	AHD SURFACE LEVEL
BY-MW25	311467.71	6418876.62	135.27	135.37
BY-MW26	312617.79	6418256.45	131.48	130.89
BY-MW29	311831.99	6414955.39	113.26	112.68

Annex K

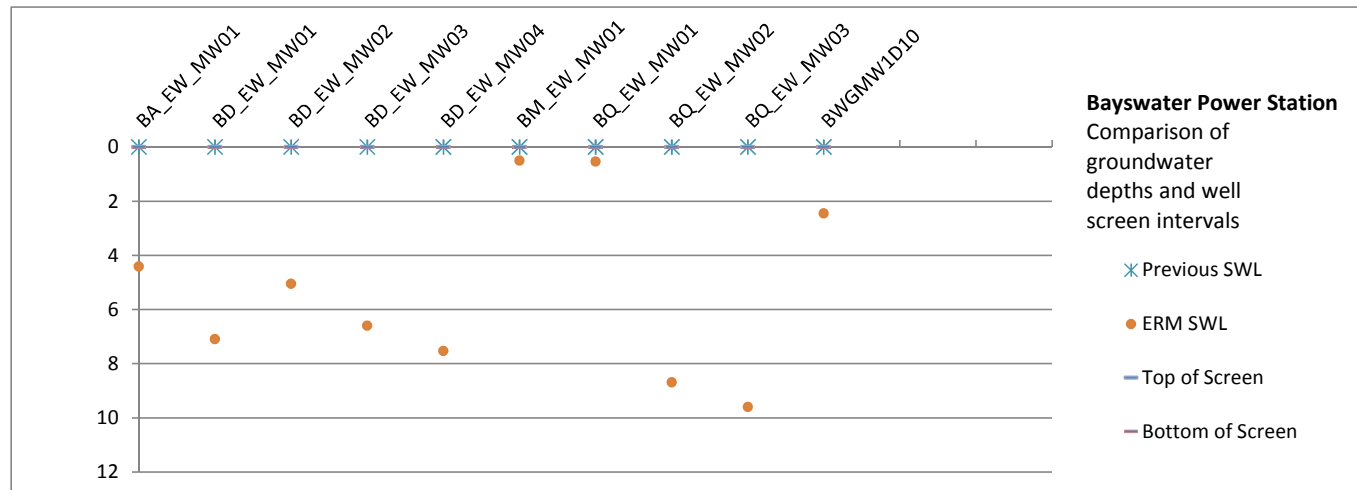
## Existing Groundwater Well Suitability



Well ID	Top of screen	Bottom of Screen	Previous SWL	ERM SWL	Screened Geological Unit / Comments
BA_EW_MW01	N/A	N/A	N/A	4.42	N/A - well construction information not available.
BD_EW_MW01	N/A	N/A	N/A	7.11	N/A - well construction information not available.
BD_EW_MW02	N/A	N/A	N/A	5.05	N/A - well construction information not available.
BD_EW_MW03	N/A	N/A	N/A	6.60	N/A - well construction information not available.
BD_EW_MW04	N/A	N/A	N/A	7.54	N/A - well construction information not available.
BM_EW_MW01	N/A	N/A	N/A	0.51	N/A - well construction information not available.
BQ_EW_MW01	N/A	N/A	N/A	0.54	N/A - well construction information not available.
BQ_EW_MW02	N/A	N/A	N/A	8.70	N/A - well construction information not available.
BQ_EW_MW03	N/A	N/A	N/A	9.61	N/A - well construction information not available.
BWGMW1D10	N/A	N/A	N/A	2.45	N/A - well construction information not available.

Notes:

N/A - data not available



**ERM** has over 100 offices  
across the following  
countries worldwide

Australia	Netherlands
Argentina	Peru
Belgium	Poland
Brazil	Portugal
China	Puerto Rico
France	Singapore
Germany	Spain
Hong Kong	Sri Lanka
Hungary	Sweden
India	Taiwan
Indonesia	Thailand
Ireland	UK
Italy	USA
Japan	Venezuela
Korea	Vietnam
Malaysia	
Mexico	

### **Environmental Resources Management**

Building C, 33 Saunders Street  
Pyrmont NSW 2009  
Locked Bag 24,  
Broadway NSW 2007

T: 61 2 8584 8888  
F: 61 2 8584 8800  
[www.erm.com](http://www.erm.com)

